

REALISTIC PRESENTATION OF VIRTUAL CHARACTERS IN MOTION PICTURES

Asst. Prof. Yüksel BALABAN
Beykent University, Graphic Design.
balabany@yahoo.com

Abstract: Reality concept has a crucial significance in the movies as well as in the other fields of art. In the movies, the identification of the audiences with the characters, and their believing what they watched are some of the reasons underlying this reality. On the one hand, the incidents happening in the imaginary world might take its audiences to the place where wanted and on the other hand they might convey the message that is desired. In the creation of reality with the development of technology, what is watched for an audience is getting more and more believable. Both the development of the technology in the movie theatres such as the use of the anaglyph spectacles and the improvements of the film production techniques support the creation of the reality in the movies.

In this study, the contribution of virtual characters used in the movies to the reality of the film is going to be examined. Even though audiences do not live in real terms, they perceive the characters within the integrity of the film with the other characters in the real life. Thanks to the developing technology, virtual characters have become inseparable from real performers. In order to the realistic appearance of these characters, some technical specifications need to be gathered. At the end of some stages having different kinds of difficulties, the characters reach their final appearances. However, the reality in here is not a concept that is going to be discussed with its unique feature. Aforesaid reality is the reality having a different structure with a good deal of features. In the realistic presentation of a character, there are a lot of features completing each other such as its acting within the context of its design, dubbing, and movements.

In the study, virtual characters used in the films at present which are created in computers are going to be discussed. Then, the features underlying the realistic performances and appearances of these characters are going to be presented. These simulated characters depended on the imitation of reality are going to be evaluated in terms of Baudrillard's Simulation Theory. The paradox being caused by the believable influence of characters on the audiences which are not real in spite of having all the features of reality as in the simulation causes is going to be demonstrated in this study.

Key Words: Virtual Characters, Animation, Simulation, Motion Capture (mocap)

INTRODUCTION

Significant developments have taken place both in the appearance of animated characters and their movements as a result of technological advancements. In line with the development of these aspects, the impact power of these animated characters in films on the viewers has increased with respect to the realistic appearances and movements of these characters. One of the methods which has been widely used prior to computer-generated imagery (CGI) is the stop motion method. One of the most known films made through this method is the 1933 dated film King Kong. O'Brien has created special effects for the directors before the film was made. King Kong has a quite high budget under the conditions of its period. The film does not only stand out with its visual effects, but with the personality aspect which has been added to the character as well. It carries the feature of being the first film in which real emotions have been attributed to a creature. O'Brien has given King Kong life, humor and warmth along with its strong appearance (<http://www.denofgeek.com/movies/animated-characters/30956/100-years-of-animated-characters-in-live-action-films>). The contribution of stop motion method to the art of animation cannot be ignored; however in particular through technological advancements, remarkable developments have begun to take place in this area.

Whereas today, the plausibility of created characters in the area of animation has become more powerful with CGI and this has increased the effect of the works produced in this area. It can be stated that the attempt to capture reality in terms of animation in motion and acting has begun with Disney. In Disney films, it is possible to see motions which are close to reality both in terms of characters' appropriate anatomical representation and their acting. For instance, drawings and observations had been made using an animal which had been brought to the studio for the film *Bambi* (1942). In addition to this, it is possible to see scenes in which the Rotoscope method has been used to capture real movements in other films produced by Disney. "Snow White", "Maleficent" and "Alice in Wonderland" are some of these films.

In the study, while various examples are given for the use of virtual characters in realistic films, primarily the Lord of the Rings trilogy and the Gollum character in this series is dealt with. The study will touch upon the history of visual effects and the development process of virtual characters through examples from other films as well. The Lord of the Rings series is one of the films in which real characters and virtual characters are used intertwiningly. Although there are many different creatures besides humans in the film, one of the most striking creatures is the Gollum character. When the creation process of this character is considered, it can be stated that Gollum portrays a realistic stance both in terms of its appearance and its movements.

1- THE USE OF COMPUTER GENERATED VIRTUAL CHARACTERS IN LIVE ACTION FILMS

Although the use of virtual characters in live action films does not go back too far, it can be seen that they are frequently used in recent motion pictures. The use of computer-generated images (CGI), or visual effects in motion pictures has increased since the beginning of 1980's. Although different films are referred to as to the use of first computer-generated character in various sources, the end of 1970's and the first years of 1980's point out to the first use of these characters. For instance, in the film "Young Sherlock Holmes" (1985), a 3D, digital and photorealistic animated character has been used for the first time in a feature film in this respect (<http://www.filmsite.org/visualeffects12.html>). Prior to this 1985 dated film, other developments have taken place as well. For instance, the 1976 dated film "Futureworld" is one of the films in which three-dimensional computer graphics in the area of computer-generated characters have been used for hands and faces.

1970's are significant in terms of the development of computer-generation method and image technologies. Numerous render technologies created during these years are still being used today (Kerlow, 2009: 9). These years have served as a preliminary preparation for the later periods and have formed a foundation for the future developments. While this preliminary preparation period has been experienced in the area of CGI technological developments, it has also allowed these to be applied to films. Another important development which took place in the 1970's is "Star Wars" which has almost become a cult film. Star Wars has been made in 1977. The film has widely brought visual effects to the fore; however the use of computer technology in the film is limited to the use of motion control systems and physical miniature models (Kerlow, 2009: 19).

As different from animated films, the virtual characters used in live action films need to be as realistic as the other real characters in the film. The identification of the viewers with the characters and their comparison of these characters with the others are some of the reasons which necessitate this reality. There are many different factors in terms of the plausibility of the characters. They do not have a one-dimensional structure and this plausibility and reality embody many different factors. Factors such as design, animation, acting and sound for the character should be devised in a manner to complete each other and be convincing.

Whereas in the 1980's, films in which visual effects have been used continued to be made. During these years, computer technology began to transform visual effects as well (<http://www.denofgeek.com/movies/animated-characters/30956/100-years-of-animated-characters-in-live-action-films>). In “Looker” (1981), the character Cindy which is one of the first CGI human models has been created with the body scan of actress Susan Dey. In the film “Young Sherlock Holmes” (1985), one of the first animated characters of the history of the cinema exists. Many other films such as “Tron” (1982), “The Abyss” (1989) and “Aliens” (1986) can also be mentioned among those which carry importance in terms of visual effects. When we consider the use of virtual characters in live action films, we need to touch upon the concept of visual effects as well. The term visual effect in its widest meaning expresses achieving an image without the use of only photographic techniques. Visual effects can be created with the camera or many different optical or digital post-production processes. Visual effect is a sub-category of special effects (Brinkman, 2009: 671).

The use of computers in the creation of visual effects has accelerated the process. In addition, visual effects have become more attractive for the viewers. It is sometimes possible to see the effect created for the viewers at the box office as well. “Jurassic Park” can be given as an example. It is observed that films which are based on visual effects and effective in this respect are successful at the box Office as well. This has also encouraged producers to use visual effects in films.

“Jurassic Park” is one of the milestones in the use of virtual characters in live action films. The computer animations of the film directed by Steven Spielberg in 1993 have been carried out by ILM (Industrial Light and Magic). This film has been awarded the Best Visual Effects Oscar as well in its time. It is one of the movies in which real characters and computer-generated virtual characters have been used together successfully until then. In the film, the computer-generated dinosaurs appeared quite realistic. In addition, it is an important development as an example of an extremely realistic render (Kerlow, 2009: 25). Spielberg has achieved his highest box office return ever with this film and it has also carried the use of digital images to a new level (Rickitt, 2007: 36). In the film, stop-motion dinosaur characters have also been used besides CGI dinosaur characters. The characters which have been animated as stop-motion have been placed in the real world by ILM through the digital compositing methods. There are many scenes in the film in which digital and mechanical effects have been used together (Netzley, 2000: V). In order to make the characters look realistic, a digital blur effect has been applied on them (Rickitt, 2007: 170).

2-TECHNIQUES USED IN THE PLAUSIBILITY OF VIRTUAL CHARACTERS

CGI characters used in live action films are created through the use of many different techniques together. Each stage in this process contributes to the realistic appearance of the characters in the eyes of the viewers and allows the perception to develop in this direction. These techniques have a hierarchical order. Once a technique is used, then the next stage begins. For instance, the render stage cannot begin before the motion capture stage is completed; or digital compositing process cannot begin before the texturing process is over. With the contribution of each process, the work is completed with the most realistic appearance. Some of the important states are as follows.

2.1. MOTION CAPTURE

Acting is as important for virtual characters in the art of animation as it is for real actors. The performance of virtual characters in live action films has come closer to the performance in real life with the rapid advancement of technology. Through the motion capture technology, the motions of real actors are recorded, transformed into digital data and transferred to computer generated virtual characters (Netzley, 2000: 154). Not only the motions of humans,

but the motions of animals or objects can be transferred to computer generated characters later on (Miller, 2006: 118). This technique can be regarded as the evolution of rotoscope as well, because it consists of exactly copying real motions. The use of rotoscope and other techniques, methods where real motions are taken as reference have rapidly become standard applications. Animations of higher quality in particular in feature animation films have begun to be sought for in motions which are more natural. In the Disney film “Snow White” and Fleischer brothers’ film “Mr. Bug Goes to Town”, rotoscope has been used in the animation of the leading characters (Hayes and Webster 2013: 185). Motion capture has been developed in the 1970’s to be used in the military. Until today, it has been used in many different areas as well. Biomedical researches, analysis of sports related motions, games and performance recordings are the leading ones. Later on, it has been used in the production of visual effects in commercials, in the live action film industry, feature animation films and television series (Furniss, 2009: 189).

In this method, which is effective on the acting of virtual characters in motion pictures, data obtained by certain devices connected to the bodies of real actors are transformed into digital data and transferred to the characters in the films. These transfers are not always problem free. In problematic cases, animation artists manually interfere and correct the motion. In live action films, one of the main reasons why such an animation method is chosen is that these motions are achieved in the closest manner possible to the motions in real life. The viewers’ eyes are used to the motions they see in real life. Therefore, the viewers will notice it when they see a different motion or acting.

There are different methods in terms of motion capture. Prosthetic, acoustic, magnetic and optic can be listed among these methods. These technologies each have advantages and disadvantages. Due to their unique characteristics, some of these might give more appropriate results in accordance with the areas they are to be applied to. Among the factors which differentiate the motion capture technologies from each other can be listed as accurate data calculations, speed rates, freedom of motion given to real actors, the number of data points on the actors and the number of actors whose motion data is to be recorded for the scenes (Kerlow, 2009: 369-370). Optic motion capture technology can be counted among the methods which best obtain data. Through this method, leading companies such as Digital Domain, ILM and PDI have successfully used the optic motion capture methods in films such as “Star Wars: Episode One”, “The Mummy” and “Titanic” (Sönmez, 2001: 150).

One example in which the Motion Capture Technology has successfully been applied to is the films of “The Lord of the Rings” series. The “Gollum” character in this series is a character which has been animated through the motion capture technique. The performance of English actor Andy Sarkis has been used in the animation of Gollum. The appearance, motions and behavior of the character are very similar to those of the human characters in the film. From another perspective, what is the definition of the limitations of these virtual characters? The appearance and acting of these characters rival those of the human characters in live action films. These characters are different from stylized animated characters, because animated characters can easily be understood by the viewers (<http://www.awn.com/vfxworld/virtual-cg-characters-live-action-feature-movies>).



Picture 1: An example of motion capture from the film *The Lord of the Rings*.
(<http://i0.wp.com/www.cgmeetup.net/home/wp-content/uploads/2013/01/Gollum-11.jpg>)

2.2. ARTIFICIAL INTELLIGENCE

One of the characteristics which contributes to the achievement of reality in films is the use of artificial intelligence. Although characteristics of artificial intelligence are used in many scenes, it can be seen that they are effectively used in particular in crowded scenes. The characters in these scenes could distinguish one another and opposing groups could fight with each other.

Artificial intelligence is the repetition of behaviors which are defined as intelligent when displayed by humans (intelligent behaviors) by a machine as well; or in other words, artificial intelligence is a theory which shows how the human mind works (web.itu.edu.tr/~sonmez/lisans/ai/yapay_zeka_icerik1_1.6.pdf). If we need to use a different definition, artificial intelligence from a simple point of view can be defined as the attempt to develop artificial directives which are similar to skills perceived as an indication of intelligence when observed in natural creatures, by analyzing them (<http://www.yapay-zeka.org/modules/wiwimod/index.php?page=AI>). Studies of artificial intelligence are generally about analyzing the thinking methods of humans and developing artificial directives which are similar to them (https://tr.wikipedia.org/wiki/Yapay_zek%C3%A2). Studies related to artificial intelligence continue today in different areas. Today, even the calculators at our homes are able to do calculations very rapidly. Due to its advanced characteristics, this technology is being made use of in the animation of characters in various films today. One of the motion pictures which arouses interest within this framework is *The Lord of the Rings* series.

One of the greatest problems faced with in *The Lord of the Rings* series was the very crowded war scenes. Very large war areas needed to be constructed. In order to be able to solve this problem, a very crowded production team began using a program called Massive four years ago. By using Massive, it was possible to randomly recreate real life through animation within a short period of time with a small group of actors (<http://www.awn.com/news/weta-digital-uses-massive-ape-reality-kong>).



Picture 2: A war scene as an example of artificial intelligence.
(<http://massivesoftware.com/why-choose-massive.html>)

It was possible to create artificial environments with this program. The general work method was to form interaction between the created characters and the environment. The created artificial characters used sounds and vision and chose the most appropriate of the prepared motion capture data to reach their goals. Each creature here had artificial intelligence. They were able to decide how they were going to act with the help of artificial intelligence. When these characters were within a group, they could see their surroundings, hear sounds and reacted accordingly to the creatures and environment around them (<http://www.cgw.com/Publications/CGW/2003/Volume-26-Issue-2-Feb-2003-/The-Two-Towers.aspx>). Each creature was programmed with skills compiled from a broad archive of motions. Stephen Regelous, from the New Zealand based Weta Digital which created the visual effects of The Lord of the Rings trilogy and the creator of Massive stated that they achieved men running to the war area to fight with the Massive program, there were thousands of characters which fought and toppled each other down and that a very realistic war scene was achieved as a result. In addition, the creatures in Massive could give appropriate reactions according to the ground they were standing on. When they were climbing, they appeared different than walking. Different motion capture cycles were being mixed and the angles were being arranged. A thing which could be used continuously was not only used for the terrain, but also for targeting weapons and holding objects. When the motion capture data was added, more graceful motions were achieved. (<http://www.tr3d.com/dersler/ders/bn/>)

Massive technical director Geoff Tobin states “All of these digital characters have an artificial intelligence brain. A part of the brain deals with what the character is doing at that moment, analyses the alternatives of the motions it can perform and decides which motion to do next. The other part of the brain analyses what kind of a terrain the character is standing on, the enemies and friends around it and where it can move. It transfers this information to the first part of the brain and helps it make a decision” (<http://www.lotrplaza.com/archives/index.php?Archive=First%20Age&TID=69431>). In addition, Massive software primarily designed for the war scenes in the movie has been used to copy and replicate the human actors and in the murder of crows as well (<http://www.cgw.com/Publications/CGW/2001/Volume-24-Issue-12-December-2001-/The-Fellowship-of-the-Ring.aspx>). Massive software has especially played the role of a savior in terms of the war scenes in the series. The software basically used in The Lord of the Rings has been used afterwards and is still being used today in the simulation of crowded scenes in numerous films. Many scenes which are impossible to be achieved through live action has been rapidly created with this software and artificial intelligence.

2.3. COMPOSITING

Scenes which are prepared within digital environment or live action scenes can be joined in accordance with the requirements of the scenes in a film. Such a task for films is carried out on moving images rather than fixed images. Many different images are brought together and a single image is achieved from them. This image constitutes the final part of the work. The process of digital compositing is a method used to join two different clips. Almost all visual effects depend on a good compositing skill. There are many different software alternatives for this task. Another method of digital compositing is the addition of virtual characters to live action scenes. One effective stage in the presentation of virtual characters may depend on the arrangement here. One of the points which should be given importance to is the rendering process of the character to be used in the animation in alpha channels. The alpha channel allows the areas other than the character to be seen transparently (Watkins, 2001: 407).

Digital compositing is important due to its different aspects in particular in the placement of computer-generated virtual characters in live action film scenes. If supportive side factors/methods are to be taken into consideration instead of dealing with the task in a single piece, then many different stages such as the tracking process, color correction process, rotoscope process and morph process along with digital compositing should support this stage as well. For instance, the motion of the camera in a scene and the motion of the object or image placed in the scene should match in the tracking process. An incomplete action or an error in this stage can easily be noticed. As a result, the realistic effect to be produced on the viewers will be lost.

The most difficult part of digital compositing is perhaps reaching an integrated result. The reason for the difficulty at this point is the impression that the composited pieces have each come from a different source. What is given special consideration here is that the produced images are of picture quality which has not been subject to a post-production process. Even if the aspects in the scene are apparently not real, the viewers need to get the impression that what they are watching has been shot at the same time and with the same camera (Brinkmann, 2008: 3).

2.4. RENDER

The three-dimensional graphics which are computer-generated through rendering are transformed into real looking pictures with their colors, textures and shadowing. During the process of rendering, the digital artist should determine how the project on the computer is to be calculated. Another important point is that, the calculations for the lighting adjustments are done here as well. The duration of the process to be carried out changes in accordance with the greatness and characteristics of the scene (Netzley, 2000: 178).

With the rendering process, the project prepared on the computer is made ready to be completed. This process has a big impact on the realism and plausibility of the image to be achieved. The design which exists as a project in the computer software is transformed into a form which creates the impression of a real image as a result of the rendering process. When the achieved image is photorealistic, it will be difficult for the viewer to differentiate it from real images. The blurring between the real and the virtual becomes apparent at this point. Achieving photorealistic renderings have become more accessible today due to the advance of technology. The digital compositing stage which comes after the rendering process complements it.

One of the greatest difficulties in organic models in terms of realistic or plausible renders is related to the appearance of the skin. This barrier against the images which are created as convincing computer graphics should be removed. The problem is that, the human skin consists largely of water and other organic matter. Therefore, the human skin cannot reflect light completely; however it changes the color of reflected light instead of absorbing some of

it. Today, a new mathematical formula has been developed for direct lights to be applied to the design of virtual characters. In this manner, the organic structure in the character's texture is noticeable. One of the first characters which had organic texture was the Gollum character (Pikkov, 2010: 84).



Picture 3: The Gollum character

(<http://www.animationsupplement.com/index.php/articles/323-15-photorealistic-movie-characters-take-a-popcorn-break>)

3- REALITY CREATED BY SIMULATION AND VIRTUAL CHARACTERS

When digital visual effects are taken into consideration in terms of their characteristic aspects, they can be defined as postmodern objects. These effects are created as a result of the hybridization between the camera and the computer (Hyung Ryu, 2007: 33). The virtual characters which are the products of computer graphics have as much an important role as the real actors in a film. Even if the viewers know that they do not really exist, the structure, anatomy, acting, appearance and stance of the characters are perceived by them as real characters. In addition, it seems difficult to say that these characters are removed from reality in terms of their production.

In addition to these, the veiling of the effects with great discretion results in the computer-generated images to create hyperreality. (<http://www.wired.com/2009/06/lucasfilm-genarts-team-up-to-bring-hollywood-style-vfx-to-games/>) Simulation or the concept of hyperreality is defined as “The reproduction of a reality without a root or reality through models” (Baudliard, 2013: 14). What is real contains a physical existence and a structure which is material and can be touched. On the other hand, the opposite of real, which is virtual, does not carry a reference related to reality. Even if it is perceived, it is not there. It is related to what a person does not have due to its lack of reference. Baudrillard argues that representation shows the meaning or concept of what is real and virtual things are representations which do not give any references to anything that is real. The differences between representation and the represented have been removed in the computer age. The virtual has its own reality (Kaçmaz, Uluoğlu, 2001: 89). Characters and environments which cannot be distinguished from reality can also be seen next to the characters and environments which are known not to be real in *The Lord of the Rings*. The line between these two situations can take an ambiguous state. Virtual characters have their own reality with the human characters.

According to Baudrillard, the visual effects in the cinema are only the distorting, deforming of reality. These effects at the same time serve as precursors which speed up the distortion of the meaning of real life as advanced simulations. However, these special effects, in particular digital effects, can create a more natural effect of reality beyond the expression of human imagination (Hyung Ryu, 2007: 32-33). At this point, the identification of the created virtual characters, attribution of tasks to them which are similar to the tasks of other characters by the viewers takes place through the impact of the displayed natural reality. In *The Lord of the*

Rings trilogy, the “Gollum” character which has a high level of reality can be shown as an example in terms of realism. Through this character, reality is in a way deformed and a non-existent reality is created. However, it is not very likely that the viewers do not perceive or reject this environment of deformed reality and its characters.

Jean Baudrillard’s approaches to the digital effects of postmodernism result from the ontological perspective of the concept of simulation. Baudrillard’s notion of the concept of simulation is frequently made use of in the explanation of postmodern conditions by CGI’s realistic effects. The realism of CGI is the result of artificial reflections of special computer programs on film frames. According to Baudrillard, the condition of mimetic reflection of reality does not exist in today’s world of simulation, because with the age of simulation all references have begun to be eliminated. Baudrillard suggests that all phenomena have lost their meanings and they are being guided by simulacra and hyperreality. These conditions which lack context are disappearing and this simulation without a context can change the representation style of reality (Hyung Ryu, 2007: 32).

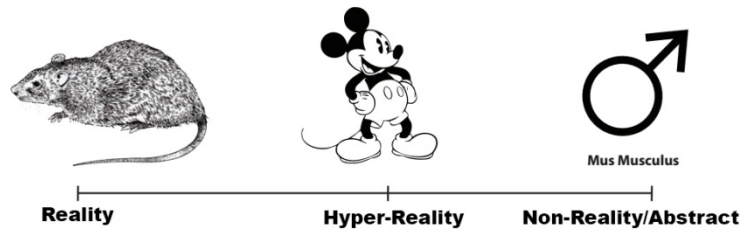
Computer-generated images blur the line between reality and fantasy. The perception style of the world is being distorted in accordance with films and media tools which make use of computer-generated images. The use of computer graphics may not be scary until it is not possible to distinguish the differences between real images and scenes and their computer-generated equivalents. When CGI is no more distinguishable, CGI blurs the viewers’ perception of reality, shape what they see and as a result, make them believe what they see and change the perception of reality in their minds (<https://isomd.wordpress.com/2010/04/15/effects-of-cgi/>).

The purpose in many live action films in which computer generated graphics are used is to make the designed visuals to be perceived as real. Many more examples can be given from the history of the cinema on this matter in addition to The Lord of the Rings trilogy. Avatar directed by James Cameron, The Matrix directed by Wachowski brothers and Jurassic Park directed by Spielberg are some of the leading examples.

In addition, it is possible to talk about a virtual reality in the film The Matrix. The characters live both in a virtual world and a real world. The people in the film live in the virtual reality of the Matrix, which is artificial intelligence and this condition is the symbol of digital technological structure (Hyung Ryu, 2007: 10). In these films and in many more as well, even though the reality created by visual effects is virtual, it is perceived as a part of the real universe or on its own in the film.

We need to acknowledge that there is on the one side a totally artificially constructed world in the art of animation; while this world needs to be independent of the real world, it should also reflect reality. According to Paul Wells, the illusion of reality in animation can be defined as hyperreality. The concept of hyperreality was first coined by semiotician Umberto Eco. Eco has used this concept to define Disneyland in which everything is definitely artificial, but is a place which is more real than reality at the same time as well. Wells has attempted to determine the quality of reality in animation films. He has suggested Disney animations as the central point taken as reference by his work on reality, because they are hyper-realities (Pikkov, 2010: 98).

Wells’ approach has progressed through the classical cartoon characters rather than the virtual characters used in live action films. A diagram such as the one below can be given as an example.



Picture 4: Diagram of reality
(Dündar, 2013: 45)

When we follow Wells' diagram above, the realistic films are at one end, unrealistic films are at the other end and hyperrealistic. Disney films are in the middle.

According to Wells, four characteristics should be taken into consideration to measure the degree of realism in animation films:

- design
- characters
- sound
- motion

Animation theoretician Stephen Rowley follows a different approach. Rowley argues that instead of evaluating certain objects, certain variables of the representation of reality should be analyzed. Rowley suggests that these should be followed:

- visual realism
- auditory realism
- realistic motion
- realism of the plot and the characters
- social realism

In addition to these, the control of realism in animation should be performed not only through the physical characteristics, but rather through the experiences of the viewers. In other words, what is important is not the similarity of animation to physical parameters which exist in real life, but how the viewers attribute meaning to and see its realism (Pikkov, 2010: 98-99).

Physical reality can be changed as long as it appears realistic and may not be noticed by the viewer if it is placed fully in a film scene. At this point, the previously mentioned methods used in the placement of virtual characters and effects on the scene come to the Picture. Films can change physical reality and thus blur the line between what is imaginary and fictional and what is real. What make this possible in films are the computer-generated images. Hyperreality will become even more wide spread with the development and applications of computer graphics. Physics is also a part of hyperreality; it can be visually produced in the mind of its creator and everything can be done with this visuality. Under these conditions, reality changes places with simulacrum. Any universe and any physical reality can be created and perceived as reality. (<https://isomd.wordpress.com/2010/04/15/effects-of-cgi/>)

CONCLUSION

Today, the rapidly advancing technology shows its impact in the area of computer graphics as well. Computer-generated products have become visible in many areas. It is possible to talk about different sectors in which computer graphics are used widely; some leading ones among these are games and motion pictures. If the films analyzed in this study are to be considered in terms of live action films, it can be seen that virtual characters have been placed in these films

in parallel with the technological developments which took place in this area. These characters have become indistinguishable from the real human characters with their design, sounds and acting with respect to Wells' criteria. The reality they have created can be evaluated as a reality formed within themselves. This can be regarded as a creation of technological advancement in this area.

Baudrillard states that visual effects distort and deform reality. Visual effects show themselves in films in a manner equivalent to today's technology and distort the viewers' minds in relation to reality. By this means, the viewers' perception of reality changes. In this respect, it can be suggested that the perception of reality steers through a transformation towards virtual reality. Reality created by visual effects has become a reality which expands beyond the human imagination.

REFERENCES

- Dündar, S.K. (2013). Üç boyutlu (3d) animasyon çalışmalarında gerçekçilik kavramının incelenmesi
Ve bir uygulama çalışması, Ankara, Sanatta Yüksek Lisans Tezi, Hacettepe Üniv. Grafik Anasanat Dalı.
- Brinkmann, R. (2008). The art and science of digital compositing, USA, Morgan Kaufmann Yayınevi.
- Baudrillard, J. (2013). Simülakrlar ve Simülasyon, İstanbul, Doğu Batı yayınları.
- Furniss, M. (2009). Art in Motion Animation Aesthetics, UK, John Libbey Publishing.
- Hayes, D. & Webster, C. (2013). Acting and performance for animation, USA, Focal Press.
- Kaçmaz, G. & Uluoğlu, B. (2005). Mimarlık, bilgisayar ve sinema: Thomas'ın sanal evi, İstanbul, İtü dergisi/a mimarlık, planlama, tasarım Cilt:4, Sayı:2.
- Miller, R. (2006). Special Effects, USA, Lerner Pub Group.
- Netzley, P.D. (2000). Encyclopedia of Movie Special Effects, USA, Oryx Press.
- Pikkov, Ü. (2010). Animasophy, Tallinna Raamatutrukikoda, Estonian Academy of Arts.
- Rickill, R. (2007). Special effects: the history and technique, USA, Billboard books.
- Ryu, J.H. (2007). Reality & effect: a cultural history of visual effects, USA, Georgia State University, Communication Dissertations, Department of Communication.
- Sönmez, G. (2001). Mocap, Türkiye, PC Life.
- Watkins, A. (2001). 3D Animation: From Models to Movies, USA, Charles River Media.
<http://i0.wp.com/www.cgmeetup.net/home/wp-content/uploads/2013/01/Gollum-11.jpg>
<http://www.denofgeek.com/movies/animated-characters/30956/100-years-of-animated-characters-in-live-action-films>
https://tr.wikipedia.org/wiki/Yapay_zek%C3%A2
<http://www.yapay-zeka.org/modules/wiwimod/index.php?page=AI>
web.itu.edu.tr/~sonmez/lisans/ai/yapay_zeka_icerik1_1.6.pdf
<http://www.awn.com/vfxworld/virtual-cg-characters-live-action-feature-movies>
<http://www.cgw.com/Publications/CGW/2001/Volume-24-Issue-12-December-2001-/The-Fellowship-of-the-Ring.aspx>
<http://www.wired.com/2009/06/lucasfilm-genarts-team-up-to-bring-hollywood-style-vfx-to-games/>