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MECHANICS

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ANIMATION FORMS IN VIDEO GAMES AND A CLASSIFICATION STUDY BASED ON GAME MECHANICS

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DİJİTAL OYUNLARDA CANLANDIRMA SİNEMASI BİÇİMLERİ VE OYUN MEKANİKLERİNE DAYALI BİR SINIFLANDIRMA ÇALIŞMASI

Cahit ÜSTÜN*

ABSTRACT: The first inventions that aimed to convey the movement had features of animated films rather than filming. However, cinema and animation began to emerge as an art, not only with the transmission of movement. The creation of software-based graphics enabled video games to be created with computer graphics, and digital games using three-dimensional graphics began to appear in other attractive animation applications. So again, game technology animation filmmaking, different forms specific to games began. Since this study accepts it as a form of making cinema, not a genre of cinema, using the ways of using cinema in video games to understand, define and use it with game mechanics. In the study, video games were examined and the animation methods used here were defined, and these methods were classified and analyzed within the teachings. Video games cooperate closely with the art of cinema. Although the digital game shows a software-based structure, its aesthetic components can be included in the animation universe. The research has shown that the playing experience is actually an animation experience and has classified these experience areas with examples in this direction.

Keywords: Animation, Video game, Cinema, Game Mechanics, Game Engine.

ÖZ: Hareketli görüntüyü aktarmayı amaçlayan ilk icatlar film kaydından daha çok canlandırma filmin özelliklerini taşımaktadır. Bu icatlar hareketli görüntünün aktarımıyla sınırlı kalmayarak bir sanat dalı olarak sinema ve canlandırma sinemasının doğmasına yol açmıştır. Yazılım tabanlı grafiklerin gelişmesi, dijital oyunların bilgisayar grafiğiyle yaratılmasına olanak tanımış, üç boyutlu grafiklerin kullanılmasıyla dijital oyunlar içerisinde çok çeşitli animasyon uygulamaları görünmeye başlamıştır. Böylelikle sürekli gelişen oyun teknolojisi içerisinde canlandırma film, oyunlara özgü olarak farklı biçimlerde yer bulmuştur. Bu çalışma, bir sinema türü değil, bir sinema yapma biçimi olarak kabul edilen canlandırma sinemasının, dijital oyunlarda kullanım biçimlerini, oyun mekanikleriyle arasındaki ilişki üzerinden anlama, tanımlama ve sınıflandırmayı amaçlamaktadır. Çalışmada dijital oyunlar incelenerek, üretim süreçlerinde kullanılan canlandırma yöntemleri tanımlanmış, bu yöntemler ise belirlenmiş sınırlar içinde sınıflandırılarak çözümlemiştir. Dijital oyunlar sinema sanatıyla sıkı sıkıya iş birliği yapmaktadır. Dijital oyun, yazılım tabanlı yapı gösterse de estetik bileşenleri animasyon evrenine dâhil edilebilir durumdadır. Araştırma oynama deneyiminin aslında bir canlandırma deneyimi olduğunu göstermiş ve bu doğrultuda bu deneyim alanlarını örneklerle sınıflandırmıştır.

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Introduction

Animation in video games describes a playing and watching experience, in which the player is actively or passively engaged almost continuously. The act of playing that makes up the playing experience, contrary to cinema, is determined by the game mechanics that runs this interaction. Animation and video games as industrial arts change with scientific and technological advancements in this area. Thereby, an interactive animation form produced by the means of gaming engines and software becomes investigable through this concept. This article, in one aspect, aims to provide a practical analytical tool for designers to describe game mechanics and animation in a video game. It also focuses on innovative approaches to animations in game design and the ability for players to deeply engage in the aesthetic gameplay experience created through game animation. In this study, the necessary findings were collected by examining the relevant literature, and the data regarding the classification were examined through the selected examples of video games. For that purpose, video games *Dragon Age: Origins, Divinity: Original Sin 2* and *The Elder Scrolls V: Skyrim* were chosen as samples. These games were chosen among those considered successful in the relevant field. The genre of the game is determined not only by the criteria such as effect, theme, emotion, but also in terms of gameplay, as it is done in the cinema. Thanks to the approach in this study, it was thought that the definition of animation could be expanded to include video games as well. The selected examples were analyzed using content analysis and descriptive methods. Thus, the aesthetic components of the video game that show the software base as a structure are also included in the animation universe.

Cinema as a field of art and its scientific and technological aspects, though closely related, are different things. Sito, (2013) states that Eadweard Muybridge, who is generally regarded as the pioneer of modern cinema and animation, experiments with stop-motion photography, and thus sees him as the pioneer of animated cinema. According to Sokolov (2006), Joseph Plato, one of the inventors of the first film production tool, is the real inventor of cinema. He created the illusion of movement by moving the drawings he arranged one after the other at a certain speed. This device, called The Phenakistoscope, in fact produces animated films. Opposing the association of the birth of cinema to the Lumière brothers, Sokolov (2006) argues that they are the inventors of only the technical aspect of cinema.

When cinema is concerned, it is not possible to understand only a produced motion piece or motion recording. Technologically, there is a big difference between the invention of cinema and animation and the creation of an art form with its own linguistic integrity. Technological tools have a

strong effect on artistic language, expression and experience, and as technological tools develop, the possibilities and forms of expression in this field are also enriched accordingly. In video games, this issue is also directly related to the fact that game mechanics affect, perhaps determine, the animation forms and narration. Starting from 1895, Georges Méliès started the adventure of cinema as a unique art by producing films with story, editing and effects, unlike previous shots. In 1895, Georges Méliès initiated the adventure of cinema as a unique art by producing films with story, editing and effects, unlike previous shots. The art of cinema started to analyze human perception in cinema with the works of cinematographers such as Lev Kuleshov on editing in cinema, thus creating its own language over time. Technological developments have strongly influenced cinema as an industrial art. This effect has become even stronger with the onset of the digital era. Digital and shooting images are mixed perfectly with computer graphics, the viewer cannot distinguish which image was produced by shooting and which image was produced by computer graphics. These are animation segments created by mixing three-dimensional or two-dimensional numerical graphics, manipulations, or green screen shots. In fact, most of the movies, which are not considered as an animation genre today, are produced using computer graphics and animations. It seems that it is quite difficult to distinguish between animation and cinema.

> *"The difference between the realization of the transfer of the movement by shooting or producing has resulted in the expression of animation as a genre by some. In terms of effect and theme, animation includes all other genres. As a concept that can be argued as a genre of cinema, animation is also open to discussion over the production method of cinema* (Erbaş, 2017)*".*

It can be deduced that this approach of industrial determinants and filmmakers, who make the distinction between animation and cinema through the concept of genre, is based on animations that can be distinguished while watching, and those that can't be. Cinema, which is produced by mixing real images, is actually a hybrid structure consisting of shooting and animation. It seems logical to conclude that the main approach in defining animation as a genre is to mark it distinctively for sales and target audience. So, by not making a distinction as animation or cinema in video games, it seems that a basis has emerged to understand the forms that animation has acquired in video games from here. The main acceptance and claim here is that the artistic language of video games is actually based on the language of cinema, but it also has its own unique differences with the playing experience it provides. In fact, game mechanics determine all the laws of motion in the game, so it cooperates with animation as a motion art in many ways.

According to Dillon (2011), a tic-tac-toe game called *Noughts and Crosses*, which is regarded as the first real game to be programmed on a computer, was developed in 1952 by Alexander Douglas, a PhD student from

Cambridge University, England, born in 1921. The game that Douglas developed as part of a thesis on human-computer interaction is called *OXO*.

Video game studies that can be started from here on the basis of human-computer interaction have also gained strong artistic qualities over time. With these developing artistic features, it has become not only quoting, but also inspiring. Video games are more clearly related to the field of animation than the field of literature. The production forms and artistic language of animation cinema is the art field with which digital games come into contact most frequently. Here, the word production forms describes the forms of animation such as two-dimensional, three-dimensional, rotoscope, stop-motion, digital, and classical. This relationship creates more complex interactions with the technological and industrial progress of the video game. The mentioned mutual interactions can be in the form of transfers, references, and quotations from the cinema to the game or from the game to the cinema. The two-way circulation of artistic texts in both areas is not limited to this, but also transforms into other forms in the game's own universe. The narration of the play is firmly based on cinematic and literary traditions, but the act of playing as an experience reveals special differences to it. Unlike the cinema, the player in the video game is not passive like the movie audience, but active and interactive. Human-computer, human-human, computer-computer interaction can be defined as important determinants, differences and forms of interaction.

Computer-aided film and game production are similar to each other, and from time to time, they establish close ties between them by using the same technological and conceptual instruments. With such an attractive collaboration, the electronic gaming experience, which started on the basis of human-computer interaction, passes through various stages and acquires new forms. Video games, both as a product of the culture industry and in terms of the quality of artistic content, are in high demand by becoming popular in this attractive form. Investigating animation under the concept of animation in a digital game is an approach related to the definition of the game-oriented features of these forms. As an artistic field of study, it also creates its own unique expression and playing styles.

Hence, what kind of relationship animation, which can be defined as one of the pioneers of this dominant player of the culture industry, produces based on game mechanics should be examined.

Game Mechanics

For Adams and Dormans (2012), a game is a measurable playing activity in which players try to reach a goal determined according to the rules in relation to a constructed reality.

Sicart (URL-2), on the other hand, thinks of game mechanics as methods used by players, designed to interact with the game environment using object-oriented programming. He considers this formal description twofold: Any game needs a tool to explore, describe, and relate game

mechanics to one another. The mechanics should be defined holistically in relation to the game system, game hardware, player experience elements, and player emotions.

According to Adams and Dormans (2012), game mechanics are the rules, processes and data on the basis of the game, how the game will progress, what will happen, when will happen, under what conditions the game will be lost or won. Although the definition of mechanics is closely related to the rules of the game, game designers make a sharp distinction in the use of the concept of rules and mechanics. While this distinction perceives the rules as a set of readable instructions, the mechanics are hidden inside the software, whose interface cannot be directly intervened, and which the player cannot see. For example, if the Monopoly game's rules of play are a few printed pages, it includes the mechanics, all the components necessary to play the game, such as chance cards or real estate values. These components are defined in a way that software developers can understand very clearly. The mechanics are hidden, but players learn these laws during the game. Video game players don't have to know what the rules of the game are when they start; unlike board and card games, video game teaches as you play, due to the unique way each game is played.

Adams & Dormans (2012) explain game mechanics with five separate components:

1. Physics: It is the definition of the action and the reaction, such as jumping, jumping, falling, which may or may not be compatible with the real world. Calculates the relationship that a game element enters in its position, orientation with other elements.

2. Internal economy: Calculates the game items bought, sold, collected, and consumed.

3. Progress mechanisms: It is the total of the elements that affect the progress in the game adventure. Examples such as locks, opening and closing mechanisms, keys, magical items can be given.

4. Tactical maneuver: The game is about attacking, defending, attacking and advantageously positioning the targets based on them. It appears prominently in more strategy-based games.

5. Social interaction: With the development of online games, interaction and socialization between players is an important determinant in the game world. Many online games include social interaction-based mechanics such as giving gifts, rewards, encouraging the participation of new friends.

Mechanics, which mainly establish the physical laws, determine the universal laws of the game. Thus, the concept establishes close ties with motion and the laws of motion. Animation based on the transfer of movement has to comply with these laws to a certain extent in a video game. Mechanics determines all the universal laws of the game.

Types of Animation in Video Games

It is worth noting that the game mechanics determine the way of playing, creating a game genre based on it. Genre distinction according to the way of playing affects the emotion, effect and theme, but is not completely determinative. For example, a video game in the role-playing genre can be either horror or comedy in terms of effect, theme and emotion. So, while the generic structure created by the video game is determined by the traditions of the cinema, it is also determined by, perhaps more importantly, the way the game played, i.e. the effect of the mechanics. The issue here is the narration produced by the game mechanics in terms of animation. These forms of expression produced by the animation forms within the game plane should be examined through examples.

> *"From the point of view of gaining utility and satisfaction, it is quite plausible that people as consumers are content to realize the possibility of choice and happily "play" with the mass media They like to watch the media talk about new trends in fashion, cars, computers, etc. Game theory does not explore why people should follow these trends, or why the choice of this particular candy combines with self-satisfaction, or that advertising (and the media involved in its content) creates a situation when such elements become so important. It fits right in with what is generally accepted as a tradition of use and gratification: people use the media to satisfy needs that are important to them and therefore have some control over any impact that may occur* (Üstün, 2019)*".*

At this point, it is necessary to elaborate on the situation mentioned in the introduction, where the audience in the cinema is passive in terms of participation in the action and active in the game plane. The sharing of motion pictures in new media channels put the passive viewer in the position of determining the content, giving feedback and even going beyond it and creating the content. The definition of the concept of film is also changing in this new field of visual communication. Participation is provided with shared animated or still images, online live broadcasts, and new forms of oral and written expression to these broadcasts. This situation not only changes the viewer's position, but also creates areas of freedom such as choosing the time of participation and the platform. Therefore, it is necessary to distinguish between passive and active players on consistent grounds.

The rapidly developing new media channels have also changed and are changing the methods of promotion, advertising and marketing. The concept of "Influencer" can be given as an example to this situation within the framework of video games. The concept defines a new type of marketers who have a high number of followers in social media and have the power to influence these audiences with their publications. Influencers are hired by companies for a fee in the field of video game marketing. Influencers give

feedback to consumer audiences by playing games with live or recorded videos online. This is another aspect of participation.

The widespread use of motion pictures and the said new promotional channels produce new forms of experience. Although the participation rate has changed and increased, the audience is not the actor, as it is the case in video games, but the audience of the presented materials. In the video game universe, the player interacts with objects as s/he wishes and experiences his/her own time and space. In online games, these experiences also include multidimensional forms of communication such as virtual socialization and commerce. Participation in motion picture is not yet as the actor or director of the adventure. The game universe includes a participatory activism and the player is an active actor here. This participation occurs through different forms of interaction. In terms of the context of this study, these participation and interactions will be classified in terms of animation forms.

Non-interactive Animation

Non-interactive animation segments refer to its parent, the cinema, within the game plane. These animation segments are created with cinematographic techniques. They don't have to be related to the way of playing. It can also be created in different aesthetic forms. It is possible to come across these parts of a digital game created in three-dimensional form, with moving images created with watercolor effects, and in game sections created with forms reminiscent of two-dimensional classical animation. For instance, the video game *Dragon Age: Origins* is a fantasy role-playing game developed by BioWare in 2009. As seen in Figure 1, the three consecutive squares in the upper part are the introductory scenes of the game. The designs are created with simple moving visuals in two-dimensional form. It is presented with a voice-over that explains the story based on cinematic conventions. It is an example of the use of a graphic visual style in cinematic narration. The visuals are given a hand-painted effect, making references to ancient documents such as historical manuscripts or scrolls. It tries to make the history specific to the created game story realistic with a unique discourse. However, the big scene at the bottom of the same image is the game parts of the *Dragon Age: Origins* and was modeled in a completely different way and created in a realistic look.

Figure 1. Dragon Age: Origins Scene Footage.

Non-interactive animation sections are generally used to tell the story of the game and explain the events. It is also used to ensure that the player does not break away from the story and participates in the narrative in the playing plane by connecting the game parts as well. Technically, it can be created with all the techniques of cinema and animation. In this sense, they are the closest sections to the cinema. It provides a cinematic experience to the player by coming into play generally at the beginning of the game story, at the end of the chapter or at the moments when the player encounters an important discovery or event. It allows the player to rest, not to break away from the story, to experience new elements of excitement and curiosity among intense conflicts and struggles in the playing plane. As a form of expression adapted directly from the cinema to the game, the non-interactive animation sections are important elements in the production of meaning in the video game. The mechanics that continue to work in the background, even if the player does not notice, generally do not allow player intervention in these sections. The area in which the player can intervene in these sections varies from game to game. Shooter-type game fans with an often impatient spirit are more concerned with the gameplay, not the story of the game. This type prefers to go through the cinematic episodes quickly and start the conflict and struggle. Game developers know their target audience, so they add features that will allow them to skip these episodes. Just like movie audiences, game consumers come from different social segments and their perceptions are related to their cultural structures. The situation can be explained through a distinction that can be discussed, such as commercial films and art films. It's a matter of the experience the player wants to have. In some games, these episodes are first watched obligatory, the game is recorded, and after a second game entry, these episodes are allowed to be skipped without watching. This strategy of game developers is about increasing the level of appreciation by changing the habits of the

audience, who are not actually interested in the cinema experience. This type of player, which represents the main body of the player base, currently generally prefers online games.

Semi-interactive Animation

Semi-interactive animation sections are parts, where game mechanics allow limited player intervention. There are different uses, but as observed generally, these are training sections designed for the player to learn the game mechanics. The player interacts with the computer and learns the rules of the game subject to the choices or directions it offers. Another application is the typical usage that appears common in role-playing games; the dialogue choices the main character makes while talking to another character. These choices can change the overall course of the game story completely or to some extent. Even going further, these choices can affect the character of the game hero, causing him to transform into a good, bad or a chaotic character that is a grayer area. As another method, it also allows the player to make decisions that will change the game experience, such as accepting or rejecting side quests. Especially in role-playing games, these dialogue choices reinforce the sense of belonging by enabling the player to identify themselves with the created character. Figure 2 (above) shows the dialogue selection examples of the turn-based role-playing game Divinity: Original Sin 2. The player receives information in these sections and makes choices. Role-playing games are usually cooperative games, with other characters joining the team besides the main character of the player. These are usually players played by the algorithm with different skills, and these skills are expressed under class, such as thief, mage, warrior, paladin, and rogue. Struggles and difficulties are resolved through these characters with different skills. Divinity: Original Sin 2 is a good example of this type of game, and the player can talk semi-interactively at any time with these collaborating characters or even ask them to leave the team. In some role-playing games, these characters' levels of loyalty to the main player increase according to their character structure. Moreover, if the character constantly acts against their own values, they can become hostile. In The Elder Scrolls V: Skyrim digital game, this semi-interactive part was used innovatively at the beginning of the game, bringing a new perspective to game design. Successfully combining cinematic non-interactive episodes with semi-interactive episodes, The Elder Scrolls V: Skyrim used semi-interactive episodes within the game narrative to build the character. The regions marked with a red circle in the image in the lower part of Figure 2 are examples of the sections where the character chooses features such as name, race, class and biography.

Figure 2. *Above: Screenshot From Divinity: Original Sin 2; Below: Screenshot From The Elder Scrolls V: Skyrim.*


The player begins the game as a prisoner imprisoned in a carriage. Captured by the Empire and sent to Helgen Castle to be executed, the player can observe and listen to the conversations by simply turning his head. When he is about to be executed in the castle, the execution officer asks for his name and history to be recorded. At this point, with the opening interface, the player makes the choices that define the character within the game narrative and not as a separate section. With this development, the game narrative both develops a unique language and successfully adapts the cinema traditions to the game plane. Digital games gradually develop the narrative forms they inherited from cinema, giving their own aesthetic suggestions, as in *The Elder Scrolls V: Skyrim*. Although non-interactive animation sections are restricted areas for the player, they are important narrative and gameplay sections that can have multidimensional functions. As explained in this study, the reasons for the evaluation in the axis of cinema and animation are presented. Interactive animation, which can be expressed as a hybrid space between cinema and play, can be expressed as a form of animation.

Interactive Animation

Interactive animation are parts of the game, where the player has direct control. It forms the main body of the game. In these sections, the player controls the character and the game completely through software. The gameplay in this area is completely independent of the cinematic parts, yet it is related to them. This relationship varies according to the type of game and the feature of the design. Although these are game-playing sections, they still benefit from the cinema experience. For example, elements such as positioning the camera to affect the narration and dramatic lighting are used. Game characters and tools are animated by animation artists and prepared in a way that the algorithm can call. This preparation is made subjective by being prepared according to the personal characteristics

and attitudes of the characters, just like in animation. Otherwise, the game's credibility will weaken. Vehicles and natural assets are similarly created faithfully or exaggerated according to the game genre. Special effects applications developed in the film industry are created on the basis of the game engine in video games. All these elements work depending on the game mechanics. As you can see, the playing sections that seem to be the furthest away from the cinema are actually in close cooperation with animation. Thus, the interactive sections can be classified under the animation form.

Figure 3. *Animation In Video Games.*

ANIMATION IN VIDEO GAMES

Non-interactive animation

Semi-interactive animation

Interactive animation
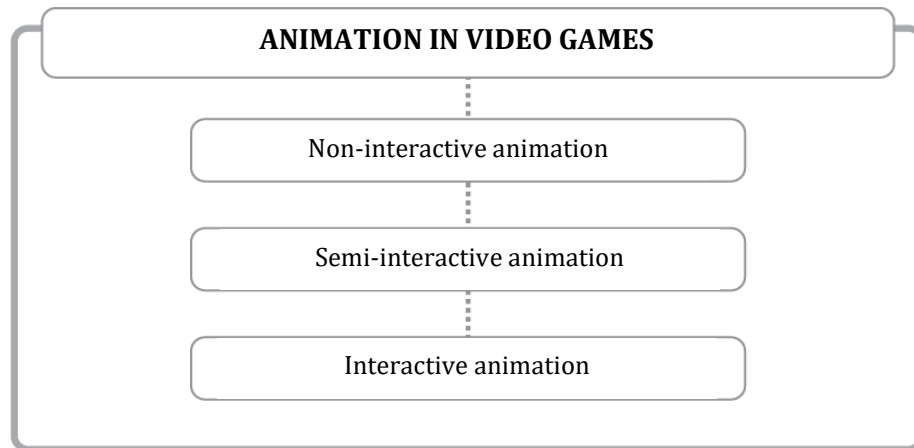
Conclusion

Video games cooperate closely with the art of cinema. In this context, the selected game samples were examined within the classification and the resulting data were revealed. These data show that animation cinema can be classified as it is claimed within the video game plane.

Although the game experience differs from the one in the cinema, it creates mutual sharing areas in terms of genre, theme, effect and expression. These areas are under development in digital games and are based on the traditions of cinema. It seems that the innovative approaches of animations in game design and the aesthetic game experience created by the game animation of the players can be evaluated as a new form of cinema.

Although the digital game shows a software-based structure, its aesthetic components can be included in the animation universe. The research has shown that the playing experience is actually an animation experience and has classified these experience areas with examples in this direction.

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Visual References

Figure 1. Dragon Age: Origins video game screenshots.

Figure 2. Screenshots from Divinity: Original Sin 2 video game and The Elder Scrolls V: Skyrim.

Figure 3. Animation in video games. Created for and within this paper.