New Challenges and New Opportunities Through Interactive Cinema in New Media Case Study: 360 Degree Film

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Abstract

Cinema, one of the most efficient means of communication, has become one of the most important industries of the age. The rapid development and progress of communication, technology, and new media in each period has shaped, changed, and transformed the cinema industry. In recent years, technological developments, which allow the rapid increase in content that offers interactive experiences to the users of other branches of art, remarkably the game industry, have also affected the literature of cinema and brought a new concept-Virtual Reality (True Virtual Reality-TVR) and 360 Degree Film (Cinematic Virtual Reality-CVR)-that has destroyed the monopoly of the magic curtain. While it is possible to see the transition from pellicle to digital as a *change*, it is possible to call the transition from digital to virtual reality a revolutionary *transformation*. This study aims to put forward the relatively new virtual reality technology and digital film narrative by comparing traditional cinema and virtual reality/360-degree film narrative structures to understand this transformation better. In the study, based on this definition, the short film Refugee Crisis in the context of the 360-degree film; the position of the director, the part of the audience, 360-degree framing and orientation, dynamic narrative structure, and transformation from the audience to the user were evaluated in terms of form and content. As a result of this study, it was determined that the VR cinema and 360-degree film technology is in a transitional phase today. It is predicted that today's technologies such as virtual reality, 360-degree video format, and metaverse will create a new language with its narrative structures and technical form shortly, beyond changing and transforming the language of cinema.

Keywords: new media, interactive cinema, virtual reality, 360-degree film, digital cinema

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Introduction

The term *digitalization*, which first appeared in the literature with the developments in information technologies since the end of the 1990s, has profoundly affected the art of cinema and fundamentally changed many dynamics of traditional media. One of the most crucial aspects in

the development of Internet publishing is known as the transition from Web 1.0 to Web 2.0. The concept of *Web 2.0*, also known as the new generation internet, promises internet users much more than static web pages and offers *interactive applications* for the first time. Web 2.0 offers its users a two-way communication model with its *interaction* features instead of the one-way communication model of traditional media. It makes many *interactive videos* content accessible to its users, which cannot be used in Web 1.0 with its innovative technology. This interaction and transformation have also resulted in radical changes in traditional cinema viewing practices, transforming collective viewing into individual viewing through new media tools. The new media narrative has overcome the linear narrative structure of traditional cinema, which has not been changed by the audience and has offered the user the opportunity to intervene in the text with its non-linear narrative structure. Digitization, new media tools, and technological developments have taken the concepts of *traditional cinema* and *audience* out of the usual definitions. The relatively limited interaction between the user and the film in classical interactive cinema has created a new channel with new concept, narrative, and technical structure as an extension of interactive cinema and because of the convergence of today's digital cinema, interactive cinema, game technology, information technology, and VR technology: VR Cinema and 360 Degree Film. Although it is too early to talk about a theorized cinematic language for this new concept and technology in the year 2022, the number of VR films produced by producers is increasing every day, new VR movie theaters are being added to existing VR movie theaters, and VR films are taking place as competitive films in the most important film festivals of the world.

This innovative narrative structure transforms the concept of *interaction* offered by interactive cinema to a different dimension. VR cinema, with the ideas of virtual universe, virtual representation, sensory feedback, high interaction, and an individual world surrounded by 360-degree images, lifts the traditional cinema audience, who passively witnesses the images reflected on the magical screen, from their sheltered red velvet seats and invites them to a *real* experience with a demolished fourth wall. This study examines the technology of *VR Cinema and 360 Degree Film*, which is the extension of interactive cinema, focusing on the new media's change, transformation, and opportunities. In this context, comparing traditional cinema with VR cinema and 360-degree film narrative and determining the similarities and differences will define this innovative concept and technology.

Conceptual Framework

Change and Transformation Presented by New Media

In the way that the invention of fire, the wheel, writing, and printing changed the history of humanity, the *new media* that emerged with the rapid development of the internet and computer technologies changed many disciplines, especially the mass media, from *traditional* methods to *digital* methods (internet and the computer) and created a critical breaking point in the historical process. Manuel Castells claims that the technical break in question occurred 2700 years after the transition to the alphabet when numerous communication models came together over an *interactive* network. In other word or other words, for the first time in history, a hyper-text and a meta-language that integrate written, oral, and audio-visual forms of human communication into the same system are emerging (Castells, 2010, p.356).

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After individual users other than the military gained access to the internet in the early 1990s, the number of users of this virtual communication network that encircled the globe grew day by day. By erasing the fictitious borderlines on the atlas, the internet has fundamentally transformed communication and media concepts to alter societies, cultures, economic order, and social life. The most significant part of the idea of new media, which evolved as a result of this transformation and has interactive, simultaneous, network-based, infinite, and multimedia (multimedia) properties, is that it allows the practice of presenting different media to its viewers under a single roof. According to Vin Crosbie, individuals do not fully understand the concept of new media because of the confusion of the new media environment with new media tools (Crosbie, 2002, p. 6). Crosbie states that most media thought of as new media are tools within the environment (Crosbie, 2002, p. 1-7). According to Lev Manovich, who made the first theoretical studies on new media, the adventure of seeking an answer to the question *What is new media?* must first begin by identifying the categories in which popular culture discusses new media. Websites on the Internet, computer media, video games, CD-ROMs, Videos, and virtual reality are some of the first tools that come to mind when discussing new media. Manovich states that limiting and defining the concept of new media, which is the common denominator of many different disciplines, only with these tools is restrictive and puts forward the research in question by saying, "Are digital videos, movies produced with digital editing, 3D animations produced with computer-generated imagery technique, or television programs shot as digital video excluded from new media?" (Manovich, 2002, p. 19). As can be seen from the examples, Manovich stated that in the definition of new media, they associate *distribution* and *screening* are associated with the computer rather than the production medium (Manovich, 2002, p. 19).

There are various definitions of the concept of new media today. To better understand the concept described as new, comparing it with the concept of traditional will help define the qualities of this new concept. While Everett M. Rogers establishes the concept of new media with three features in his work named Research Methods and The New Media, Manovich explains it with five fundamental principles in his work The Language of New Media. Although there are many common denominators between traditional and new, according to Rogers, three features distinguish media from each other (Williams et al., 1988, p. 10-13). These are Interactivity, De-massification, and Asynchronousity. *Interactivity* is defined as the degree to which participants in a communication process have control over their mutual discourses and exchange roles (Williams et al., 1988, p. 10-12). Although it would not be correct to say that interaction does not exist in traditional media, Rogers claims that the conventional media's one-way communication has turned into an individual-oriented interaction with instant interaction. In this context, the demassifying feature of new media is de-massification, defined as "the degree to which each individual can receive a particular message within a large audience" (Williams et al., 1988, p. 12). In interpersonal communication, such individualization compares new media to the face-to-face conversation (Williams et al., 1988, p. 12-13). Asynchronous means accessing and responding to a sent message later by destroying the traditional need to be in the moment to communicate. "New communication technologies have a structure that allows individual users to send or receive messages at an appropriate time without using the communication system simultaneously" (Williams et al., 1988, p. 12-13).

On the other hand, Manovich explains the principles of new media in five categories (the last three principles depend on the first two) (Manovich, 2002, p. 27-69). These are *Numerical Representation, Modularity, Automation, Variability, and Transcoding. Numerical*

Representation: It can be described as 0-1 codes widely regarded as the computer's language. Manovich's numerical representation is based on two main results. The first is the ability to express objects using mathematical formulas, and the second is algorithm-specific object manipulation, or the ability to improve images using programming. Modularity: It allows you to gather elements of several levels under one roof and intervene in any desired layer under that roof. Images, sounds, forms, and actions in media are represented as categories of diverse instances. These elements can also come together in larger-scale objects, but their identities will not change. Objects can merge themselves with larger objects stored locally or on the network (Manovich, 2002, p. 51-52). Automation: Digital coding format and modular structure of the media; allows many processes to be automated, including media creation, manipulation, and access (Manovich, 2002, p. 51-52). The software can produce complex results with the command of the user. They can offer detailed results thanks to the algorithm included by third-party programs (plugins) in response to simple controls of the user, such as movie effects, photo filters, or sound effects. Variability: It states that the properties of new media items can be changed in an infinite loop, depending on the principles of modularity and digital coding. A new media object can have endless new variations rather than a one-off. This is another consequence of the digital coding of the media (principle 1) and the modular structure of the media object (principle 2) (Manovich, 2002, p. 51-52). Transcoding: Each new media item formed by digital representations has a format. Transcoding is the ability to convert an object of any design to another format. Although this transformability is infinite, like the variability principle, it is not always possible to preserve the original element as in the variability principle. For example, when a TIF file with many layers is converted to JPEG, it becomes a single layer, and even if it can be converted back to TIF format, it loses its old-layered feature and becomes a merged TIF file. However, it is possible to convert a new media item between formats in an infinite loop despite all this.

While describing this new concept, Rogers and Manovich compared it with the traditional media concept dynamics. They focused on the differences between them, and the features offered by the new media. In this respect, Rogers touched upon the new media in the context of user Manovich. On the other hand, it touched upon the concept of new media from the perspective of technical features. According to Rogers, instead of the mass media's centralist, one-way communication approach and the audience's passive positioning, new media places the user in the subject position and ensures two-way communication through its instant interaction feature (Roges, 1988, p. 10-14). In contrast to the passive audience of traditional media who simply consume, the new media user can contribute to the interaction by producing content. On the other hand, Manovich examined new media in terms of its qualities and demonstrated how it differs from traditional media. Unlike traditional media, this new medium can be changed, transformed, and replaced by taking different forms. This movement can also repeat itself in an unending cycle and can be returned to its original state and exist with digital codes. One of the essential features of new media is the principle of convergence, which may be defined as a new product or service established by combining current technical products. Carolyn Handler Miller represents convergence as audio, video, and data transmission technology integrated into a single content. The contents must be digital (Miller, 2004, p. 31-32). One of the most effective channels to define the concept of convergence is through the Internet. You can use the Internet to watch movies, and traditional broadcasts, listen to music, shop, read books, and perform public institutions or banking activities. New opportunities have arisen due to technological innovations and interactive media. Companies and investors did not hesitate to consider the latest options from this strategic union. This new medium, which brings

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together cinema and interaction, is not a new format in terms of narrative structure but is defined as a new format in terms of technique.

Interactive Cinema

Although it is named variously such as cinema 3.0., conversational cinema, interactive movie, participatory cinema, engrossing cinema, interactive cinema is an innovative cinema concept that allows two-way interaction between the user and the film and can be personalized according to the preferences of the user with its technical structure and non-linear storytelling. Interactive cinema is a type of cinema that makes users join the flow and positions it as a subject with the choices it offers (D'aloia, 2020). Although the first example of interactive cinema, Kinoautomat, was shown in 1976, interactive storytelling dates back to much earlier times, the campfire set in the first periods of human history. According to Miller, prehistoric storytellers would tell a part of the story to people gathered around the campfire and shape the rest of the story according to people's reactions, comments, and directions. Of course, it can be said that the interaction of the people gathered around the fire is extremely limited, considering the difficulty of directing and controlling the story told (Miller, 2004, p. 2-9).

Interactive storytelling is also found in novels and stories of today. Interactive books offer choices to their readers at the end of every chapter and guide readers to the chapter that should continue according to their preferences. According to readers' favorites, these books finish with many alternative endings, and they are also packed with various transitions so that a linear reading can't be done. Nonlinear dynamic narratives of interactive stories are also used in games. It used interactive storytelling for the first time in traditional video games, then in flash-based single-player interactive games via computer in networked computers, in multi-user games, and today in online games on internet-based digital media. Interactive cinema is a media that has emerged due to the convergence of digital cinema with the interaction feature of new media tools. This community in question has created a new community in which the interaction opportunity offered by the new media and the digital cinema structure are intertwined, allowing mutual communication between the film and the user. Even if the audiences are passive in traditional cinema, it can be said that it establishes a relationship with the film. Still, interactive cinema carries this relationship to a mutual and interactive structure. It can also be noted that they are productions that transform this narrative, which is considered the seventh art, by combining the unique narrative structure of digital cinema with the innovative features of interactive cinema.

Kinoautomat, directed by Raduz Cincera, was shown to a limited audience at the Expo-67 in Montreal as the first interactive film in cinema history (Hales, 2005, p. 54-56). Kinoautomat paused at five critical points and continued with the scene, which was preferred more by the audience than the voting result. When the movie remains, there are two frozen visuals on the magical screen, and the director of the film or one of the essential characters comes to the stage in front of the screen and tells the audience about the two rigid frames. One hundred and twenty-seven people in the hall vote by pressing the green button or red button on the edge of the seats. Ultimately, the arithmetic average of the movie theater decides which scene to continue with.

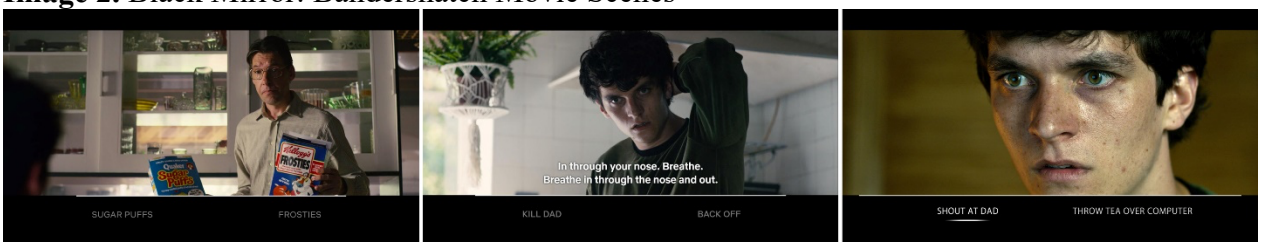
Image 1. Images From the Kinoautomat Film at the Movie Theatre



Sources. *https://cmf-fmc.ca/now-next/articles/interactive-cinema-tantale-and-late-shift
**https://thestoryfix.blog/2019/02/11/the-first-interactive-movie-was-banned

Interactive cinema, which came into existence due to the combination of the interaction feature of cinema and new media, appears as interactive films in the new generation of digital film screening channels today. Netflix, which is the most popular digital movie content market in the global market, prepares the audience for an interactive experience by offering more basic options in the first scenes of the interactive cinema with Black Mirror: Bandersnatch, which was released in 2018 and asked the audience to make critical decisions that will change the flow of the movie in the following minutes. If the audience do not select within ten seconds, the system activates the default selection and continues the film (Conley & Burroughs, 2020, p. 128).

Image 2. Black Mirror: Bandersnatch Movie Scenes



Source. https://www.netflix.com/title/80988062

Although the interaction method of Black Mirror: Bandersnatch is similar to the first interactive films, it gains importance with two different features. First of all, it increased the level of interaction and strengthened the bonds between the film and the audience by transforming the collective viewing into individual viewing. Secondly, they offer an experience independent of time and space in the context of the medium they show with the advantage of digitalization. In the process from the first interactive film to the present, the interaction between the film and the audience was based on the audience's choice. The developments in computer technologies, the game industry, and VR technologies after 2012 were reflected in the interactive cinema narrative as the concept of VR cinema and 360-degree film. These new technologies take interactive cinema's interaction feature to a different dimension beyond solely making the user choose. The virtual universe, virtual representation, emotional feedback, high interaction, and 360 degrees framing offer its users VR cinema and 360-degree movie format to provide real experiences in the virtual world. In the case study part, details of the concept of VR cinema and 360-degree film, a branch of interactive cinema, are examined.

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Case Study: 360 Degree Film

Virtual and Augmented Reality

Even if the basics of virtual reality were laid in the 1830s, after a long stop in the 2000s, this subject has regained its popularity with the technological developments in the game industry in recent years. It has affected other branches of art, especially cinema. As a result of the interaction of the concept of virtual reality with different disciplines and the technological developments of the era, its boundaries have expanded in each period. It has taken place in the standard intersection set of new concepts entering the literature. Nowadays, virtual reality, augmented reality, VR cinema, and 360-degree movie formats are confused due to the abundance of elements in these intersection sets. The experience that virtual reality gives to individuals is similar to dreaming in a virtual environment. VR technology is a human-computer interface that simulates physical reality in a virtual universe. Users can navigate this virtual world, view it from any angle, and rearrange objects by changing their location (Zheng et al., 1998, p. 20). Virtual reality has technology that offers real experiences in virtual time and space, where users are almost entirely disconnected from the physical world and actively use four of the five senses (hearing, seeing, smelling, and touching).

On the other hand, augmented reality is similar to seeing hallucinations in the physical environment, unlike virtual reality technology. Augmented reality, which is considered to have been invented by Tom Caudell and David Mizell, differs from virtual reality as it doesn't only provide computer-generated graphics but also enriches physical reality with digital content and offers an interactive new digital reality to its users (Berryman, 2012). While virtual reality technology is almost completely disconnected from the physical environment, augmented reality aims to make this reality experience more interactive by supporting it with 2D and 3D virtual graphics.

Historical Development of VR Technology in Terms of Video and Film

The panoramic paintings of the 1900s, encompassing 360 degrees of the individual, make the experience feel as if they are in the scene in terms of time and space. Although not considered a technological initiative, these frozen frames regarding the feeling of being there are considered the first steps of hyperreality created by virtual reality. The stereoscopic technique developed in the early 1930s is based on the perception of photographs recorded in two dimensions as three-dimensional, creating the illusion of depth. This technique forms the basis of the three-dimensional image in the context of photography and video. Developed in 1939, the View-Master enables the mind to perceive different images as three-dimensional visuals thanks to its two perspectives (Heberet, 2019, p. 137). View-Master makes its users feel there when they gaze through their viewfinder, and every time a photo is changed, the user is practically teleported to another part of the world with the illusion that they are somewhere they are not.

Developed by the cinematographer and filmmaker Morton Heilig in 1957, the device called sensorama is considered the pioneer of virtual reality technology due to its innovations. Sensorama can be described as an emotional video simulator (Mandal, 2013). Heilig has presented the short shots taken with a special camera with the help of sensorama. These shots were presented with a 3D wide-angle color image, stereo speaker, fans for the feeling of wind, fragrance producers, and

seats with vibrations for the sense of shaking. While the television technology of the period was able to transmit only black and white images and sound, sensorama managed to attract attention with all these features it promised. Still, it will be incorrect to call this virtual reality technology. This is because interaction and emotional feedback, which are the essential components of virtual reality, aren't available in sensorama technology (Zheng et al., 1998, p. 20). In 1960 Heiling developed the *Head Mounted Display (HMD)* device with the name *Telesphere Mask*, which was able to carry the sensorama into the form of glasses and consisted of a helmet unit and a pair of glasses with a head-mounted image monitoring unit. After the telesphere mask, 3D video display technology continued to develop on drinks rather than desktop devices, and Heilig was a pioneer in this regard for other researchers.

The device developed by Philco engineers Charles Comeau and James Bryan in 1961 with the name *Headlight* has a video screen connected to a movable security camera and a motion-tracking sensor (Zmigrodzka, 2017). When the user puts the developed device on his head and moves his head left and right, the security camera also moves in x, and y coordinates so that the user can watch the surroundings. This created device made history in VR as the mechanism that connects the first authentic images to the human body. The production of hindsight glasses was followed by the first motion capture studies. Then the concept of alternative reality, which we hear about today, found its place in the literature. Ivan Sutherland, the father of the internet and a pioneer of computer graphics, laid the groundwork for virtual and augmented reality concepts in 1965 with The Ultimate Display, which he developed by discussing an alternate reality. Sutherland believed that displaying pre-recorded video sequences with glasses or a desktop device was ineffective, and he developed glasses that showed graphics generated entirely by the computer. Sutherland paved the way for the development of VR and AR technologies by creating and displaying a virtual reality that differed from the previously known truth (Bown et al., 2017).

The period from 1990 to 2011 is regarded as a stagnation for VR technologies. Even though there are literary works, films, and other forms of art that focus on virtual reality as a subject, VR technology has been overlooked by both producers and users. The fact that computer technology is too expensive, VR equipment is too heavy and full of cables, VR technology has not made the expected leap in the past time, user problems such as dizziness and nausea cannot be resolved, has led to a decline in the graph of VR technology development. 2012 is the turning point of VR technology. Since then, VR equipment has gradually shrunk, freed from cables, and has become more portable and accessible to the end-user than previous models. One of the most critical factors that enable the development of VR technology is known as the development of computer hardware. In the increasing popularity of both VR and 360-degree movies; The fact that today's computers have graphics cards and processors that can display photorealistic images at 120+ frames per second and that users can easily access the hardware has been highly effective in increasing the popularity of both VR and 360-degree film Unreal Engine developed by Epic Games, Unity developed by Unity Technologies, CryEngine Developed by Crytek, is known as game engines that can design fully interactive 360 degrees VR content using the most known 3D models or libraries of programs. The fact that game engine developer companies share their programs with individual users for free or for an access fee has not removed the technical limitations in producing VR and 360-degree movie content. Still, it has been influential in the experience of these contents and the development of VR technology. By 2022, the metaverse universe has increased the popularity of VR technologies. In addition, the Covid-19 epidemic on a global scale has transformed the production, distribution, and display dynamics of all branches of art and

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accelerated their normalization. However, today, a little more time is needed to talk about the concept of VR Cinema Language.

The Reality, Virtual Reality, Simulation and Hyperreality

The concept of real, which is an abstract concept that dates to the allegory of the cave, is now lost in the shadow of the virtual, losing clarity and becoming difficult to notice. According to Jean Baudrillard, a French thinker and sociologist working on media theories, separating the real and the virtual in this age is very difficult because these two concepts are intertwined. While it is difficult to define these two concepts in our generation, it is much more complicated to explain the concept of virtual and reality. According to Baudrillard, the copies that emerge from this interpenetrating situation constitute a new reality, hyperreality (Baudrillard, 2016). In his book Simulacra and Simulation, Baudrillard defines today's reality as hyperreality produced in simulations and explains *real, virtual,* and *hyperreality* in detail through the concepts of Simulacra, Simulating, Simulation, Hyperreality (Baudrillard, 2016).

Simulacra refers to things that are intended to be perceived as accurate or that appear natural, simulating refers to attempting to make something unreal seem real, and simulation refers to artificially reproducing the produced simulacrum using a computer program. He defines hyperreality as the endless loop of simulations replacing each other and the disappearance of the thin border between reality and fiction (Baudrillard, 1982, cited by Adanır, 2021). When concepts that seem abstract and complex are embodied on a sky image, according to the assumption that accepts the first image as real, the new reality that emerges as a result of modifying a copy of the image is expressed as similar. The new reality produced is still perceived as real even though it is a copy of the truth. Copying this image, which is accepted as a new reality, in an endless loop using a computer program is called simulation. If the actual and duplicate images are not distinguished among these thousands of copies, the phenomenon of hyperreality occurs when all photos are accepted as accurate.

Virtual Reality and 360 Degree Video Format

There are numerous points (experience through a title, subjective point of view, 360-degree free framing, etc.) where virtual reality and 360-degree video content intersect. The most significant distinction between the two content is in interaction and sensory feedback. User interactive content is defined as VR content in the cinema or other media. The central concept of VR content is interaction and immersion. Immersion is defined as improving the quality of a virtual experience by removing the VR user as much as possible from the disturbing and distracting factors of the physical world and physical reality (Zheng et al., 1998, p. 20) 360-degree video is a global video format created by recording images with multiple cameras (4, 8, or 16 cameras) and combining them with numerical operations. The interaction between a user and a 360-degree video is indistinguishable from any 2D video and its user (such as pausing the video, fast-forwarding, or rewinding in time).

360-degree video content is defined as witness but doesn't touch. It is not correct to refer to 360-degree videos as virtual reality videos. The VR system should have three main characteristic features: Reaction to user movements, real-time 3D graphics, and feeling of immersion (Zheng et al., 1998, p. 20). In their book Understanding Virtual Reality, William R. Sherman, and Alan B.

Craig (2003) state that for content to be defined as virtual reality content, it must contain five essential elements: 1 and 2 The Creators and Participants, 3 Virtual World, 4 Immersion, and 5 Interactivity. According to Sherman and Craig (2003), virtual reality is a virtual universe in which the user is almost completely disconnected from the physical environment by wearing VR glasses, can interact with the object and character in the virtual world he passes through, change, and transform the universe in it, and receive sensory feedback based on his reactions during this interaction (Sherman and Craig, 2003). The critical difference between 360-degree video and virtual reality content is that the content is produced entirely by computer in virtual reality. In contrast, in 360-degree video, the content is created in video recording format. In addition, sensory feedback can be received in VR content, but in 360-degree video content, only that moment can be witnessed.

Based on these differences, Sarah Thomas divides virtual reality, and 360-degree video format into two basic classes True Virtual Reality (TVR) and Cinematic Virtual Reality (CVR) (Thomas 2019, p.454, cited by: Erkılıç; Dönmez, 2020) The distinction between Zheng and Thomas and Sherman and Craig is based on the same basis. According to Thomas, while actual virtual reality (True Virtual Reality-TVR) offers complete control, interaction, and feedback to the user, cinematic virtual reality (CVR) expresses a form of conventional video that can be experienced in 360 degrees. With its innovative technology, virtual reality and 360-degree movies aim to create a unique language by transforming (changing to a different form, changing shape, reform, transformation) the traditional cinema language rather than changing (totality of changes over a period) it. D. W. Griffith's formal innovations in the language of cinema, such as revolutionary camera angles, optical movements, vertical camera movements, and editing concise shots one after the other, are well known to have made significant contributions to the formation of today's cinema language (Levin & Baker, 2017). The table below compares Griffith's innovations to cinematic language and how virtual reality and 360-degree film technology transformed into or excluded from the narrative structure.

Table 1. D. W. Griffith's Contribution to Cinematic Language and the Transformation of These Contributions in Virtual Reality/360 Film Language

Griffith's Contributions to Cinematic Language	Virtual Reality	360 Degree Film
Lower-Upper-Eye Level Camera Angles	×	×
Camera Scales	×	×
Darkening-Lightening Transition	✓	✓
Dramatic Lighting	✓	×
Clear and Blurred Areas	×	×
Creative (Parallel) Editing	×	×
Vertical Camera Movements	×	×
Adding After Very Short Plans	×	×
Optical Movement (Zoom)	×	×

Source. Levin & Baker, 2017

As shown in Table 1, many Griffith innovations that can be considered the building blocks of creating meaning in traditional cinema art are not used in both VR and 360-degree film, but this should not be interpreted as a deficiency of VR technology. With its innovative technology, virtual reality transforms the art of cinema into a language beyond the ordinary. While tens of different camera angles can be used in a scene in traditional cinema, VR movies consist of single-shot or long-plan sequence scenes, and there is a single camera angle within the settings. The user can manage his perspective as he wishes in a 360-degree frame. In VR cinema, it is not possible to use

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Griffith's parallel editing, or the editing technique used for the first time until that day. Theorists who believe that dividing time with fiction in the art of cinema is deceptive and hinders reality argue that uninterrupted time and space are closer to reality (Andrew, 2010). The uninterrupted editing of VR cinema also demonstrates the virtuality of its universe as real.

In traditional cinema, camera scales, optical zoom movements, or vertical camera movements show different dimensions of characters or objects. In VR movies, on the other hand, the user can move independently, approaching/fleeing from the characters or objects and looking closer/far away. In VR cinema, the entire universe is transparent, unlike a traditional cinematic image's narrow depth of field. Dramatic lighting, which is used to create meaning in conventional cinema, in other words, the partial lighting technique, can be used in VR movies prepared using the game engine infrastructure. It is tough to operate a 360-degree film format where the whole space can be seen, and technically the lights cannot be hidden. Virtual reality and 360-degree film technology leave many of its features out of the narrative structure, which are most basic capabilities of the traditional film language such as framing, angle versus angle concept, continuity, 180-degree rule, 20% rule, 30-degree rule, and sliding writings, which is one of the first images that come to mind when it comes to cinema. In traditional cinema, camera scales, optical zoom movements, or vertical camera movements show different dimensions of characters or objects. In VR movies, on the other hand, the user can move independently, approaching/fleeing from the characters or objects and looking closer/far away. In VR cinema, the entire universe is transparent, unlike a traditional cinematic image's narrow depth of field. Dramatic lighting, which is used to create meaning in traditional cinema, in other words, the partial lighting technique, can be used in VR movies prepared using the game engine infrastructure. It is tough to operate a 360-degree film format where the whole space can be seen, and the lights cannot be hidden. Virtual reality and 360-degree film technology leave many of its features out of the narrative structure, which are most basic capabilities of the traditional film language such as framing, angle versus angle concept, continuity, 180-degree rule, 20% rule, 30-degree rule, and sliding writings, which is one of the first images that come to mind when it comes to cinema.

From Passive Audience to Active User: 360 Degree Dynamic Framing

When comparing traditional cinema with VR and 360-degree movie watching practices, the most apparent distinction is transforming the traditional *passive audience* into the *active user* in VR technology. Today, the VR user turns into an unprotected, individual user in the virtual universe, in contrast to the traditional cinema audience, who collectively witnesses the common images, described as the director's dream, from a safe distance, in a place with red velvet armchairs lined up in front of the magical curtain. While the traditional viewer is witnessing the moving images on the screen, the VR user, just like in plastic arts, can touch, feel, interact, get feedback on the artistic product, and thus experience the state of being there more actively. Another difference that transforms the traditional audience into a user in the VR experience is that the user can control his physical body through an avatar in the virtual universe. The user can customize the flow by making choices thanks to his avatar in the virtual environment and thus become the active subject of the movie.

There are two types of framing methods in traditional cinema: closed and open frames. One of the most pioneering innovations that distinguish VR cinema from traditional cinema is the 360-degree liberal and individual framing provided by virtual reality technology to its users. Unlike the

traditional cinema audience, the VR and 360-degree film user has the superiority of unique structure. This superiority of the VR user over the traditional cinema audience brings with it the power to create his direction, thus breaking the director's monopoly on the image. The most notable feature of this structure is that the user can form his path, look directly at the object or character he wants from any angle, and determine whether the duration of this gaze is long or short. The classical narrative structure of traditional cinema is known to be linear; The beginning and the end are determined. It cannot be changed with the intervention of the audience and cannot be reduced. All audiences are expected to progress collectively in only one way, providing a more controlled structure to the storyteller—user-oriented storytelling in the dynamic narrative of VR movies and interactive games. The user can change the movie's flow with his choices in the story. Depending on these, the movie's end can vary according to the user, with the alternatives predetermined by the experienced designer. In the dynamic narrative, there are several alternatives for each scene and a non-linear story understanding according to the results of those alternatives. The user is taken on a journey of discovery again in every different path he chooses. The main difference between traditional cinema narratives and dynamic narrative is that the user can determine the flow of the adventure, not the director (Carstensdottir et al., 2019).

Virtual reality cinema transforms the concept of identification, which belongs to traditional cinema, into the concept of type identification. The actual relationship that the VR user establishes with the place he is in and with the other characters of the movie he is involved in as a character also increases the reality of identification. While in traditional cinema, looking directly at the camera creates the effect of estrangement, in VR technology, the user can make eye contact with the characters, touch the characters, look from the angle and closeness to the character they want, for as long as they want. The ability to look through the user creates a hyperidentification effect on the user, and this ultimate situation strengthens the user's feeling of being there and increases the virtual reality. Unlike the passive viewer who watches the moving images reflected on the white screen of traditional cinema, which is considered magical, the VR user is included in the narrative as a character of the movie. Molo (2020) has positioned the VR movie user in three different categories as User as the Main Character, User as a Character, and User as an Observative Person, are considering the distance of the character from the script of the movie, virtual universe, and other characters.

Table 2. User Categories in Virtual Reality and 360 Degree Film

Character Category	Character Distance	Position
User as the main character	User-centered	Active
User as character	User in partially centered position	Semi-Active
User as observer	User isolation location	Passive

Source. Molo, 2020

The character in which the VR user is in the leading position in the movie with the virtual character they take on, and all the interactions, actions, movements, and directions in the experience are planned directly towards the user, are defined as the *User as the Main Character*. This category is specified as a gamified movie. The *User as a Character* (the character positioning of Refugee Crisis is in this category and is detailed with examples in the movie review section) is the positioning where the user is positioned in the same position as the other characters of the movie and is affected by the positive or negative situations in the movie at the same level as the other characters of the movie. The VR movie character in the *User as an Observer* category, on the other hand, is only a watcher, unlike the characters in the other two types, and the distance between the

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movie and the user is relatively high compared to other classes. The character in this category is not observed by other characters in the movie and is not affected by the events in the movie. The user witnesses the events between the movie's other characters, like an invisible character (Molo, 2020, p. 217). The topics discussed up to this point in the study are listed in the table below to explain the aforementioned *transformation* from traditional cinema to virtual reality cinema and 360-degree film.

Table 3. Comparison of Traditional Cinema and Virtual Reality

Traditional Cinema	Virtual Reality
Audience	User
Fiction	Long Plan Sequences
Dramatic Lighting	Natural Lighting in 360 Degree Video
Frame/Frame/Window	360 Degree View
To be Witness	Experience
Identification	Hyperidentification
Hearing and Sight	Hearing, Sight, Touch, and Smell
Traditional and Modern Narrative	Dynamic Narrative Structure
Sheltered Viewing Experience	The Experience of Being There
Fragmented Story	A Single Plan or a Storyline in a Plan Sequence
Computer Generated Imagery and Visual Effects	Computer Generated Imagery, Visual Effects, and Game Engines
Reflection of the 3D World on the 2D Screen	3D Virtual Universe

In more than a hundred years that cinema has left behind, technological developments have profoundly impacted cinema in each period. It has reshaped the production, distribution, and screening dynamics of cinema. In the early years of cinema, some theorists stated that technological developments would not contribute to cinema's narrative. At the end of the 1990s, they argued that digital cinema was a false revolution and would bring the future of cinema. Still, this inextricable link between technological developments and cinema became the language of film day by day. It was further strengthened by another technological innovation that reshaped it (Galili, 2013). The transition from pellicle to digital cinema is described as a change. Still, virtual reality and 360-degree film can be described as a transformation in the distinctive storytelling built by VR technology compared to traditional or digital cinema.

Analysis of the Film Refugee Crisis Within the Framework of 360 Degree Film

Summary of the Film

The film, directed by Christopher Petry and supported by the Canadian Labor Congress, was shot to both destroy the rising prejudice against people living in refugee status and address the issue of xenophobia. Millions of people who had to leave their country after the civil war in Syria in 2011 sought refuge in other countries hoping for a better life. Like the citizens of some European countries, citizens of Canada reacted to these asylum demands of refugees and tended not to accept refugees in their countries. Although the citizens of these countries explained this tendency as worrying about their safety and their families, they could not empathize with the people who risked almost everything to keep themselves and their families safe. The film searches for an answer to the question, what if there was a war in your country and you had to flee with your family? It presents the challenges of being refugees in their homeland through a first-person experience and 360-degree video to connect Canadian people with refugees.

Discovery

VR glasses, which act as a bridge between reality and hyperreality, transport the user to the virtual universe by breaking free from physical reality. The concept of discovery, which corresponds to the founding plan in traditional cinema, is transformed into virtual reality. The user embarks on a journey of discovering this new world for the first time in this 360-degree encircled universe that he has not encountered before. In addition to discovering the space at first, the user will also find the subjective point of view (POV) experience that he has not experienced before. This user-specific perspective will make the experience personal and increase the user's level of identification with the film and contribute to the creation of hyper-identification (Wilson, 1976, p. 1026).

Image 3. Images From the First Scene of the Refugee Crisis Film



Source. www.youtube.com/watch?v=HXNkRkAR54M&t=270s

Even if the VR user feels free in the designed virtual environment, it is impossible to say that VR and 360-degree video are created democratically, as in traditional cinema and other branches of art. In this context, the prediction that the VR user replaces the director or becomes equal is a false opinion. The user lives within the boundaries and domain of dominance presented by the director, who is the designer of all the possibilities of the virtual experience and makes his own decisions. The first discovery of the user, who is teleported from his physical environment to the virtual reality universe, begins with the image of father and daughter in front of him while sitting in a cafe overlooking the street on a calm Canadian day (Image 3.1). Then he discovers the images of American football on the giant screen on the left (the director also uses this screen to direct the user and keep them under control) (Image 3.2). In the opening sequence, in other scenes of the movie, the chair where the user will be positioned is seen (Image 3.3), and at the same time, the sound of rabarba in the street is heard from the soundstage. Although it may seem like a quiet, routine day at first glance, the director allows 10 seconds for the user to explore the universe they are in for the first time and begins to create an uncanny atmosphere with the movements and soundstage of the characters on the stage to take control of the user in 360 degrees of freedom. Realizing that the place has become strange, the user carefully tries to understand what is happening around him. At the same time, the attack, which is the breaking moment of the film, occurs, and the chaos of people fleeing in panic dominates the street that has turned into a wreckage area.

Directing the User

One of the most challenging factors for a VR or 360-degree film director is the effort to direct the user's gaze. If the director cannot control where the user will look, they will have difficulty advancing their narrative (Murch, 2005). Directors want to know what the audience is thinking at any given moment in the movie, where they are looking at the screen, and whether the focus is on

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their direction. It is easier to make the passive audience of the traditional cinema look at the desired part of the images reflected on the 2D screen than to direct the uncontrolled users in the 360-degree free frame of the VR cinema. So, how can the director guide his user? Another critical question is What and where does the user look? Although it will limit the freedom of the user to the action (to an item that comes suddenly towards the camera or to an object that passes quickly even if it stays in the background), interaction(a character with eye contact or a button for selection), sound effects(to sounds like banging, shouting, etc.), dialogues, bright and high-contrast areas on the stage(especially to the color red, which has the highest wavelength), the VR user looks at the texts on the image, graphic elements, and explanation texts. The directors consciously use these elements to direct the user and keep them under their control.

Image 4. Images From the Refugee Crisis Film



Source. www.youtube.com/watch?v=HXNkRkAR54M&t=270s

Petry tries to keep the user in his story from the tenth second of the movie with the directions he uses in visual and audio tracks. In the first scene, the director disrupts the routine of the quiet Canadian street and directs the user's attention to the sky, which is the viewpoint of the crowd in the film (Image 4.1). Then, requiring the user's gaze to the giant screen on the left of the stage with both the crowd's gaze and the emphasis of the siren sound, the director prepares the user for possible danger with both a graphic element (emergency warning graphic) and a sound effect (Image 4.2). With a strong jet, the sound is heard suddenly, both the user and the other characters of the movie turn their gazes to the sky again, and sprays are seen very closely watching the earth (Image 4.5). With the siren sound effect he uses, the director redirects the user's perspective to the motorcycle police passing by on the street. While the user is focused on the movement of the motorcycle police, an attack occurs on the building across the road with a loud noise (Image 4.6). As seen in this scene, sound effects are an essential guide.

In the movie's other scenes, Petry planned both auditory and visual indicators, one after the other, to keep the user with a global perspective in his narrative, taking the user's gaze from one point to the other point he wanted to look at. While the director directs the user's eye to the chaos in the wreckage area in the second scene (Image 4.3), in the next stage, he leads the quarrel between the police and the other movie characters (Image 4.4). Although it is a restrictive use, the texts used in the form of 360-degree movies (although it is a restrictive use) are one of the methods used to direct the user. Petry guides the user in any direction with the text he uses at the movie's end (Image 4.8). As previously stated, 360-degree sound design in VR film is also a very effective element for directing the audience's viewpoint. Sudden, loud, or uncertain sounds from outside the field of view attract the user's attention and outlook towards the sound source. The emergency beeper, police sirens, jets' noise, and the sound of explosions heard right at the movie's beginning

were the most significant indicators for the director to control the users' gaze. Petry directed the users with siren, jet, and explosion sounds in the first scene and the high-pitched sound effect caused by the explosion, the heartbeat, the ambulance, and the voices of the injured people at the second scene.

Position of the User

The movie character Molo in Refugee Crisis is in the category of User as a Character, Semi-Centered position, and Semi-Active based on the Classification of Users in Virtual Reality and 360-Degree Movies (in Table 2).

Image 5. Images From the Refugee Crisis Film



Source. www.youtube.com/watch?v=HXNkRkAR54M&t=270s

In the movie, the user is in the position of a strong observer, and the events are not planned directly for the user. The user is in the same position as the other characters in the movie and is affected by the events in the film and the other characters. The chair in which the user sits in the first scene of the movie (Image 5.1) turns into a stretcher (Image 5.2) and then a wheelchair (Image 5.3) in the following scenes, showing that the user was also affected by the explosion in the first scene like other characters. The fact that there is a character among the audience in the film is also an expression of the observer position. The fact that he is on a stretcher and in a wheelchair also shows that he is seen and observed by the movie's other characters. The chairs used in the movie are an essential indicator of the power relationship between the user and the director. The director reminds the user, who thinks that he has all the control, that he has the power with the position he places him on the chair.

Conclusion

After Auguste and Louis Lumière produced the cinematograph device, which allows watching movies collectively by recording moving images and reflecting them on the magical screen, in 1895, the evolution of cinema from pellicle to digital and the effect of today's new media digital content platforms demolished its collective structure and lead to a change in its production, distribution and display practices. During the Covid-19 pandemic, which affected the whole world in 2019, the concepts of virtual and individuality radically shook the dynamics of society and became an integral part of the new lifestyle. In this context, the pandemic process has transformed all fields and accelerated the rapid digitalization of the art of cinema, the individualization of collective viewing practices, and the normalization of this new reality. The convergence feature of new media offers storytellers new channels with their unique forms like interactive cinema, VR cinema, and 360-degree film. While the theoretical *Virtual Reality Cinema Language* phenomenon is not yet mentioned in 2022, it is seen that this innovative cinema concept, whose borders are not

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clearly defined, has started to increase its influence day by day, to take place in the competition part of the world's largest film festivals and play a role in the opening of private movie theaters.

The study examined the unique developing processes of these new concepts by combining traditional cinema with VR cinema and 360-degree film formats and centering the similarities and differences between the two media. Based on the images of virtual universe and immersion feeling, virtual representation, interaction, and sensory feedback specific to virtual reality technology, Refugee Crisis 360-degree short film was analyzed in terms of director's position, viewer's position, 360-degree framing and orientation, dynamic narrative structure, the transformation from the audience to the user. Virtual reality cinema transforms the as if effect of traditional cinema into a hyperreality effect by activating many senses in contrast to the limited reasons addressed by traditional cinema. It is seen that the traditional cinema director turns into the experience designer of the VR film, and the passive audience of the traditional turns into an active user who can make choices on the text and change the flow in the VR film narrative.

As a result, considering the films produced until 2022 and the Refugee Crisis film examined within the scope of this study, it is seen that the VR cinema and 360-degree film technology is in a transitional phase today. The traditional cinema structure of the works produced until the mentioned period is imitated and adapted to VR and 360-degree film formats. On the other hand, it is seen that the use of traditional cinema narrative formats in VR cinema and 360-degree film formats is limited. It is predicted that today's technologies such as virtual reality, 360-degree video format, and metaverse will create a new language with its narrative structures and technical form shortly, beyond changing and transforming the language of cinema. This prediction is also supported by the development of 3D computer programs (Maxon Cinema 4D, Autodesk Maya, Blender, etc.), modeling, animation, rendering, lighting modules, and real-time rendering engines (Octane and Redshift), and game engines (Unreal Engine, Unity). Equipment such as glasses, gloves, scent simulators, 360-degree cinema seats, and VR headset technology used in the VR experience is developing and getting smaller daily. Today's big technology companies also support this field. Based on the previous predictions, it is possible to say that the form of 'VR Cinema and 360 Degree Film' will turn into an art form with its theoretical language shortly.

Considering where the results of virtual universes will reach today, the power and limitlessness of the new media and internet environment can be seen in the leading role of this adventure. While these environments have an ordinary, customary, and eclectic structure, they are reconstructed, created, fictionalized universes, and based on diffusion, approval, and appreciation. As a result, when new media fields, virtual reality tools, and programs used with technology are considered, digital and visual output specific to this century are increasing rapidly. For this reason, one of the areas that will develop the most in the future is the structural applications and equipment specific to this universe. Traditional, modern, and postmodern chaos is experienced in every period of cinema and art, which will lead to progress in the field in the long run. While technological developments, changes, and transformations are experienced, one crucial point is to adapt quickly. Because in a century with dominant visual and digital aspects, the power is the technology, and the information is the driver.

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