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Attractive Visuality Generation Within the 360˚-VR Video Format as a Technological Trend in Modern Film Production

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The aim of the article is to study the features of the process of attractive visuality generation within the 360˚-VR video format. *Results*. A comprehensive consideration of the issue with the use of general scientific and special methods (problem-logical, theoretical-informational, art studies, comparative analysis, the method of analogy, abstraction, induction, and deduction) demonstrates that one of the key trends in modern film production is the creation of a "multinarrative space" (A. G. Iñárritu) VR-immersion of the viewer as a recipient and co-creator of this space, accompanied by the transformation of the film into a visually attractive activity and transformation principles of film aesthetics in the 20th century. *Scientific novelty*. It is proved that the 360˚-VR video format is a unique audiovisual form that requires a special grammatical, technical and technological base (professional or amateur 360˚ camera, effective tools for creating and editing 360˚video content for the different platforms, Kolor Autopano Video Pro, SIFT algorithm, etc.) thus, brings the use of the immersion principle to a qualitatively new level. *Conclusions*. Due to this, attractive visuality is becoming possible in the quality of a new aesthetic and perceptual-virtual experience that is being formed under the influence of VR-attractions and modern special effects in the digital cinematograph. It leads to the synthesis between cinematograph and theatre when the transition is occurring from montage sequence to virtual-theatrical play where in consequence of 360˚-VR the action has been developing constantly, and the viewer is in the very centre of the events. Thereby, there are grounds to confirm that, including technological development and measureless creative possibilities in the process of projecting different VR-attractions, it is possible for a viewer's infinite immersion in the space of a digital film; that, from one side, transforms film language on the modern stage, creating the perspectives of the further branch development, and from another side, it conditions a number of psychological problems and risks connected with the viewers' reaction on a different level of density of the attractive field of modified film language.

Keywords: attractive visuality; film production; immersive cinematograph; film aesthetics; virtual reality; 360˚-VR

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Introduction

The 21st century deepens the feeling that we live in a network and "liquid society", which is characterised by turbulence, cyberface interactions, and one of the key attributes of which is virtuality. Today, at the level of everyday communication, you can hear such expressions as virtual life, virtual communication, or enter the virtual world more and more often.

It underlines the essence of virtuality as a global modern megatrend and confirms Mark Zuckerberg's expectations, who, commenting on the situation in the VR market during the Facebook Connect 2021 online conference, pointed out that he was looking forward to the day when everyone could immerse into virtual reality and finally this day has come — today everything is possible (CNET Highlights, 2021). And it is true, back in January 2016, the investment bank Goldman Sachs made a report with concrete arguments that virtual technologies have a great potential to become the industry with a capital of $80 billion by 2025 (Verhage, 2016) but the company Microsoft commented the possibilities of HoloLens sees in virtual and augmented reality (further in the text VR/AR) anew step of the evolution in an informative-technological branch (Langston, 2019).

Due to its own advantages, the change of Field of View, Head Tracking, Positional Tracking, Locomotion, Controllers, developments of SulonTechnologies and Microsoft in the sphere of augmented reality, binaural volume, VR/AR technologies play an important role in the modern culture, whereas enabling the acquisition and processing of visual information in a new way, solving many related problems in various industries, in particular, within the creative and audiovisual industries. Considering the insane popularity of the audiovisual sector against the background of many initiatives of the last decades and the formation of the single digital market (Busson et al., 2016), special attention is paid to the development of cinematograph and connected with its industries on the modern stage, especially, when it comes to Internet technologies that change film language interactive and videogame industry, immersive cinematograph and immersion into a synthetic VR-environment. If AR technology is more suitable to virtual-practical applying and usage, then the VR technology is to the artistic, where the immersion effect depends on the technical characteristics and the quality of the content. Thanks to the computer-simulated artificial virtual environment, the endless variability of interpretations of a stable artistic object changes into unequal cores of virtual variations, where the place of a stable result of the creative process is taken by a moving techno-image, which by definition, and not by the will of the author, is an object virtual becoming (Mateer, 2017; Xiao, 2019).

Recent research and publications analysis. Last year, a new trend in the frames of modern film industry becomes very popular — filming video images covering 360˚. At the international conference in Germany, May 2017, this issue was addressed in the conference paper "Towards subjective quality of experience assessment for omnidirectional video streaming" (Schatz et al., 2017). The usage of "360˚" video streaming technology makes it possible, firstly, to overcome the "director's dictatorship" (the spectator has the possibility to independently form the trajectory of movement in this space and the logic of viewing); secondly, to remove the technological barrier in the form of a TV screen, which allows the viewer to fully immerse himself in the atmosphere of

the film story; thirdly, the basis of the principle of the formation of the audiovisual stream and the demonstration of real objects in it is the construction of the spherical visualisation of the space of the event, which turns the movie into a visually attractive attraction and, thereby, transforms the principles of film aesthetics in the 21st century.

The problem of becoming VR cinematography and using connected with them technological innovations is gradually attracting the attention of the modern researcher. Thus we can emphasise the research dedicated to the analysis of specific and becoming VR-storytelling (Davila, 2017), connection film montage with segmentation of cognitive events in VR video (Serrano et al., 2017), VR-theatre, a VR-based multi-screen film simulator for testing multi-screen content and environments (Lee et al., 2017), film zenith VR in film production and evolution of storytelling in a new cimena (Farahzadi, 2019), applied aspects of VR technology application in cinema and TV (Zhang et al., 2020), the design of the projection of the application that provides views within the framework of cinematic VR (Rothe et al., 2020), roles of VR/AR technologies in film industry (Li, 2021) and others.

Regarding the prospects and effectiveness of applying panoramic 360˚ filming in VR cinematograph and other spheres that interest us within the framework of this research, we need to underline developments connected with the analysis of the visual advantages of the 360˚ image for the present methods of prediction (Chao et al., 2018), adaptive and mobile 360˚ video streaming (Fan et al., 2019; Eltobgy et al., 2020; Chopra et al., 2021), broadcast mosaic 360˚ VR video (Guo et al., 2019; Guo et al., 2021), technologies Spherical Convolution which extends predictive functions based on 360˚ video with limited feedback (Li et al., 2022), perspectives of applying 360˚ cinematographic VR in medicine (Beverly et al., 2022) and others. That is why there are reasons to consider that insufficient determination of the impact of the technology and method of panoramic 360˚ filming in VR cinema on the formation of its attractive component, which is a transition to a new level of technical and technological development, determines the need to conduct research in this direction.

Aim of the article

The research aims at determining the technical and technological features of using the method of panoramic 360˚ filming in VR cinematography, which enable the generation of attractive visuality that transforms the VR film production for the subject — participant into a new aesthetic and overemotional experience, which synthesises various artistic directions inside, in particular: cinematograph (spectacle, visuality), immersive theatre (orientation on a subject), and video games (interaction).

Main research material

Objectively and expectedly, if we take into account the pace of technological development and the pandemic, VR now has transformed into an integral part of the professional activity of screenwriters and cinematographers. It is typical that Steven Spielberg at the 2016 Cannes Film Festival expressed scepticism and concern about VR as

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a rather dangerous environment for film art (Damiani & Southard, 2017), but the next year 7 minutes film for VR helmets *Carney Arena* by A. G. Iñárritu was dedicated to the migration crisis on the US-Mexico border, was first shown at the Cannes Film Festival.

Paradigmatic shifts are that VR is moving away from classic storytelling, where traditional media control the frame flow of content and, accordingly, the focus of the viewer's attention, while VR gives the viewer complete freedom of choice, where to look, stand and what to listen in 3D-format. In this regard, not only the technological parameters of the film language change, the specifics of inter-frame and intra-frame editing, the film's timing, the duration of the plans of its components, their composition, but also the aesthetic experience of the viewer, because in the case of the application of VR technologies, it is about creating an interactive audiovisual environment with a high level of psychological credibility, which determines the degree of immersiveness, that is, the depth of the effect of immersion in a virtual game or film world (see Fig. 1). This is because the VR helmet provides a mode of greater (but not absolute) sensory localisation, which turns VR cinematograph into a sphere of individual experiences, in contrast to the collective experience of watching traditional cinema or television.

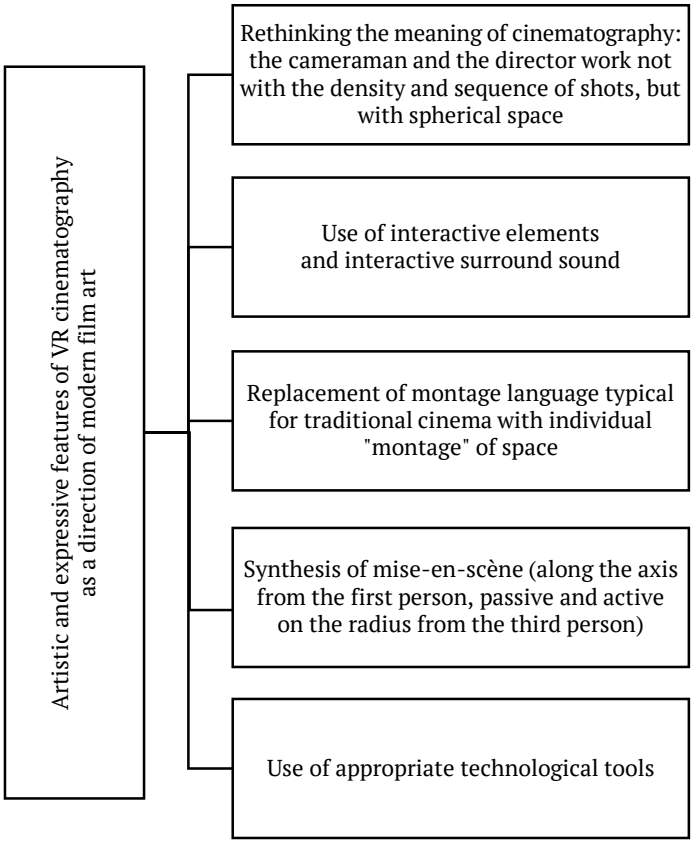

Figure 1. Artistic and expressive features of VR cinematography as a direction of modern film art

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Two issues, without which it is difficult to understand the specifics of VR cinematography, should be noted separately. Firstly, it is the change of montage language which is due to the limitation of the timing of VR film, the duration of which is not more than 15–20 minutes. These changes are accompanied by:

– by increasing the role of in-frame montage (during the production of the shot and when choosing the filming point, you need to remember the peculiarity of the VR camera, which captures the entire surrounding space, and builds the actions of the characters in such a way that the viewer can look around and follow the objects, which move, switching attention from one to another and from the near plan to the far);

– the lack of the ability to make the most of dense montage as in classic cinematography, which leads to an increase in the need to increase the duration of VR frames (in a spherical frame, it is difficult to show a thing separated from space, as a result, the rhythm of montage gluing slows down, and in a VR frame, the viewer needs more time to perceive what is happening);

– the increasing importance of the montage principle based on the compositional centre (after the end of one 360˚ frame and the onset of the next due to montage gluing, it is important to continue to keep the viewer's attention on the new compositional centre in the new 360˚ frame, that is, during the "stitching" of frames and montage, the editor must take into account the most a possible variant of the viewer's behaviour while watching this scene) (Cameron et al., 2020);

– enrichment of multi-frame montage techniques in view of expanding the visual space, when the spectator, turning his head, can move from one frame to another, and for this, the frame itself needs to be divided into two or more areas where different actions take place. Thus, the editing will take place at the moment when the viewer turns his head (Fan et al., 2019).

Secondly, aspects connected with the methods and technique-technical accompaniment of VR film. It is about the movable camera that has to move accurately and smoothly whereas first-person filming is done in different ways, such as when the camera is fixed above the actor's head on a helmet with a suspension, or on the actor's face around the head, or on a tripod, and the body with arms is added to the frame separately, or there is a sense limit the viewer's ability to look down perpendicular to the ground. To achieve the effect of perfect fluidity, the actor should not turn his head during filming, instead, if you need to change the direction of movement, then you should smoothly and slowly turn first the body, then slowly the head with the cameras (Cameron et al., 2020).

Very often notions "360˚ video" and "VR film" are used as interchangeable, although a full VR experience requires some interaction between the viewer and the media content. Filming in format 360˚ allows using in VR films volume image, reaching with the appropriate depth and verisimilitude so much that psychologically there is a lulling effect (Newton & Soukup, 2016). At the same time, from a technical point of view, the number of cameras on the filming structure doubles: there can be 16 or more, located in a circle, forming 8 pairs, which are directed in different directions. In the process of stitching video panoramas during the creation of a spherical frame, cameras located one after the other participate. It makes separate for each eye video sphere with its aspect and further two video panoramas join into a vertical stereo pair that generates attractive visuals and provides artistic uniqueness of VR film.

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With the help of synchronised video materials, make 360˚ films, done by multiple lenses or cameras to create encompassing "field of view" (FoV). These films are often viewed by using VR headsets, but they can also be viewed on mobile phones, tablets or regular computer screens, while the viewer moves their device, swipes on the screen, and drags the video. Therefore, 360˚ films offer an immersive way of viewing, allowing the viewer to explore the scene around them, and with the help of multiple cameras can even shoot in 3D to enhance the sense of immersion (Boukhris et al., 2017). In addition, VR movies created with a 360˚ camera can also be made interactive using software, creating points within the video that allow the viewer to interact with other media (for example, switching from one 360˚ video to another through a doorway or opening an information tab) (Tran et al., 2017).

Professional 360˚ video cameras capture the entire field of view and produce a combined video output in 4K, 8K monoscopic and 6K stereoscopic equally-rectangular formats. The key factor of the success of such video is the availability of effective tools for creating and editing 360˚ video content for various platforms (such as conventional TVs via HbbTV, VR headsets or mobile devices). Available tools mostly focused on, first, high-quality video stitching, stabilisation and optimal encoding with minimal loss of raw camera data, and, second, interactive annotation to place hot spots, embedded images and videos in relation to visual links for interaction and storytelling (Takacs et al., 2019).

Among cameras with an angle of view 360˚, the following can be distinguished: Insta 360 Pro; Kandao Odsidian R; Kandao Obsidian GO; GoPro Omni; Detu F4 Plus.

Thanks to these devices, 360˚ filming has become a widespread phenomenon. Before their appearance, spherical photography involved the use of expensive multi-camera setups and subsequent hours of editing, but these portable devices have simplified the entire process, reducing it to the push of a button. The further success provides YouTube and Facebook by implementing the necessary support for 360˚ content on its services (Dredge, 2015). During making 360˚ films can appear some difficulties which exist in comparison with usual filming and their necessary to remember if we want to reach the effect of attractive visuality. The first is the problem of script writing, because you cannot take an existing idea, such as a script for a TV show, and create it in 360˚. The script should be designed so that the audience has the desire to look around in all directions. You can use visual cues or audio cues to achieve this. For example, to make the hero go out of the viewer's field of view, or to add a loud sound or a voiceover. Another problem is that you cannot choose a space that has a small area, so a lot of projects that use 360˚ technologies are panoramic tours of cities, etc.

The next difficulty is called the "parallax effect" (Whissel, 2015; Ku, 2015), which is especially noticeable in the example of close-up objects. At the post-production stage, the saving grace is that adjacent frames always have an overlapping area and you can draw a line of connection so that this effect is less noticeable. However, this is a rather painstaking process, so it is better to reduce it to a minimum at the filming stage by correctly setting up the 360˚ camera. This effect can be avoided when filming panoramic photos, but not when working with panoramic videos, because there are at least two cameras and the parallax-free point of each of them is inside the lens, which does not allow you to physically shoot from it. At the same time, the parallax effect is smaller, the closer the parallax-free points of the lenses are to each other. To reduce this

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distance, it is necessary to disassemble the existing cameras, change the lenses, and think over the systems of simultaneous start of the cameras, synchronization, cooling, and power supply.

There is a similar problem with video stitching: the more video seams, the more difficult it is to get a perfect picture. If there are not enough seams, then the resolution may not be enough to display video content on large screens. You always have to look for the perfect solution for each specific case. In a situation where everything is known in advance, what and how will happen, it is possible to set the cameras so that the dynamic action unfolds only in front of the camera. The rest of the static interior is much easier to sew neatly than shots with moving objects. In case of unknown, then it is better to sacrifice material resolution and use fewer cameras (ideally two) so that fewer joints need to be stitched in post-processing (Lee et al., 2017; Park et al., 2021).

As for the problem of perception of panoramic video by the spectator, it is not particularly important if you watch content on a screen or from a mobile device. However, if you use virtual reality glasses, then the situation becomes critical and you need to take into account the physiological and psychophysical state of the spectator (Barreda-Ángeles et al., 2018).

Technologies such as a panoramic lens can be used to capture panoramic and spherical video GoPano Plus and "rig" with cameras GoPro Hero: Panoramic lens Camera GoPro HERO 11 and Black Creator Edition CHDFB-111-EU GoPano Plus.

Similar videos can be watched on YouTube, both on a computer and on a smartphone. This format is supported by cameras SP360 (Kodak), 360 cam (Giroptic), Theta (Ricoh) and Allie (IC Real Tech). In the first case, to control the view, you need to move the screen with a pressed mouse or use a virtual joystick, while in the second one; it is enough to turn the gadget, changing the viewing angle.

At the moment there is no general methodology for creating a video with a 360 view, it is at the stage of formation. As an option, this is a choice of cameras, some of which, namely TOP-professional ones, we have indicated above. Also one of the methods is to divide the captured video material into frames, and then stitch them together using PTGui, Hugin, Pano2VR and Kolor Autopano programs. To effectively cope with this rather time-consuming process, a good product appeared on the market that will help in this — Kolor Autopano Video Pro. This is a professional application for "stitching" and creating video panoramas with a viewing angle of 360x180°. It synthesises several objects taken from different angles into a single video sequence that provides a full view vertically and horizontally, is cross-platform, supports heterogeneous equipment, does not impose restrictions on the number of sources of video streams and the size of finished video files.

For the correct work they need Autopano Video Pro requires Autopano Pro or Autopano Giga. Compared to Autopano Video edition, the professional version of Autopano Video Pro adds a GPU rendering function compatible with all graphics cards on the market. If the video stream has sound, Autopano Video Pro syncs it automatically, but users can manually sync frames if they don't have sound.

The best method to detect the control points between images for automatic stitching is the SIFT algorithm, which is used to solve the visual tracking problem and has five main steps (see Fig. 2).

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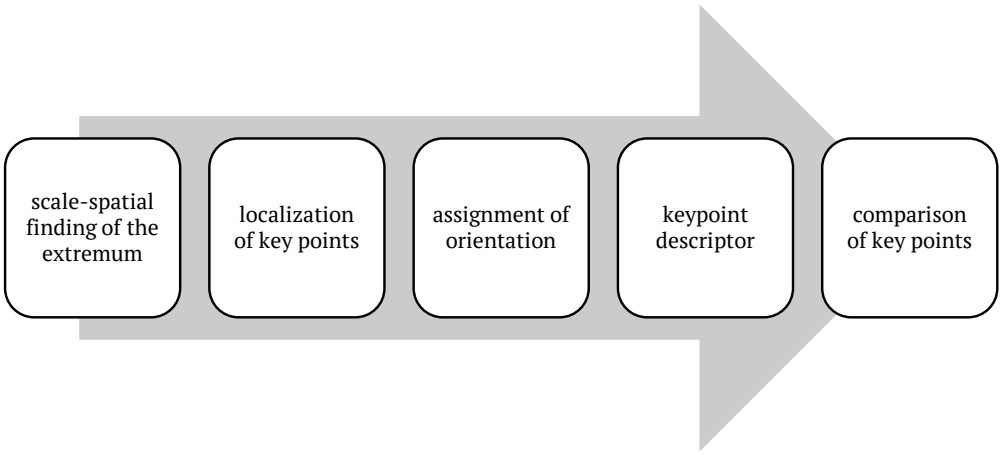

Figure 2. The main steps of the SIFT algorithm (Kong, 2021)

In addition, ready-made stitching patterns can be used instead of running the detection procedure for each new project. When saving a project file in Autopano Pro/Giga, the preview image is automatically updated in Autopano Video Pro. All Autopano Pro/Giga editing options are included, including 9 projections, color correction and horizontal alignment. The preview mode in almost real time helps to monitor what result will be obtained after the full video rendering. Autopano Video Pro does not limit the size of video files, as it all depends on the capabilities of the operating system. Video encoding is based on Main Concept technologies. Autopano Video Pro allows you to output audio tracks, but 3D audio has not been supported yet. The use of GPU-rendering is compatible with all graphics cards: it allows you to achieve a 10-fold increase in speed compared to CPU-rendering, and is also the last stage of creating video panoramas. The finished material is uploaded for display using special software that places metadata on the video, thereby changing the format to spherical video.

The specified technique is interactive and in it, much attention is paid to working with the finished product is a post-processing. In general, it is possible to highlight the hardware part, which includes the selection of equipment and filming. Here it is necessary to take into account where exactly the filming takes place and it is also necessary to configure the equipment, which includes turning off all automatic functions (white balance, exposure, etc.). It is followed by the software part, which includes processing and stitching stages (using Kolor Autopano Video Pro and the SIFT algorithm), as well as post-processing using Adobe After Effects and the Mettle Skybox plugin, which allows you to easily navigate and work with 360˚ material (titles, logos, graphics, special effects, tracking, etc.), and the interactive implementation stage. The latter includes methods of adding interactivity to the panorama: the use of crane and JavaScript scripts, as well as visual programming, which consists in the automated development of programs using a special dialog shell and is based on object-oriented programming and is its logical continuation. It is the interactivity that acts as the prism through which the viewer, even in stories that are already bored, can open new faces and "try on" a virtual-perceptual experience, being under the strong influence of attractive visuality.

Film attraction is mainly related to visual effects (for example, 3D "wow-effects" and interpellation in comics). Based on the disjunctive synthesis of the causal series "singular/universal", "presence/absence", "visual/narrative", "rational/emotional" and "fictional/real", attraction in cinema and comics emerges from the liminal (limiting the space for fiction) and foreign (goes beyond the screen limitations), which cancels conventional obstacles for artistic fiction. An example of an attraction is a locomotive that heads into the audience hall from the movie screen, considered as an attractive and sensational element of the artistic program. It appeals to visual perception, and the resonance provided by the primacy of the visual over the narrative is important for its success (Christie, 2015).

Today, a film attraction is the result of a constructive interaction of visual perceptions and creative interpretations of the plot, which are built by the recipient himself, in particular, using the 360˚ video format.

Instead of passive observation in classical cinematography, interest in personal management, maximum loading, and increasing the duration of contact as a result of interactive experiments is increasingly emerging. The development of immersive cinematography and VR immersions (Pillai & Verma, 2019) influences the formation of the aesthetics of the VR film, and viewing films and installations made in the VR-360˚ format allows the spectator to experience a memorable super-emotional experience related to with visual and sensitive factors that contain a high potential for the development of similar creative projects. VR-360˚ videos help to create a unique interactive audio-visual environment, which has such a high level of psychological authenticity that it creates obstacles to return to reality. And not without reason, because it is about the complete immersion of the recipient in VR in the context of the synthesis of aesthetic components, which is realized in the psyche of the viewer as a co-creator of VR-360˚ video and the recipient who communicates with the computer and network space with the help of an individual creative activity.

From the point of view of film aesthetics, 3D and VR-360˚ videos add an important parameter — they expand the space. Thanks to "3D", the viewer feels like a part of the underwater or cave worlds, the effect of presence and personal immersion is created, rather than a third-party observation of what is happening. From a technological point of view, we should especially note the carefully made "Avatar" in 2009, which set a high standard for the quality of digital stereo photography, and "Titanic 3D", released in 2012, set a high bar for conversion and technical work with large parallaxes. These large projects have become a positive example for the film industry, which it emulated, but subjective assessments of the discomfort felt when watching stereo films, in some cases, continue to differ greatly from theoretical indicators of the quality of stereo content.

The ambivalence of the attraction is that, on the one hand, it is directly perceived as the direct inclusion of the viewer in communication, causing an affective reaction and forming a new aesthetic experience, and on the other hand, it triggers rather complex processes of further association with the object of the attraction. In this way, the viewer, taking into account the above-described method of creating films with a 360˚ overview, expands the boundaries of the possible, permissible and probable, which leads to a deep emotional experience, the production of vital energy. Thus, the display of horrors, causing a shock, stimulates a sense of security, and a sports record, in addition to excitement, provides an opportunity to discharge aggression, etc. The

multifaceted and complex structure of audiovisual and technological means, which are involved in the VR-360˚ video format, open up new opportunities for cinematography and television — the ability for effective synthesis, which changes the qualitative "composition" of an artistic work and video product, creating the necessary prerequisites for completeness and truth reflection.

Conclusions

Therefore, the 360˚-VR video format should be defined as a certain specific form that requires a special grammar and technological support. Although the VR cinematograph does not yet provide total immersion in the internal and external sensations of the recipient, the possibility of free movement within the artistic space, nevertheless, the VR format takes the application of the principle of immersion to a qualitatively new level. Today, video with a 360˚ view is actively used in many audiovisual areas (music videos, virtual tours, travel, independent immersion in digital painting, installations). Due to its visual immersiveness, VR content produced within the framework of the methodology outlined by us for creating full-dome photo panoramas and films with a 360˚ view is able to have the most vivid impact on the receptors of the viewer immersed in the virtual world unfolding around him. The psychological fusion of the subject and the surrounding space is a unique feature of VR-immersions, which is not characteristic of classical visual arts.

If a traditional genre film appeals to the mass consciousness of the audience in the hall as a "collective interlocutor", then the perception of VR content with a 360˚ view is aimed exclusively at the individual's personal, personal sense of well-being. 360˚ videos use the orientation of the viewer's head to display whatever part of the world they are facing. The flat image is deformed into a sphere, allowing you to look in any direction while being locked in a fixed point in space. The attractive visuality generation due to the technology and VR-360° format during the analogous immersions changes the viewers' self-feelings, and perception of surrounding space, events, characters, and brings closer VR-aesthetics with an ambivalent, art house directions and is one of the key technological trends in film making of the 21st century.

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Генерування атракційної візуальності у форматі 360˚-VR відео як технологічний тренд сучасного кіновиробництва

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Мета статті — дослідити специфіку процесу генерування атракційної візуальності у форматі 360˚-VR відео. *Результати дослідження*. Під час комплексного розгляду проблеми із застосуванням загальнонаукових і спеціальних методів (проблемно-логічного, теоретико-інформаційного, мистецтвознавчого, порівняльного аналізу, методу аналогії, абстракції, індукції та дедукції) доведено, що одним із ключових напрямів у сучасному кіновиробництві є створення «мультинаративного простору» (А. Г. Іньярріту) VR-занурення глядача як реципієнта та співтворця цього простору, що супроводжується трансформацією фільму у візуально привабливу діяльність з урахуванням принципів кіноестетики XX ст. *Наукова новизна*. Доведено, що формат відео 360˚-VR є унікальною аудіовізуальною формою, яка потребує спеціальної граматичної та техніко-технологічної бази (професійна або аматорська 360˚ камера, ефективні інструменти для створення та редагування 360˚ відеоконтенту для різних платформ, Kolor Autopano Video Pro, алгоритм SIFT та ін.), та виводить використання принципу занурення на якісно новий рівень. *Висновки*. Атракційна візуальність стає можливою як новий естетичний і перцептивно-віртуальний досвід, що формується під впливом VR-атракцій і сучасних спецефектів у цифровому кінематографі. Це призводить до синтезу кінематографа і театру, коли відбувається перехід від монтажної послідовності до віртуально-театральної гри, де завдяки 360°-VR дія постійно розвивається, а глядач перебуває в центрі подій. Отже, технологічний розвиток і безмежні творчі можливості в процесі проєктування різних VR-атракцій сприяють нескінченному зануренню глядача в простір цифрового фільму, що, з одного боку, трансформує кіномову на сучасній сцені, створюючи перспективи подальшого розвитку галузі, а з іншого — зумовлює низку психологічних проблем

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і ризиків, пов'язаних із реакцією глядачів на різний рівень щільності атрактивного поля модифікованої кіномови.

Ключові слова: атракційна візуальність; кіновиробництво; імерсивний кінематограф; кіноестетика; віртуальна реальність; 360˚-VR