

## **REVIEW**

by Prof. Martin Venets Dimitrov, PhD

Department of "Audiovisual Production", School of Screen Arts

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scientific specialty Cinema studies, film art, and television (film and television cameramanship)

**Subject:** Submitted dissertation for the acquisition of Doctoral educational and scientific degree  
in

Professional Field 8.4. Theater and Film Arts.

scientific specialty Film studies, film art, and television (film and television broadcasting)

Author of the dissertation: **Despot Sebishki**

Form of doctoral studies: Independent preparation

Title of the dissertation work: "INFLUENCE OF 3D TECHNOLOGY ON THE PERCEPTION  
OF AUDIOVISUAL FORMS BY THE VIEWER"

Research supervisor: Assoc. Prof. Elisaveta Boeva, PhD

### **Brief biographical data of the PhD student:**

Despot Sebishki is a director, editor of feature films, and creator of author projects for Macedonian television channels. He fully renders 3D animation on television demand through VR and AR technology. There is no information about an acquired academic specialty with a completed master's degree.

The submitted materials include the following documents:

- Dissertation work;
- Abstract of the dissertation work
- Folder with files with 3D renderings of virtual studios, as well as links to content with video previews of virtual studios

The following documents were not provided:

- Published articles by the PhD student on the topic of his dissertation
- Declaration of originality and credibility of the work

## **I. General overview of the dissertation work:**

The dissertation on the topic developed by the doctoral candidate Despot Sebishki, "Influence of 3D technology on the perception of audiovisual forms by the viewer," is a curious, modern topic with potential practical implications.

The dissertation consists of 148 pages, including an introduction, five chapters, a conclusion, and contributions. It also includes a bibliography with 29 titles in Latin, 9 electronic links to sources, and a glossary of terms used. The page numbering in the content does not correspond to the actual references in the dissertation; it is in fact the content numbering from the abstract. The reason for choosing the topic, considering its relevance for viewers, producers, and creators of 3D products, is properly justified in the introduction and adequately explained.

The primary focus of this dissertation is to examine the impact of 3D technology, including virtual and holographic elements, on the psycho-physiological perception of viewers.

The abstract is constructed and written as per the required standards, accurately conveying the quality of the doctoral work.

## **II. Assessment of the form and content of the dissertation:**

The scientific material is organized into five meaningful chapters, each with separate sections and topics.

In the first chapter, the dissertation student Despot Sebishki provides historical background on the development of 3D technology and its initial concepts. This chapter explores the early attempts at creating three-dimensional visual experiences and breaks away from traditional two-dimensional imagery. The intention is not merely to replace real objects in the frame with 3D graphic content but to offer a qualitatively novel experience, involving the viewer in a pseudo-stereoscopic environment. The presentation of facts, ranging from the early use of red-green anaglyph glasses to the development of IMAX 3D and the integration of 3D capabilities in-home TV sets, lacks structure and organization, appearing chaotic and disorganized. The reference to holographic imagery is intriguing, but currently, it remains limited to use as a visual effect in feature films and experimental laboratory settings, with no practical application in mainstream cinema. It is unclear what motivates filmmakers to explore and advance the concept of volumetric cinema.

The second chapter promises to delve into the theory of 3D film and holographic film. Regrettably, it begins with a somewhat contradictory statement regarding the effect of 3D technology on the viewer's perception of distance. *"The 3D movie loses the effect of the notion of distance between the camera and the action and the claustrophobic awareness of space limitations, where most activities take place. In fact, the main effect of stereoscopy is to create a sense of distance from the action"* (underline is mine - M.D.). The idea of 3D movies is exactly the opposite - to immerse the viewer in the story's space, allowing them to merge with the characters and eliminate the boundary between the viewer and the screen. Just a few sentences earlier, Sebishki presented a different perspective: *"The 3D film promotes a greater sense of depth in the scene, which means that for the viewer, it offers an entirely different spatial experience and configuration."*

The author's position remains unclear, which raises doubts about a substantial portion of the work. Another example: *"Using stereoscopic depth, the heads of the characters gain a rounded quality that enhances their lifelike presence."* Interestingly, the work never discusses the concept of a voluminous image.

In the sections on 3D theoretical analysis, 3D TV, and 2D to 3D conversion, the content is significantly improved, providing clarity and specificity. It accurately and truthfully presents various aspects. Here, a distinction is made between computer-generated imagery (CGI), which relies on 3D virtual object models, and stereoscopic (S3D) films. The examples of creating a 3D frame are well-founded, and guidance on 2D to 3D conversion is appropriately provided. The historical information about virtual reality (VR) is both intriguing and educational, complete with hardware device examples that allow the carrier to experience computer-generated environments. While discussing VR perception, some negative aspects related to physiology are introduced. Overall, the information is technically oriented.

The third chapter, which starts from page 96, focuses on *how 3D film affects the viewer*. Unfortunately, the chapter mainly presents dry information about different types of volumetric imaging technology. It does not sufficiently address the essence of the dissertation, which should examine how viewers perceive these technologies. The sources used in this section are largely derived from existing literature of other researchers. Perhaps this was done due to the resources available to these individuals or institutes. However, my expectations for a scientific dissertation include the capability for independent scientific research and being informed about one's personal scientific findings. The conclusions drawn by other researchers primarily emphasize the negative aspects of viewing a film in a form of volumetric imagery. It would be intriguing to ascertain what exactly those are and whether any positive aspects exist in these illusionary 3D movies. Furthermore, from a psychological standpoint, apart from the heightened brain activity induced by voluminous films, there is a lack of information regarding their impact.

Chapter four explores the future of 3D film and briefly discusses holograms. However, the claim that holographic images are the future of 3D perception lacks substantiation. The chapter also focuses on technical details and references to films that use holographic imagery without providing a

Chapter five, titled *"How the Director Sees the 3D Film,"* offers a structured perspective on working in virtual environments. It discusses how VR creates a more personal experience for viewers because they can choose a different viewing point to explore the world of the film in a personalized manner, thereby achieving a deeper emotional connection with the story. The chapter also highlights the opinions of Hollywood directors and actors on the pros and cons of 3D movies.

### **III. Scientific and applied science contributions of the dissertation work:**

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The dissertation contributes to the field by attempting a historical overview of existing 3D technologies and by exploring why and how 3D technology, especially virtual film, can have a negative impact on the viewer.

#### **IV. Impact of the dissertation work on the external environment:**

There is no information about Despot Sebishki's publications related to the dissertation work.

#### **V. Critical notes, questions, and recommendations on the dissertation work:**

The following criticism of the work of the dissertee can be made:

The mention of increased viewer and filmmaker support for 3D movies in 2023 seems out of touch, as the peak of interest in this technology occurred around 2010, followed by a considerable decline in interest. The dissertation speculates about the increased interest in 3D movies without providing concrete evidence, citing the box office success of James Cameron's *Avatar 2* without establishing a direct link between this success and new technologies. This statement is speculative because *Avatar 2* is a sequel of a successful project with a huge advertising strategy, and nowhere is it mentioned that its success is due to new technologies. Likewise, a counterexample can be given with the failure of *The Nutcracker: The Untold Story* (The Nutcracker in 3D) in 2010 by Andrey Konchalovsky. So, the success or failure of a film cannot be solely attributed to the way of technical implementation.

Regarding 3D technology in the dissertation, at the very beginning, there is talk of stereoscopic vision, 3D images obtained through some optical reception technology for the viewer, and even holograms. Subsequently, the theme transitions into 3D rendering, the creation of artificial space through computer graphics, augmented reality, and virtual reality. At the end, we have a rather attractive 3D+ (4D, 5D,...9D). Actually, what volumetric space are we talking about? Is it about the way the viewer sees the film in the cinema, at home, or on the computer screen, which replaces reality? It is merely technical and engineering solutions for creating 3D visions that are listed. In a volume of 20 pages of the work, the principle of the holographic image is considered from a physical and technical point of view. However, there is no word on how the viewer reacts to this type of image. While background information is relevant, it does not correspond to the basis of the topic. What is truly valuable is understanding how the viewer assimilates and accepts (or does not) vision in more than two dimensions.

Actually, any movie, TV show, play, or any screen and stage work is created primarily for the viewer. It is essential to focus on what is viewed in terms of meaning and information, rather than just how the signal is recorded, encoded, broadcast, and reaches the audience.

Article 6 of the Development of Academic Staff in the Republic of Bulgaria Act reads:

(3) (New - SG No. 101 of 2010) The dissertation under para. 2 (For the acquisition of the educational and scientific degree "doctor") must contain scientific or applied scientific results that represent an original contribution to science. The dissertation should demonstrate that the candidate has in-depth theoretical knowledge in the relevant major and the abilities for independent research.

Unfortunately, it is not clear from the present work what the scientific results that represent a real contribution are. Despot Sebishki claims that he "*makes a comprehensive overview of the most significant influences of 3D technology on the perception of an audiovisual form by the viewer.*" An overview, as a collection of historical information, is acceptable. However, it is not really clear HOW the viewer perceives these 3D models, movies, and visualizations. Nowhere is there a research model to explain how the dissertation conducted its research. For example, "*I am researching holograms in cinema in depth to get an idea of what kind of installation can be created to achieve the best audience reaction*" is a statement that does not clarify how this research is conducted and what in-depth research entails.

Certain film works are often mentioned, but only as an existing fact. For example, *Futureworld* from 1976 is mentioned, with footage of manual hand-drawn animation (actually also the first 3D CGI film), but all information stops there. Nowhere is there a word about *Tron* from 1982, which undoubtedly had an impact on the audience. In fact, the movie was disqualified from receiving an Oscar nomination for special effects, as they felt that the use of computer-generated effects was a "fraud." A few decades later, the same Academy, in 2010, gave an Oscar to *Avatar* for its visual effects. What has changed in the perception of people's visual narrative, and why is CGI no longer considered a hoax? I'm just mentioning a small part as examples, but throughout the scientific work, facts are mentioned without reasoning regarding how certain technical solutions in the field of 3D have or have not, changed the film industry and how and what it has led to in terms of innovation from the observer's point of view. A significant portion of the work presents facts without sufficient reasoning or analysis of how specific technical solutions in the 3D field have impacted the film industry and viewers' experiences. The central question of how viewers perceive 3D technology remains unanswered.

The dissertation would benefit from a thorough revision, including the modernization of information and the elimination of outdated and irrelevant content. At present, the content leans towards being an archival historical overview containing outdated and uninteresting information. For example: "*Until today, this technology (auto-stereoscopic screens (MD)) is applied only on smaller devices like mobile phones and the upcoming 3DS Nintendo's portable system*" (underlining mine- MD). In fact, this game console has been around since 2011 until 2020... The new, real, and modern films from 2019, such as *The Mandalorian*, which introduces the use of 360-degree LED screens to build a virtual environment, are not mentioned. Additionally, the reasons for the shift to this type of technology are not discussed. The information is not modernized, something inadmissible in an up-to-date dissertation.

The terminology used should be clarified, and vague or illogical statements should be addressed. For example, a "frame" and a "frame rate" or instead of "VR helmet" or "virtual reality glasses," the word "headset" is used for a device that is not just for listening to music.

The scientific supervisor's role should include assisting the doctoral student in making necessary corrections and ensuring the work's coherence.

Moreover, it is essential to highlight the need for more substantial input from the personal experiences of the dissertation student regarding the researched topic. As an active practitioner in

the field, as Despot Sebishki himself claims to be, sharing insights into the practical challenges encountered during the dissertation research would have been invaluable. This could have included detailing the specific problems that arose during the research process, the decisions made to address these issues, and the rationale behind those decisions. Additionally, gaining insights into how Sebishki envisions the potential impact of 3D technology on audiences and how he plans to contribute to the field would have enriched the scientific work.

This kind of personal experience and practical perspective could have given the dissertation a more professional and well-rounded appearance, strengthening the argumentation and providing a more comprehensive understanding of the topic at hand. Such insights would have been particularly relevant given the interdisciplinary nature of the subject, which involves aspects of film studies, technology, and psychology.

**VI. Summary conclusion and opinion:** The dissertation, titled "Influence of 3D technology on the perception of audiovisual forms by the viewer," in its current form, represents an outdated research attempt. The information presented relies heavily on other researchers' findings, contains speculative judgments, and lacks substantial factual data. Notably, the dissertation fails to incorporate targeted interviews with producers, viewers, 3D artists, or psychologists, all of which would have significantly enriched the study.

One of the fundamental issues is that the dissertation does not effectively address its central question: "How do 3D film, Virtual Reality, and 3D hologram affect the viewer, and why 3D?" While the work mentions these technologies, it fails to provide a comprehensive understanding of how viewers perceive and engage with them, which should have been the core focus of the study.

To sum up, the evaluation of the dissertation work is negative. It does not convincingly demonstrate that Despot Sebishki possesses the necessary research and analytical skills to be awarded the educational and scientific degree of "Doctor."

Therefore, my vote is NO.

21.8.2023

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