



**Sociology and  
Communication Science.  
Corvinus Doctoral**

## **THESIS SUMMARY**

**Ádám Kuttner**  
**EXAMINATION OF AR/VR**  
**TECHNOLOGIES IN EXHIBITION**  
**COMMUNICATION**

Article-based doctoral dissertation

**Supervisor:**  
**Andrea Kárpáti, DSc**  
Professor

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**Doctoral School of Sociology and Communication  
Science**

**THESIS SUMMARY**

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**AR/VR TECHNOLÓGIÁK VIZSGÁLATA A  
KIÁLLÍTÁSI KOMMUNIKÁCIÓBAN**

**Supervisor:**

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## **I. Research background and justification of the topic**

My research at the intersection of communication, education, and museology focuses on the relationship between various augmented and virtual reality-based technologies and exhibition communication, which I link to the contemporary paradigm shift in contemporary museums through society's conceptions of space.

The archetypes of museums, as cultural and conservation institutions, were designed to preserve and exhibit rare, valuable, tangible objects, thus contributing to the preservation of the universal knowledge of mankind (Kárpáti, 2013). Over the centuries, the functions and tasks of museums have changed, mostly for the benefit of the wider 'public', and one could say that institutions have become democratised. But despite this, they have long retained their essential role as repositories of information and representations of power. In the wake of the social changes of the 20th century, the role of these functions weakened (Koltai, 2011), and in the 21st century, it has become common for lay people to question the values that gave traditional museum institutions their being. This may be because the institutions' basic idea of preserving the memories of the former "golden age" for a declining future (Ébli, 2009)

no longer corresponds to the new social imagination, as Péter György (2005) calls the processes by which society wants to regulate the present and the future. In addition to the various social changes, the proliferation of digital tools and various social media applications that have emerged in masses in recent decades, which, like many other aspects of life, have changed the way museum visitors consume and experience content and the way they share it, may also play a role (Kuttner et al., 2021). In my opinion, these trends and observations are also relevant from the point of view of communication theory, and contemporary museums have to adapt their communication to the changed conditions. In response to these phenomena, my research fits into a discourse that has been underway for some years now on the new social role and possible new functions of the museum, according to which contemporary institutions should aim in their communication to enable visitors to understand the conditions of the present and to find ways to change the future, which requires museums to develop or adopt positions on contemporary issues (Bishop, 2018).

## **II. Methodology**

The first phase of my doctoral research was based on observations at different exhibition sites and the evaluation of the virtual technologies presented there. In total, 32 contemporary multimedia exhibition applications were described and evaluated in 17 different cultural institutions in 12 countries.

In December 2020, I conducted a systematic literature review using the EBSCO Discovery Service. Based on the lessons learned from the literature review, a qualitative analysis method was mainly chosen in experiments where the primary purpose of writing the study was to describe the creation of a museum development, i.e., to report primarily on the outcome of a technological development (Barbieri et al., 2018; Clini et al., 2018; Comes, 2016; Duer et al., 2020). Quantitative analysis has been used mainly in experiments to show whether virtual technology has a positive impact on different aspects of the visitor experience (Falconer et al., 2020; Trunfio et al., 2020; He et al, 2018), in some cases complemented by narrative analysis or field observation (Aguayo et al., 2020; Hammady et al., 2020). As I could not find any research method in the literature that specifically focused on communication research, I

decided to develop my own research tool based on the visual framing methodology.

In the third phase of the research, I demonstrated the applicability of the assessment system I developed by using school-based studies. Data collection, which constituted the study corpus, was carried out at three independent dates and exhibitions involving 142 participants.

### **III. The findings of the dissertation**

I summarize the results of my research on the use of AR/VR technologies in exhibition communication and the conclusions that can be drawn from them along the hypotheses.

First, I wanted to find answers to the question of what communication theories can be used to describe the communication between the postmodern visitor and the contemporary museum. I hypothesized that, from the perspective of the majority of visitors, museum communication is best described by a ritual or cultural approach to communication among existing theories. Lazzeretti (2016) identified independent but partially overlapping discourses in museum communication: scientific-artistic, media, and promotional discourse. This division can be complemented by an educational-cultural discourse, including online or face-to-face communication between museums and visitors. Based on the studies of Hooper-Greenhill (2000), Lazzeretti (2016), and Nielsen (2017) in museum settings, I investigated the applicability of communication theory approaches to different discourses in practice. Based on the literature review and the practical experiences I have gained in the last eight years in more than 460 school sessions for a total of 22 museums and



collections in Hungary and abroad, for more than 460 participants in 22 museums and collections in Hungary and in the surrounding countries, I conclude that my initial hypothesis has been proven correct. That is, the communication of the contemporary museum

I hypothesized that virtual reality technologies could be used to artificially extend the physics space in institutions, which could have the potential to influence the nature and structure of knowledge generated in museums. The studies carried out during the doctoral research have clearly demonstrated that virtual and augmented reality technologies can be a suitable tool for this purpose and, as a new kind of communication system, can radically transform the exhibition space and the fundamental dimensions of the traditional way of visiting museums (Castells, 2004). As a consequence, they can have an impact on the construction of the social reality of the individual through the way society views and thinks about space.

My initial hypothesis is that contemporary multimedia technology can be used in all discourses of exhibition communication and can facilitate the communication processes and institutional communication goals. This assumption was confirmed by an analysis of 32 contemporary multimedia exhibition applications evaluated in a field study in 17 cultural

institutions in 12 different countries, and supported by practical examples using the corpus of the study. During my fieldwork, I identified six areas in which the use of AR/VR technologies can be particularly effective in the practice of exhibition communication: guided tours, presenting complex scientific contexts, arts education, increasing engagement, sensitising people to social issues and generating positive emotions about science.

In the development of exhibition communication applications using AR/VR technology, I started from the hypothesis that they should be evaluated primarily on the basis of the message of the exhibition or the artwork. It is necessary to examine whether the use of the application has succeeded in promoting personal development by embedding experiences and providing interpretation strategies, depending on the nature of the exhibition's message, which may ultimately manifest in improved social integration, and whether it has succeeded in creating and transmitting shared cultural beliefs. My hypothesis is that an iterative, test-and-measure development process centred on the exhibition message and visitors should be used in the design and development. I have been able to prove this assumption through the testing of self-developed applications at three different exhibition venues. Of the six areas of application

identified in the second phase of the research, I conducted studies in the field of guided tours, involving a total of 141 people. Unfortunately, a comprehensive study of the other areas was beyond the time frame of the doctoral research, but based on the existing results, I assume that the research method can be used for a qualitative comparison and analysis of the communication tools of the exhibition using the technology, or even for a qualitative analysis of the whole exhibition from a communication perspective. I take this finding as a limitation of the research and also as a hypothesis for possible future research.

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- Kuttner, Á. (2022): AR és VR technológia oktatási felhasználási lehetőségei a kiállítási kommunikációban. *Iskolakultúra*, 32(2), 83–94.
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