Rereading the Narrative Paradox for Virtual Reality Theatre

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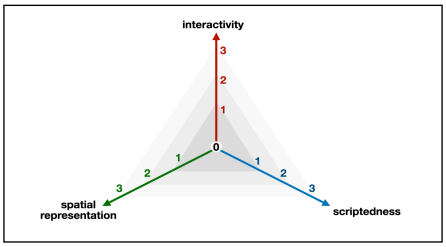

Figure 1 Left: The conceptual model of VR theatre forms. Right: Study 2 VR Theatre (Sedate Group = S1, S2; Active Group = A1, A2)

Abstract

We examined several key issues around audience autonomy in VR theatre. Informed by a literature review and a qualitative user study (grounded theory), we developed a conceptual model that enables a quantifiable evaluation of audience experience in VR theatre. A second user study inspired by the 'narrative paradox', investigates the relationship between spatial exploration and narrative comprehension in two VR performances. Our results show that although navigation distracted the participants from following the full story, they were more engaged, attached and had a better overall experience as a result of their freedom to move and interact.

Keywords: Virtual Reality, Theatre, Immersion, Narrative

Index Terms: H.5.1 [Information Interfaces and Presentation]: Multimedia Information Systems—Artificial, Augmented, and Virtual Realities; J.4 [Computer Applications]: Social and Behavioural Sciences—Psychology

1. Introduction

In recent years, VR experiences within the theatre and performance context have flourished (e.g., The National Theatre: All Kinds of Limbo, Draw Me Close; Tenderclaws: The Tempest), making it imperative to understand how existing technical and design features can support impactful experiences. In this work, we are interested in the audiences' experience of VR theatre. Specifically, how VR's spatial and interactive characteristics impact the audiences' experience of meaning-making in a virtual theatre show. Many key concepts in VR theatre are borrowed from related fields of game studies, theatre studies, and telecommunication. Depending on the field, immersion can either mean an objective set of technical properties [1], an affective experience [2] or a scale measuring involvement [3]. Presence is loosely defined as 'the sense of being there' (in an environment different from one's current physical surroundings) [4]. In gaming the two terms (i.e. immersion and presence) are often used interchangeably due to their experiential similarities [5][6]. Furthermore, subtypes of immersion in games and VR studies are also different [5][10]. Future studies need to acknowledge the potential mixed used of terminology surrounding VR theatre and establish which definitions best suit the purpose.

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Due to the interdisciplinary nature of VR theatre, the behaviour of its audience may sit between that of a conventional theatre audience, an immersive theatre participant and a video gamer. In those experiences, the 'narrative paradox', the conflict between the creator's control over the narrative and the audience's autonomy, often occurs [8]. To understand whether VR's interactive nature works against its storytelling capability, we used Biocca's 3 pole model to navigate a hypothetical VR theatre audience's spatial presence [9]. We extrapolate that if one has to actively navigate and interact within a virtual space, it is likely they will be worse able to engage with the script of the performance, due to a competition of attention resources.

2. Developing a Conceptual Model of VR Theatre Forms

Our first aim is to identify what audiences were most concerned with when theatrical performances move from a physical space to a virtual one. We interviewed 12 participants (including creatives and theatregoers) about their habits around theatergoing, the audience-performer dynamics in physical/virtual shows, and their experience of the technology and narrative during performances. Over half the participants noted differences in the ways audiences engage with physical and virtual, particularly in relation to the mental preparation for the performance. Compared to virtual ones, physical theatre audiences put in more effort to learn about the performance beforehand. They also expressed a clear desire to understand the performance and reflect on their experience. This need to intellectually prepare or 'see the bigger picture' was less often mentioned in relation to VR performances. For VR shows, audiences have a strong demand for connection and interaction in the performance. They also express more awareness of their individual presence and other audience members during a show. From our interview findings and the literature review, we created a conceptual model of theatre forms based on three axes (interactability, scriptedness and spatial representation) sitting on a 4-Likert scale, where 0 is the lowest score and 3 the highest (Fig. 1(Left)). **Interactivity** (**I**) refers to the degree of impactful interactions the audience/participant has, how much their choices and actions may influence the narrative of the performance. **Scriptedness** (**S**) refers to the level of structure within the narrative and with how much autonomy the audience can influence the story's narrative. **Spatial representation** (**SR**) points to the 3D environment which the audience is immersed in, specifically how much the audience/participant can navigate freely and interact with the environment. The purpose of the conceptual model is to provide a quantifiable method to discuss and compare different theatre productions, since they are usually described subjectively, making them difficult to measure or compare at scale.

3.User study: The Narrative Paradox

We invited participants to experience one of the two specially-designed short theatre performances in *AltspaceVR*. Participants joined the performance either on a 6DoF VR headset or a desktop computer. In the **Sedate Group** participants were instructed to find a fixed position upon arrival and stay in place for the duration of the performance. The performers performed in front of the participants in a designated area, resembling a conventional theatre format. In the **Active Group** participants were encouraged to explore the performance space freely and engage with the performers. The performers delivered their lines in different spaces within the virtual environment, which required the participants to move along to hear the entire conversation. Our first purpose is to confirm the effectiveness of the model developed in Section 2. We predict that (**H1**) *the Sedated Group will rate the show as I-1, S-3, SR-1, and the Active Group I-2, S-2, SR-2* (0: low, 3: high). Our second purpose is to investigate how spatial exploration and interaction affects the narrative reflection process. Here, we hypothesize that *the audience in the active group will show a lower score on narrative engagement* (**H2**), measured by three questions (obtaining less information from the script, making more effort to keep up with the story and having more difficulty understanding the story). We also use the AIM (Audience Impact Metric, 7-Likert Scale with 0 indicating the lowest) to measure audience impact, capturing epistemic immersion, emotional intensity, engagement, cultural value, and quality of experience (See https://www.i2mediaresearch.com/i2-metrics).

3.1. Participants and Procedure

Eleven participants (7 females, age range 22-61) attended our study. All had prior experience with VR and reported regularly actively attending theatre or music shows. Participants were asked to join one performance at a given time via their own device. Five participants joined the Active group performance and six joined the Sedate group. The two performers in both groups were the same. After the performance, a questionnaire was sent to all the participants, followed by semi-structured interviews.

3.2. Results

We represent the average of each group, and the p value using t test for between group comparison. When asked to rate the performance based on our framework (Fig. 1(Left)), the participants' scores for both shows closely match our predicted score (Mean score: Sedated: I-1, S-2.4, SR-1.4; Active: I-2.3, S-1.7, SR-3), with the Active group receiving a significantly high score on I and SR, but not S (I: **p = 0.006**; S: p= 0.122; SR: **p = 0.02**), validating the preliminary reliability of the framework (**H1**). When it comes to **H2**, contrary to our prediction, no difference was observed in their narrative engagement (Sedate: 4.5±1.0; Active: 4.4±0.61; p = 0.77). For AIM, the Active group scored higher in each category (Fig. 2), with significant result on Engagement (**p=0.03**) and borderline difference on Emotional intensity (p=0.07), but not on Epistemic Immersion (p=0.21), Cultural Value (p=0.41), or Quality of Experience (p=0.17). In the interview, participants from both groups expressed that their storyworld immersion was the highest when the actors interacted with them, and this immersion level dropped if the interaction ceases. Two out of 6 in the Active group explicitly expressed that having to navigate and follow the actors distracted them from the story. Almost all in the Active group spoke about their role as an audience in the performance, whereas this is almost not mentioned in the Sedate group.

4. Conclusion

In this work we reviewed and clarified the terminology surrounding VR theatre. The analysis of Biocca's 3 pole model and the

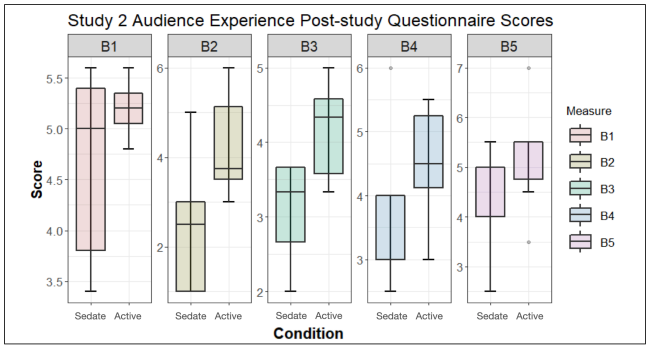

Figure 2 Box plot of the Study 2 AIM results

'narrative paradox' identifies the issue of competing sources of attentional focus in VR theatre. We captured some key concerns from the perspective of audiences and creators, providing a reference point to further research. We presented a conceptual model of VR theatre forms that offers a quantitative measurement of virtual theatrical experiences. We also presented a user study investigating the relationship between spatial exploration and narrative comprehension. The findings suggest that while spatial agency distracts the audience from extracting more spoken information from the story, it enhances other aspects of the performance such as emotional engagement and generates a higher sense of general engagement and belonging in the experience.

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