The Avatar-Interpreter: Simultaneous Interpreting using VR Headsets

El avatar-intérprete: interpretación simultánea con gafas de RV

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ABSTRACT: While technological innovation has significantly changed the interpreters' work, few professionals seem to have interpreted in the Metaverse or in Virtual Reality (VR). Limited data are available on simultaneous interpreting (SI) in virtual environments. This paper investigates the feasibility of simultaneously interpreting using VR headsets through a study conducted on 20 students enrolled in the Master's degree programme in Conference Interpreting at IULM University. The study focuses on turn-taking and the need for handover during simultaneous interpreting in VR, leading to the assumption that SI using VR headsets is feasible and constitutes a stimulating and immersive experience for interpreters. Data from this study suggest that SI shifts using VR headsets in virtual reality and in the Metaverse by means of avatars can last up to 20 minutes, followed by longer breaks to allow interpreters to rest from the stimuli and cognitive load perceived as considerably high in virtual environments.

KEYWORDS: Human-machine interaction; Virtual Reality (VR); Metaverse; simultaneous interpreting (SI); turn-taking; cognitive load.

RESUMEN: Aunque la innovación tecnológica ha transformado el ámbito de la interpretación, son pocos los profesionales que han trabajado en el Metaverso o en la Realidad Virtual (RV). La escasez de datos sobre la interpretación simultánea (IS) en entornos virtuales ha motivado esta investigación, que examina la viabilidad de la IS utilizando gafas de RV. El estudio se llevó a cabo con 20 estudiantes matriculados en el Máster de Interpretación de Conferencias de la Universidad IULM. Los hallazgos sugieren que la IS utilizando gafas de RV es factible y

constituye una experiencia inmersiva y estimulante para los intérpretes. Los datos obtenidos indican que los turnos durante la IS con gafas de RV en la realidad virtual y en el Metaverso, a través de avatares, pueden extenderse hasta 20 minutos, seguidos de pausas prolongadas para permitir a los intérpretes recuperarse de la intensa estimulación y la elevada carga cognitiva asociada a los entornos virtuales.

PALABRAS CLAVE: Interacción persona-máquina; Realidad Virtual (RV); Metaverso; interpretación simultánea (IS); toma de turnos; carga cognitiva.

1. INTRODUCTION

In recent years, there has been a surge of interest in Metaverse events and the use of VR for training. The term «Metaverse» captured the attention of numerous scholars worldwide when Mark Zuckerberg rebranded Facebook to Meta in 2021 to create a multifunctional Metaverse. Since then, companies like Bulgari[1] and Lamborghini[2] have organised campaigns and events in the Metaverse, the Fashion Week has landed on Decentraland[3], and big tech companies have announced that innovative devices are expected to become more common in our everyday life. These new extended realities, which are increasingly available in the market, enable individuals to immerse themselves in digital experiences, including access to platforms commonly referred to as «metaverses» (Romano et al. 2023, 1). While there is no single, universally accepted definition of the term «metaverse», it may be defined as a «3D virtual shared world where all activities can be carried out with the help of augmented and virtual reality services» (Dwivedi et al. 2022, 2). On the other hand, Virtual Reality (VR) can be defined as «the use of computer technology to create the effect of an interactive three-dimensional world in which the objects have a sense of spatial presence» (Bryson 2013, 4). To the best of the author's knowledge, few interpreters seem to have orally translated in VR environments, and limited data and details are available on this topic. Furthermore, no interpreter seems to have interpreted in the Metaverse equipped with VR headsets. Previously, some attempts at simultaneous interpreting in the Metaverse had been made using Simultaneous Interpreting Delivery Platforms (SIDPs). On these occasions, the interpreters only took the audio from the Metaverse without being physically present at the event with an avatar, just as in Remote Simultaneous Interpreting (RSI). Two examples are the partnership signed by the virtual events platform Mootup with the SIDP

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[1] The Bulgari metaverse is an immersive experience of the brand's vision for the future. It welcomes visitors through a metaphysical Rome flooded with light. https://www.bulgari.com/it-it/the-maison/about-bvlgari/bulgari-and-innovation.html.

[2] Lamborghini has committed to digital innovation by building a new space on Roblox. On this platform, users can explore «a virtual replica of the Automobili Lamborghini Museum, design» and customise their own digital car. https://www.lamborghini.com/en-en/news/lamborghini-lanzador-lab-on-roblox.

[3] From March 28 to 31, 2023, Metaverse Fashion Week hosted runway shows, after-parties and immersive experiences, https://mvfw.org/. For the Fall 2024, Metaverse Fashion Week is organised from November 20 through 24 by the Metaverse Fashion Council, collaborating with Silicon Valley tech giants, https://metaversefashioncouncil.org/magazine/tpost/k4juz950h1-metaverse-fashion-week-will-take-pl.

Interprefy,[4] and the Superdesign Show[5] organised on Superstudio Cyberspace, where the remote simultaneous interpreting platform Converso[6] provided the remote interpreting service during the Milano Design Week 2024.

To take part in virtual events, interpreters have to dive into immersive 3D spaces by connecting to Metaverse virtual events platforms like Roblox, Decentraland, Second Life or MootUp. VR headsets, augmented or extended reality glasses, and haptic gloves or controllers may be needed. Furthermore, the use of avatars might reduce anxiety in the act of interpreting since interpreters seem to feel more confident when they are represented by a virtual image compared to real life (Yoo and Chun 2021) and remote interpreting. When Mark Zuckerberg affirmed that Meta was in the process of building a translation tool that could translate every language in the world, this initiative underlined the significance of communication problems in the Metaverse community (Tasdan Dogan 2023, 3), proving the need for human interpreting in events that take place in the Metaverse. Furthermore, according to some scholars, VR and the Metaverse may offer a pleasant working environment for interpreters, which is not easily found in real events. In this virtual universe, there is no need for an SI booth and technical equipment because interpreting can be performed with a VR headset (Yoo and Chun 2021), leading to a reduction in the organisational costs of events. Moreover, this environment may be more pleasant than RSI platforms, which represent a source of technostress for interpreters and where shifts are shorter (Moser Mercer 2005; Baselli 2024). Against this backdrop, the study aims to assess the feasibility of simultaneous interpreting with virtual reality headsets, the dynamics of turn-taking and the need for shorter shifts compared to in-person events and remote simultaneous interpreting.

2. LITERATURE REVIEW: INTERPRETING IN VIRTUAL REALITY & THE METAVERSE

Interest in translation, interpreting and training in VR environments and in the Metaverse increased after the COVID-19 pandemic, but a pioneering role in investigating virtual reality interpreter training is given by the IVY Project (Braun et al. 2013a; 2013b; 2014a; 2014b), funded with support from the European Commission and coordinated by Sabine Braun (University of Surrey). Its aim was to take advantage of the opportunities offered by a 3D virtual learning environment for interpreting students. This project started in 2013 and targeted both students of interpreting and potential clients of interpreting services. It was followed by the EVIVA project, in order to evaluate virtual learning environments (Braun et al. 2020). In a Korean study conducted by Yoo and Chun in 2021 (Yoo and Chun 2021), a new model of language education is suggested by leveraging avatar-based learning and game-based word learning. Also, UNINT University

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[4] For more details on these events, see https://knowledge.interprefy.com/how-does-interprefy-work-with-mootup and https://mootup.com/.
[5] For more details on the Super Design Show organised by Superstudio Cyberspace https://www.anothereality.io/it/case-studies/superstudio-cyberspace/ with Remote Simultaneous Interpreting by Converso, see https://www.superdesignshow.com/superdesign-show-2024/.
[6] https://converso.cloud/.

investigated interpreter training in virtual environments and the integration of VR in Italian schools. The study (Romano et al. 2023) involved high school teachers to assess the acceptability of VR for educational purposes, including its potential for situated language learning. With regard to interpreting and translation, a study conducted by Tasdan Dogan in 2023 aims to highlight opportunities and challenges of the Metaverse for the profession and training of translators and interpreters. «In this personalized environment, the translation product of each translator is protected through a blockchain system, and non-fungible tokens (NFT) are assigned to the translations saved in the personalized metaverse» (Tasdan Dogan 2023, 8). Furthermore, allowing people to design their avatars can eliminate discrimination between people and reduce anxiety about interpreting (Tasdan Dogan 2023, 10). From an educational perspective, at universities where necessary laboratories for simultaneous interpreting with booths and headphones are not available, interpreting students could practise without investing in building an actual laboratory for simultaneous interpreting (Tasdan Dogan 2023, 11). In the same year, Wang, Tang, and Wang delved into the potential application of the Metaverse in the teaching of speaking, listening, and interpreting skills. In particular, they state that the Metaverse can restore real interpretation scenarios and improve students' abilities by integrating the real environment and the accent of the speaker, also preserving students' interpreting data by means of the blockchain. Over 2024, the International Center for Research on Collaborative Translation (IULM) has delved into translation and interpreting in Virtual Reality and in the Metaverse using VR headsets Meta Oculus Quest 3. The research on the feasibility of simultaneous interpreting in virtual reality (VR) and the Metaverse has investigated the possibility of projecting the interpreter's avatar into the Metaverse without using external SIDPs, such as Interprefy and Converso. The forthcoming results of these studies will shed light on this new form of the avatar-interpreter participation in the Metaverse events and human-machine interaction that has created the new «avaterpreter».

3.   SIMULTANEOUS INTERPRETING IN VR: A CASE STUDY

3.1. *Methodology*

This case study was conducted within the «Interpreting in Virtual Reality» project of the International Center for Research on Collaborative Translation at IULM University in Milan. Ten first-year and ten second-year students of the MA in Conference Interpreting at IULM with Italian as their A-language and English as their B-language were asked to simultaneously interpret a full immersive speech on YouTube VR from English into Italian. The speech was 20 minutes long, but the students were instructed to take off their VR headsets if they could no longer continue simultaneously interpreting the speech due to excessive fatigue or cognitive overload. The student's performance was neither recorded nor analysed, as the study's aim was to assess the tolerability of the VR headset and the duration of simultaneous interpreting shifts with VR headsets without experiencing extreme fatigue. The ten students enrolled in the first year of the MA had

attended 10 hours of interpreter training in VR in the previous months, and prior to the English-Italian simultaneous interpreting experiment, they had taken a 20-minute simultaneous interpreting session in VR followed by a 10-minute break. In contrast, the second-year MA students had never had any experience in virtual reality and had not taken part in any simultaneous interpreting sessions prior to the experiment.

3.2. *VR Headsets*

The VR headset used in this study was Meta Oculus Quest 3[7] connected to compatible earphones for simultaneous interpreting. This 128 GB VR headset is equipped with colour cameras and a depth projector for improved depth and 2,064 x 2,208-pixel resolution. It weighs 515 grams, and its battery life is up to 2.2 hours on average, depending on various factors such as device settings, usage, and the age of the battery. A signal notifies bystanders that the external cameras are in use. After the sessions, the students were asked to complete a questionnaire on their experience in VR, which included closed- and open-ended questions.

4. FINDINGS

4.1. *Findings from the Second-Year Students' Experiment*

All ten second-year students who had never taken part in VR sessions before managed to finish interpreting the full immersive video on YouTube VR without asking for a handover and were amazed by such an experience. In the questionnaire, participants stated that the feelings experienced during the experiment were curiosity, astonishment and total immersion as if they were in a real environment. Furthermore, they stated that the immersive experience made simultaneous interpreting easier and less tiring. Some (2) initially felt slightly nauseous but then got used to it. They also felt their eyes a little glazed over after a while and felt dizzy while the camera was moving. A participant indicated in the questionnaire that it was a very immersive exercise, a situation that seemed to be so real, as if they were «really there». However, students were also faced with several stimuli and felt «a bit of weight» on their faces due to the VR headset. Another participant stated that she had a lot of adrenaline because it was a completely new and very interesting experience. In addition, she had the feeling that she could translate better than usual, always finishing the sentences and never making full pauses. After the 20-minute session, the feelings experienced by the participants were tiredness, a slight feeling of nausea, clouded mind, headache, and disbelief, in addition to a sense of disorientation caused by the total immersion in another reality, which, however, only lasted a few minutes. The participants also felt satisfied with the new experience, and one of them was not more fatigued than after a traditional simultaneous interpreting task. Another student reported that she/he did not face any problems at all and experienced enthusiasm during the exercise.

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[7] https://www.meta.com/it/en/quest/quest-3/

4.2. *Findings from the First-Year Students' Experiment*

None of the ten first-year students managed to finish interpreting the full immersive video on YouTube VR. On average, they interpreted 12 minutes before taking off the VR headsets. In the questionnaire, participants indicated that, during the experiment, the feelings experienced were nausea, seasickness, disorientation but also headache and mental fatigue. One participant stated that she felt fully immersed in the video and could no longer perceive the external reality, which made it difficult to concentrate on the interpreting task. For this reason, after only 5 minutes from the beginning of the interpreting session, she had to fight against a slight but constant headache in the area between her eyes and a feeling of discomfort just keeping her eyes open. After the session, the first-year students perceived headache, fatigue, nausea, sore neck and tiredness. In the questionnaire, one student indicated that she felt some relief in returning to reality and that once the Oculus Meta Quest 3 was removed, she felt physically free without the weight of the VR headset. Another student felt her/his eyes were slightly sore and felt more fatigued than after a whole day spent in front of a computer screen.

4.3. *Overall Results*

The study's findings show a higher tolerance for VR headsets among the students who had not been exposed to simultaneous interpreting in VR prior to the experiment. The students who had taken a previous session of VR simultaneous interpreting followed by a break did not manage to interpret the 20-minute video in full. Overall, the most commonly experienced feelings in the two groups were total immersion (55 %), followed by sickness (25 %) and fatigue (15 %). One student (purple slice of the pie graph) specified that she performed the exercise wearing prescription glasses because, without glasses, her vision was blurred.
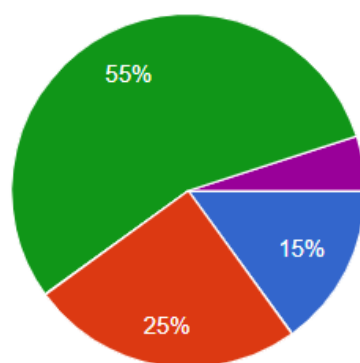
Figure 1. Most commonly experienced feelings by the students during the experiment. Graph created by the author

These data lead to the assumption that simultaneous interpreting using VR headsets is feasible and constitutes a stimulating and highly immersive experience for interpreters due to the total feeling of immersion perceived. Furthermore, data suggest that

simultaneous interpreting shifts in virtual reality (and in the Metaverse events by means of avatars) using VR headsets can last up to 20 minutes, but they must be followed by longer breaks to allow interpreters to rest from cybersickness and the stimuli perceived as notably high during simultaneous interpreting in these virtual environments.

5.   CONCLUSIONS

The preliminary studies conducted in the Metaverse and VR by the International Center for Research on Collaborative Translation and the results of this study suggest that simultaneous interpreting with VR headsets is feasible if performed with appropriate breaks that allow interpreters to recover from the interpreting effort in such an immersive reality. However, given the growing importance of virtual reality and the Metaverse, more research on interpreting in this extension of reality, as well as a comparison of interpreting in real space and in the space made virtual by technologies (remote simultaneous interpreting, the Metaverse and VR), may be beneficial and lead to significant findings in this field. The current measurement of stress and cognitive load in simultaneous interpreting while using VR headsets may also lead to new findings in this field.

In conclusion, given the possible development of this reality, it is crucial to further investigate the impact of VR and the Metaverse on simultaneous interpreting and the interpreter profession.

REFERENCES

Baselli, Valentina. 2024. «L'Interpretazione Simultanea da Remoto: stato attuale, sfide e prospettive». In *Transiti linguistici - Traduzioni, interpretazioni, mediazioni linguistiche*, edited by Paolo Proietti and Sylvia Fuehrlinger. Roma: Aracne.

Braun, Sabine, Elena Davitti, Sara Dicerto, Catherine Slater, and Robert Gittins. 2013a. EVIVA Project (Evaluating the Education of Interpreters and Their Clients Through Virtual Learning Activities) - Best Practice Guide, Deliverable 8.2.

Braun, Sabine, Catherine Slater, Robert Gittins, Panagiotis Ritsos, and Jonathan Roberts. 2013b. «Interpreting in Virtual Reality: designing and developing a 3D virtual world to prepare interpreters and their clients for professional practice». In *New Prospects and Perspectives for Educating Language Mediators* edited by Don Kiraly, Silvia Hansen-Schirra, and Karin Maksymski. Tübingen: Gunter Narr Verlag Editors.

Braun, Sabine, Catherine Slater, and Nicholas Botfield. 2014a. «Evaluating the pedagogical affordances of a bespoke 3D virtual learning environment for training interpreters and their clients». In *Interpreter Education in the Digital Age: Innovation, Access, and Change*, edited by Suzanne Ehrlich and Jemina Napier. Washington, D.C.: Gallaudet University Press.

Braun, Sabine, and Catherine Slater. 2014b. «Populating a 3D virtual learning environment for interpreting students with bilingual dialogues to support situated

learning in an institutional context». *The Interpreter and Translator Trainer* 8 (3): 469-85.

Braun, Sabine, Elena Davitti, and Catherine Slater. 2020. «It's like being in bubbles: Affordances and challenges of virtual learning environments for collaborative learning in interpreter education». *The Interpreter and Translator Trainer* 14 (3): 1-18.

Bryson, Steve. 2013. «Virtual Reality: A Definition History - A Personal Essay». *arXiv*. Accessed July 20, 2024. https://arxiv.org/abs/1312.4322.

Chan, Venus. 2022. «Using a virtual reality mobile application for interpreting learning: Listening to the students' voice». *Interactive Learning Environments* 32 (6): 2438–51.

Chan, Venus. 2023a. «Investigating the impact of a virtual reality mobile application on learners' interpreting competence». *Journal of Computer Assisted Learning*, 1-17.

Chan, Venus. 2023b. «Research on Computer-Assisted Interpreter Training: A Review of Studies from 2013 to 2023». *Computer Science* (4): 648.

Dwivedi, Yogesh, Laurie Hughes, and Abdullah Baabdullah. 2022. «Metaverse beyond the hype: Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy». *International Journal of Information Management: The Journal for Information Professionals* 66: 1025-42.

Moser Mercer, Barbara. 2005 «Remote Interpreting: Issues of Multi-Sensory Integration in a Multilingual Task». *Meta* 50 (2): 727-38.

Rodriguez, Salvador. October 28, 2021. «Facebook changes company name to Meta». *CNBC*. Accessed July 20, 2024. https://www.cnbc.com/2021/10/28/facebook-changes-company-name-to-meta.html.

Romano, Marco, Alessandro Frolli, Alessandro Aloisio, Claudio Russello, Angelo Rega, Francesco Cerciello, and Fabio Bisogni. 2023. «Exploring the Potential of Immersive Virtual Reality in Italian Schools: A Practical Workshop with High School Teachers». *Multimodal Technol. Interact* 7: 111.

Tasdan Dogan, Tuğçe Elif 2023. «Translating and interpreting in the Metaverse: Potential opportunities and challenges». *RumeliDE Journal of Language and Literature Studies* (35): 1589-604.

Yoo, Gab-Sang, and Keung Chun. 2021. «A Study on The Development of A Game-type Language Education Service Platform Based on Metaverse». *Journal of Digital Contents Society* 22 (9): 1377-86.

Wang, Qingnian, Lan Tang, and Yunpei Wang. 2023. «Potential Applications of the Metaverse in Higher English Education». *Open Journal of Social Sciences* 11: 450-59.