5. Language rights in the metaverse: the implications of translingual metaverse communication

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1. INTRODUCTION

The term *metaverse* has attracted particular attention with the rebranding of Facebook in 2020, before the social media network launched a transformative programme in 2021 to offer a metaverse-based work platform involving social, learning, collaboration, and gaming experiences.[1] However, the term has been used at least since the 1990s.[2] Initially employed in literature, it became subsequently applied in other contexts, such as education, to refer to how learners use technology to socialise and engage with each other.[3] Over the years, however, the concepts of technology and particularly the metaverse have continued to evolve dramatically. But what is the metaverse, and how does it relate to language rights? Visions of the metaverse or virtual worlds, where people interact on a three-dimensional online platform through virtual reality (VR), augmented reality (AR) or even extended reality (XR), often posit that the interaction is mediated by translation technology that allows people to communicate seamlessly in real time across language barriers.[4] In these visions, such technology would remove language barriers and guarantee the realisation of rights regardless of the user's language. However, while translation tech-

[1] Facebook, 'Introducing Horizon Workrooms: Remote Collaboration Reimagined' (2021) https://about.fb.com/news/2021/08/introducing-horizon-workrooms-remote-collaboration-reimagined/ accessed 17 February 2026.

[2] Davy Tsz Kit Ng, 'What Is the Metaverse? Definitions, Technologies and the Community of Inquiry' (2022) 38 *Australasian Journal of Educational Technology* 190.

[3] Ibid.

[4] OECD, Global Scenarios 2035 (2021) 14.

nology has the potential to support inclusion by enabling communication and increasing linguistic accessibility, it can also exacerbate exclusion due to the unequal availability and quality of systems for different languages.

In this chapter, we examine how human rights intersect with language rights and reflect on the potential role of technology in supporting linguistic accessibility and the realisation of rights in the metaverse. We first define the concept of metaverse as used in this chapter and examine questions of law, ethics and responsibility in the metaverse. We then outline how language technology is used for (automatic) translation and interpreting, discussing both the current state and more speculative views of translingual communication in the metaverse. After a brief overview of relevant language rights, we then examine the potential implications of the metaverse on these rights. Finally, we conclude with some recommendations for the development of the metaverse in light of language rights.

2. DEFINING THE CONCEPT OF THE METAVERSE

Huynh-The et al. describe the sound technical structure underlying the metaverse, in that an entirely 3D immersive experience produced by merging advanced technologies is offered to users so that they can interact and collaborate in the virtual world.[5] In this immersive experience, virtuality and reality are fused[6] to offer users a distinctive, albeit integrated, user-generated experience.[7] Over time, the gap between the virtual space and the real space is expected to be gradually bridged;[8] especially as a result of AR, and the two will become increasingly integrated, and hence indistinguishable. AR glasses are an example of how this integration will be unveiled, to offer a range of opportunities in the personal, industrial, public and societal spheres.[9]

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[5] Thien Huynh-The et al., 'Artificial Intelligence for the Metaverse: A Survey' (2023) 117 *Engineering Applications of Artificial Intelligence* 105581, 3.

[6] Feifei Shi and others, 'A New Technology Perspective of the Metaverse: Its Essence, Framework and Challenges' (2023) *Digital Communications and Networks* S2352864823000524.

[7] Yun Kyung Oh, Jisu Yi and Jongdae Kim, 'What Enhances or Worsens the User-Generated Metaverse Experience? An Application of BERTopic to Roblox User EWOM' (2024) 34 *Internet Research* 1800.

[8] Shasha Yu and Fiona Carroll, 'Insights into the Next Generation of Policing: Understanding the Impact of Technology on the Police Force in the Digital Age' in Reza Montasari (ed), *Artificial Intelligence and National Security* (Springer 2022).

[9] Commission, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the

While the concept has been repurposed across disciplines, it is worth examining from a linguistics perspective. Although the term *metaverse* has been defined by Dionisio et al.[10] based on the prefix *meta* (in the sense of 'beyond') and the suffix *verse* (to mean 'universe'),[11] we contend that building on the morphology of the word, as well as on its lexicographic, dictionary definition, the lemma *verse* stands for *universe*, whereas the prefix *meta*[12] is meant to invoke change and going beyond the ordinary limits of the universe. In this sense, the concept is here repurposed to mean a new form of seeing and experiencing the universe that moves within and beyond the virtual world(s), and where the physical and the virtual are seamlessly integrated.

Technological developments in recent decades, notably in language technology, have paved the way for new virtual worlds, which have initially attempted to mimic the *real* physical world in the *virtual* environment.[13] However, as predicted by Perlin,[14] technology has evolved to become integrated with our senses, which enables users to speak not only through technology, but more importantly to technology.[15] This subtle change has had a major impact on the metaverse. Users no longer simply replicate physical world actions and interactions in the virtual world, but more importantly, become immersed in the metaverse and replicate in the physical world the actions and interactions of the virtual world(s). Consequently, the two worlds have become blended. The metaverse is hence no longer shaped by virtual realities, but instead shapes our physical world by augmenting its virtues and its vices, and by changing it significantly. This is already visible in how generative AI is changing language, action and interaction.

Committee of the Regions, "An EU initiative on Web 4.0 and virtual worlds: a head start in the next technological transition"' COM (2023) 442 final.

[10] John David N Dionisio, William G Burns III and Richard Gilbert, '3D Virtual Worlds and the Metaverse: Current Status and Future Possibilities' (2013) 45 *ACM Computing Surveys* 1.

[11] Ng (n 2).

[12] 'meta, prefix' (*Cambridge Dictionary* 2024) https://dictionary.cambridge.org/dictionary/english/meta accessed 6 February 2026.

[13] Thomas J Holt and Adam M Bossler, *Cybercrime in Progress: Theory and Prevention of Technology-Enabled Offenses* (Routledge 2016).

[14] Ken Perlin, 'Future Reality: How Emerging Technologies Will Change Language Itself' (2016) 36 *IEEE Computer Graphics and Applications* 84.

[15] Dave Sayers and others, 'The Dawn of the Human-Machine Era: A Forecast of New and Emerging Language Technologies' (*Report for EU COST Action CA19102 'Language In The Human-Machine Era'* 2021) https://jyx.jyu.fi/handle/123456789/75737 accessed 6 February 2026.

Consequently, for the purposes of this chapter, we build upon Ng's framework[16] to define the metaverse as a new form of emerging virtual world, where social interaction, boosted by advanced computing and powerful hardware platforms, builds upon the immersive context provided by the most recent advances in (language) technology. The computing power currently available allows language to be processed in a way that realistically simulates human interaction. More importantly, it also provides users with decentralisation: in the metaverse, users no longer depend on a centralised authority to establish what they can or cannot do. This leads to the ultimate aim of the metaverse: socialisation. In the metaverse, users have the power to fully socialise with others; not only to engage in online discussions, but also to collaborate with other users, produce and create entertaining content, experience new scenarios and solve problems in real-life settings.[17] They can also build their own identity (even multiple identities), including their true identity (that they are not allowed to assume in the real, physical world), their alternate identity (that they are incapable of assuming in the offline world), or even fake identities (which they want to – and can – assume in the metaverse). As they are given the opportunity to create their own virtual spaces, users can express and actualise themselves in unprecedented ways.[18] In the metaverse, they can be what they are, but also what they would like to be and, more importantly, socially interact in previously unthinkable ways. This includes repurposing language rights, whatever its advantages and disadvantages may be, especially in translation scenarios.

3. LAW, ETHICS AND RESPONSIBILITY IN THE METAVERSE

A much-desired feature of metaverse-related technologies is increasing the development of humanisation skills across different fields by encouraging sociability, affection and emotional understanding and sympathy among users in technology-mediated communication. However, so far, this potential has not been fully realised, despite all attempts made,[19] largely because technology-mediated communication acts as a barrier to said humanisation. Conversely, examples of the disadvantages of the metaverse abound, including trespassing on user rights and freedoms, deceiving and ignoring citizens'

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16 Ng (n 2).

17 Ibid.

18 Oh, Yi and Kim (n 7).

19 Maria Gonzalez-Moreno and others, 'Improving Humanization through Metaverse-Related Technologies: A Systematic Review' (2023) 12 *Electronics* 1727.

choices, or failing to grant accessibility and affordability to all, instead of only those who have sufficient financial, technical and technological resources. The seamlessly interconnected metaverse has a noticeable impact on how people interact, how they live and work, and create and share content. The metaverse thus increasingly mirrors *real* physical life in its virtues and vices.[20]

From a social perspective, the possibilities offered by the metaverse are endless, thanks to the new forms of interaction and collaboration among citizens and the new immersive cultural experiences provided. The simulation scenarios offered by the metaverse make it possible to simulate emergency scenarios and consequently provide better health services; in the education sector, they support more engaging forms of education and training based on more experiential learning processes; and in the public services sector, new forms of engaging with people emerge which enable more personalised administrative services (including providing remote assistance in remote and rural areas). On a larger scale, the metaverse makes it possible to improve life in communities; for example, via the preservation or reconstruction of cultural heritage, in as much as this contributes to enhancing democratic participation, since citizens have new more engaging opportunities to have a voice in public affairs.[21] Unsurprisingly, therefore, these virtual worlds are situated at the intersection of law, ethics, and responsibility.

In the legal arena, digital worlds have long faced unlawful activities. Starting by mimicking real-life criminal activities in virtual spaces,[22] cybercriminals have meanwhile devised new offences that not only replicate real crime in virtual worlds but also augment it. Nevertheless, developments in the metaverse also bring significant challenges to fundamental human rights and, in the EU, to shared values such as user safety, confidence, empowerment, and respect for people's rights. In that sense, users need to be granted the right to privacy protection, protection against cyber-violence, hate speech and exclusion, as well as all forms of disinformation.

The emerging metaverse is also likely to result in new ethical challenges, related in particular to the misuse of personal data to improve communication in the metaverse. While, from a legal perspective, personal data are handled by the General Data Protection Regulation (GDPR), legal conformity does not necessarily equate with ethical compliance. One example is that companies operating in the EU are required to observe the provisions of the GDPR, but often deceivingly obtain holders' consent to secure their data, analytics and information. The problem, in this case, is not whether the data holder has

[20] Adrien Basdevant, Camille François and Rémi Ronfard, *Mission Exploratoire Sur Les Métavers* (Gouvernement de France 2022).

[21] Commission (n 9).

[22] Holt and Bossler (n 13).

granted access to their data, but rather whether the access is based on genuinely informed consent.

The metaverse consequently raises the issues of responsibility and liability, not only due to the risk that lower EU social standards might be imposed on users of virtual worlds,[23] but also due to issues related to instruction, assessment, planning and preserving languages.[24] Despite these challenges, the interoperability potential offered by the metaverse enables users to benefit from freedom of choice, while championing sustainability, inclusion and accessibility – all of which underlie the technological developments in the metaverse.[25]

In the EU, a robust legislative framework already exists that applies to the virtual worlds and to the development of the metaverse, including the Digital Services Act, the Digital Markets Act, the Data Governance Act, the AI Act (which aims to address the emerging risks arising from AI, while promoting trustworthy AI), the aforementioned GDPR, among others (e.g., the EU consumer law). Altogether, these aim to mitigate the risks underlying the development of the metaverse, although it is very likely that some risks will remain high. One example of these risks is access to the metaverse by people with disabilities or linguistic limitations, which will doubtless remain a challenge, despite the European Accessibility Act and the Web Accessibility Directive.

4. TRANSLINGUAL COMMUNICATION IN THE METAVERSE

While virtual worlds have no physical barriers or frontiers preventing people from communicating and socialising, the physical world's language barriers may persist, as they originate from the multilingualism and multiculturalism characterising international environments, including the metaverse. Automated translation has been offered as a solution to this problem. In 2000, Lehman-Wilzig envisioned synchronous automated translation systems that would make instantaneous communication possible between people speaking different languages.[26] Since then, advances first in neural machine translation technology (NMT), which forms the basis of popular tools like Google Translate, and more recently in generative AI based on large language models,

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23 Commission (n 9).

24 Patriann Smith, 'Black Immigrants in the United States: Transraciolinguistic Justice for Imagined Futures in a Global Metaverse' (2022) 42 *Annual Review of Applied Linguistics* 109.

25 Commission (n 9).

26 Sam Lehman-Wilzig, 'The Tower of Babel vs the Power of Babble: Future Political, Economic and Cultural Consequences of Synchronous, Automated Translation Systems' (2000) 2 *New Media & Society* 467.

such as ChatGPT, have brought this idea closer.[27] Translation technology is already widely used and integrated into websites, social media and chatbots. In the metaverse, users come from different backgrounds and speak different languages, and the natural way for them to communicate is to use their native languages.[28] While some studies promote establishing a common language in the metaverse as a solution,[29] this would jeopardise diversity and the inclusion of languages, cultures, identities and people(s). Hence, 'translation is essential, in collaboration with artificial intelligence, for the development and success of interaction and communication in the metaverse'[30] and '[t]he demand for automatic translation in virtual worlds is as strong as in the real world'[31] – perhaps even stronger.

The Virtual Babel project has already shown how a non-verbal-context-aware automated translation system can help users of the popular virtual world Second Life to understand messages in foreign languages, allowing them to communicate and socialise.[32] A recent systematic review of studies involving automated translation of communication and interaction in the metaverse revealed that while NMT approaches provide 'better linguistic solutions when dealing with complex issues in translation, such as context, ambiguity [or] interpretation', the number of languages covered is insufficient, and particularly when a minority or under-resourced language is involved in the translation pair, numerous syntactic and semantic errors and inaccuracies emerge. This inadequate level of precision in the translations leads to a notable lack of quality in the conversations. As González Vallejo argues, 'the metaverse must offer an inclusive experience and [help to preserve] languages in a virtual world, to address racism and overcome racialization'.[33]

Real-time communication and socialising between metaverse users across different languages requires developing an AI-based universal translation system, an 'instantaneous speech-to-speech translation across all languages

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[27] See e.g., Sai Cheong Siu, 'Revolutionising Translation with AI: Unravelling Neural Machine Translation and Generative Pre-Trained Large Language Models' in Yuhong Peng, Huihui Huang and Defeng Li (eds), *New Advances in Translation Technology* (Springer Nature Singapore 2024).

[28] Ying Zhang and Nguyen Bach, 'Virtual Babel: Towards Context-Aware Machine Translation in Virtual Worlds', *Proceedings of Machine Translation Summit XII: Posters* (2009).

[29] Rubén González Vallejo, 'Metaverse and Translation Studies: Analysis of Machine Translation' (2023) 2 *Metaverse Basic and Applied Research* 38.

[30] Ibid., 1.

[31] Zhang and Bach (n 28), 2.

[32] Ibid., 2.

[33] González Vallejo (n 29), 2.

[...]; the ability to communicate with anyone in any language', as Meta's Mark Zuckerberg has defined the goal of the company's No Language Left Behind programme.[34] However, today's AI-based speech translation systems are not equipped to serve the thousands of languages and their diverse varieties utilised around the world mainly due to the shortage of suitable language resources for model training,[35] and challenges of variation in spoken languages and their dialects. Currently, the common approach is still to convert speech to text for translating and then back to speech, which delays responses excessively.[36] Accordingly, the aim (and the challenge) is to develop models that translate speech-to-speech directly, without intermediate processes.[37] In addition to the translation process being quicker, such technology could enable translation for languages and language varieties without standardised writing systems.[38]

Furthermore, sensory accessibility[39] also needs to be considered. Some attention has indeed been paid to making the metaverse inclusive for blind and visually impaired people.[40] However, while some work has addressed

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[34] Andre Syafrony and Vica Ananta Kusuma, 'Universal Language Translator: Is This the Future or the Doom of Language Learning?' (2022) 2 *Jurnal Humaya: Jurnal Hukum, Humaniora, Masyarakat, dan Budaya* 93.

[35] Cf. Pratik Joshi and others, 'The State and Fate of Linguistic Diversity and Inclusion in the NLP World', *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics* (Association for Computational Linguistics 2020).

[36] Hirofumi Inaguma and others, 'UnitY: Two-Pass Direct Speech-to-Speech Translation with Discrete Units', *Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)* (Association for Computational Linguistics 2023) 15655.

[37] Peng-Jen Chen and others, 'Speech-to-Speech Translation for a Real-World Unwritten Language', *Findings of the Association for Computational Linguistics: ACL 2023* (Association for Computational Linguistics 2023); Inaguma and others (n 36); Jeongsoo Choi and others, 'AV2AV: Direct Audio-Visual Speech to Audio-Visual Speech Translation with Unified Audio-Visual Speech Representation', *2024 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)* (IEEE 2024).

[38] Syafrony and Kusuma (n 34).

[39] Cf. Maija Hirvonen and Tuija Kinnunen, 'Accessibility and Linguistic Rights' in Kaisa Koskinen and Nike K Pokorn (eds), *The Routledge Handbook of Translation and Ethics* (Routledge 2021).

[40] Callum Parker and others, 'Towards an Inclusive and Accessible Metaverse', *Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems* (ACM 2023).

recognising and processing sign language within virtual systems,[41] less attention appears to have been paid to sign language generation in order to achieve full inclusion of the deaf and hard-of-hearing community in virtual systems in general. Although some sources provide recommendations or suggestions in order to make virtual systems more inclusive,[42] actual implementation of these recommendations in the metaverse appears distant since current virtual avatars offer relatively limited freedom of movement for hands and arms, and limited facial expression, which does not allow for proper sign language to be used in virtual scenarios.

Despite improvements, translation systems still face many challenges to becoming fully operational and helpful in the potentially highly multicultural and multilingual metaverse domain, where languages are spoken spontaneously, with unrestricted vocabulary and register. These challenges include the need for translation systems to address numerous cultural issues, and translation in the metaverse may require 'extensive culturalisation of content, including certain non-verbal elements such as icons and layouts, to make the presentation more suitable for the target audience'.[43] Nowadays, such culturalisation may also involve inclusion criteria, such as readability for people with special needs or plain language in legal texts for a general audience, or unbiasing when dealing with gender-biased language. These aspects need to be addressed seamlessly for cross-lingual, cross-cultural communication to succeed in the metaverse.

Studies focusing on visual culture in the metaverse show that virtual worlds are created and shaped by their users; sometimes replicating reality and real objects and designing new, imagined realities and objects, which may further

[41] Natalie Hollain, Martha Larson and Floris Roelofsen, 'Analyzing the Potential of Linguistic Features for Sign Spotting: A Look at Approximative Features', *Proceedings of the Second International Workshop on Automatic Translation for Signed and Spoken Languages* (EAMT 2023); Mario Perez-Enriquez, Jose Luis Lopez-Cuadrado and Israel Gonzalez-Carrasco, 'Platform for Accessible Online Learning', *Proceedings of the XXIV International Conference on Human Computer Interaction* (ACM 2024).

[42] Dhruv Jain and others, 'Towards Sound Accessibility in Virtual Reality', *Proceedings of the 2021 International Conference on Multimodal Interaction* (ACM 2021); Irene Mazza and others, 'Poster: An Exploratory Analysis to Elicit Requirements for Avatar-Based Interfaces Aimed at the Deaf Community', *Proceedings of the 15th Biannual Conference of the Italian SIGCHI Chapter* (ACM 2023).

[43] Sam Berner, '"Lost in Translation": Cross-Lingual Communication, and Virtual Academic Communities', *5th Annual Conference on World Wide Web Applications* (2003), 8.

complicate and diversify the visual culture of the metaverse.[44] However, users belonging to a different culture (and hence also translation systems) may perceive or conceptualise other users' creations in a different way. Therefore, localisation (in this case, from the culturalisation perspective) is essential in the metaverse. However, the automation of localisation, including the localisation of visual elements, such as digital 3D objects, images, and non-standardised icons, remains a problem that future technology will hopefully help solve.

Culture-aware translation can be viewed as part of the wider, more complex problem of pragmatics-aware translation, which characterises (or should characterise) human translation, but not necessarily current translation technology. Pragmatics-aware translation has to handle or interpret correctly not only cultural aspects, but also other kinds of contextual information and knowledge.[45] Such information includes implicit and explicit context-aware, circumstantial references like time, date, season, and location, or multimodal references in sign language, as well as higher-level rules and protocols, like politeness and proper ways of addressing the hearer.[46] Finally, the meaning of a speech act, referring to the actual meaning or intention of the speaker, may differ from what is being said.[47] While current translation systems appear to address the circumstantial references with relative success, they still struggle with the higher-level figurative and implicit uses of language, which may hinder the intention of the speaker especially in less common language pairs. Furthermore, aspects such as politeness and implied meanings vary across groups of people or geographical language varieties, making their use and translation challenging even for native speakers and experienced human translators. While research on the metaverse is still scarce, general theoretical perspectives highlight the significance of pragmatic issues, such as the participation structure, the

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[44] Hsiao-Cheng Sandrine Han, 'Visual Culture Versus Virtual Culture: When the Visual Culture Is All Made by Virtual World Users' (2017) 1 *International Journal of Virtual and Augmented Reality* 60.

[45] Cf. George Yule, *Pragmatics* (21st ed, OUP 2014).

[46] Rachel Mapson, 'Im/Politeness and Interpreting' in Rebecca Tipton and Louisa Desilla (eds), *The Routledge Handbook of Translation and Pragmatics* (Routledge 2019); Christopher Stone, 'Pointing, Telling and Showing – Multimodal Deictic Enrichment during in-Vision News Sign Language Translation' in Tipton and Desilla, ibid.

[47] Silvia Bruti, 'Speech Acts and Translation' in Tipton and Desilla, ibid.; Carlos de Pablos-Ortega, '"I'm so Sorry to Disturb You but I Wonder If I Could Have Your Autograph" versus ¿Me Firma Un Autógrafo Por Favor? – Contrastive (in)Directness in Subtitling' in Tipton andDesilla, ibid.

medium and other circumstances of communication,[48] as well as the impact of context and contextualisation.[49] Questions of difference, context and audience are raised also by the impact of multimodality; for example, in the form of advertisements,[50] and the translation of 2D works into 3D galleries and other forms of virtual art.[51]

Regarding languages and the metaverse, perhaps the main challenge for future technology is the issue of augmentation. In visions of the metaverse, translation systems combined with facial augmentation technology,[52] full sense integration and more realistic avatars with improved freedom of movement and facial expressions can provide an actual feeling of reality. In this scenario, communication flows seamlessly, independent of the language spoken by the metaverse users, since this technology should enable the instantaneous and accurate interpreting of each speaker's speech into the hearer(s) language (where the 'No Language Left Behind' principle should apply), who would not even notice that the speaker is using a different language (variety). This scenario, which we will refer to as translingual metaverse communication, may have implications for the users' language rights, which we will examine next.

5. DEFINING LANGUAGE RIGHTS

Language rights refer to 'all rights related to the learning and use of languages', while language varieties, such as regional dialects, are sometimes included under the broader term linguistic rights.[53] Arguments for language rights are grounded, on the one hand, on an instrumental view of language as enabling access to information, communication and societal participation, and on the other hand, on views emphasising the importance of language for the identity, autonomy and dignity of an individual.[54] The instrumental view also

[48] Daria Dayter, Miriam A Locher and Thomas C Messerli, *Pragmatics in Translation: Mediality, Participation and Relational Work* (CUP 2023).

[49] Rebecca Tipton and Louisa Desilla (eds), *The Routledge Handbook of Translation and Pragmatics* (Routledge 2019).

[50] Cristina Valdés, 'Advertising Translation and Pragmatics' in Tipton and Desilla, ibid.

[51] Patrick Lichty, 'The Translation of Art in Virtual Worlds' in Mark Grimshaw-Aagaard (ed), *The Oxford Handbook of Virtuality* (OUP 2014).

[52] Sayers and others (n 15).

[53] Tove Skutnabb-Kangas, 'Linguistic Human Rights' in Carol A Chapelle (ed), *The Encyclopedia of Applied Linguistics* (Blackwell Publishing 2012), 1.

[54] Stephen May, 'Multilingualism and Language Rights' in Chapelle, ibid.; Jacqueline Mowbray, 'Translation as Marginalisation? International Law, Translation and the Status of Linguistic Minorities' in Gabriel González Núñez

connects to accessibility: linguistic aspects of access have recently been raised alongside more traditional, physical, social, sensory and cognitive aspects of accessibility.[55] Some identity perspectives appear to rely on a deterministic, essentialised linking of language and (ethnic) identity, while others argue that language is not a determining factor of identity, although still significant.[56] The key aspects are the right for members of linguistic minorities to maintain their membership in that culture and for members of the community to control ongoing linguistic and cultural change and development.[57]

International law and treaties can grant rights to languages themselves, as is the case with the European Charter for Regional or Minority Languages, which stipulates measures to promote minority languages.[58] More commonly, however, language rights are granted collectively to speakers of minority languages; for example, in the Council of Europe's Framework Convention for the Protection of National Minorities, the United Nations Declaration on the Rights of Indigenous Peoples, and the UN Convention on the Rights of Persons with Disabilities, which has important provisions for the use of signed languages.[59] These collective rights include, for example, the right to use one's own language when interacting with public services and authorities, and participating in political, cultural, social and economic life.[60] Such rights tend to be limited to officially recognised national or regional language minorities, while migrants and refugees are generally not afforded the same status.[61] Linguistic rights that apply to all individuals can also be derived from general human rights instruments, such as the United Nations' Universal Declaration of Human Rights, International Covenant on Economic, Social and Cultural Rights and International Covenant on Civil and Political Rights.[62] These include specific rights like the right to translation and interpreting at criminal proceedings (Directive 2010/64/EU of the European Parliament and of the Council of 20 October 2010) or as a way to access medical services to guarantee the right to health.[63] As a minimum, speakers of all languages should have the right to use their preferred language in the private sphere, without

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and Reine Meylaerts (eds), *Translation and Public Policy: Interdisciplinary Perspectives and Case Studies* (Routledge 2017).

55 Hirvonen and Kinnunen (n 39).

56 May (n 54).

57 Ibid.

58 Skutnabb-Kangas (n 53). See also Mowbray (n 54).

59 Skutnabb-Kangas (n 53).

60 Mowbray (n 54). See also Hirvonen and Kinnunen (n 39).

61 May (n 54).

62 Skutnabb-Kangas (n 53).

63 Mowbray (n 54).

discrimination or the interference of the state[64] – whether those speakers can go about without social discrimination or interference is a different matter. Following the interpretation of Skutnabb-Kangas,[65] our discussion aims to address implications not only for members of officially recognised linguistic minorities in a given society, but more broadly all non-dominant language groups.

6. IMPLICATIONS FOR LANGUAGE RIGHTS FROM TRANSLINGUAL METAVERSE COMMUNICATION

The instantaneous accurate translingual metaverse communication envisioned in Section 4 would make it possible for all users to communicate with others independent of the language spoken by each participant in the interaction, and provide everyone access to the same information, discussions, collaborations and entertainment in the metaverse. This would allow all individuals in multilingual communities to socialise and communicate without giving preference to any specific language.[66] The multilingualism enabled by technology could broaden access for minority language speakers to public services, healthcare and educational opportunities and empower speakers of minority languages to participate in public discussion, political and civic activity, and decision-making.[67] It can be argued that, in this manner, translingual metaverse communication would support the realisation of the right to use one's own language and the connected rights to information and to participation in political, civic, cultural, social and economic life. This idealised vision, however, comes with some caveats.

One key consideration involves the quality offered by translingual metaverse communication. While the technology has improved and will likely continue to develop, the potential for translation errors cannot be fully eliminated in translingual metaverse communication. Misunderstandings and miscommunications caused by faulty translations can have potentially severe consequences

64 Skutnabb-Kangas (n 53).

65 Ibid.

66 Cf. Lehman-Wilzig (n 26).

67 Petra Lea Láncos, 'The Role of Language Technologies in Promoting the Participation of Linguistic Minorities in Social, Political and Economic Life' (2021) 14 *Foreign Policy Review* 73; Olga Torres-Hostench, 'Europe, Multilingualism and Machine Translation' in Dorothy Kenny (ed), *Machine Translation for Everyone: Empowering Users in the Age of Artificial Intelligence* (Language Science Press 2022); Luis Cabrera, 'Babel Fish Democracy? Prospects for Addressing Democratic Language Barriers through Machine Translation and Interpretation' (2024) 68 *American Journal of Political Science* 767.

including physical injury or even death, damage to property, financial damage and legal consequences.[68] Quality issues are often also downplayed in popularised accounts of translation technology, which tend to frame it as infallible, nearly magical, and treat errors as unexpected aberrations, if they are even mentioned.[69] Reflecting such accounts, unrealistic views that '[i]n practice, artificial intelligence can perform even better than humans in many narrow sectors such as translation'[70] can lead to a situation where service providers – public or private – decide that automated translation alone is sufficient for serving speakers of some languages in the metaverse (on the grounds that technology is good enough to get a gist of the text), while speakers of dominant languages are offered human-created content and direct communication. Since translation quality is generally poorer for under-resourced languages, overreliance on translation technology places members of already disadvantaged groups at a further disadvantage.[71] In this way, translingual metaverse communication could have adverse implications for the equal treatment of languages and their speakers.

A second consideration relates to the fact that people's way of expressing themselves through language affects how others perceive them. For example, literally translating expressions from one language to another, as is sometimes done by people speaking a foreign language, can lead the hearers to make unfairly negative assumptions about the speaker's intelligence, credibility or honesty.[72] Similar issues could arise in translingual metaverse communication, if the technology cannot account for pragmatic and cultural differences. Furthermore, the language models behind translation technology have been observed to replicate and even exacerbate biases and harmful stereotypes found in the training data, and even to introduce biased or offensive features

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[68] Maarit Koponen and Mary Nurminen, 'Risk Management for Content Delivery via Raw Machine Translation' in Marion Winters, Sharon Deane-Cox and Ursula Böser (eds), *Translation, Interpreting and Technological Change: Innovations in Research, Practice and Training* (Bloomsbury 2024).

[69] Lucas Nunes Vieira, 'Machine Translation in the News: A Framing Analysis of the Written Press' (2020) 9 *Translation Spaces* 98.

[70] Steering Group of the Artificial Intelligence Programme, *Finland's Age of Artificial Intelligence* (Ministry of Economic Affairs and Employment 2017), 64.

[71] Lucas Nunes Vieira, Minako O'Hagan and Carol O'Sullivan, 'Understanding the Societal Impacts of Machine Translation: A Critical Review of the Literature on Medical and Legal Use Cases' (2020) 24 *Information Communication and Society* 1515; Laura Weidinger and others, 'Taxonomy of Risks Posed by Language Models', *2022 ACM Conference on Fairness, Accountability, and Transparency* (ACM 2022).

[72] Cf. Yael Peled, 'Language Barriers and Epistemic Injustice in Healthcare Settings' (2018) 32 *Bioethics* 360.

in translations when no corresponding feature is present in the source.[73] Particularly if the participants in the interaction have an unrealistic impression of translation technology as an infallibly accurate and neutral representation of what was said and have an insufficient understanding of the role of cultural and pragmatic aspects, they blame perceived oddities or inconsistencies on the speaker rather than the technology. In this way, technology can also have an adverse impact on people's right to self-expression.

From the identity perspective, one central idea is that members of a linguistic community have the right to control the development of their language.[74] While translingual metaverse communication can support language revitalisation and preservation efforts by allowing people to use the minority language, there is the risk that the language produced by the speakers themselves could become overpowered by automatically translated discourse, which tends to reflect the cultural, pragmatic and discourse practices of the source language.[75] Being exposed to overwhelming amounts of such language could especially lead minority languages that lack an established standard form to develop according to the features of the source language (and the technology) rather than on its own terms. The seamless integration of translingual metaverse communication could also reduce and even hide linguistic (and cultural) diversity, lowering the general awareness of minority languages (or even accents) and decreasing interest in learning them.[76]

Another perspective relates to the broader nature of the metaverse where the users can not only choose to represent their true identity (for which the ability to use their own minority language could be beneficial), but also to misrepresent themselves with a fake identity. For example, someone could pose as a member of a minority language community in order to produce harmful or deceitful content, including offensive and disrespectful comments, gain an unfair advantage, or produce disinformation.[77] Recent generative AI systems make it easy for anyone to instantly produce harmful content in any language. Even good intentions can lead to harmful impacts. For example, when nearly half of the Wikipedia articles in the Scots language were found to have been written by a user who had no knowledge of Scots, and therefore did not reflect

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73 Weidinger and others (n 71).

74 May (n 54).

75 Nora Aranberri and Uxoa Iñurrieta, 'When Minoritized Languages Encounter MT: Perceptions and Expectations of the Basque Community' (2024) 41 *Journal of Specialised Translation* 179.

76 Lehman-Wilzig (n 26).

77 Rui Sousa-Silva, '"We Attempted to Deliver Your Package": Forensic Translation in the Fight Against Cross-Border Cybercrime' (2024) 37 *International Journal for the Semiotics of Law* 1323.

the actual grammar and vocabulary of the language, the Scots-speaking community raised concerns about this misrepresentation of their language, which contributed to a perception that it is not a real language.[78]

7. RECOMMENDATIONS FOR TRANSLINGUAL METAVERSE COMMUNICATION

In this chapter, we have aimed at examining how translingual communication may be enabled by the metaverse and what implications this may have for language rights. While some implications may be positive, the potential negatives must also be considered. In general, some guiding principles are required to design a desirable and fair metaverse, all of which have a direct or indirect impact on language rights: freedom of choice, sustainability, humanisation and human-centricity, health, education, safety and security, transparency, and inclusion.[79] These values can be granted in the metaverse by improving and promoting its fair and just development. In this discussion, we aim to draft some recommendations with a view specifically to upholding language rights.

For language rights, the potential major ethical challenge of the metaverse is equality and accessibility. If technological developments are driven by demand, companies are likely to invest more in more widely spoken languages. Conversely, little investment is likely to be made in under-resourced languages, where support is most needed. As a result, the citizens who are most likely to need the metaverse are the ones who are most likely to struggle with access to it, either due to unequal availability of solutions for their languages, or due to their cost being insurmountable.[80] Furthermore, the virtual environment could form obstacles to blind or deaf people. Consequently, the metaverse may remain only accessible to the chosen few. Achieving the goal of translingual metaverse communication entails raising the quality of the output of translation systems to match real human-like quality. However, this will likely require new hybrid approaches or innovations that improve accuracy but do not increase response delays, particularly for the kind of spontaneous, unrestricted and colloquial communication that is likely to occur in a multilingual metaverse. To truly support diversity, identity and inclusion in this communication, technological development needs to take into account different languages (and language variants), sensory accessibility, as well as cost.

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78 Stephen Harrison, 'What Happens to Scots Wikipedia Now?' (*Slate* 2020) https://slate.com/technology/2020/09/scots-wikipedia-language-american-teenager.html accessed 6 February 2026.

79 Commission (n 9).

80 Sayers and others (n 15).

Considering the potentially adverse effects of automatically translated discourse on the preservation and development of languages, particularly minority or endangered languages, some have even proposed that language and translation technology solutions should not be made publicly available until they can be demonstrated to reach a sufficient level of quality.[81] However, it is not straightforward how such a level would be defined and assessed,[82] and members of linguistic minorities themselves may find less than perfect translations useful for instrumental communication purposes. In any case, the linguistic communities should have a say in how technology is developed and used for their language.

Seamless and instantaneous translingual metaverse communication may mean that users do not even realise that they are not interacting directly with the other person in a shared language but speaking to each other through technology. As discussed in Section 6, this can lead to problems such as misunderstanding, misrepresenting, or misjudging the other person. Therefore, transparency is needed: users need to be made aware if and when information or interactions are being translated automatically, similar to current practices of placing disclaimers on machine-translated websites or documents.[83] However, such disclaimers may run counter to the very goals of metaverse developers, who aim to provide seamless integrated systems where users cannot tell physical from virtual worlds. This may thus entail a broader focus on AI literacy, including raising awareness not only of how translation systems work, but also what problems may arise, and how to use this technology in a responsible manner.[84] For example, it may be necessary to recognise that automated translation as the only solution is not appropriate for certain high-risk situations, such as healthcare or legal settings.

Another concern is the question of liability. Where does responsibility lie if miscommunications caused by the technology lead to harm? One issue is the generation of translation errors and hallucinations (i.e., factually false information that is presented to users as truthful), which may lead to critical miscommunication events, particularly when interlocutors do not have control over the information. Moreover, generative AI relies on large language models that feed on vast amounts of often unacknowledged training data, which means that users run the risk of inadvertently infringing copyright and intellectual property. Until now, providers of machine translation tools and developers of

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81 Lynne Bowker, 'Translation Technology and Ethics' in Kaisa Koskinen and Nike K Pokorn (eds), *The Routledge Handbook of Translation and Ethics* (Routledge 2021).

82 Bowker, ibid.; see also Weidinger and others (n 71).

83 Cf. Koponen and Nurminen (n 68).

84 Vieira, O'Hagan and O'Sullivan (n 71).

generative AI systems have warded off any responsibility by presenting users with a disclaimer of how their systems build upon AI, and therefore are not guaranteed to be fully accurate. It is thus safe to assume that any responsibility resulting from the use of such systems lies with the user. All these issues need to be resolved before translingual metaverse communication can become sufficiently reliable for users to communicate seamlessly in the metaverse.

In the EU, one of the main aims of the Artificial Intelligence Act is to promote trustworthy AI, providing a solid first step to providing the right to safety and inclusion for metaverse users. The Act's approach to prohibiting social scoring, whereby people are classified according to their personal characteristics or behaviour, as well as the need to officially register systems designed to provide assistance in legal interpretation and the application of the law, are demonstrative of the Union's good intentions and will help shape the future of the metaverse. The AI Act is a high-stakes attempt to strike a balance between safety and fundamental rights, on the one hand, and decentralisation, on the other. Decentralisation being one of the major basic tenets of the metaverse that allows users to communicate freely and independently of a central controlling authority; a careful approach by regulatory authorities is required to ensure a balance between the potentially conflicting concepts of guaranteeing safety and granting all forms of fundamental rights, including language rights, and offering individuals the power to choose how to communicate. As users are granted decentralised control, they will have the opportunity to infringe the rights of others, in which case a technological, political or legal authority will be called upon to resolve conflicting interests. That balance can be difficult to achieve and is likely to be imperfect, and depending on how such authority is exerted in the metaverse, the consequences may be dire. Nevertheless, the democratisation potential of the metaverse is invaluable, given the freedom of choice that it will offer users and the power that they are given to enforce their own rights, while also standing up for the rights of others.

Finally, the development and use of the technology needed for translingual metaverse communication intersects with wider societal and even global issues, including environmental and economic sustainability. Environmental concerns involve the energy consumption, emissions, and use of natural resources required for building hardware and managing software.[85] Developing the language models needed for the approximately 6,000 to 7,000 languages and additional language varieties spoken in the world also entails vast economic investment, with further costs arising from keeping the solutions up to date,

[85] See e.g., Emily M Bender and others, 'On the Dangers of Stochastic Parrots: Can Language Models Be Too Big?', *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency* (ACM 2021); Weidinger and others (n 71).

integrated and interoperating in the metaverse. Instead of competing development by multiple (private and public) actors, joint efforts by companies and governments might be needed to support the fair and sustainable development of translingual metaverse communication.

8. CONCLUSION

In the previous discussions, we have envisioned a form of translingual communication enabled by instantaneous automatic translation seamlessly integrated into the metaverse. While this scenario remains speculative for now, the necessary technological building blocks already exist or are being developed. We therefore contend that future implementation of these technologies in the metaverse is foreseeable. It is likely that, in the near future, technology will move from large language models, which exacerbate and maximise the most evident language patterns of the vast majority of speakers, to medium-sized models. These will hopefully more accurately represent the diversity of languages, regardless of the statistical weight of those features, which is strikingly different from technology-shaped language use.

Although we posit translingual metaverse communication as possible, even likely, it is not our intention to argue that it is recommended or desirable in all possible communication scenarios. While such technology-enabled communication could be well suited to allow people to use their own (or preferred) language in the private sphere, in interactions between citizens and public services the risk of misunderstandings as outlined in Section 6 may be much greater. Furthermore, as noted, translingual metaverse communication could have negative impacts on language as part of culture and identity. Upholding language rights in the metaverse is therefore a multifaceted issue. With careful consideration of the implications, caveats and recommendations outlined here, translingual metaverse communication could one day allow world citizens to communicate across languages in a seamlessly integrated technological environment, yet with the imperfections that punctuate humanisation.

ACKNOWLEDGEMENTS

The work of Maarit Koponen is partially funded by the Strategic Research Council (SRC) established within the Research Council of Finland – funding agreements 352577 (University of Eastern Finland) and 352557 (DECA consortium coordinator University of Helsinki). The work of Rui Sousa-Silva is funded from national funds by the Fundação para a Ciência e a Tecnologia, I.P. (FCT), project UID/00022, CLUP – Centre for Linguistics of the University of Porto (DOI: https://doi.org/10.54499/UID/00022/2025). The work of Antonio Pareja-Lora is partially funded by the Spanish Ministry of Science

and Innovation, Knowledge Generation Programme, via the PRAGMACOR ('Corpus pragmatics and telephone interpreting: analysis of face threatening acts in telephone interpreting') project grant, with ref. n.º PID2021-127196NA-I00. The collaboration has been facilitated by the COST Action 'Language in the Human–Machine Era' LITHME (CA19102), funded by COST (European Cooperation in Science and Technology).