

# ChatGPT, Metaverses and the Future of Transdisciplinary Communication

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## **Abstract<sup>1</sup>**

*The emergence of artificial intelligence (AI) and virtual reality (VR) technologies has propelled human-machine interaction and immersive experiences to unprecedented levels. Current discussions revolve around Trans-disciplinarity, transdisciplinary communication, metaverses<sup>2</sup>, and a paradigm shift ushered in by ChatGPT, an intelligent conversational agent powered by OpenAI's GPT-3.5 architecture. Its integration into VR and metaverses for education and transdisciplinary communication is also being explored. The objective is to discuss and reframe ethical issues arising within the global discourse surrounding technology adaptation, and the innate promises, potential, and pitfalls. By examining the technical and ethical implications of such a potential integration, the paper aims to uncover the broader contexts of these advancements. A deeper understanding of the challenges ahead can be achieved by critically examining the risks and opportunities presented by ChatGPT, virtual realities, and metaverses. The paper emphasizes the need for initiative-taking measures to guide the development and deployment of these transformative technologies. Furthermore, the intersection of AI, VR, metaverses, education, transdisciplinarity, and transdisciplinary communication will be investigated and examined.*

**Keywords:** *Artificial Intelligence (AI), Virtual Reality (VR), Human-machine interaction, ChatGPT, metaverses, education, Transdisciplinary communication, Trans-Disciplinarity, paradigm shifts*

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<sup>1</sup> The author would like to thank Beta reader: Dr. Birgit Oberer from the Bundeshandelsakademie Treibach-Althofen, Austria; Peer-Editing: Cristo Leon, M.B.A., Director of Research, College of Science and Liberal Arts, Office of Research & Development, New Jersey Institute of Technology; non-anonymous review: Prof. Dr. habil. Carl Heese, Ostbayerische Technische Hochschule Regensburg, Germany for their insightful comments and detailed feedback

<sup>2</sup> Metaverses, as meant here, "simulate interactive virtual spaces and experiences that emulate and expand upon the physical world, offering users a wide range of immersive experiences, from socializing and gaming to learning and creating."

## **1. Introduction: A Paradigm Shift?**

In academic and scientific contexts, paradigms shape how researchers conduct their investigations, interpret their findings, and communicate their ideas. They provide a shared framework that guides the thinking, methodology, and inquiry within a specific discipline or community of scholars. “Research paradigms guide scientific discoveries through their assumptions and principles. Understanding paradigm-specific assumptions helps illuminate the quality of findings that support scientific studies and identify gaps in generating sound evidence.” (Park, Konge, & Artino, 2020) Paradigms typically include a set of fundamental assumptions, principles, and concepts that define the boundaries of what is considered valid and meaningful within a given field. They influence the types of questions asked, the methods employed, the interpretation of data, and the formation of theories. Paradigm shifts occur when there is a significant change in the underlying assumptions or theoretical frameworks that shape a particular discipline. These shifts often involve a fundamental reevaluation of existing theories and methodologies, leading to a transformative change in the way knowledge is constructed and understood.

In the context of transdisciplinary communication, the utilization of ChatGPT within virtual reality (VR) technologies such as metaverses introduces a new dimension to the exchange of knowledge and ideas. ChatGPT, as a language model, interacts with users, facilitating conversations that transcend traditional disciplinary boundaries. It enables individuals from diverse fields to collaborate and share insights. However, the integration of ChatGPT with metaverses and other VR technologies also raises ethical concerns about the potential for malicious actors to exploit this technology in an unregulated market, given that ChatGPT is a “black box.” The term “black box” originates from the field of engineering, particularly in reference to electronic or mechanical systems. When a system is considered a black box, it means that its

internal workings are not accessible or visible to the user or observer. The user can input commands or data into the system and receive output or results, but the specific processes or algorithms that take place inside the black box are unknown or hidden.

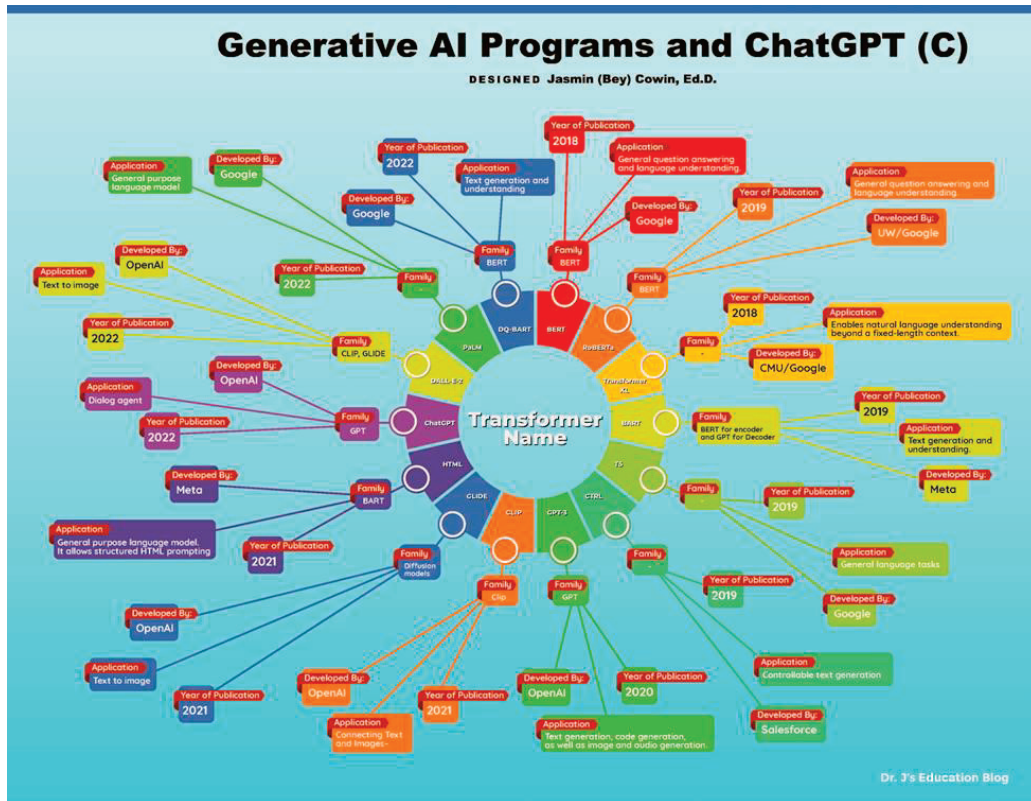
The history of Chat GPT and AI traces back to the 1950s, when the field of artificial intelligence was first taking shape. In 1950, computer scientist Alan Turing proposed the concept of a "thinking machine" and developed the famous Turing Test, which aimed to determine whether a machine could exhibit intelligent behavior indistinguishable from that of a human. Throughout the following decades, AI research experienced significant advancements, with notable contributions from pioneers such as John McCarthy, Marvin Minsky, and Herbert Simon. In the 1990s and early 2000s, chatbot technologies emerged, enabling rudimentary conversations with users. However, it was in 2015 that deep learning and neural networks gained prominence, leading to breakthroughs in natural language processing. In 2020, OpenAI released GPT-3, a language model capable of generating human-like text. Subsequently, the evolution of GPT models, including Chat GPT, occurred, refining conversational abilities, and demonstrating the tremendous potential of AI in communication and various other domains (Figure1).

In the context of transdisciplinary communication, the utilization of ChatGPT within the VR and metaverses introduces a new dimension to the exchange of knowledge and ideas.

## **2. Literature review**

In recent years, there has been a growing academic discourse surrounding the ethical implications of large language models (LLMs), as highlighted by notable studies such as Weidinger et al. (2021). However, the introduction of OpenAI's ChatGPT on November 30th, 2022, has

propelled this discussion into the mainstream among researchers and users alike. OpenAI's decision to release the new chatbot as a research preview was driven by the intention to gather user feedback and gain insights into its capabilities and limitations (OpenAI, 2022).



**Figure 1:** Generative AI Programs and ChatGPT by Dr. Jasmin (Bey) Cowin

But what determines which technological vision prevails? Even though the choices are about how best to use our collective knowledge, the decisive factors are not solely technical or purely engineering-based. In this context, choice fundamentally revolves around power—the power to persuade others (Acemoglu, et al., 2023)

The seminal article "The Combination of Artificial Intelligence and Extended Reality." Reiners et al. explores the combination of AI and

extended reality (XR) and how this combination is emerging as a powerful tool for addressing prominent challenges and opportunities in both AI and XR, facilitating cross-development (Reiners 2023). Furthermore, Chow discusses the importance of AI technologies like ChatGPT and DALL-E in building detail-rich and customizable virtual worlds, and their potential implications for the Metaverse. (Chow, 2023) The article *A Chain of Worlds: Education in the Age of Metaverses* states that:

Introducing AI and intelligent systems into education will have profound effects on not only assessment and administrative functions but also on faculty and learner motivation, engagement, and overall academic performance. Other areas affected will be organizational strategic planning, student acquisition, and retention, curriculum design and Personal Learning Networks. (Covin, 2022)

*ChatGPT: The Next Firestorm in Education* by Johan Roos discusses the potential implications of ChatGPT for education. The article argues that instead of banning new technology from classrooms, it might be more productive to adjust to its implications while exploring its potential. Roos further hypothesizes that AI-driven tools such as ChatGPT promise a range of benefits that will enhance educational delivery, improve student learning, and accelerate the research process. (Roos, 2023) however, *A SWOT<sup>3</sup> analysis of ChatGPT: Implications for educational practice and research*, (Farrokhnia et al. (2023) employed a SWOT analysis framework to examine the strengths and weaknesses of ChatGPT, as well as its potential opportunities and threats in the field of education. The analysis reveals strengths, such as the utilization of a sophisticated natural language model that generates plausible responses, the capability for self-improvement, and the provision of personalized and real-time answers. However, identified weaknesses include challenges in

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<sup>3</sup> SWOT is an acronym for “Strengths, Weaknesses, Opportunities, and Threats”

evaluating the quality of responses, the risk of introducing bias and discrimination, and a deficiency in higher-order thinking skills. Moreover, the article highlights threats to education arising from ChatGPT, such as inadequate contextual understanding, potential risks to academic integrity, the perpetuation of discriminatory practices in education, the democratization of plagiarism, and a decline in high-order cognitive abilities.

These references suggest that the intersection of AI, VR technologies, metaverses, education, transdisciplinary communication, Trans-Disciplinarity are an active area of research and discussion.

### **3. The Trans-Disciplinary Communication Logarithmic Spiral**

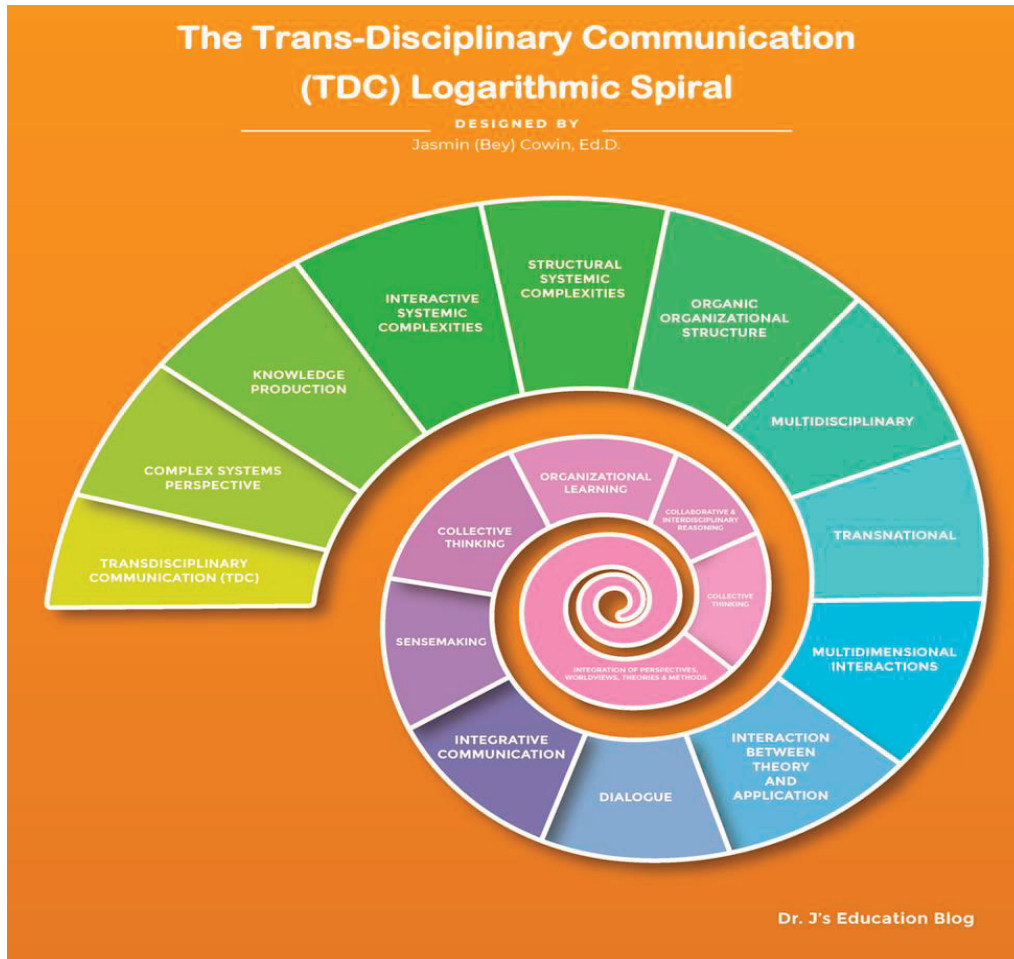
Dr. Nagib Callaos has researched and written extensively about Trans-Disciplinary Communication, Education, and Meta-Education. According to him, transdisciplinary communication skills are developed using the intellect's main components: Cognition, Conation, and Affect (Callaos, 2022). The Trans-Disciplinary Communication Logarithmic Spiral (figure 2) visualizes the interconnectedness and interdependence of various components within Transdisciplinary Communication (TDC<sup>4</sup>). TDC plays a crucial role in navigating interactive and structural systemic complexities inherent in complex systems perspectives. TDC serves as a conduit for knowledge production, fostering multidimensional interactions and facilitating the integration of perspectives, worldviews, theories, and methods. Within an organic organizational structure, TDC encourages collaborative and interdisciplinary reasoning, promoting a transnational and multidisciplinary approach to address complex challenges. Through dialogue and integrative communication, TDC enables sensemaking and collective thinking, fostering organizational learning and the creative synthesis of theories, concepts, or methods. By

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<sup>4</sup> The meaning of TDC in this article is provided in Table 1.



facilitating the interaction between theory and application, TDC enables the generation of innovative solutions that transcend disciplinary boundaries, leading to transformative outcomes (Figure 2).



**Figure 2:** The Trans-Disciplinary Communication Logarithmic Spiral by Jasmin (Bey) Cowin

#### **4. The Intersection of Artificial Intelligence, Virtual Reality, Metaverses, and Education**

By integrating VR, metaverses, and artificial intelligence, a new era of education is on the horizon. This era will be characterized by transformative shifts in pedagogy, didactics, and technology. However, virtuality does not consider the concept of embodied cognition, a learning paradigm based on the idea of an inseparable link between body, mind, and environment. In recent years, there has been an advent of theoretical learning approaches around embodied cognition theory that has resulted in empirical studies exploring the implementation of the theory in education. For example, Shapiro and Stolz (2019) argue that the emerging research agenda of embodied cognition has much to offer educational practitioners, researchers, and/or policymakers. They suggest that the multidisciplinary and interdisciplinary nature of the literature provides thought-provoking recommendations to enhance educational practices, which in turn can bring about student learning more effectively.

Digital domains, including metaverses and augmented reality technologies, offer novel and tailored learning environments, fostering diverse acquisition of knowledge and skills. As education moves into 3D spaces and online platforms, educators and learners will undergo significant transformations, requiring them to possess 21st-century didactic options. Employers now seek Fourth Industrial Revolution skill sets from their workforce, emphasizing lifelong self-directed learning, networked thinking, adaptability, creativity, and advanced digital literacy. These skills are vital for collaborative and communicative work dynamics in the evolving landscape of teachers, learners, and learning cultures worldwide.

Sophisticated deceptions enabled by ChatGPT could potentially undermine the trust and authenticity necessary for effective



transdisciplinary collaboration. Misinformation campaigns and deceptive virtual humans may manipulate shared knowledge and compromise the integrity of transdisciplinary discussions within metaverses. Transdisciplinary research necessitates transdisciplinary communication, particularly when engaging stakeholders, identifying socially acceptable solutions, and communicating with policymakers and the wider academic community to gain diverse perspectives.

## **5. Transdisciplinary Communication, Trans-Disciplinarity, Virtual Humans in AI-Powered Metaverses**

Transdisciplinary communication, Trans-Disciplinarity, and the emergence of virtual humans in AI-powered metaverses are three interconnected phenomena shaping the future of collaboration, knowledge sharing, and human interaction. In the context of AI-powered metaverses, Trans-Disciplinarity allows for the convergence of various fields such as artificial intelligence, virtual reality, psychology, sociology, economics, and more. This convergence enables researchers, practitioners, and supporters to explore the intersection of these disciplines, collaborate on shared objectives, and develop new insights and applications. Trans-Disciplinarity in metaverses can foster innovative approaches to problem-solving, encourage cross-pollination of ideas, and accelerate knowledge creation and dissemination.

Within metaverses, professionals from fields such as Science, Technology, Engineering, Arts, and Mathematics (STEAM), as well as social “sciences” might come together to tackle complex challenges. For instance, imagine a team comprising engineers, architects and environmental scientists collaborating to design sustainable smart cities. Through shared virtual environments they might one day visualize and simulate urban spaces, assess various scenarios, and analyze the impact of their decisions on energy consumption transportation systems and

community well-being. This transdisciplinary approach has the potential to foster a comprehensive understanding of the interconnections between distinct aspects of city planning leading to more effective solutions.

**Table 1:** Trans-Disciplinary Communication (TDC), Trans-Disciplinarity, and virtual humans by Jasmin (Bey) Cowin

<b>Concept</b>	<b>Definition</b>
Trans-Disciplinary Communication (TDC)	TDC encompasses the exchange of ideas, knowledge, and expertise across disciplinary boundaries to integrate diverse perspectives, methodologies, and theories from different fields. It goes beyond multidisciplinary or interdisciplinary approaches and seeks to address complex problems through collaborative efforts that transcend traditional disciplinary silos.
Trans-Disciplinarity	Takes TDC further by emphasizing multiple disciplines' integration and mutual enrichment. It aims to create new frameworks and methodologies that transcend traditional disciplinary boundaries to address interconnected real-world challenges effectively.
Virtual Humans in AI-Powered Metaverses	Artificially Intelligent (AI) entities within virtual environments exhibit human-like characteristics and behaviors. They can engage in conversations, understand emotions, respond to queries, and interact with users. Virtual humans enhance social and collaborative experiences in metaverses by serving as facilitators, mentors, or companions. They bridge disciplinary gaps and foster transdisciplinary communication, knowledge sharing, and collaboration.

Furthermore, the metaverse can enhance transdisciplinary communication by providing new modes of representation and expression. For example, artists designers and data scientists can collaborate to create immersive visualizations and interactive experiences that convey complex information in intuitive and engaging ways. By blending artistic creativity with analytical rigor, they can communicate scientific concepts and research findings to a broader audience making knowledge more accessible and stimulating public interest and engagement.

## **6. Promises, Potential and Pitfalls**

On one hand, the integration of ChatGPT into metaverses holds immense potential for transdisciplinary communication and collaboration. The seamless and immersive nature of ChatGPT allows for fluid interactions between individuals from diverse fields, facilitating knowledge exchange. This opens new possibilities for research, education, and decision-making processes, as experts from different domains can come together virtually to share insights and solve complex problems.

By leveraging the capabilities of ChatGPT, metaverses can revolutionize transdisciplinary collaboration, breaking down barriers and fostering a deeper understanding across disciplines. Moreover, the use of ChatGPT in metaverses can enhance the accessibility of transdisciplinary communication. AI technology can provide real-time language translation, enabling individuals who speak different languages to engage in meaningful conversations and contribute to interdisciplinary endeavors. This inclusivity promotes diversity and widens the reach of transdisciplinary collaboration. Conversely, the integration of ChatGPT into VR and metaverses does raise ethical concerns and potential risks. One major concern is the potential for malicious actors to exploit the

advanced capabilities of ChatGPT for personal gain. The ability to create virtual humans that appear indistinguishable from real people introduces the risk of individuals being lured into dangerous situations or deceived by sophisticated deceptions. Moreover, the generation of misinformation campaigns within VR and metaverses can further exacerbate the spread of false information.

These risks highlight the need for careful consideration and mitigation strategies to safeguard transdisciplinary collaboration in the virtual environment. To ensure the integrity of interactions within the metaverse, it is essential to have strong verification processes and security measures in place. The use of technologies that can detect and prevent malicious activities can minimize the potential risks associated with integrating ChatGPT into metaverses.

## **7. Conclusion: Ragnarök or Anthropocene?**

In Scandinavian mythology, Ragnarök unfolds as a sequence of events that heralds the demise of both the divine domain and mankind. The verses foretell a cataclysmic end, preceded by brutal winters and a disarray of morals. Its details can be found in the Icelandic poem *Völuspá* (Völuspá, 2023) and the Prose Edda of Snorri Sturluson, written in the 13th century. (Sturluson, 2005). On the other hand, Anthropocene is a geological epoch that marks the onset of profound human influence on Earth's geology and ecosystems, encompassing the far-reaching impacts of anthropogenic climate change and more. The term "Anthropocene" draws its origin from the Greek words "anthropo-" denoting "man," and "-cene" representing "new."

To fully realize the benefits of ChatGPT and metaverses while mitigating these risks, it is crucial to approach their development and deployment

with a strong ethical framework. This entails establishing guidelines and safeguards to ensure responsible and beneficial use of these technologies.

Proactive measures must be taken to address concerns such as privacy, security, and algorithmic biases. Transparency in the design and operation of ChatGPT systems is essential, allowing users to understand how decisions are made and ensuring accountability for any potential misuse. Additionally, robust security protocols need to be implemented to safeguard against unauthorized access and manipulation of the virtual environment.

Furthermore, efforts should be made to address the potential amplification of existing inequalities in access to and utilization of these technologies. Ensuring equitable access and promoting inclusivity in VR and metaverses will be crucial to prevent further marginalization and exclusion of underrepresented communities.

In conclusion, transdisciplinary communication, trans-disciplinarity, and the emergence of virtual humans in AI-powered metaverses might become driving forces behind the transformation of collaboration, knowledge sharing, and human interaction. These concepts open new possibilities for interdisciplinary collaboration, the synthesis of knowledge, and the creation of immersive and personalized experiences. As these trends continue to evolve, they hold the potential to shape the future of work, education, research, and societal interactions in profound ways.

Ultimately, the choice between Ragnarök and Anthropocene lies in our hands. Digital technologies, metaverses, and transdisciplinary communication have the potential to either drive us toward a future of collaborative innovation and collective intelligence or lead to a decline in trust, privacy, and societal well-being. By critically examining the ethical

considerations and challenges, we can guide the development and deployment of these technologies in a way that aligns with our shared values.

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