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## **Media Arts: Convergence of Art Spheres in the Digital Age**

*Media Arts: Convergência de Esferas Artísticas na Era do Digital*

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By dissolving the boundaries between disciplines like music, film, literature, architecture, and visual arts such as painting or sculpture, the convergence of the different art spheres has become a defining feature of the digital age. Digital technologies allow a fluid integration of various artistic languages and the creation of hybrid works that combine sound, image, text and interaction. This phenomenon not only expands creative possibilities but also promotes interdisciplinary collaborations, where artists, scientists and technologists work together

to explore new expressive territories. Media art exemplifies this convergence by using digital devices and platforms to merge the physical and the virtual, challenging traditional concepts of space, time and materiality while inviting the public to actively participate in the artistic experience, contributing to an increasingly dynamic state of art.

The integration of technologies such as virtual reality and augmented reality has promoted a reconsideration of the boundaries between the tangible and the virtual (Grau & Veigl, 2011; Moura et al., 2021). These technologies facilitate a multiplicity of creative possibilities, allowing artists to transcend the conventional spatial and narrative boundaries that have previously constrained their work (Sommerer et al., 2008; Stocker et al., 2009). Narratives presented through complex, non-linear structures encourage audience participation in the unfolding story, thus challenging the traditionally more passive artistic experiences. This transformative potential of digital technologies is also reflected in the way visual, sound and interactive works have been introduced into urban environments (Thomas & Penz, 2003). Examples include digital sculptures or interactive light installations in public squares, mapped projections on building façades, artistic interventions using augmented reality that make it possible to integrate virtual visual works into physical spaces, systems reacting to variations in the environment or gamified public art that transform entire cities into interactive gaming platforms. With media arts, our relationship with our surroundings can be redefined through a process of mediation, integrating art into architecture and promoting a new cultural language (Simanowski, 2011).

However, the convergence between art and digital technologies calls for deep reflection on the ethical implications inherent to the digital creation process. In the past two years, artificial intelligence (AI) has become one of the main dominant themes in contemporary artistic practice, raising fundamental questions about authorship, responsibility and the preconceptions that often emerge with the advent of new technologies. Rather than attempting to restrict the use of AI, media art can take on a transformative role, incorporating the aforementioned concerns as raw material, promoting and fuelling debate and critical awareness about its main economic, social and cultural impacts. It is crucial to ensure that AI is used in a vital, transparent and responsible manner, avoiding the perpetuation of stereotypes (Carvalhais, 2023).

In fact, media art can play an important role as an agent of change, especially when the artworks address social and political issues. By exploring interaction in their artworks, various artists have mobilised their audiences for debate and action, amplifying marginalised voices, creating alternative narratives to institutional ones and challenging power structures (Varne et al., 2024). By using technology to engage audiences quickly and with a global reach, media art can thus become a powerful tool for social activism (Mesquita et al., 2024).

On the other hand, digital practices, including the ones used in media arts, have a significant environmental impact due to the high energy consumption needed to power servers and infrastructures, contributing to the global carbon footprint.

In addition, the production and disposal of electronic devices generate toxic waste that exacerbates the e-waste crisis, while the extraction of rare materials to manufacture technological components causes irreversible damage to ecosystems, jeopardising biodiversity and the planet's natural resources.

Media arts are therefore required to make a commitment to sustainability, which can be achieved by adopting greener practices, such as using renewable energy sources to power art installations, low-energy equipment, and recycling or responsibly reusing hardware. In addition, the creation of digital artworks optimised to reduce energy consumption, modular design with sustainable materials and the promotion of virtual or hybrid events are among the many ways to minimise environmental impact. Partnerships with environmental projects, such as reforestation initiatives, and the creation of artworks that alert the audiences to ecological issues are also effective ways of aligning artistic innovation with environmental responsibility.

Finally, post-digital aesthetics reflects how media arts are redefining our understanding of reality (Carvalhais & Cayolla Ribeiro, 2023; Kwastek, 2013). In a world where the boundaries between the physical and the virtual are becoming increasingly blurred, these artistic practices offer new forms of expression that challenge traditional conventions. The creation of hybrid experiences highlights the ability of media arts to capture the social and cultural transformations of the digital age, exploring the creative possibilities that emerge from this intersection.

By connecting these dimensions, we aim to emphasise the transformative role of media arts in the digital age. Through interdisciplinary collaboration, ethical commitment and sustainable innovation, media arts transcend mere aesthetics, becoming a platform for critical reflection, active participation and the reimagining of our common future. This dynamic field continues to evolve, challenging us to reconsider what we mean by art, technology and humanity (Moura & Ferreira-Lopes, 2017).

The thematic issue Number 14 of the visual culture journal *Vista* aims to illuminate the evolving landscape of interdisciplinary media arts research and practice as it intertwines with the ever-expanding realms of digital media. Four articles and a visual essay, along with an interview and an article published in the *Varia* section, make up this issue, proposing a dive into the intersections between art and technology and an understanding of how technological evolution in digital media has been affecting creative and artistic practice, challenging expression and aesthetic perception, but also the ethics of the creative process itself.

In their article “Rethinking Media Art in a Time of Pervasive Computing”, Rosemary Lee and Miguel Carvalhais explore the complex relationship between art, technology and the media, analysing how rapid technological evolution and the omnipresence of computing have been shaping contemporary media art. The debate on the definition of media art in a post-digital context, where technology permeates every aspect of life, is a central theme of this article. If the use of

digital technologies alone no longer defines media art, what distinguishes it from contemporary art in general? These authors argue that media art needs to re-evaluate its defining characteristics, as many of the technologies that once distinguished it, such as the internet, the computer and screen-based media, are no longer considered “new”. The integration of these technologies into mainstream art has led to a blurring of the aesthetic, technical and thematic boundaries that once separated art from media art.

The omnipresence of computing in the “long digital age”, as described by Galloway (2021), makes the mere presence of technology in art insufficient to classify it as media art. The article suggests that media art can be defined by its critical engagement with technology, exploring its potential and cultural and social implications, going beyond the simple use of digital tools. Temporal relationships, the interaction between different elements and the exploration of new aesthetics emerge as possible distinctive characteristics of media art.

Lee and Carvalhais highlight the importance of the media in media art, recognising the influence of the medium on the form and content of the work. McLuhan’s (1964) famous maxim “the medium is the message” is evoked to emphasise the role of the media in creating meaning in digital art. Technology, the media that derive from it and the tools used by artists are responsible for moulding the artistic experience. The article ends by proposing a reformulation of media art as a critical practice and resistance to the commodification of art and the standardisation of the media, suggesting that its value lies in its transgressive approach and the interaction between art and its means of expression, technology.

In turn, Fábio Oliveira Nunes addresses the aesthetics of AI tools in art, arguing that these, despite being labelled “disruptive”, tend to generate conservative and “average” and predictable results due to their statistical nature and dependence on pre-existing data, reinforcing conventional norms rather than breaking the *status quo*. In his article “From JODI to *AIDOJ*: The ‘Disruption’ of Internet Art by Artificial Intelligence”, the author exposes the difficulty of AI in replicating the subversive aesthetic characteristic of the artistic duo JODI, by creating a work entitled *AIDOJ* as a case study. This work serves as a meta-commentary on the limitations of AI in art, questioning its ability to generate truly innovative and challenging results.

The fragility and ephemerality of media artworks, emphasised in the article by Lee and Carvalhais, challenges traditional conservation standards and models of art production and consumption. This aspect is also present in Nunes’ work, with the description of the work [www.wwwwwwwww.jodi.org](http://www.wwwwwwwww.jodi.org), which, despite its historical relevance, is blocked by anti-virus software. This inherent instability of media art poses new challenges but also distinguishes it from conventional art. Although AI has the potential to facilitate artistic endeavours, its limitations reveal the complexity of creativity and artistic transgression present in this technology.

In their article “Enhancing Firefighter Training With Virtual Reality: Benefits, Challenges and Technological Integration”, Bruno Miguel Pinheiro, Pedro Alves

da Veiga and Paulo Duarte Branco explore virtual reality as a tool for training firefighters, illustrating how this technology can be used to create immersive and interactive experiences, characteristics often associated with media art. The article demonstrates how virtual reality allows realistic scenarios to be simulated, providing trainees with experiences that are close to real situations. This ability to simulate and manipulate reality is one of the potentialities of technology in art, enabling the creation of artworks that transcend the limits of the physical world.

Interdisciplinarity emerges as a crucial aspect for the development of media art, requiring collaboration between artists, technologists and scientists, as the article by Pinheiro, Veiga, and Branco argues. Continuous research and reflection are essential to keep up with the rapid technological evolution and its implications for media art, as demonstrated by the analysis of the work of Nam June Paik, a pioneer in the use of video in the performing arts, which Ruben Ferreira presents in his article “Performative Aesthetic Action and Theatrical Narrative in Digital Environments: Insights from the 20th Annual Lisbon Academic Theatre Festival and the Production of a Digital Media Art Artefact”.

This article explores the influence of technology on the performing arts, focusing on the necessary adaptation of artists to the digital context imposed by the COVID-19 pandemic. By analysing performances and a digital media art artefact, the article seeks to demonstrate how technology can expand the expressive and communicative possibilities of performance. Using Pedro Veiga’s cyberperformance analysis grid (adapted and expanded by the author), Ferreira investigates the transition from physical to digital performance, exploring the interaction between video, film and performance and the emergence of new aesthetic and narrative languages in this context with the aim of understanding aesthetic phenomena and changes in the relationship between the performer, the artwork and the audience in the digital space.

Finally, Carloalberto Treccani examines the relationship between machine vision and photography, arguing that “intelligent” vision machines have been influenced by photographic images. Photographic databases, made up of millions of images, are used to train algorithms and create systems that “see” and interpret the visual world, simplifying its complexity into a set of data. The art project *Sometimes Your Eyes Do Not See* explores the “histogram of oriented gradients” technique, a computer vision algorithm, to process six images and create abstract black and white images, challenging human perception and interpretation of these images. The author concludes that the machine gaze, present in technologies such as autonomous cars and facial recognition, is reconfiguring our understanding of the act of seeing and challenging us to confront the unknown ways in which machines perceive reality. Taking into account the philosophical and aesthetic implications of the way machines “see”, the author seeks to problematise the boundary between science, technology and art.

To summarise, the articles published in this thematic issue invite us to rethink media art in a post-digital context, where the ubiquity of technology demands a

redefinition of its distinctive characteristics. Critical engagement with technology, the exploration of temporality, the creation of immersive experiences and interdisciplinarity are key aspects for understanding contemporary media art. Its critical nature, its ability to question norms and challenge us to rethink our relationship with technology consolidate its importance in today's art scene.

**Translation: Daniel Brandão**

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## Biographical Notes

Daniel Brandão holds a PhD in Digital Media in the domain of Audiovisual and Interactive Content Creation at the University of Porto (2014), where he developed the project *Museum of Ransom* ([www.museudoresgate.org](http://www.museudoresgate.org)). This participatory website collects videos made by citizens about the city's daily life, aiming at legitimising their cultural heritage vocation. He also co-coordinated the project *Citadocs*, which was the creation of collaborative mini-documentaries born in Future Places Medialab for Citizenship. He holds a degree in Communication Design (2004) and a master's degree in Multimedia Art (2008), both from the Faculty of Fine Arts of the University of Porto. He is an assistant professor at the Department of Communication Sciences at the Institute of Social Sciences, University of Minho, where he founded and currently directs the master's programme in Media Arts. He is an integrated researcher at the Communication and Society Research Centre and a collaborator at the Research Institute for Design, Media and Culture. He is co-principle investigator of the project *bYou: Study on Children and Young People's Experiences and Expressions of the Media* (PTDC/COM-OUT/3004/2020), and integrated the teams of the research projects *ECHO: Echoing the Communal Self* (EXPL/ART-DAQ/0037/2021) and *HERIC 2D: Health Risk Communication* (2022.06008.PTDC), all of them funded by Portuguese Foundation for Science and Technology. He is co-chair of DIGICOM (International Conference on Design and Digital Communication), has co-edited several books on design and has participated in several scientific committees of international conferences and journals. With vast teaching experience in public and private universities in the areas of communication design, audiovisual and multimedia, he has worked at the Polytechnic Institute of Cávado and Ave, Escola Superior Artística do Porto, College of Art and Design — Matosinhos, Universidade Católica Portuguesa — Braga. He has worked with several institutions in the area of culture, with particular emphasis on the Serralves Foundation and its Museum of Contemporary Art, with which he collaborated for six years.

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João Martinho Moura is a Portuguese researcher and media artist. Over the last 20 years, his work has been shown internationally several times in more than 20 countries, some of them city-wide. In 2013, he was awarded the National Multimedia Art and Culture Prize in Lisbon for his contribution to digital arts in Portugal. He is the author of several academic publications in the field of media arts, interfaces, computer graphics, artificial intelligence and visualisation. His work has been included in the curated collections “Selected Works ARS ELECTRONICA Animation Festival” (Linz, 2012), “Processing Curated Collection” (United States, 2008) and in the catalogue of “ISEA 2019: 25th International Symposium on Electronic Art”, in South Korea, where he was a guest artist. He is a founding member of the Artech-International Association and a member of the artistic cooperative Au Au Feio Mau. He has also been a guest media artist at Balle teatro, Porto, since 2008. Since 2013, he has collaborated as a media artist with international institutions such as the European Space Agency, the International Iberian Nanotechnology Laboratory, the North Atlantic Treaty Organisation, and Unesco. From 2015 to 2017, he was a member of the committee for Braga’s application to Unesco’s Creative Cities Network in the Media Arts category. The title was awarded to the city of Braga on 31 October 2017. He is a partner artist in the Braga Media Arts network. In 2018–2019, he was a laureate and resident artist in the European Commission’s STARTS (EU Science, Technology and Arts) programme, having presented the results of his work and research at the International Iberian Nanotechnology Laboratory in Braga, at IRCAM: Centre Pompidou and Centquatre in Paris, and at the Art Center Nabi gallery in Seoul. In 2020, he was awarded the MindSpaces prize, a European Commission programme that aims to create new urban and architectural approaches by integrating immersive “neuroenvironments” in virtual reality. He has a PhD in Science and Technology of the Arts from the School of Arts of the Portuguese Catholic University. He is currently a senior researcher at the International Iberian Nanotechnology Laboratory and a visiting assistant professor at the University of Minho.

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Christa Sommerer is an internationally renowned media artist, researcher and pioneer of interactive art. Together with Laurent Mignonneau, she worked at the IAMAS Academy in Gifu, Japan, the ATR Research Labs in Kyoto, Japan, the MIT CAVS in Cambridge, Unites States and the NCSA in Champaign



Urbana, Illinois, United States. In 2004, Sommerer and Mignonneau set up the Department for Interface Cultures at the University of Art and Design in Linz, Austria. Sommerer held visiting professor positions at CAFA Central Academy of Fine Arts Beijing, Tsukuba University and Aalborg University, Denmark. Together, Sommerer and Mignonneau created around 40 interactive artworks that were shown at around 380 international exhibitions. They received numerous awards, including the Austrian State Art Award in the category of “Media Art” and the Wu Guanzhong Art and Science Innovation Prize awarded by the Ministry of Culture of the People’s Republic of China. Between 2021 and 2024, their 30 years retrospective exhibition *The Artwork as a Living System* was touring from the ZKM in Karlsruhe, to the OK Center in Linz, to the iMAL in Brussels and to the Azkuna Zentroa in Bilbao. This exhibition is also accompanied by a comprehensive overview of their artworks in the book *Christa Sommerer & Laurent Mignonneau - The Artwork as a Living System* edited by Karin Ohlenschläger, Peter Weibel and Alfred Weidinger, published in 2023 at The MIT Press. More information at: <https://mitpress.mit.edu/9780262048156/christa-sommerer-and-laurent-mignonneau/> and <http://www.interface.ufg.ac.at/christa-laurent>.

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