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Rethinking Media Art in a Time of Pervasive Computation

Repensar a *Media Art* na Era da Computação
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As its aesthetics, methods, and conceptual focus have, in many respects, merged with those of mainstream contemporary art, the boundaries of media art have become more unclear than when the use of technology in art was more of a rare occurrence. While the term "media art" may be helpful in designating a particular sphere of practice and discourse, its current meaning has shifted as a result of changing contexts surrounding the use of technology in art. From its close association with "new media" such as the digital computer, the internet, screen-based media, and interactive systems in the early days of media art as a field, this term now bears re-evaluation in light of the pervasive use of technology we are familiar with in the post-digital condition. As many of these defining forms

of new media have lost their novelty and have also been adopted in mainstream artistic practices, media art may be defined less by its engagement with specific media than by stylistic and referential aspects derived from its historical lineage. This paper draws comparisons between early discussions on media art and recent developments in this area with the aim of developing insights into whether and in what capacity media art remains relevant as a term for addressing technologically engaged contemporary artistic practices. By considering media art in such terms, this investigation reconsiders what may be regarded as defining aspects of the field, enquiring into what potential this reframing may have for practitioners and theorists working with this topic.

Keywords: media art, computational aesthetics, new media, contemporary art, art history

Repensar a Media Art na Era da Computação Pervasiva

À medida que a sua estética, os seus métodos e o seu foco conceptual se fundiram em diversos aspetos com os da arte contemporânea convencional, os limites da media art tornaram-se menos claros do que quando a utilização da tecnologia na arte era ainda pouco frequente. Embora o termo "media art" possa ser útil na designação de uma esfera de atuação ou discurso específica, o seu atual significado sofreu uma alteração decorrente da evolução das circunstâncias inerentes à utilização da tecnologia na criação de arte. Devido à sua íntima associação, desde os seus primórdios enquanto campo, com os "novos média", como o computador, a internet, os meios de comunicação à base de ecrãs e sistemas interativos, este termo requer agora uma reavaliação face ao panorama de computação pervasiva com o qual estamos familiarizados na condição pós-digital. Sendo que muitas destas formas definidoras dos novos média deixaram de ser novidade e foram integradas em práticas artísticas convencionais, a media art poderá não se definir tanto pela sua interação com meios de comunicação específicos, mas sim pelos aspetos estilísticos e referenciais provenientes da sua linhagem histórica. Este trabalho estabelece comparações entre os primeiros debates acerca da media art e desenvolvimentos recentes na área, com o propósito de compreender se, e de que forma, a media art continua a ser relevante enquanto termo referente a práticas artísticas contemporâneas que utilizam a tecnologia. Considerando-a de tal perspectiva, esta investigação propõe repensar que aspetos poderão ser considerados inerentes a esta área e questiona a forma como esta reestruturação poderá beneficiar os profissionais e teóricos que abordam este tópico.

Palavras-chave: media art, estética computacional, novos média, arte contemporânea, história da arte

Introduction

Media art has been defined to a great extent through its relationship with emerging technologies and the issues that accompany them. But this perspective on media art carries with it a number of challenges — practical, theoretical, and

logistical — that may be seen in a new light given the current pervasiveness of "new media" that are no longer especially *new*, such as the ubiquitous presence of computation in and outside artistic contexts (Galloway, 2021) and, indeed, in seemingly all aspects of contemporary life (Cramer, 2013). The current popularity of artificial intelligence in cultural spheres is one such example. While recent developments have opened up new methods, aesthetics, and conceptual directions, the longer roots of artificial intelligence are crucial to contextualizing current perspectives on the role of machines in art (Broeckmann, 2016; Hui, 2023). The novelty factor of *new media* is often equally fleeting to the ephemeral works that employ or address them, yet this is not a quality exclusive to ephemeral works. And, while it is arguable that new forms of technology may also be adopted in the broader sphere of contemporary art beyond the artists and institutions that self-identify as being dedicated to media art, there are particular traditions, aesthetics, theoretical leanings, and other conventions that make a case for its delimitation as a unique area of practice and discourse.

Arguably, media art has an existential need to assert its relationship with new media, and, as such, it seems that its foundational logic is frequently connected with the meaning of the work being derived to a significant extent from the medium of expression (Lee, 2022). Marshall McLuhan's (1964) famous assertion that "the medium is the message" is one of the driving ideas of media art, emphasizing the role played by technical and communications media in not only informing the context we live in but also serving as material for art. This is meant not in the sense of proving the legitimacy of newer media, something of greater significance in more traditional perspectives on art, but rather asserting that how these media act on us and on the world produces new meaning and new ways of meaning through art. We may consider such a perspective as a potential line for the demarcation of media art from artistic practices where newer media are present but may not engage significantly in questioning the relevance of technical media. Theoretical perspectives such as McLuhan's tenet remain relevant and influential, but there may be more insights to be gained from revisiting media art's conceptual foundations.

This area of thinking and practice requires further reflection, given the changing technical and cultural conditions that surround it. While the use of newer forms of media and of emerging techniques may have been sufficient criteria to discern media art from more traditional artistic spheres in the past, today, we may gain deeper insights from new conceptualizations of media art as we become accustomed to a context of pervasive computation that touches and transforms all media as well as the tools for their production. This paper looks at the origins of the term "media art", enquiring into how its foundational theoretical basis may inform our understanding of what defines it as a field today. Looking at core assumptions about what delineates media art from the broader art world, we consider whether this term holds up now and what this might mean for the future of media art.

Background

An engagement with novel forms of media technologies has been a central characteristic of media art, which itself emerged from "new media art". Already at the time of the publication of Lev Manovich's (2001) *Language of New Media*, a — if not *the* — foundational text on new media, many of the technologies synonymous with this term were no longer especially new. This fact was made even clearer, just two years later, by the publication of Noah Wardrip-Fruin and Nick Montfort's (2003) textbook, *The New Media Reader*. For art to take on the form of or to integrate media such as "web sites, computer multimedia, computer games, CD-ROMs and DVD, virtual reality" (Manovich, 2001, p. 19) is not necessarily a defining aspect that would make such works easily categorizable as media art, per se, in the same sense now that these would have been outstanding attributes at earlier phases of media art's history. In this sense, just as the conditions of what constitutes *new* media are continually changing, the boundaries of media art may also be subject to ongoing revision.

Terms abound for what we in this paper choose to refer to as *media art*, with some of them gaining or losing traction over the years. "New media art", "new media", "multimedia", "digital art", "electronic art", "net art", "interactive art", and "digital culture" each denominate a particular perspective on this sphere of discourse and practice. Longstanding authorities on the topic, including festivals (such as Ars Electronica, transmediale, File Festival, or Meta.Morf), conferences (such as International Symposium on Electronic Art, Special Interest Group on Computer Graphics and Interactive Techniques, International Conference on Computation, Communication, Aesthetics & X), institutions (such as Center for Art and Media Karlsruhe or V2_ Lab for the Unstable Media), publications (such as the *Neural* magazine), and archives (such as Rhizome or Monoskop), have had evolving relationships with these terms, as well. In general, the names that are less medium-specific have tended to maintain relevance longer than those that hinge on a particular technology or technical protocol that may go out of fashion as those *new* media are eclipsed by even newer methods.

Digital media and the involvement of computers have been one way of delineating the type of practices we wish to discuss from those with more traditional approaches, but this is no longer tenable. With the expansion of computational media, and with it, computational art and aesthetics (Carvalhais, 2022), it has become especially clear that the mere presence of digital computers or computation is not sufficient criteria to define something, whether art or otherwise, as "computational" (Lee, 2022). Computing is ubiquitous, and, consequently, a majority of media that is encountered daily is in some way mediated through them. Screen-based media abound, from personal devices to a proliferation of digital displays one encounters both in private and public spaces. Media are not only seen but they watch us back, developing entirely new relationships with us (Paglen, 2024) and facilitating the emergence of novel relationships between us and our surroundings. To make matters worse for our aim of clarifying things, contemporary art has adopted many of the technologies and aesthetics that had

previously been considered the realm of new media art, meaning that not only the methods but also the experiential aspects of mainstream art have, in certain respects, merged with media art.

Media Art

To develop a better understanding of what media art is — or could be — *now*, we look to theories that have had a defining impact on its early connotations. This seeks to ground our investigation in relation to historical trajectories that have influenced media art, practically, theoretically, and institutionally.

The first trope to analyze is perhaps the most obvious: the integration of technology. To many definitions of "media art", the intersection of artistic practice with some measure of technological experimentation is fundamental. This idea defends that the communication technologies, the media that are developed from them (Gitelman, 2008; Jenkins, 2006), or even the tools that artists use to create those media forms are not only paramount to the artistic experience but also to the creation of meaning. Conversely, it also seems to suggest that media art, as a field, is inevitably peripheral to the art world as it involves media forms that the art world has not yet accepted. As Josephine Bosma (2011) notes, referring to Rosalind Krauss, to be effectively used in art, a medium needs to become obsolete.

The interobjective relationship (Morton, 2013b) developed with artworks is certainly influenced by the technologies used, if not fundamentally dependent on them. However, those technologies and, more centrally, our knowledge, familiarity, and previous experiences with them, inform the intersubjective relationships fundamental to the artistic experience (Morton, 2013a).

This points to a concretization of the technologies used in artistic practice and the artwork, a concretization that was developed through most of the 20th century, with roots in anti-academic movements like Impressionism, and that counters the ideals of transparency of the media, and the transcendence of tools and techniques for the development of visual art. This embrace of hypermediation (Bolter & Gromala, 2003) brings technology and the media, as well as all the apparatuses of artistic production and the rhizomatic networks of meaning that they are part of, to the forefront of meaning-making, to the intersubjective space "in which human meaning resonates" (Morton, 2013a, p. 81). We may regard this as somewhat of a transformation of classical arts and their aesthetics or as a sign of the paradoxical relation to art (Wagner, 2017) in which media have (perhaps always) stood.

Another view of media art is related to its temporality, sometimes considered to be "the most thoroughly novel quality of the 'new' media" (Penny, 2017, p. 364). Katja Kwastek (2013), referring to Paul Virilio, notes how the three traditional tenses — past, present, future — are replaced by just two: "delayed time" and "real time". Virilio's concept of delayed time refers to the existence

of potential events that "can be accessed or realized at any time through a medium" (Kwastek, 2013, p. 111), whereas real-time refers to a "natural flow of time", supposedly unaffected by any technological influence or manipulation. "Media art", as a concept, was developed at a time when then-new technologies allowed the discovery of new potentialities for time, making temporal structures detached from nature and allowing them to be manipulated and controlled. The fact that this emergence hit its stride in the late 1970s and into the 1980s is noteworthy to our understanding of media art, as this was the point at which many of the mass-media tools we are accustomed to today had already become widely available. Keeping this in mind, it's notable that while perhaps simpler than today's methods, some of the basic modalities afforded by more basic audiovisual technologies from several decades ago have commonalities in terms of their peculiar relationship with temporality. If traditional artworks were valued by existing almost *outside* of time, media art often brings time to the essence of the artwork, blurring the boundaries between visual arts and performing arts and making the visual arts performative. Artworks become real-time objects that are "made manifest in a visual experience rather than in a finalized material object" (Csuri, 1976, para. 8).

Experiencing art now often requires the development of relationships with systems that perform and engagement with dynamic flows, with things that are built in real-time, that are not static documents but that come into existence in a situated time and space (Manovich, 2013), through networks of media and technologies that are significant to that performance and thus become meaningful to the experience. The experience of art becomes spatiotemporal and profoundly transforms the established "aesthetics of the passively perceived, static, and distanced object" (Penny, 2017, p. 363), requiring modes of engagement that are focused on the situated, enactive, and subjective character of the works.

Therefore, in Sigfried Zielinski's (2006) terms, media art becomes a "strange *mixtum compositum*" (p. 276) between the media and art.

From this perspective, the *mixtum compositum* contains two elements that are far apart and strives to fuse two different worlds into one. The origin of the compound was strategic — not so much for media, but certainly for art. Similar to the terms "film art" and "video art", which preceded it, the prefix *media* was designed to facilitate its delineation of new artistic praxes as opposed to traditional "old" ones; its association with "art" staked its claim for tapping into historically developed markets, distribution channels, and discourses. The strategic concept of "media art," however, went further. Since the mid 1980s at latest, the prefix *media* could count on a high rate of acceptance, both politically and economically. At the same time, this acceptance was one reason media art was rejected more vehemently in the traditional institutions of art than previous concepts involving other media. (Zielinski, 2006, p. 276)

If any form of art requires a medium in order to be perceived and is also a medium in its own right (Wagner, 2017), the term "media art" may feel somewhat circular or even redundant. However, its provenance reflects an openness from artists and the art world to using and incorporating a plethora of technologies and media forms that challenged a set of established, and still largely normative, media for visual art. Many of these technologies were developed after the second half of the 20th century, and are, therefore, not only recent (or even still *new*) but also, as Zielinski (2006) notes, available to much broader social and cultural circles than were the traditional media of visual arts. They were developed as technologies with a worldwide reach, technologies that still feel somewhat uneasy with many of the traditional spaces for the presentation and enjoyment of art, such as the gallery or the museum. Therefore, the continued usage of the term "media art" can still be legitimate, if for nothing more, because it is a useful heuristic for designating practices and artworks that exist in the rift between the medium, the technologies, and the artworks that feed from the tension between the objective and the subjective, and even between multiple subjectivities: the artists', the audiences', the media's.

We must be careful to distinguish "media art" from "machine art" (Broeckmann, 2016), of which it is occasionally treated as a synonym. For Broeckmann (2019), the category of "machine" mostly describes a relationship between humans and technology that can be characterized as being of "antagonistic proximity" (p. 8). It is, therefore, not so much a political description as it is an attempt to describe the alterity of entities that are other-than-human. Like machine art, media art can be "entirely independent of painting, sculpture and architecture" (Broeckmann, 2019, p. 1), however, media art also can, and should, establish a dialogue with the histories and traditions not only of visual arts but also of music, theatre, dance, and other forms. Only in this way can media art be able to "contribute to the continuous transformation of sense-making that we tend to categorise as 'art'" (Broeckmann, 2019, p. 3).

Likewise, we should not equate media art with computational art. Media art is increasingly computational because most media have been growing increasingly computational themselves (Carvalhais, 2023). As this happens, many spaces and tools that are expanded by computation in any way and form, almost inevitably acquire media affordances (Carvalhais & Cardoso, 2023), and may, therefore, also be seen as a potential resource for media art, greatly expanding the scope of the definition.

Starting from an expansive but still relatively focused definition as art forms and practices that engage with newer technologies for communication, the momentous shifts in the technocultural landscape (Kitchin & Dodge, 2011) that led to the omnipresence of computation and its interfaces with humans, spaces, and many other agents in the world (Andersen & Pold, 2018), turned media art into something of an art for our "age of asymmetry", for a time "after the

end of the world" (Morton, 2013a, p. 2). Media art often entails a reactionary element that speaks to the societal repercussions of technologies, as opposed to passively adopting tools without reflection. While not necessarily an element that could help to clearly demarcate media art from art in general, this points us to question this division, itself, and whether it may be related to more pragmatic considerations than the formal, theoretical conceptions we have thus far covered.

Media Art *vs* the Art World

As its aesthetics, methods, and conceptual focus have, in many respects, merged with those of mainstream contemporary art, the boundaries of media art have become more unclear than when the use of technology in art was more of a rare occurrence. For example, if a work involves digital media in the form of hardware, software, or even its thematic focus, it may not be enough to distinguish that piece as necessarily falling within the category of media art. The work of high-profile artists such as Hito Steyerl, Pierre Huyghe, Sondra Perry, and Ian Cheng, for instance, is deeply entangled with technology, yet is positioned within the mainstream art world not as media art, but as art. In this sense, technology has infiltrated art in the same way that it has found its way into many other corners of life, not as an exception but, on the contrary, quotidian. Just as viewing content through or about computational, networked forms of media may not stand out to us as remarkably techy, an artwork may use or discuss technology without being viewed as especially characteristic of media art.

Technical novelty, in itself, is often present in works of media art, but media art may not be reduced to solely this. While even the most recent forms of media are connected in meaningful ways to older tendencies, traditions, and technologies, and while art, in general, engages with its medium of expression, there is more at work here. Media art is often distinguished by its captivation with those that are currently emerging or especially timely in the concerns they bring up. It's also important to note that while artists who do not self-identify as "media artists" also use these same, increasingly ubiquitous, tools, we may question the extent to which this meaningfully informs the work in such cases. This ultimately holds implications for funding structures, given that more experimental work, and work with emerging media, are usually seen as less commercially viable or are undervalued by the general public, in contrast to the mainstream art world's preoccupation with and participation in a robust art market. This tendency has the downside of prioritizing technical gimmickry and hype cycles, pushing the newest and most headline-grabbing forms of technology as a route to relevance (Zylinska, 2020). In this sense, media artists and the institutions that are focused on media art may depend on asserting that seemingly self-contradictory distinction in order to secure support and even to define themselves, their milieux, and so forth, but this superficial relationship with technology is itself insufficient to describe it.

There may be more to this term than purely an engagement with technological media. In mainstream art contexts — including galleries, institutions, as well as the art market — the kind of technologically-engaged art we could refer to under the title of "media art" remains relatively uncommon in comparison to that embodying more traditional approaches. Discourse-defining events such as international art biennials typically contain only a few examples that could be argued to be works of media art. Additionally, while such works may be presented publicly in exhibitions, they have yet to receive comparable economic traction to painting, which, for the most part, dominates global art sales. The emergence of art non-fungible tokens (NFT) was initially seen as a potential exception to make sales of digital artworks more commercially viable, but after an initial surge in 2021, this entered a slump, with NFT trading occurring for the most part outside of the traditional art market (McAndrew, 2024). Pragmatically, continuing to use the term "media art" allows it to be considered as a particular niche of artistic production, and importantly, this can be the basis of argumentation for institutional support for these practices.

Seen in this light, continuing to distinguish media art as a genre, field, or tradition of art may have a more existential justification than a formal one. Since this kind of work remains fairly peripheral, there is a need to assert its distinctiveness from other forms of art and their associated narratives. Media art is also subject to certain challenges in its presentation, conservation, monetization, and theory, which are absent, for example, in more traditional media like painting, as we will discuss in the following section.

Media Art Today

Given the lack of a strong set of inherent defining features that distinguish media art from other spheres of art, we can question what, if anything, defines media art as a field today. Media art is often still articulated around a defining identity focused on media or tools and increasingly feels self-contradictory. On the one hand, this happens because even the more recent media forms are not created in a technological or cultural void but are connected to the traditions, histories, and practices of previous forms of media (Lee, 2024). While media artists are usually keen to bring newer media forms and technologies to their work, previous traditions, histories, and practices are often sidelined or valued only through the lens of their retro appeal. On the other hand, artists who do not identify as "media artists" often use the very same tools, perhaps not emphasizing them in their process or the works' hermeneutics, but not necessarily approaching them in less informed ways. If, in the early years of media art, the use of emergent forms of media and technologies could have been a good defining criterium, we nowadays live in what Alexander Galloway (2021) calls a "long digital age", a post-digital condition where computational technologies are not only ubiquitous but also inescapable. And in this context, computation touches and transforms all technologies, all media, and all the tools for their production, even when

these are not computational or digital on their own because they are part of interobjective networks of relationships with computational technologies.

New technologies and their transformative influence in technoculture create opportunities and affordances for expressive use, or become creative media in their own right (Ribas, 2024). As technoculture continuously shifts, it unveils new challenges and opportunities for media artists. Still, as the pace of these shifts accelerates, perhaps for the first time in history, to a rhythm that far exceeds the minimum time necessary to analyze and understand it (Rivero-Moreno, 2024), media art may struggle to keep pace. Furthermore, if McLuhan's influence is still very present in media art contexts, it is nowadays often reduced to his most well-known and quotable phrases and does not necessarily translate into critical reflections on how media ultimately shape the artworks, the artists' actions, even their creative horizons (Carvalhais & Cayolla Ribeiro, 2023).

So, how well does the concept hold? How can we think about media art nowadays? How can we experience and critique it? What is, or what can be, media art in the long digital age?

We can regard media art as a form of critical theory, a form of research through practice that explores a territory shared with media theory (Kittler, 2017) and media archaeology (Huhtamo & Parikka, 2011), feeding from the insights of these disciplines and contributing to their bodies of knowledge.

Besides the research strain, we can think of media art as a critical practice, a form of resistance through art against what can be seen as core issues in the art world. Media art often manifests through works that are, at least to some extent, fragile and ephemeral, or *unstable*, as Bosma (2011) describes them, because media artworks are commonly resistant to many of the more established strategies for conservation. However, this instability far exceeds matters of preservation and conservation because the complexity of media artworks also affects their development, installation, operation, storage, and maintenance during their showing. Media artworks are, therefore, also technologically fragile, a frailty compounded by that of the technoculture, which is constantly transforming and influencing the various ways in which the artworks are able to reverberate with it and its audiences. Technologies transform and eventually may become obsolete, and the media evolve (Jenkins, 2006). Technoculture influences and reframes our relationships with technologies and media, as the artists' goal is not only to create new art forms, but rather to use media themselves as implements to create art, being keenly aware of the media's affordances, constraints, politics, and economics. As such, the effects and impacts of media art are necessarily constrained to a somewhat narrow slice of the technoculture. This is not to say that there aren't universals in media art, just that they are evoked through means that require a technocultural attunement that may not be universally present.

We may conceive of media art as a practice of resistance and critique. Against the commodification of art and a certain fetishization of the artwork as a

material object. Against the normalization and apparent standardization of the media, formats, and genres of art. Even against the idea that art and culture need to be "user-friendly", transparent, immediate and smooth. Media art pushes its practitioners and audiences to constantly rethink and scrutinize their relationships with technologies and media forms, to go against the *aesthetics of the like*, that tendency to appear smart while being "intentionally relaxed and disarming" (Han, 2024, p. 48). Media art is an art of aesthetic friction, where cognitive effort and discomfort are required as first steps simply to understand the artwork as such. In media art, all technologies and media forms are made *strange* (Noë, 2015), all are disrupted, reframed, redefined, and used in a tactical capacity (Ludovico, 2023).

Conclusion

Taking a look back from media art as it stands currently towards aspects that had a defining effect on its founding discourses, this paper gives an overview of relevant aspects that have changed since the early days of this field. Many of the technologies that had once been unfamiliar to art contexts, such as those involving digital technologies such as computer graphics, screen-based media, and the internet, are no longer novel nor rare in the same way they were at the time of the founding of the early institutions centered on the topic of media art.

As relatively new technologies have become integrated into mainstream art, there is a blurring of previously more distinct aesthetic, technical, and thematic tendencies. This highlights the lack of a clear-cut distinction of media art from art, in general, prompting the need for a re-evaluation of what this term may grant technologically engaged spheres of practice and theory. The presence of "new" media is not a defining element that distinguishes media art from other forms of contemporary art, making engagement with emerging forms of media an unreliable basis for establishing this sphere of artistic practice and theoretical inquiry. Rather, a combination of other features may be more helpful in developing an understanding of what is at stake in media art. This may include works having a meaningful engagement with technology, temporal relationships, and interrelation, instead of focusing on the relative novelty of a particular medium or technical modality.

Works of media art often address emerging issues that accompany technology in ways that are critical, reactionary, or even tactical. Framed this way, media art may step away from being defined in a medium-specific capacity. However, it again may be argued that contemporary art, too, is not excluded from doing so as well, leaving the question open to qualitative judgment as to whether an approach is necessarily fitting this genre. While the borders of media art are not especially clear, a case can be made for the relevance of precisely this kind of elusiveness and its possibilities for experimental artmaking. All art engages with its medium of expression, but what may set media art apart is its transgressive approach to that engagement.

Biographical Notes

Rosemary Lee is an artist and researcher whose work examines how current discourse on technology is informed by tendencies from the distant past. Lee completed her PhD at the IT-University of Copenhagen, where she conducted practice-led research on generative machine learning systems' connection to the history of imaging technologies. Her book *Algorithm, Image, Art*, and artistic projects such as *A Structural Plan for Imitation* expand upon that research. Rosemary Lee teaches in the Multimedia program at the University of Porto Faculty of Engineering.

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