

ART, MUSEUMS & DIGITAL CULTURES



RETHINKING CHANGE

Edited by Helena Barranha
& Joana Simões Henriques

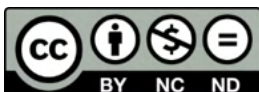
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Contents

INTRODUCTION

Introduction: Rethinking Change in Art and Museums

Helena Barranha and Joana Simões Henriques

But what is a movement of alteration? Is it ideal? It is natural that anything occupying time should alter, and that all things in space should be in movement; these things are contained in the nature of the notions of time and of space.

Fernando Pessoa (1906)

Historically, the development and dissemination of new technologies has often, if not always, been associated with the idea of change. Although the systems of production and communication tend to be identified as the epicentre of such change, the shift paradigm has a wider scope and scale. Frequently regarded and addressed as a revolution, technological innovation derives from, and impacts on, society and culture at large. Moreover, the recurring narratives of technology as change reflect an attempt to establish symbolic and material borders between past, present and future. Modernism, 'characterised by an abandonment of tradition and a forward propulsion towards the new' (Bishop, 2014, p. 19) configured a perspective of industrial progress as a promising opportunity for breaking with the past, which, in many aspects, still persists and resonates in current discourses about digital transition.

For more than a century, the social and cultural transformations driven by emerging industries, rather than the technologies themselves, have brought new challenges to museums. Interestingly, the harshest criticisms of the possible adaptation of cultural institutions to an increasingly industrialised world have not come from the field of science and technology, but mainly from the artistic avant-garde. Following the *Futurist Manifesto* (1909), in the first half of the twentieth century the key argument against museums was that they were not prepared to deal with change. Clearly, what was at stake in such criticism was not the integration of new technologies into museums but, above all, the latter's relationship with time. 'Time and space died yesterday,' Marinetti claimed, condemning museums to an absolute irrelevance for their 'unending veneration for the past' (Marinetti, 1909/2011, p. 6).

A few decades later, the advent of the computer and the globalisation of the Internet also generated utopian and dystopian visions of the future of art and museums, even when 'the actual relations between emerging technologies and their ancestor systems proved to be more complex, often more congenial, and always less suddenly disruptive than was dreamt of in the apocalyptic philosophies that heralded their appearance' (Thorburn and Jenkins, 2003).

Notwithstanding the postmodernist efforts to dismantle a linear perspective of technological evolution, arguing in favour of the complexity and ambiguity of time and space, the previous narratives of technology as a cultural rupture have proved to be widely appealing and resilient. Although the postmodernist conceptualisation of a hybrid and expanded reality would, at first sight, be more coherent with digital culture, the evolution of information and communication technologies and their incorporation into the most diverse sectors of society have repositioned the idea of change at the centre of political and cultural debates. The terminology that has widely come to be adopted – digital revolution, digital transformation, digital transition – reveals the tendency to focus on rupture to the detriment of continuity. Such an emphasis on transformation can also be interpreted as an expression of interest on the part of technological companies, for whom planned obsolescence and a collective movement of demand for new services and products represents a potential business opportunity.

Cultural institutions are never neutral agents in the development of these dynamics, and digital technologies inevitably reshape museum practices in various ways. As Chiel van den Akker and Susan Legêne point out, 'The use of information and communication technology affects means of display, research, and communication and may involve issues of power and authority, of ownership and control over access to heritage and information, both physically and intellectually' (Van den Akker and Legêne, 2016, p. 7). Furthermore, with the global spread of social media, museum audiences are more than ever active participants, assuming and demanding – whether in physical spaces or online, or moving between the two (Kidd, 2014) – the right to have a role in the representation and construction of knowledge and culture.

In this context, and especially after the global acceleration of the "digital turn" caused by the COVID-19 pandemic, it is crucially important to discuss the meaning of change in museums, questioning to what extent technologies can enhance their relevance as repositories and connectors of time and space (Castells, 2001/2010) or even whether "change" is the right path for museums to follow.

Following the International Conference on Art, Museums and Digital Cultures (online, April 2021)¹ this book represents the third phase of a collaborative project developed by maat – Museum of Art, Architecture and Technology and the Institute of Art History, School of Social Sciences and Humanities, Universidade NOVA de Lisboa, under the scope of its Art, Museums and Digital Cultures Cluster.² This partnership began in October 2020, with a webinar on these topics,³ which preceded the conference and enabled us to share the experiences and practices that had already begun to take place in the first few months of the COVID-19 pandemic.

The objective of this e-book is not to transpose the previous debates and presentations to a different format, but rather to gather together a diverse collection of essays by both renowned authors and younger researchers, from different backgrounds and geographies and to share them with wider audiences. Organised and designed as a born-digital and open-access publication, this book further seeks to expand the debate on how digital technologies have contributed to the creation of new territories and stimulated different innovations in artistic production, curatorial practices and museum spaces. On the other hand, this collective work also seeks to demonstrate that the relationship between technologies and culture has reciprocal impacts, as contemporary art and museums have formulated new challenges and paved the way for new scientific developments, based on alternative visions of change. Considering that digital resources 'are distributed unevenly across the globe, and the effects of digital media are not uniform' (Bollmer, 2018, p. 20), this project adopts the plural term "Digital Cultures", which not only signals the complexity of the subject-matter but also underlines the importance of cultural diversity and media pluralism in contemporary society.

In this sense, the book opens with the section 'Questioning Digital Culture', in which the conference keynote speakers Ross Parry and Vince Dziekan reflect on the meaning of the term "digital" in the museum context and its declensions over the past three decades, observing that currently 'it is no longer new or disruptive. It is no longer an anomaly that needs to be understood or assimilated.' Consequently, they argue that 'the metamodern museum today

1 For more information about the conference, see: <https://museumdigitalcultures.weebly.com/>

2 Both the International Conference and this book benefited from the support of Instituto Superior Técnico, Universidade de Lisboa (Partner Institution), Millennium bcp Foundation (Sponsor) and *Umbigo Magazine* (Media Partner).

3 More information about the webinar is available at: <https://museumdigitalcultures.weebly.com/related-events.html>

is where the sincerity of modernism and the critique of postmodernity can *quantumly* co-exist.' The post-digital and post-pandemic circumstances are also examined by John P. Bell, Jon Ippolito and Meredith Steinfelds, who use a multifaceted set of examples to expose some recurrent contradictions underlying digital transformation and open access in museums, insightfully asking: 'What do we want a museum to be?' and 'What is the information that should be free?'

Other historical and critical perspectives are examined in section two: 'Curating Digital Art Beyond the Institutional Sphere'. In her essay, Annet Dekker questions the persistence of traditional museum paradigms, noting that 'Comparing the current examples to some of their predecessors it seems institutions have barely changed and learned little when it comes to curating online exhibitions.' Focusing on the concept of "adversarial interfaces", Heiko Schmid also reflects on the potential of online exhibitions and the groundbreaking net art projects of the 1990s and 2000s. The variability of digital art is a theme that permeates the entire section and, through different perspectives and case studies, technology emerges as a decisive agent in curating and design, impacting perception and conditioning the way in which connections are made. While Dejan Grba addresses the conflicted relationship between experimental digital art and the established circuits of contemporary artistic production, Myrto Aristidou and Theopisti Stylianou-Lambert argue that the preservation of VR and AR artworks depends on an effective dialogue between artists and museum professionals. Finally, as a counterpoint to the international scope of the previous essays, José Oliveira outlines a brief retrospective of the early days of computer art in Portugal.

Entitled 'Collaborative Territories', the third section explores alternative forms of interdisciplinary cooperation between artists, curators and scientists. In revisiting both past and current projects, the four texts address such topics as the crossovers between neuroscience, algorithms and the visual arts (George Legrady and Timo Honkela), the role of artists in sci/art collaborations under the increasing pressure of "impact" factors and the potential of fictional strategies for innovative scientific approaches (Charlie Tweed). Other topical issues discussed in this section include artificial intelligence in art museums (Dominik Bönisch) and conceptual prototypes for virtual museums based on 'augmented urban spaces, populated by [...] layers of original and remixed digital audio-visual information, interconnected by hashtags and geo-tags' (Pedro Alves da Veiga).

The debate about online curatorial practices continues in section four – 'Virtual Museums, Archives and Databases' – in which different digital archives and virtual museums are analysed. This section discusses the importance of databases for the documentation and preservation of cultural heritage, as well as for democratising access to public and private collections. While the first two essays (Diego Mantoan; Joana Baião and Sofia Carvalho) focus on the digitisation of contemporary art through the introduction of new cataloguing practices, Maria de Fátima Lambert demonstrates the potential of online archives for the development of research and curatorial projects on nineteenth-century travelling artists and writers, under the scope of women's studies. Centred on online sound archives and intangible heritage, the last text suggests that, with the development of media technologies, 'museums have become places for experiencing new sensations not exclusively described by viewing' (Madalena Oliveira and Cláudia Martinho).

The fifth section – 'Museums on the Web: Shifting Representations and Narratives' – pays particular attention to the pandemic situation, when museums had to find alternative ways to dialogue with their visitors and were forced to adapt their collections, exhibitions and programmes to a digital format. This sequence of three texts illustrates how cultural institutions are using digital platforms to build new narratives, fostering closer and more meaningful relations with their publics. The ambitious (and sometimes misinterpreted) digital strategies of leading institutions, such as the Uffizi Gallery in Florence (Vanda Lisanti), are contrasted here with the work of experimental web-based museums, such as the Museum of the Person in Brazil (Rachel Augusto). Addressing storytelling and the construction of individual and collective memories, the authors' contributions suggest a 'vision of contemporary museological concepts and practices, taking into consideration [...] shared responsibility, inclusiveness and creativity' (Vitória Schincariol and Marina Pignatelli).

The last section – 'Mediation and Prospects of Change' – further explores the potential and implications of participatory dynamics in museums, addressing critical concepts and issues, such as digital solidarity, networked public space or the decolonisation of digital technology. Drawing on Nina Simon's four models of participation – contributory, collaborative, co-creative and hosted – Jasmin Pfefferkorn suggests a fifth possibility: challenge, which proved to be extremely motivating in recent online projects involving the recreation of art collections. As John P. Bell, Jon Ippolito and Meredith Steinfelds also point out in the first

section of this book, the surprising lesson may be that challenge is attractive. On the other hand, Nick Pozek warns that the potential of digital platforms for providing a broader and more inclusive access to museum collections frequently ignores the fact that 'like the institutions and societies that they serve, digital platforms are not neutral. They incorporate the encoded biases and assumptions of their engineers, but, more dangerously, their ubiquity and ease of use obfuscate the scope of their design and make their consequences insidious.' This perception points to the increasing complexity of digital cultures, which is also explored through the contribution of one of the keynote speakers at the international conference: Felix Stalder. He insightfully questions the role played by the different publics under the present digital condition, observing that: 'Technology involves both reacting to and increasing social complexity. From a cultural point of view, rising complexity means that the number and diversity of normative positions [...] are increasing, together with the possible relations between them. [...] this is both a quantitative (more) and qualitative (different) transformation that has been fed from many sources.'

Rethinking change in art and museums therefore requires facing the complexity of a multidirectional process, in which not only does the evolution of digital technologies impact on cultural institutions, but also cultural agents themselves interpret, inform and inspire technological developments. This involves reframing the relationship between technology and cultural production, thereby overcoming the technocratic stereotypes of "digital transition", which, with their simplified and optimistic narratives, have tended to ignore the fact that new forms of control, segregation and inequality are emerging and spreading.

Contrary to the dystopian visions of the early twentieth-century Futurists, over the last century museums have been able to respond to the challenges of new and unstable notions of time and space, driven by ever faster movements of change. More than at any other time in their history, museums are now called upon to critically exercise their privileged power to simultaneously preserve cultural heritage and transform society.

As an epilogue, this e-book ends with a visual essay by the Portuguese artist João Paulo Serafim, who, together with all the other authors, generously participated in this collaborative project. With the suggestive title 'The Endless Task of Taxonomy', his contribution to the e-book derives from the video essay specially created for, and presented at, the conference in April 2021.

This sequence of images appears as a poetic stimulus to review and rethink the notions of change, time and space in museums, leading us back to Fernando Pessoa's fundamental question: what is, after all, a movement of alteration?

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QUESTIONING DIGITAL CULTURE

Critical Digital: Museums and their Postdigital Circumstance

Ross Parry and Vince Dziekan

During the “digital era”, the *modus operandi* of museums – how museums, their collections and the cultural values they exhibit are understood and activated – has been challenged. The digital transformation that has occurred over the past quarter of a century has unfolded as a series of continuous disruptions, each characterised by their modern, postmodern and metamodern contexts. Given the tumultuous experience of cultural organisations across the world due to the coronavirus pandemic, this text serves as an initial platform for re-evaluating just how critical the relationship between museums and digital technology is today. It reflects on how these exceptional circumstances might be reasoned within the continually evolving relationship between art, museums and the socio-cultural and technological conditions under which they coexist.

A critical difference...

The digital transformation of museums has unfolded as a series of continuous disruptions. The adoption of the networked economies and technologies of the Internet age have directed a restaging of how museums, their collections and the cultural values they embody are understood and activated.

And yet, even after decades of re-coding with and for digital, it was not possible to foresee anything quite so ‘devastating’ (AAM, 2021), ‘unprecedented’ (NEMO, 2021) or ‘dire’ (ICOM, 2021) as what was experienced by cultural organisations across the world during 2020-2021, with the catastrophic effects of the global coronavirus pandemic. If there was ever a time for understanding just how critical the integration of “digital” is to the future of the museum and wider cultural sector, then that time (with respect and with empathy) is now.

In these exceptional times, this text attempts to serve as an initial platform for re-evaluating the relationship between museums and digital technology. We ask what the implications might be of this unprecedented moment – where “normativity” is again reset. We reflect on how this current rupture might be

reasoned within the continually evolving relationship between art, museums and the socio-cultural and technological conditions under which they coexist. We begin by outlining another possible way of thinking about the continuing dialectic between how we theorise and how we practise "digital" in the museum. Specifically, we suggest here that the response precipitated by the pandemic emergency has come at a time when our practice and scholarship are already performing their own re-orientation. The case made here is that, following the initial era of practical adoption (in the 1970s and 1980s), and after a period of critique and reflective theorisation (in the 1990s and 2000s), museum technology as a discipline and as a practice was developing a new maturity (in the 2010s into the 2020s). This was a maturity built upon the museum's confidence to use, manage, create and understand digital technology in hybrid, equitable and sustainable ways.

It should be noted, however, that, throughout this discussion, the word "digital" is being evoked in a way that is intended to be self-consciously consistent with this condition of maturity. The aim here is to use the word, knowingly, in a formation that speaks to the "contours" of metamodernity towards which our discussion is directed (Vermeulen and Van den Akker, 2010). The term "digital" itself (at least in an Anglophone context) has proven both helpful and resilient as museums have adopted, and then adapted to, new technologies. Initially, the word "digital" (succinct, recognisable, unfailingly relevant), served as an effective and resonant way of speaking to a wide range of stakeholders, from policymakers and museum executives to a variety of publics, but also amongst ourselves as a burgeoning community of practice (Finnis and Kennedy, 2020, p. 6). By articulating the varieties and vagaries of technology in an economic and singular way, the term "digital" has proven exceedingly useful. Nonetheless, this powerful all-encompassing word has also masked the subtlety and complexity of what "digital" might be understood to mean, by different people in different contexts, and especially with respect to its specific significance to museums. In other words, despite its value as an all-encompassing high-order term, it has always carried with it the risk of conflation.

Any formal definition of "digital" does, of course, need to acknowledge the logic of computational processing and recording within a fixed digital array of signals – usually binary. And yet, beyond this, how we deploy the word within the sector today requires both precision and confidence. With respect to museum work, "digital" can be usefully understood to carry four key meanings (Malde, Kennedy and Parry, 2019, p. 23). Firstly: digital is something we *use*; it is a tool, a piece of

software or hardware. Secondly: digital is also a *process*; it is strategy, vision, it is the protocols and the ways that we project-manage. Thirdly: digital is the thing we *create*; we have digital assets, we create digitally-born information, artworks and artefacts, and indeed we collect digital things. Finally, digital is the context in which the museum finds itself today in its contemporary circumstance; it is a cultural condition, as well as the aspect of society that museums might seek to interpret along with their audiences and communities. Digital, in short, is also something museums *understand*.

It is this definition of museum digitality (both expansive and framed, consistent but flexible) that the following three "episodes" draw upon in order to illustrate a sense of evolving digital criticality. Three episodes, each with its own metonym: an agency newsletter; a gallery visualisation; and a podcast conversation.

The (modernist) advent of computer-based technology

Our first episode marks the moment, two generations ago, when initial attempts were made to identify the tools, build the systems and devise the processes through which computer technology could assist the operations of the modern museum. The priorities of those first adopters and technologists was to identify which hardware to procure, establish how to make new software options function, and then to understand an operator's way through this new network of machines, data and other operators (Roberts, 1984; Parry, 2019).

Our illustrative artefact here is a newsletter, dated April 1977: the first ever edition of a circular for museum professionals, titled *MDA Information*, written, published and distributed in the UK by the Museum Documentation Association. Across a total of nine Courier-typed A4 pages, with a single-staple binding the sheets together in their top-left corner, we hear a new sector agency attempting to find its voice, and reaching for an unfamiliar vocabulary, in order to 'advise and assist museums' in the new challenges of information management. This was a nascent community of practice, coming together to 'research and develop methods of documenting collections, managing these and other sources of data, and retrieving information from them' (MDA, 1977, p. 1). The story that this newsletter tells is of a flickering of new workshops, meetings and working parties, emerging (amongst other things) to 'find the computer resource requirements' of individual museums, looking to the potential of 'a common approach' to computerisation across institutions (MDA, 1977, p. 8).

Those association members, who read those first updates on “computer use” within museums, were documentation specialists and represented a new breed of information professionals and technologists. The readers of *MDA Information: Volume 1* were interested in the structure of data and its application to the management of collections. This was a community that, in the twenty years to follow, would go on to produce entire bookshelves of instructive manuals and “how to” guides. They would schematise new processes, diagram new systems (Rold, 1995), and explain ‘new technologies’ (Puglia, 2000). They would endeavour to reach consensus on shared terminology and codes, as well as to establish the new standards for interoperable machine use. This was the new practice and new scholarship of “museum informatics”.

Our modernist episode here, illustrated by our newsletter artefact, characterises a professional and cultural moment where primacy was given to technical competency, where thought leadership became aligned to technological expertise. In that moment, computing was something to be “solved” and the museum sector sought “IT solutions”. The criticality surrounding “museum computing” was consequently the product of its modernist era: an industrialised approach to “progressing” museum work through technical experimentation, automation, systematisation and computer-based information management. Therefore, both the academic discourse and the curatorial practice that were centred on this technology attended to questions of “how”. It would be in our next episode (which we might usefully see in the condition of postmodernity) that more playful and intentionally awkward questions of “why” would enter the frame.

The (postmodernist) disruption of new media in the museum

In this episode, the story of postmodern disruption will be told illustratively in relation to the redevelopment of a representative museum some twenty years ago, at the turn of the millennium. The type of institution that this account evokes can be generalised, while prevailing *circumstances* can be discerned in the traces left by things and recognised through particular *situations* that, according to Guy Debord, represent ‘a moment of life concretely and deliberately constructed by the collective organisation of the unit, unitary ambiance and a game of events’ (Debord, 1958, p. 51).

(So, in order to begin this story, please indulge us by taking a moment to imagine a museum... a museum whose monumental presence exudes a prevailing impression of tradition, solidity and timelessness.)

This idealised "image" conjures up the architectural visualisations of the National Gallery of Victoria (NGV) that the Australian architect Roy Grounds prepared in 1960. Designed to mark the centenary of one of Australia's most enduring and important cultural institutions, even back then, this way of seeing (or conceiving) the museum was anachronistic, being both out of step and register with the reality that the building as a proxy for the institution at large would end up finding itself occupying. Some forty years later, this process of visualising the museum anew would be revisited once again in the NGV's further expansion as part of a major civic redevelopment project in Melbourne. While confronted, this time around, with new digital realities, and despite wearing a host of distinctive postmodernist trappings on its gleaming and sharply-faceted surfaces, certain enduring, innately conservative traits were internalised. The resulting National Gallery of Victoria Australia (NGVA) betrays a degree of reticence (or is simply not "imaginative" enough) in relation to the broader implications of digital culture, while also treating digital as something separate, almost a parallel universe, rather than an *infrastructure* that would permeate the fullest range of functions and programmes of the institution at large. The disruption of digitalisation at that time would be largely managed behind the scenes, where, during an extended period of closure while major building works were undertaken, the institution took its first comprehensive steps towards digitising its collection of some 70,000 works. For the most part, this transformative activity remained hidden from public view, with only brief glimpses of this digital realm breaking through into the museum's gallery spaces via the architecture's notable insertion of a proliferation of digital screens.

The challenge of digital may not have thoroughly infused this particular iteration of the postmodern museum. Notwithstanding, its architectural expression did indeed announce a certain critical self-reflexivity, influenced by a cultural context which institutional critique had already taken hold of. Critical practices – exemplified by the theorisations produced by the likes of Douglas Crimp (1993) and Griselda Pollock (2007) amongst others – put forward other perspectives and embraced interdisciplinary discourses offering fresh angles, while new understandings gained from, and expressed through, forms of practice marked the rise of the curatorial (Lind, 2012) as a means of self-interrogation in its own right.

The relationship between digital mediation and spatial practice would be reshaped by the emergence of New Media Art. The new cultural architectures, interventions, exhibition formats and platforms that this form of cultural practice brought with it (Graham and Cook, 2010) would encourage us to start thinking differently about the interfacing of the real and the virtual and to treat analogue and digital not as oppositions, but as forming new relations with each other that begin to circumscribe a set of increasing *postdigital* conditions.

The (metamodernist) maturity of digital practice in the museum

This story's unfolding "digital" narrative over half a century has taken us, thus far, from something systematic and structured, to something that held up a mirror with which to reflect upon itself and critique what it means to bring digital media into the museum. Today, the new media have become more orthodox within the function of the museum, more orthodox within the skills, behaviours and the everyday experiences of many (though not all) members of the museum community: visitors, as well as museum workers themselves. This is our postdigital moment; our metamodern moment where digital is now a normative function within both the museum and the society that it operates within. It is no longer new or disruptive. It is no longer an anomaly that needs to be understood or assimilated. Rather, it has become innate for museums to think of themselves as media organisations within a "mediatised" world (Drotner et al, 2019, pp. 3-9). Notably, this now means that what we write about and focus on has become less about the technology itself, and instead is much more about where that technology is being used, why, by whom and what it enables.

To illustrate this further change in professional practice and (synergistically) in scholarly criticality, our third episode centres not on a document, or a space – but on a podcast. The *People. Change. Museums.* podcast series, written and presented by Sophie Frost (2020), shares insights from *One by One* – an international consortium (of academics, cultural organisations, technologists, professional agencies, funders and policymakers) that uses situated action research to help build digitally confident museums. The multiple episodes of the podcast series provide a striking artefact of how much has changed in the criticality of museum technology: of who leads, on what, how, where and for what purpose. First, Sophie Frost is not a technologist – but a humanities scholar leveraging sociological thought and anthropological methods, in order

to understand the everyday experience of museum work centred around change and technology. Here we notice thought leadership that is not aligned either to technical competence (as with the computer-based technology of our modernist episode), or to curatorial design (as with the "new media" of our postmodernist episode), but instead – liberatingly – to outside museology and the core of museum computing itself. Here, the critical constituency of museum technology has opened up and spread outside – and self-knowingly so.

Furthermore, the method that Frost follows (what she calls 'part spoken essay, part interview and part call to arms'), is not intended to be problem-solving and solution-finding, nor is it an experimental disruption or sceptical critique. Instead, her work listens (rather than tells), and inclusively seeks allyship in the diverse voices of others (rather than claiming its own exclusive expertise). These are not instructive guides, nor are they unsettling interventions – but rather places for empowerment. The subjects covered in *People. Change. Museums.* signal an even more profound re-orientation in the criticality of museum technology. The podcast is not a primer on technology and standards, nor a thought-experiment on the role of museums and media in the digital age. Instead – looking to the 'mediating' (Kilicoglu and Kilicoglu, 2019) and 'reconstructing' (Radchenko, 2020) qualities of its contemporary metamodern age – the key points it raises for consideration revolve around "emotional labour" and the role of "cultural identity" within digital transformation, as well as the recognition given to the part that "precarity", "agency" and "courage" play within the museum's work with technology.

By foregrounding these qualities, the *People. Change. Museums.* podcast invites us to take up the challenge of a new form of criticality – where discourse is open, voices are diverse, expertise is distributive and (perhaps most notably of all) change is possible.

... a different criticality for museum technology

These three "episodes" reflect an ongoing evolution of museum technology – as both academic discipline and curatorial practice. They are not intended to be complete and closed explanations, but are offered, rather, as three vignettes, whose framings might help us to notice, and then differentiate between, different conditions of criticality. Their purpose is illustrative. As a triptych, they depict how today's context might be seen as distinct from – and yet dependent upon – the professional eras that came before.

In the first episode, we see the initial burst of enthusiasm and excitement that had developed around museums and technology. A moment of industrialisation, of structural thinking, of classification, of seeing the potential of the machine. The response in the museum sector at that time was to automate collections, to categorise thinking, to bring the computer into the museum environment as a "solution". A moment of genuine sincerity, a belief that computing could help the museum to fulfil its mission.

In our middle episode, a moment influenced by postmodernism during the 1990s and 2000s, the sector found itself faced with the challenges of digitisation, databases and connectivity on a global scale, thanks to the World Wide Web. This was also the era of critique, of play, and – at times – of pastiche of what "visiting" meant online, how an object could be "digital", what it was to "curate" with crowd-sourced content. This was the museum's moment of digital self-examination – of questioning its role and value in the network age.

We suggest that this latest critical episode (the last panel in our triptych) is that of the metamodern. Whereas the modernist museum worked hard to structure, build and organise with technology, and whereas the postmodern museum allowed this work to wilfully collapse in on itself (questioning whether everything was quite as orderable), so the metamodern museum today is where the sincerity of modernism and the critique of postmodernity can *quantumly* co-exist. Consequently, our moment of digital maturity is one of hybridity – being critical, reflective, sceptical and questioning, while yet retaining a sense of purposeful optimism. It is a new criticality that is comfortable with complexity (Anderson, 2020, p. 21), can decline outmoded binary distinctions with confidence (Cameron, 2021, p. 8) and is ready to deal with unprecedented digital scale and velocity (Manovich, 2020, p. 14). And yet, it is also a moment, amidst all that justifiable critique, in which we can still build things of value and worth.

Ultimately, across these "episodes" we can trace an evolving criticality around museum technology – in each case showing us in which direction we now might usefully turn. In terms of "products", and *what* this criticality generates: a shift from producing protocols, instructive guides and handbooks, to developing enabling tools that are open and adaptable. In terms of "people", and *who* leads these critical conversations: a shift from the lauded technical competencies of first adopters to the now lived cultural experiences of multiple allies across the sector and society. In terms of "principles", and *why* this criticality helps us

to move forward: a shift from technology-centred, problem-based, progress-led activity to people-centred, context-based, values-led processes that reflect *how* such criticality is enculturated.

Now, in our postdigital circumstance (and metamodern condition), we have an opportunity – in whom we support, what we produce, how we reason, and where we assemble to undertake this important work: a shift from closed projects to an open commons of digitally-enabled discourse and activity – to support a very different form of criticality for museums and technology.

Acknowledgements

The authors are grateful to the convenors of several international events who have generously provided an arena (albeit online, during this disruptive last year) to share and test early versions of the narrative and thesis presented in this paper. These include: *The Art Museum in the Digital Age – 2021*, The Belvedere (Vienna, January 2021); *El I Congreso Internacional de Museos y Estrategias Digitales*, CIMED21 (Valencia, March 2021); *Vores museums afslutningskonference* (Copenhagen, May 2021); and the *7 Experiences Summit*, Experience Research Society, Aalto University (Espoo, September 2021). The work presented here also draws upon the ongoing work of the authors within the *One by One* research consortium, and its latest (*3 by 3*) funding from the National Endowment for the Arts (NEH) in the US, and the Arts and Humanities Research Council (AHRC) in the UK. Thanks also go to the numerous (anonymous) reviewers who have provided feedback on the proposal to establish a new international book series (with Routledge) *Critical Perspectives on Museums and Digital Technology*, to which this paper serves in many respects as a prolegomenon.

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Used to Be Different, Now It's the Same? The Post-Pandemic Makeover of Museums

John P. Bell, Jon Ippolito and Meredith Steinfelds

It has become commonplace to hear that 2020 has forever changed the art world and cultural heritage in general. But this is a story we heard even before this, during the dot-com boom of the early 2000s, when museums like the Guggenheim, Whitney and SFMOMA made a leap towards digital collections and programming. What lessons can be learned from the digital gold rush of the turn of the millennium and how should museums apportion resources strained under the pandemic in order to take advantage of this latest transition? In this collaborative text, the three authors focus on case studies of digital solutions from today, compared to solutions to similar conundrums from 20 years ago. The case studies will explore three key areas of change: improving content, improving access and improving tools.

Introduction

In 2020, it became common to proclaim that the transition to virtual experiences driven by COVID-19 would forever change the art world and cultural institutions in general. Given our collective faith in technological progress, it is tempting to assume that the technologies for sharing cultural artefacts in digital form – virtual galleries, 3D scanned artefacts, social media – have dramatically improved the range and quality of remote experience compared to the innovations that artists and curators explored in the 1990s and 2000s. But has the digital divide improved or worsened? Can museums harness the open-source dynamic of the early Internet to distribute the load now placed on museum staff under post-pandemic budgetary and logistic challenges, or must they, in the words of Seema Rao, 'do more, with less, under harder circumstances' (Rao, 2020)?

Better Content

If there was ever a year when museums needed to look outside their walls for inspiration, it was 2020. COVID-19 shut galleries, choked off travel to cities

and scared people away from public spaces in fear that being exposed to artwork in the flesh would expose them to fleshy contagions as well. So, it was natural for museums to renew their attention towards engaging visitors online.

Unfortunately, over the past two decades, the default for visitors to arts websites has become a largely passive affair in which they scroll past artworks in virtual galleries or attend a Zoom panel discussion with artists. Looking back at how crowdsourcing enlivened the early web reveals that there were previously much higher standards of engagement.

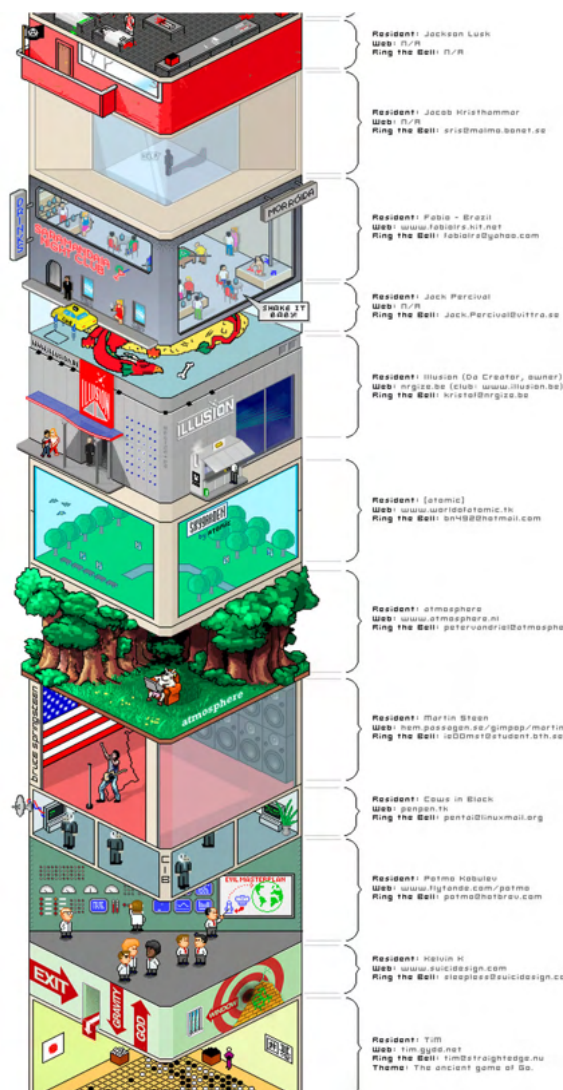


Fig. 1 → Mr. Wong's Soup'Partments (detail), 2004. Screenshot from: <http://www.mrwong.de/myhouse> (Accessed: 20 March 2021). © MrWong.de 2004.

The world's tallest building is not the Empire State Building in New York or the Burj Khalifa in Dubai, but *Mr. Wong's Soup'Partments in cyberspace* (mrwong.de, 2004) (Fig. 1). In 2002, this website invited participants to contribute a floor

to a virtual tower by customising a template with a pixelated 1990s aesthetic. Apart from its size, over 400 storeys tall, this digital skyscraper is a model for successful crowdsourcing because of the quality of its contributions, ranging from meticulously designed apartments to soccer stadiums and fish tanks.

One of the features that gave contributions to *Mr. Wong's Soup'Partments* such high quality was the fact that participation was a challenge. Matching the aesthetic required contributors to add one pixel at a time, rather than hastily dash off an image with Photoshop, and this filter excluded dilettantes and vandals from the process. So, raising the bar for participation can ironically help crowdsourcing to be more engaging for the participants.

Now, it is one thing to have a bunch of wacky artists create a fanciful building, but cultural heritage institutions also need scholarly research. It turns out that amateurs can be remarkably good at that too.

American writer Michael S. Hart started Project Gutenberg in the 1970s, with the aim of transcribing the *Declaration of Independence*, Shakespeare's works and other printed texts to digital files, but the project only really took off with the founding of a website in 2000 that let anyone improve Optical Character Recognition (OCR) transcriptions by fixing typos. In a parallel crowdsourcing project from the sciences, NASA invited their online audience to identify depressions in images of the lunar and Martian surfaces that could be craters (Fig. 2).



Fig. 2 → NASA, Martian Surface, *Crater Locator Project*, 2009. Available at: https://commons.wikimedia.org/wiki/File:Dinorwic_crater_area.png (Accessed: 20 March 2021).

It may seem unlikely that anyone in their right mind would volunteer for such menial tasks, yet both of these crowdsourcing projects attracted enormous numbers of participants. Poring through square mile after square mile of the lunar surface to identify dots would seem to require a fanatical amount of dedication. Not only was the quantity of work extraordinary, but so was the quality. Yochai Benkler's *The Wealth of Networks* (Benkler, 2006) cites studies demonstrating that the contributions of these amateurs were just as or even more accurate than those of professional graduate students. Again, the surprising lesson may be simply that people find such challenges attractive.

Of course, there are many more things to do online now than there were in 2000 and many of them are more engaging. In the 2020s, the dominant cultural paradigm for such challenges is a computer game and it is no surprise that 50 percent of Americans turned to videogames while stuck at home during the pandemic, in what *The Verge* described as 'a habit that's here to stay' (Farokhmanesh, 2021). The appeal of games is also responsible for one of crowdsourcing's greatest successes: the creation of emulators to run obsolete software.

On 31 December 2020, Adobe officially discontinued its Flash plugin following shrinking browser support for this interactive environment. This move made it effectively impossible to play the lion's share of games that were on the web in the early 2000s. Enter the amateurs: gamers who missed shooting aliens in *Space Invaders* or kicking Koopa Troopas in *Super Mario Bros.* had already built emulators that impersonated obsolete platforms like the Atari and Nintendo consoles. Those waxing nostalgic for Flash games on sites like *New Grounds* turned their attention to Flash. Eventually Flash-based emulators like Ruffle made their way into the Internet Archive, where visitors can play vintage games without a special plugin. A side benefit of a robust emulator is that it can run any software that originally ran on the obsolete platform, which means that museums may be able to resuscitate their own curatorial projects built in Flash, by using an emulator originally designed to help a frog cross the street.

How might the game paradigm attract contributions to a museum that is looking, let us say, to improve how it categorises its collection? *Waisda* (Dutch for "What's that?") is a video-labelling game created by the Netherlands Institute for Sound and Vision. Now, proofreading a sonnet or identifying craters in a photograph can be performed in a few seconds; scrubbing through 10-minute videos to add metadata, on the other hand, burns through precious time that curators and other staff could usefully spend attending to other

priorities. So, *Waisda* invites online outsiders to score points by labelling birds and other subjects seen in video excerpts. For example, in the *Waisda* game *Spotvogel*, if two different users tag the video with the same name of a bird species, such as "nuthatch", for example, they are likely to be correct. This successful outcome benefits both the users and the institution: both users earn a point, and the tag is officially entered into the institution's metadata. *Spotvogel's* success derives from combining the attraction of a game with the passion already associated with the "birder" community.

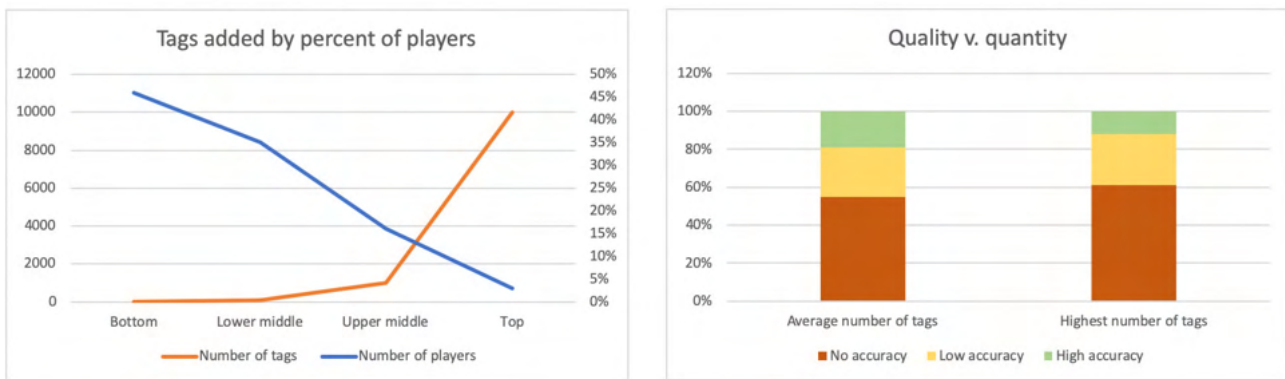


Fig. 3 → Netherlands Institute for Sound and Vision, *Spotvogel*, 2009. *Waisda* metadata crowdsourcing analysis. Tag frequency by user, based on Maarten Brinkerink, 'Waisda? Video Labeling Game: Evaluation Report', 18 January 2010. Graph created by the authors.

Despite this success, an analysis of *Waisda* (Brinkerink, 2010; Netherlands Institute for Sound and Vision, 2013) showed that most of the metadata tags were posted by a small subset of players (Fig. 3) and that more tags do not mean more accuracy – in fact, they usually mean less. Therefore, a museum intent on accurate metadata should not try to get as many people tagging as possible, but should invite people to tag what they know about and what interests them. Having said this, the accuracy of crowdsourced metadata may not be as important as engaging your public (Oomen, 2014), especially for the post-pandemic museum.

For organisations without the wherewithal to host an interactive metadata game, services like *From The Page* (FromThePage, 2021) enable visitors to transcribe handwritten letters or the backs of vintage photographs. An invitation to re-create paintings or other works from your organisation's collection on social media offers another pandemic-friendly way to engage your public (Goldstein, 2020). Feature a handful of sample paintings on your homepage with a custom hashtag and reassure social media users who re-interpret these images in their own idiom that you will not sue for copyright infringement. Then keep tabs on

that hashtag on Instagram and Pinterest and be sure to give some love to that *Madonna and Child* that Debra re-created in her kitchen with a tablecloth and cat.

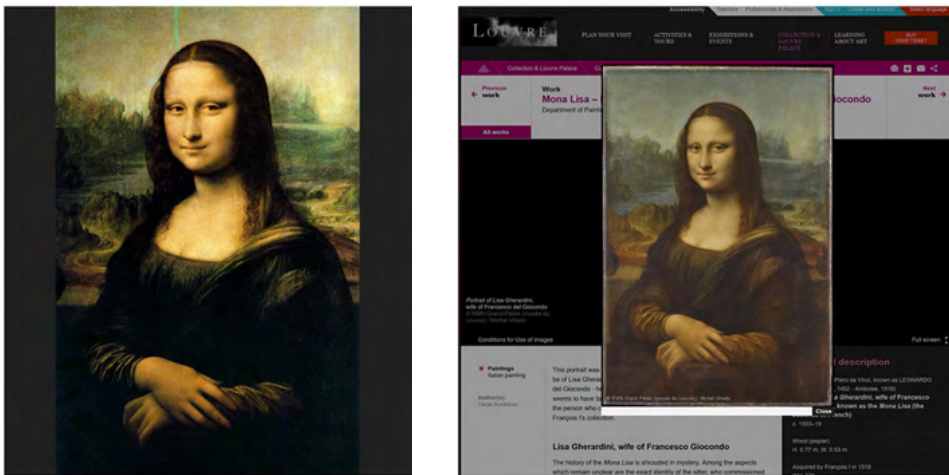
Better Access

The mythology of the early World Wide Web was built on a base of techno-utopian hype that was quickly called into question by contact with the real world. One of the pillars of that mythology, namely Stewart Brand's idea that 'information wants to be free' (Levy, 2014), has long been a complicated feature for museums that want to engage with their patrons online. Living in a pandemic has only highlighted the challenges involved with providing access to museum collections online: if visitors can no longer walk through the turnstile at a physical museum, how can they better experience those collections remotely?

Most would agree that providing people with greater exposure to their collective cultural heritage is inherently good and is in keeping with the ideal that information wants to be free. But while the full context of that phrase is often omitted, when Stewart Brand coined it, he was highlighting a tension that museums have become very familiar with:

It seems like there's a couple of interesting paradoxes we're working with here. [...] On the one hand information wants to be expensive, because it's so valuable. The right information in the right place just changes your life. On the other hand, information wants to be free, because the cost of getting it out is getting lower and lower all the time. So, you have these two fighting against each other. (Brand cited in Levy, 2014)

Addressing this paradox has been the work of decades for museums. At the beginning of the web era, museums moved too slowly to try to resolve the problem and the community raced ahead of them. Nicholas Pioch's 1994 *WebLouvre* was an online homage for many artworks in the collection of the physical Musée du Louvre (Mirapaul, 1996). While Pioch agreed to change the name of his site to *WebMuseum* after its launch, he did not remove the images of works held by the Louvre itself. Between 1994 and a redesign of the Louvre's website in March 2021, *WebMuseum* provided better access to some works than the official Louvre website: Pioch's image of the portrait of *Mona Lisa*, for instance, had a higher resolution (743px x 1155px) (Pioch, 2006) (Fig. 4) than the image that the Louvre provided (442px x 650px) (Musée du Louvre, 2019) (Fig. 5).



Figs. 4-5 → Two images of Mona Lisa, pre-COVID-19. Left: Leonardo da Vinci (c. 1503–1506) *Portrait of Mona Lisa*, also known as '*La Gioconda*'. Online reproduction of the original artwork at Pioch's WebMuseum, 1994. © 2006 Nicolas Pioch. Right: Leonardo da Vinci (c. 1503–1519) *Portrait de Lisa Gherardini, épouse de Francesco del Giocondo, dit La Joconde ou Mona Lisa*. Online reproduction of the original artwork at the Louvre Museum website, 2020. © 2018 RMN-Grand Palais (Musée du Louvre) / Michel Urtado.

It was only after the Louvre's 2021 redesign – notably a year into the COVID-19 pandemic – that the Louvre's digital access provided a higher-quality (1145px x 1500px) image of the painting (Musée du Louvre, 2021), as part of a massive database documenting more than 480,000 of its objects (Musée du Louvre, 2021). Although this is an improvement, the Louvre's new site is still holding back the highest quality images.

The Louvre created its website to supplement the physical paintings in its collection; access from this perspective is an inherently lesser experience than standing before the piece itself. The site was a compromise between information being valuable (exclusive rights to see the *Mona Lisa* are owned by the Louvre) and free (images of the *Mona Lisa* are widely available and simple to transmit digitally). This tension was resolved by offering a lower-quality documentation of the experience as a placeholder and an enticement for the higher quality in-person experience. The 2021 redesign completed during the pandemic only adjusted the threshold; while image quality became more free, other aspects of the museum experience remain expensive. The new website is still an object-centric database that provides metadata in place of context. Database-oriented presentations such as this are essentially a bagful of artefacts that lacks the curatorial context of a museum gallery. The new site says that the information that wants to be expensive is the works themselves and the information that wants to be free is the documentary shadows of those works.

Changing that valuation is what changes a digital visitor's experience. The Smithsonian Institution, for example, has begun offering some of its objects as 3D models on its website (Smithsonian Institution, 2021). While 3D models remain documentation of physical artefacts, the viewer app used to see them allows visitors to manipulate the model, see it from different perspectives and even glimpse aspects that may be hidden in a physical museum, like the back of a relief (Fig. 6). Interactive documentation that grants users the agency to manipulate a digital object in ways they could never replicate in a physical museum is no longer just a shadow of a physical artwork – it offers new modes of experience. The Smithsonian even goes a step further by offering these models for download in formats that are compatible with 3D printers – the expensive information of physical form is thus made free.

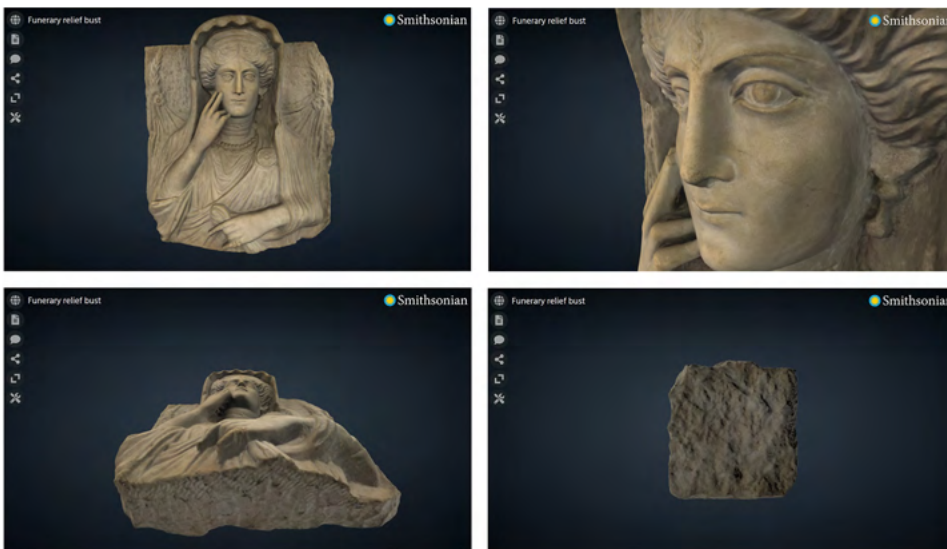


Fig. 6 → Unknown Author, Funerary relief bust from ancient Palmyra, c. 231 CE. National Museum of Asian Art, Smithsonian Institution. Gift of Charles Lang Freer. Four views on the Smithsonian Institution's 3D web viewer. Screenshot from: <https://3d.si.edu/object/3d/funerary-relief-bust:7bc195a7-385f-43be-93c8-79a6bb46ff4b> (Accessed: 21 March 2021).

Other digital reformations that go beyond a website gallery maintain a more static model of interaction with the works, but they also supplement it with the context a visitor would receive by entering a physical gallery. The Vordun Museum in the virtual world Second Life is a full digital replication of a physical museum, even down to the gift shop (Pey, 2016). The Vordun's skeuomorphic take on a virtual gallery forestalls the freedom provided to visitors by the Smithsonian's open 3D models. Instead, it offers information that the Louvre website treats as expensive – gallery curatorial context – for free. Replication of physical worlds in virtual spaces can go even further by offering up some of the agency held back by the Vordun; for example, the Museum of the Fossilized Internet (Berger, 2020) (Fig. 7), created by Michelle Thorne and Cathleen Berger

in Mozilla Hubs, combines the Vordun's skeuomorphism with the openness of the Hubs platform, laying the foundations for folksonomic virtual museum galleries.

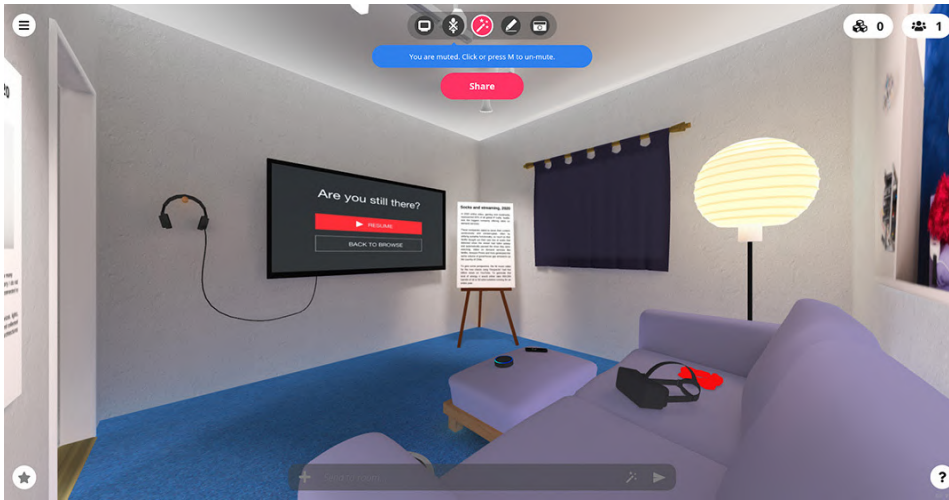


Fig. 7 → Cathleen Berger and Michelle Thorne, *The Museum of the Fossilized Internet*, 2020. Screenshot from: <https://hubs.mozilla.com/scenes/wgsrNly> (Accessed: 21 March 2021).

Even traditional museums have been adding more interactive and playful exhibits for some time, but full user-generated exhibits can still be conceptually challenging. In virtual worlds, however, they are coming regardless of what museum professionals believe a museum gallery is or should be. This trend is dictated not just by the development of platforms for experiencing digital collections like the web or Hubs, but also, more recently, for creating them. Democratizing access to tools of virtual creation is blurring the lines between what a museum can do with expensive 3D scanners and what a random person at home can do with their iPhone.

When the end user's experience of a museum gallery will be similar whether it was created by the full weight of the Smithsonian Institution or a single art history undergraduate student, we must ask: What do we want a museum to be? What is the information that should be free and what is expensive? Providing better digital access opens up opportunities to ask the next set of questions about how art can be experienced, interacted with, and understood in ways that were not possible in the past.

Better Tools

'What problem are we trying to solve?' could be the official-unofficial quote of museum technologists. In 1967-68, it was how to create a digital collection management system (CMS) for museum use (Sully, 2006). Immediately before and during the dot-com boom, it was how to respond to the increased digital literacy and higher expectations of a community integrating the use of the World Wide Web into their daily practice. Collection management systems that had been developed as electronic inventory trackers were enhanced with multimedia capabilities and larger, more complex data structures, shifting from collection management to content management and attempting to deliver digital experiences to the public (e.g., online collection portals) (Sully, 2006).

When museums shut their physical doors in 2020, virtual access to the collections became the only access. Staff who were used to delving into physical files or stepping into art storage were forced to log into their databases – sometimes for the first time in years. However, the development of museum enterprise systems is not in lockstep with the other software that staff and public utilise.

Coinciding with the pandemic-induced closures, there was an increasingly prevalent awareness that the very nature of collecting objects is a fundamentally western practice that centres whiteness. Cataloguing is performed through this western lens, often using terminologies and structures developed by communities that did not create the objects. This cataloguing is captured in databases which, in addition to lacking fundamental, commonly-used and widely available functionality (e.g., keyword search), were not designed to capture the multiplicities of knowledge and uncertainties about an object.

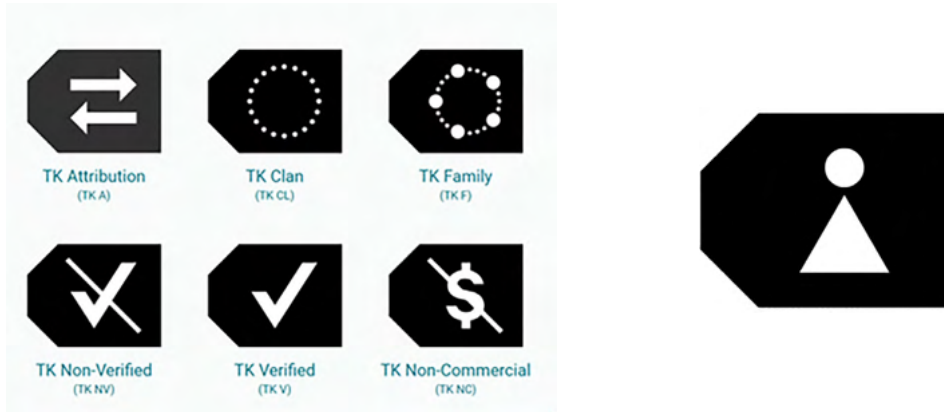
The problem we are trying to solve – we (museum workers) want better tools to match our needs – remains unchanged. But the needs surrounding the tools – the recognition of multifaceted knowledge types – have changed. Yet, feature lists for enterprise systems are almost always limited to restructuring technical infrastructure or fixing bugs and thus ignore the new restructuring of knowledge relationships themselves.

It should be noted that reconfiguring an entire database is no mean feat, nor is attempting to migrate from one proprietary structure to another. However, this does not mean that we should not attempt to work with database creators

in order to restructure knowledge. A database is not a neutral tool, and data selection is a non-neutral act. For example, a database may capture the fact that an object was made in what is currently called New Hampshire, purchased at a gallery and donated to a museum. It may have the ability to record that, between its creation and subsequent purchase, it was looted from the creating community. But, although that information is in the database, there is a sterility and a lack of contextualisation. What forms of knowledge are we missing when we force these Eurocentric tools onto museum collections? Furthermore, from an examination of successful community-driven efforts that enriched collective knowledge in the late 1990s and early 2000s, what can we apply to our current practice?

Below, we touch on four tools that utilise collective, community-based knowledge and which we believe are part of the antidote to the issues described above. However, we would like to acknowledge that these are just four of many cultural heritage-driven projects that operate under this ethos. In 2007, Warumungu community members partnered with Kim Christen and Craig Dietrich to produce the *Mukurtu Wumpurrarni-kari Archive* (Mukurtu.org, 2017). From these efforts, Mukurtu CMS was created, with the intention of affording indigenous descendent communities a way to describe and share their heritage. It is an open-source CMS, maintained by the Center for Digital Scholarship and Curation at Washington State University, but it has yet to see widespread implementation despite being free – and many museums hold indigenous objects and artworks within their collections.

Directly emerging from Christen's work with Mukurtu, Local Contexts was founded by Kim Christen and Jane Anderson, and co-directed by Christen, Anderson, Maui Hudson (Whakatōhea Nation) and James Francis (Penobscot Nation). Local Contexts allows for indigenous descendent communities to utilise community-defined metadata to govern, contextualise and describe Indigenous property via Traditional Knowledge (TK) labels (Local Contexts, n.d.) (Fig. 8). These labels are visual indicators of specific rulesets that govern indigenous material. For example, the *Women General* label indicates that 'the material circulating should only be shared between women in the community' (Local Contexts, n.d.) (Fig. 9). By embracing these labels, and not forcing Eurocentric museum-developed language and taxonomies onto indigenous material, TK labels provide community-centred control for indigenous peoples.



Figs. 8-9 → Some examples of TK labels. *Local Contexts*, n.d. Screenshots from: <https://localcontexts.org/labels/traditional-knowledge-labels/> and <https://localcontexts.org/label/tk-women-general/> (Accessed: 29 March 2021).

The Reciprocal Research Network (RRN), a collaborative initiative meant for the facilitation and sharing of cultural heritage, was co-developed by the Musqueam Indian Band, the Stó:lō Nation/Tribal Council, the U'mista Cultural Society and the Museum of Anthropology at the University of British Columbia. As described on their website, 'the RRN enables communities, cultural institutions and researchers to work together' (RRN, 2014). Within the network, members will use submitted objects for open research and member-created virtual exhibitions. This community-guided research allows for identification of previously unknown makers or research corrections.

Promoted by a community of research, together with public libraries, museums, companies and image repositories, the International Image Interoperability Framework (IIIF) is a standardised, open-source set of application programming interfaces (APIs) that deliver digital images and metadata over the web via manifests (IIIF, n.d.). An end-user can access and utilise any images, from any institution, that generate IIIF-compliant manifests. While originally developed by libraries, museums have begun utilising IIIF-generated images in their online collection portals. Widespread adoption of IIIF or an IIIF-like community-driven software would promote alignment of image standards across cultural heritage institutions, remove barriers of access to high-resolution, research-quality images, and create a sustainable resource.

Neither Mukurtu, Local Contexts/TK & BC Labels, nor RRN are recent efforts; all were developed closer to the dot-com boom than today – and, when this paper was written, IIIF (released in 2012) was sitting right in the middle of the two time periods. However, all speak to the fundamental need that museums have expressed but not found solutions for – namely, that the "standard"

enterprise-level tools developed to answer the needs expressed in the late 1990s/early 2000s are no longer meeting the needs of this era. However, the ethos that these projects embody – openness, community resourcing – are foundational and essential to museum practice. This was successfully practised during the dot-com boom, granting much-needed legitimacy to crowdsourced efforts. However, museums have not adapted their practice, instead favouring control and categorisation, hiding mistakes behind a polished presentation and gatekeeping knowledge. That mindset is no longer tenable. Museums now find themselves with fewer staff, less money, larger collections and a wider public awareness of the problematic nature of museum practices. By examining and adapting past efforts, by shifting the cultural attitude to embrace open access, open source and open data, museums and museum technologists can move towards the ever-changing answer to “What problem are we trying to solve?”.

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**CURATING
DIGITAL ART
BEYOND THE
INSTITUTIONAL
SPHERE**

The Art and Care of Online Curating

Annet Dekker

When museums began turning their curatorial attention towards the Web, these new exhibitions effectively mirrored their offline efforts, being the same thing simply presented in a digitised format. Normally, this form of digital curating was characterised by an approach to the display of artworks that presented rows of thumbnail images to the user with catalogue descriptions attached, enabling them to make selections for viewing based on themes, genres, periods or artists. At the same time, artists, designers and independent curators started moving beyond the standardised white cube galleries and began exploring the seemingly boundless and unrestricted space of the Web. This essay will examine how online curating challenges the traditional models and methods for presenting, accessing and distributing art by discussing practices of collaboration and networked curating. By focusing on the socio-technical aspect of curating, it will address how these practices question established museological values and precipitate alternative ways of understanding curatorial authority.

Introduction

The year 2020 marked a significant shift in online curating. Cultural institutions were forced to close their doors due to COVID-19 and, in an attempt to secure their funding and guarantee the attention of their audiences, resorted to the Web. Unlikely candidates, such as the Uffizi Galleries in Florence, became a hit on TikTok with their absurd video clips showing their prestigious Italian Renaissance collection of fifteenth-century figures "dance along" to Todrick Hall's rap song *Nails, Hair, Hips, Heels*, or by staging the Medusa (with a mask) turning coronavirus into stone. Getty launched *Museum Challenge*, asking audience members to perform their favourite painting or sculpture, and Hastings Contemporary in the United Kingdom wheeled in a robot that visitors could whizz around its prestigious collection. However, many of the examples primarily revealed how the physical gallery space is distinct from the online space (Dekker, 2021). The curated exhibitions mimicked and kept to the standards of the gallery spaces. As someone poignantly remarked when discussing the relevance of the transition

to online exhibitions, it is like moving from 'tab to tab [instead of] room to room'.¹ Comparing the current examples to some of their predecessors, it seems institutions have barely changed and learned little when it comes to curating online exhibitions.

Perhaps this is not too surprising, because, when trying to outline a comprehensive historical trajectory of curating on the Web, there are many challenges to overcome: early examples – and even more recent ones – are often removed, deleted, or simply disappear amid the ongoing processes of the platform that was used, or due to a lack of interest or of the energy needed to endlessly update an exhibition site and/or the artworks. Similarly, there is a lack of archival projects dedicated to Web-based exhibitions. Indeed, despite a tradition of more than 25 years since the introduction of the Web and the subsequent online curatorial efforts, it can be difficult to expand on historical collections, or to remember the exhibitions and events that were held. As also mentioned by Michael Connor, 'The histories are not particularly well documented, and the specificities not so thoroughly mapped' (Connor, 2020). Finally, the expansion and commercialisation of the Web made these challenges even harder to deal with – as they further blurred the boundary between what is or is not art, or what is an exhibition and what is not. In this sense, it is also important to consider the limitations that many institutions have to deal with. As maintained by media researcher Katrina Sluis, the online space is contested,

as it's usually the domain of the communications and marketing team, who are under incredible pressure to convert online traffic into physical audiences. Corporate web servers are tightly controlled, and administered by expensive external web developers who are rarely sympathetic to the installation of unauthorised scripts. So this becomes a boring, yet important factor limiting the format and scale of online projects. (Sluis cited in Dekker, 2021, p. 289)

Pita Arreola-Burns and Elliott Burns from the curatorial collective Off Site Project echo Sluis' observation. After interviewing fifteen contemporary online galleries, they concluded that a great deal of online curation is intrinsically connected to, and influenced by, social media metrics. They noticed how curatorial decisions, including their own, are heavily informed by the need to be visible through likes, comments and shares on social media platforms. As they remarked:

1 This comment was made by one of the participants in the online workshop *expo-facto: into the algorithm of exhibition?* on 29 January 2021. For more information, see: <https://exhibition.school/expo-facto/> (Accessed: 2 March 2021).

Personally, we feel subject to a cult of performativity, having over the past three years extended our programming and felt an increased pressure to publicise this and thereby promote the artists we show. We have become attuned to the reception of our social media actions, internalising an awareness of why singular Posts succeed over others, be it a visual quality, a time period, multiple images or the inclusion of video. In turn we have implemented those unconscious learnings into our design vocabulary and in all likelihood have allowed the Instagramability of particular styles to influence which artists we approach. (Arreola-Burns and Burns, 2020)

Yet, while online exhibitions were popping up out of nowhere, several online curatorial projects decided to halt their activities, perhaps signalling the precarious situation for online art, or to protest the institution that was celebrating its newly claimed territory with digitised collection tours, while ignoring the decades-long history of online curating. Following these concerns, this is an initial attempt to focus on the social aspect of curating, by looking at how curating is cared for, who is involved, and how it is influenced by online platforms and software.

Clearly, the concept of *care* is used and interpreted in different ways, depending on the academic or professional discipline, country and culture. As mentioned by anthropologists Annemarie Mol and Anita Hardon, 'engaging in *caring* does not serve an unequivocal, common good. To think that it does is yet another romantic dream (Puig de la Bellacasa, 2017). Caring practices, like other practices, are rife with tensions' (Mol and Hardon, 2021, p. 197). By reverting to the etymology of the verb "curating", as in "taking care of", and using the verb as an analytical concept and tool, in this article I analyse the activities of caring that take place in online curating: between a curator, the users and the technology involved. In keeping with the analysis and methodology of Mol and Hardon and Maria Puig de la Bellacasa (2017), I see care as a processual activity that develops over time, rather than being performed in a single moment. As Mol and Herdon point out, such an 'activity of *caring* is not taken on board by isolated individuals, but spread out over a wide range of people, tools and infrastructures. Such *caring* does not oppose technology, but includes it' (Mol and Hardon, 2021, p. 199). Moreover, they argue that: 'The technology involved does not offer control, but needs to be handled with care – while, in its turn, it is bound to only work as long as it is being cared for' (*ibid.*). By emphasising the agency of technology in curating, I aim to show how technology does not only need to be taken care of, but can also care.

Towards collaborative curating

In 1998, net artist Olia Lialina initiated the *Art.Teleportacia* project. The idea was to develop an online gallery that questioned the selling and ownership of net art, or, as stated on the website:

[...] to offer on-demand net.art works over the Internet, *Art.Teleportacia* is challenging the traditional art selling system and the institutionalized establishment of curators and directors by offering an [easy] to access presentation platform, a broad and qualified selection, the best service and support for our customers, and last but not least: context, critics and certifications. (Art.Teleportacia, n.d.)

Her attempts to sell net art were unsuccessful and, in the process, *Art.Teleportacia* was renamed *First Real Net Art Gallery*, and later *Last Real Net Art Museum*. Despite the failed attempts, the project demonstrated a new approach to curating by considering (through hands-on experimentation) the medium of creation and presentation to be on the same level as the artworks. After more than twenty years, the *Last Real Net Art Museum* still exists and its collection consists of 37 versions by different artists of *My Boyfriend Came Back from The War (MBCBFTW)*, Lialina's net artwork from 1996. Merely presenting a list of links, at first the website looks similar to institutional websites of that time. However, *Last Real Net Art Museum* was a provocative gesture towards, and a critique of, museums and galleries that were presenting their digitised artworks as an online electronic catalogue. According to Lialina (2017), they also frequently neglected to show the location bars or turn them off when showing the work offline. Providing the URLs of the websites is profoundly important to Lialina, because, in this way, the works can be experienced in their natural environment. It further indicates that the projects belong to the artists, as they exist on their servers, where they can also be changed, replaced, preserved or deleted. She also considers the location bar as a narrative device and thus part of the artistic concept.²

By providing the links to other versions of Lialina's own work, *Last Real Net Art Museum* emphasises the possibilities for appropriation and (re)creation by showing the infinite configurations that are possible, while using the standard interface of an Internet store in addition to presenting discrete projects. In this way, the site also underlines the social network of the Web

2 For more information about the importance of the location bar in Lialina's work, see Dekker (2020).

by linking to the works and the artists. In addition to the online space, the project was translated into physical spaces where the net artworks were transformed in different ways: while some of them were shown in their original hardware casing (albeit functioning via an inserted emulator), others became large projections, immersive VR installations, or could be scrolled on an interactive screen.

In this sense, curating digital art takes advantage of the variability of exhibiting digital art, helped by the increasing affordability of the technology. As such, it expands the curatorial inquiry to include questions concerning the potential of appropriation, online distribution and digital archiving. Moreover, while working on the *Last Real Net Art Museum*, Lialina began collecting all the information relating to *MBCBFTW*: the people who made the iterations, the exhibitions, the sources of the files and the metadata of the artwork. This information proved to be of art-historical interest at the 20-year anniversary exhibition of *MBCBFTW* in 2016, which took place simultaneously at HeK, the House of Electronic Arts in Basel and MU Hybrid Art House in Eindhoven, but more importantly it ensured the preservation of *MBCBFTW*. In the end, the artist is curator is archivist is conservator. Similarly, the practice of care returns in the acts of exhibiting, preserving and archiving the works, but also through appropriation, which can be seen as a way to continue the project (Dekker, 2018). Seeing appropriation as an affective act by the artists who pay tribute to Lialina's initial work continues a process that is set in motion – although mostly unintentionally³ – by Lialina's attempt to collect all the information about her work. Yet, because she presents them together, they become part of larger project that moves between the different iterations, potentially empowering a (networked) act of care. At the same time, Lialina also engages in appropriation by connecting the works to her larger project without the artists' permission, thereby problematising conventional notions of custody and provenance, as well as the way in which they connect to care.

In the case of *MBCBFTW*, a collaborative effort has not yet taken place, perhaps partly because the artists, although inspired and affected by *MBCBFTW*, merely respond and are not directly invited to participate in the project. In 2007, the TAGallery collective tried to emphasise such collective acts by continuing the investigation of linking as a curatorial method. The link

3 Lialina invited the first five artists to contribute (Lialina, 2017), while the contributions by Constant Dullaart and Foundland were commissioned in 2017 by MU to celebrate the twentieth anniversary of the project.

was regarded 'as the main medium for networking, collaborating, contextualizing along with its role as a sign for mutual estimation in a social environment is a fragile entity' (TAGallery 001 (2007)). It was also a metaphor for the 'ephemerality of Web-based art-forms' (*ibid.*), since links often broke, leading to an empty website or '404-Object not found' messages.

Rather than merely missing a connection, the broken link also showed how net art depends on technical processes that are often beyond the artist's control. In this sense, the broken link as part of an exhibition still signalled the existence of an artwork and, hence, it became a reflection on the artwork, as well as on how it was produced and is maintained. By using the social platform Del.icio.us, TAGallery also tried to extend the concept of a tagged and collaborative exhibition. Tagging was a way to assign different artworks to single or multiple themes, to create contextual meaning, and, at the same time, a means to open up the act of selection. The tags, or keywords, formulated by the collective and the users, emphasised the different interpretations for reading the artworks, resulting in semantically impenetrable exhibition titles such as *dead.art(-missing!)LINKreSources*, *de-re-/con-struct(ur)ed_LANG(U)agE*, or *link.of.thought_thought.of.link...*

Tagging was also used to underline the tension between different types of language and methods of communication, from spoken human utterances to computer coding. Finally, by using the medium of the blog, they wanted to explore the practice of collective curating, focusing on dialogue by summarising and juxtaposing experiences, venues, spaces and observations surrounding digital arts curating. Here, collaboration with the users was key, as each new entry became the beginning of a new thread. The curating and the exhibition could be seen as the means to create and emphasise the social network and its subsequent process – enabled by the platform.

How technology cares

While tagging became a popular form of collaborative curating, with the increase in social media platforms and commercial (sharing) sites such as Facebook, Tumblr, Instagram, YouTube, Are.na and eBay, these platforms also impacted curating in other ways. Some curators were exploring the tools within online platforms to modify their original purposes in an attempt to expand the curatorial scope. As explained by curator Gaia Tedone, this was not only

about subverting a platform, but rather an inevitable consequence of curating in these spaces:

[curating in] such a process inevitably needs to confront itself with the extreme volatility of digital content and of images in particular, as links are erased, content removed and websites down-ranked. This should not be seen as a limit in itself, but as an integral part of the research process and can, in my understanding, be creatively incorporated into the curatorial narrative. (Tedone cited in Dekker, 2021, p. 104)

Instead of merely being controversial or trying to break with traditional curation, curating on existing, and often commercial, digital platforms required a new approach. To find out what this meant as part of the larger curatorial project *#exstrange* (2017) on the auction site eBay, curated by Marialaura Ghidini and Rebekah Modrak,⁴ Tedone explicitly started to "collaborate" with eBay's algorithm Cassini to see what the effects of algorithmic curating would be for a curator.

Learning some of the characteristics of Cassini, Tedone put out a call for a "curatorial consultancy" on eBay. Her service was aimed at increasing an artist's or an artwork's visibility, as well as boosting critical reviews, thereby generating revenue through sales – two measures which are usually hard to quantify and control since they depend on highly subjective and volatile criteria such as fame, change, taste and market fluctuations. Engaging with the algorithm involved acknowledging that the latter occupied an embedded position within the platform and that it would have to be accepted as a "relational, contingent and contextual" agent inseparable from its socio-technical assemblage and the conditions under which it was developed and deployed. Of course, Gaia herself was also part of this same assemblage, as were her potential clients. As such, in its articulation as human-algorithmic curation, the service brought together commercial, cultural and socio-technical agendas that characterise the multiple facets of online curation both as a cultural practice, located at the intersection between art, technology and the market, and as a method of 'engaging and participating in online cultures of mass participation' (Tyzlik-Carver, 2016, p. 280).

Ajafa, later identified as the artist Alessandro Sambini, bought Tedone's service to get help in producing his artwork *Portable Wildlife Image Instance*:

4 For more information about the project, see <http://exstrange.com/> (Accessed: 2 March 2021).

his cut-up Tesco plastic shopping bag played with the tropes of contemporary landscape photography and Dada readymades. After a fierce bidding competition, the artwork was successfully sold for 44 euros: an increased market value of 40.5%. On the one hand, the success of the sale can be attributed to understanding and following the logic of Cassini, which was trained to deliver. On the other hand, the auction also benefitted from human interactions, knowledge and experiences – which could not have been anticipated by the metrics of the algorithm – such as in-depth knowledge of the platform and the ability to interact with the algorithm's parameters, disclosed as part of the consultancy service, as well as the fact that the project acquired symbolic value, as it was part of a larger initiative: *#exstrange*.⁵

With her project, Tedone showed how online curation diverges from the logic of conventional practices because of its socio-technical specificity. It shifts the attention from the content to processes and systems, recasting the function of the artwork within a complex network of human and technical agents, other "networked artworks", digital objects and machines, each with their own task, which together create the "performance": the interactions build upon each other, and together they construct the experience. Working with eBay's algorithm, Tedone experienced an alliance between herself as the curator, the objects/artists she selected, the users of the platform, and the machine operations of eBay, which can be framed as a transition from online curation to 'networked co-curation' (Dekker and Tedone, 2019). Moreover, the experiment demonstrated how technology as part of the process also cares, as it tries to make the best deal for both the seller and the buyer, even if the exact process is not fully understood.

Seeing online curating as a set of socio-technical relations and negotiations that are necessary to produce and maintain something, acknowledging that its outcome may be unexpected, then it can be understood as a speculative practice, where knowledge unfolds between human and non-human subjects, whose ability to know is mediated by how they reach out and by the receptivity of the other. Paraphrasing Puig de la Bellacasa (2017), this interplay between curating machines and machine curating proposes a world constantly made and remade through encounters that accentuate the attraction of closeness as well as an awareness of alterity. Moreover, marked by unexpectedness,

5 For more information about the project and its exact workings, see Tedone (2017), as well as Dekker and Tedone (2019).

they require a situated ethicality (Puig de la Bellacasa, 2017, p. 115). In this sense, online curating is about striking a delicate balance between care, dependency and inequality, in which it is important to continuously question the place of care within or beyond notions of power and ethics, as well as the relationships between different dimensions of care.

Conclusion

The examples discussed in this text show how online curating has expanded and diversified the practice, by reconfiguring and opening up the methods of selecting, exhibiting, categorising and sometimes archiving, including artists, users and the socio-technical environment of the Web. The current flood of online exhibitions can be seen as a favourable institutional effort to explore the Web, albeit often in crude ways. However, if the enmeshed ecology is not taken into account, the separation between the online exhibition and its production development will remain, which will impact how online curating is perceived. Rather than looking at the selection and exhibition of artworks, in which the subject of curating enters the institutional and creates meaning, online curating means looking at the multiplicity of entities and considering how the processes they involve are necessary to understand curating. Acknowledging the socio-technical entanglement of curating online is the first step towards emphasising the potential of collaboration, while, in that process, creating the possibility to reshape institutional authority.

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Adversarial Interfaces

Heiko Schmid

Appealing and smoothly constructed, digital interfaces today are installed to cover the complex technological infrastructure of our digital culture. In order to question the suggested seamlessness of contemporary computational media and to understand the potential of online exhibition formats, the following text discusses representative projects that bring an adversarial approach to the design of Graphical User Interfaces (GUI). The concept of adversarial design is defined in this context, drawing on Carl DiSalvo (2012), who speaks of 'a way of doing the work of agonism through designed things'. Against this background, several online art and exhibition projects are introduced, allowing for critical impulses of understanding, disturbing and redeveloping user interface ensembles, as well as depicting the role of computation in the design process. The paper thus highlights the existence of (historic) projects seeking to design media-reflexive internet spaces that offer perspectives for innovative online exhibition formats.

Introduction: Desktop Displays

We live in a world of user interfaces, in which a broad infrastructure of digitally-connected devices operate while mostly hidden behind glossy surfaces. Today, with the rise in the use of cloud-based services, we are literally surrounded by computers. We are living in a computerised and interconnected environment, which also means that the way in which we deal with "interfaces" has shifted from one of control to one of interaction (Shah, 2017). Even though, until recently, the predominant Graphical User Interface (GUI) has been the desktop-keyboard-mouse combo developed in the 1970s (Shedroff and Noessel, 2012), our situation has changed under a post-Internet condition, in which digital technologies affect the most banal everyday situations (Stalder, 2016) with machinery that mostly functions in an opaque mode.

This development is not new, but it has clearly been accelerated by the COVID-19 pandemic and the consequent demand for remote working facilities. Nonetheless, we continue to build on the constant technological

and "artistic" developments that have taken place over the last few decades. It is therefore no surprise to discover that digital mediation formats have gained the attention of the cultural sector during this pandemic. But, as will be highlighted in this text, the approach of curators, artists and cultural mediators is destined to stagnate if they do not foster perspectives that are capable of penetrating the surface of the classical desktop GUI.

If we analyse most of the online strategies developed by museums, artists and other actors from the cultural sector, there has been a clear shift towards the use of archives, databases and event-calendar concepts. Explicitly, museums have been using their Internet representations for marketing and documentation, so that their webpages are mainly used to reference their own exhibitions and events. Consequently, most museums and art institutions do not use the internet in itself as a medium for research and development, but rather as something that is related to their core business of developing and staging exhibitions in physical spaces, as well as for documenting their archives.

We can therefore claim that museums and other cultural institutions still stick to the metaphor of the classical Graphical User Interface, which organises computers into "desktops" manipulated via a mouse-keyboard-display ensemble (Moggridge, 2007). In the end, the classical GUI suggests user-control over the digital machinery by building on writing and storing operations, thus prioritising archives, databases and event-calendar tools. This means that our interaction with online infrastructures is still mostly organised by building on visual and auditory (desktop) interaction patterns, which clearly favour copying and interconnecting approaches.

Nevertheless, with the recent rise in the use of the cloud-based computing infrastructure, which fully immerses the user in a digitised working and living environment, the GUI has lost its central position (Shah, 2017). As this text seeks to demonstrate, the development of this new infrastructure has had a severe impact on the working modes of the cultural sector, because the classical desktop-inspired approach, which focuses on referencing exhibitions and other cultural events, is, quite simply, outdated.

This idea can be validated by observing the characteristics of most current online exhibition formats. Explicitly, in the case of the largest online exhibition facilitator – Google Arts & Culture – it is easy to identify a clear

GUI-inspired approach to online exhibition formats. *Arts & Culture* builds on webpage-oriented arrangements of pictorial documentations and curatorial texts and, in this way, visitors can scroll through the relevant pages, just as they are used to doing when visiting an online shopping or news platform. In these online appropriations, goods, artworks and exhibition spaces are adapted and framed by texts and illustrations in a way that is commonly used for scrolling through classical (desktop-oriented) webpage designs. We are thus faced with phenomena referencing "real" shops, newspapers or exhibitions, by using desktop dependencies. Consequently, it is possible to state that the online displays developed by *Arts & Culture* are unlikely to bring any clear "added value" to the exhibition format. They simply apply classical copying and interconnecting strategies and, in this way, streamline their "content" to a dominant webpage format.

These formats thus suffer from primarily referring to physical exhibition spaces or from being "also" visible on the Internet. Based on this evidence, it can be argued that the classical GUI-based approach has to be counter-positioned with strategies able to adapt the technological entanglements of our present digitised world and also to reflect and reference the technological infrastructure shaping our current experience. Furthermore, as suggested in this text, there is a need to critically renegotiate technological design dependencies, in order to allow online exhibition formats to develop productively. In the following pages, I will introduce a number of leading art and exhibition projects and contextualise them with the classifications of speculative and adversarial design. With these examples, I wish to highlight the existence of (historic) projects seeking to design media-reflexive Internet spaces as a way of negotiating technological interfacing processes. Or, to be more precise, I will discuss projects which build on "adversarial design" concepts to critically reference the way in which digital technology interferes with our living realities, and thus display relevant strategies for innovative online exhibition formats.

Net.art and the Potential of Adversarial Design

Historic net.art artists of the 1990s and early 2000s, as well as their successors, critically adapted to technological and aesthetic dependencies relevant for the ensemble that today we summarise under the title of the Internet (*Net.Art*, 2016). If we consider the early net.art artworks of Olia Lialina, the online

interventions of the art collective JODI, or the critical design analysis performed by Alex Shulgin, we can conclude that those artists formed diverse strategies to critically mirror and develop an independent "mediality" for their artistic internet projects. In this context, the webpage of the artistic duo JODI consists of a rather radical approach (Fig. 1).

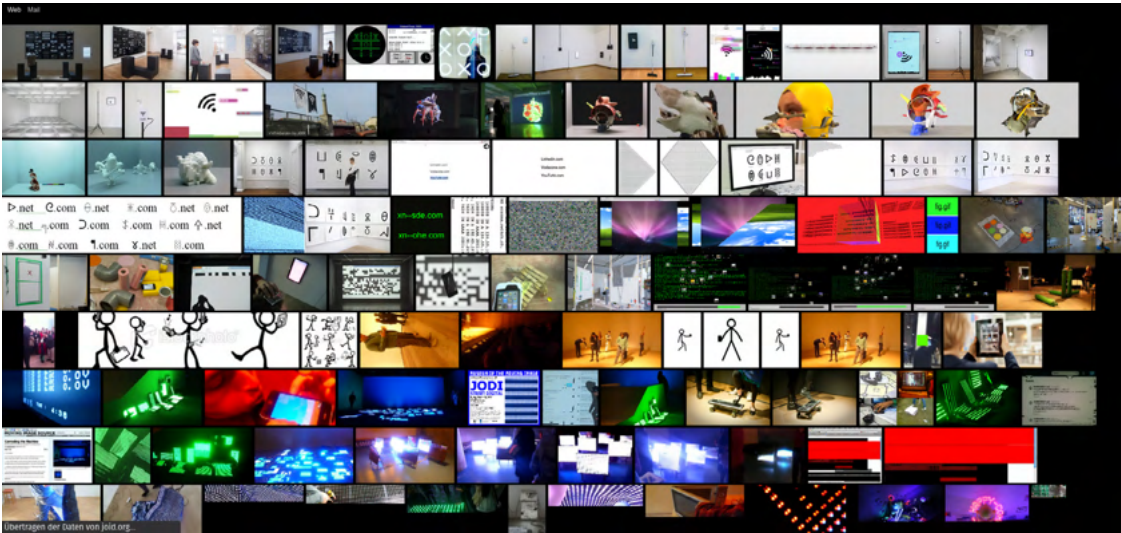


Fig. 1 → JODI, *Archive*, 2021. Screenshot from: <https://joid.org/archive/> (Accessed: 20 June 2021). © 2021 JODI.

By creating abstract webpage sceneries that arrange their content in a disruptive way, the artists disturb the otherwise well-organised "surface" of the desktop window. With their artistic arrangements, they allow diverse interactive elements of webpage designs to gain their own aesthetic presence. In keeping with this strategy, JODI perform interventions which artistically reveal the mediality of the browser window by disturbing trained reception processes. In a similar fashion to abstract art, JODI's net.art turns the design elements and organisational structures of webpage displays into a subject of much discussion. They simply reduce GUI designs to their core elements and, in this way, facilitate an understanding of the background structures defining our navigation through the Internet.

Alex Shulgin displays a more analytical approach to webpage design. In his first interactive project, *Form Art* (1997), he isolated, counter-positioned and arranged design elements from a range of different webpages. At the same time, Shulgin analysed the structural system of webpage interface structures by creating a decontextualised arrangement of relevant design elements. In this way, he gave greater visibility to design phenomena, which would normally disappear in the flow of online navigation. He basically forced visitors

to distance themselves from pre-formatted strategies of perception and to reflect on the design elements, allowing for a seamlessly clean navigation on the Internet. Both JODI and Shulgin critically reference specific design or perception strategies of the webpage navigation in order to create media-reflexive online "artefacts".

In her artwork *Summer* (2013), Olia Lialina actualised this strategy in a more contemporary way. The work consists of a short, animated loop in which the artist appears smiling in a summer dress 'swinging from a playground swing that is seemingly fixed to the top of the browser window' against an abstract white-blue background (Connor, 2013). By displaying visible jumps in between picture frames, *Summer* references important technological and contextual backgrounds. The artwork basically builds on a structure that is spread across different webpages. The obvious frame jumps are apparently caused by Lialina "swinging" between different webpage-servers and, if the observer realises that Lialina swings between the webpages of other artists, for example Rafael Rozendaal or James Bridle, it becomes obvious that she chose websites that were thematically relevant for her work. Thus, Lialina uses the infrastructural framework of the Web to display dependencies and inspirations. She creates a meta-referential artwork that, on the one hand, displays the functional structure of the Web (as a phenomenon connecting content stored on different server-platforms) and, on the other hand, inscribes Lialina's personal connections. This intervention allows her metaphorically to swing happily forever across her own personal Internet. Moreover, by creating a disruption in our normal reception process while surfing the net, Lialina allegorises technological and habitual dependencies that are only subliminally present in our daily use of the contemporary Internet infrastructure.

In this strategy of creating critical online displays that playfully disturb our established reception processes, I wish to highlight another strategy that the above-mentioned net.art projects perform, and which can be contextualised and explained according to Carl DiSalvo's concept of adversarial design. The author defines adversarial design as 'a way of doing the work of agonism through designed things and a way of interpreting designed things in terms of their agonistic qualities', with a special focus on understanding 'what it means to do design with computation as a medium that, like any medium, has particular characteristics' (DiSalvo, 2012). Comparable to the speculative design approach of Anthony Dunne, DiSalvo's approach challenges design professionals to critically reflect upon and reshape their engagement with

the social, cultural and ethical implications of technologies that they make sexy and consumable (Dunne, 2008). Adversarial design for DiSalvo thus incorporates and performs a strategy that agonistically depicts and questions the (technological) structures pre-defining our perception, while navigating through a digitally enhanced world.

In this regard, the concept of adversarial design allows us to critically analyse digital technology, not only as extensions of our bodies or memories, but also as intrinsic constituents of our present living conditions (Marenko, 2017). And that is exactly what the above-mentioned artistic projects do. They apply strategies that can be summed up as adversarial design, in order to reveal and counteract technological frameworks and "thinking" structures established in the context of computational media. We can therefore claim that net.art displays early approaches to adversarial interventions in the design and perception structures of online phenomena. More importantly, and as further explained in the following chapter, such an adversarial approach to web GUI design is needed to foster innovative installations of contemporary online exhibition projects. Hence the critical impulse to understand and disturb cleanly designed surfaces, as well as to depict the role of computation in the design process, must be highlighted as central to the development of contemporary online exhibition projects.

VR and Gaming Spaces

Online exhibition spaces that go beyond the classical GUI structure of online storage, communication and documentation formats are still relatively rare to find, and some of the existing ones are defined by the strategy of optimising the monitor display for simulating virtual exhibition spaces. Such a strategy is counterintuitive to classical GUIs, because the spaces created do not refer to images connecting the computer internals to physical spaces. Those exhibition spaces are, in fact, installed as autonomous phenomena, which simply optimise the browser or display window in order to sustain the art perception. The exhibition webpage *Panther Modern* (2021) is typical of such a VR space.

As can be easily understood while visiting the relevant webpage *Panther Modern*, the browser-window interface can be reduced in such a way that it completely ceases to interfere with the content. The webpage basically offers

the possibility to scroll through images that are seamlessly placed below one another. *Panther Modern* thus adversarially minimises the appearance of the technological interface in order to optimise the impact of its displayed images. We can even claim that *Panther Modern* counteracts the classical webpage design, in order to establish its interface as an interference-free or even "interface-free" stage for art.

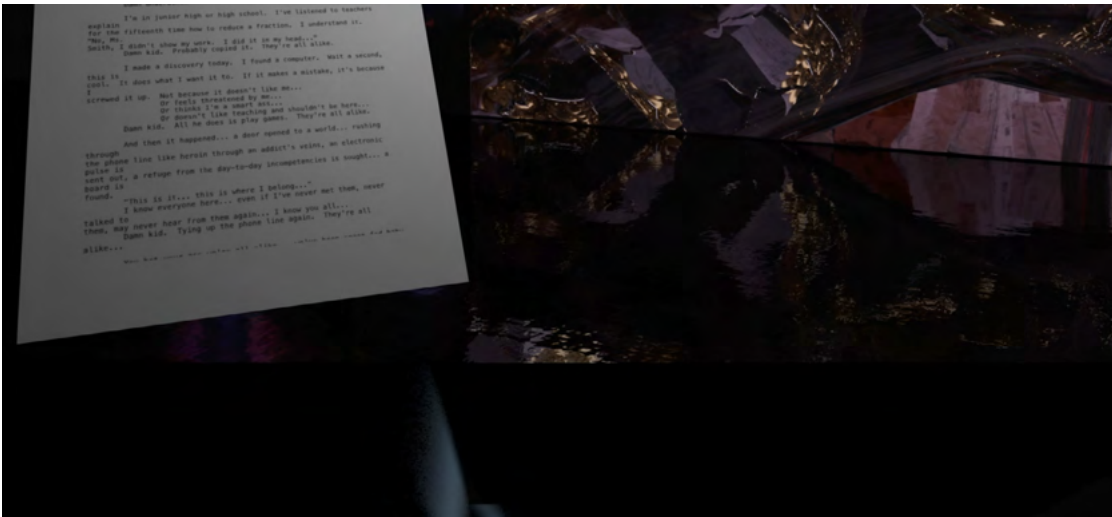


Fig. 2 → Panther Modern, *The Beauty of the Baud*, 2017. Screenshot from: <https://panthermodern.org/roomseventeen.html> (Accessed: 20 June 2021). © 2021 Panther Modern.

The Berlin-based Float Gallery radicalises this strategy of building a hybrid between an actual existing venue and a virtual exhibition space. The gallery thus uses "real" spaces as a starting point for an online exhibition interface.



Fig. 3 → Joe Hamilton, *Act Natural*. Online Exhibition, Float Gallery, 2015. Screenshot from: <https://float.gallery/de/exhibitions/act-natural/joe-hamilton/> (Accessed: 20 June 2021). © 2021 Float Gallery / Joe Hamilton.

Considering its virtual spaces, we are confronted here with the same structure that Panther Modern aims for. The Float online exhibition spaces are arranged free of disturbance and only allow for a very reduced user navigation access. Furthermore, what is special about Float is that the gallery uses its webpage to virtualise and expand its existing gallery facilities. For example, in online exhibitions, the walls are equally perforated and the exhibition space is filled with objects which would normally not allow a visitor to move around in the physical gallery. Here again, the possibilities that the Internet offers to manipulate the occurrence of spaces are used in a way that contradicts the classical desktop GUI. As was said in the introduction, GUIs normally translate physical standards one to one, to an interface that enables us to trigger the internal functionalities of a computer. We are therefore confronted with an adversarial approach that establishes the online format as the starting point for disrupting our conception and reception of space.

A consequent evolution of Virtual Reality exhibition spaces is to be noted in game environments. This kind of exhibition project adapts the technological infrastructure of games in order to develop virtual spaces, which invite visitors to move by using the mouse and keyboard. The project *First Person Soother* by LIKELIKE, 'a neo-arcade arts gallery promoting an experimental and independent game culture' (Pedercini, Schmida and Kelley, n.d.), is a well-produced exhibition game that everyone can visit by navigating to its website and creating an avatar.

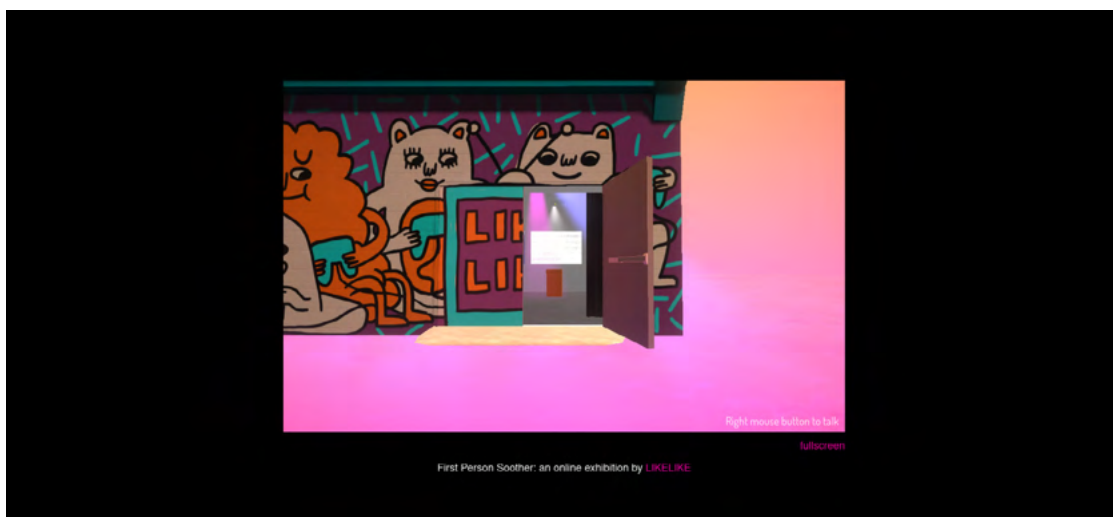


Fig. 4 → Paolo Pedercini, *Likelike 3D – First Person Soother*, 2020. Screenshot from: <http://likelike.org/2020/08/27/first-person-soother/> (Accessed: 20 June 2021). © 2021 likelike.org.

An interesting feature of *First Person Soother* is that the visitor can interact with other visitors by initiating avatar dance moves or producing talking bubbles. We are thus confronted with a virtual world concept that includes an exhibition space which the visitor is able to walk through with others. Again, what was already relevant for virtual gallery spaces such as *Panther Modern* is radicalised here. The constructed world shows no functional or aesthetic connection to classical webpage designs, but rather, as the title highlights, to the popular computer game genre of first-person shooters. The only difference here is that, instead of shooting monsters, the visitor is confronted with an effective exhibition infrastructure, which even includes virtual "mind-blowing" party drugs potentially disturbing the consumer's view. In this way, the project adversarially disconnects from analogue reality measures and creates a gaming-exhibition world, a "mediality" of its own.

This gaming strategy is even further radicalised in the *Dismal Swamp* online exhibition projects. Organised into so-called *Dismal Sessions*, this project completely disconnects from classical exhibition space ideas and creates a dark gaming scenery, in which the artworks are placed in diverse positions.

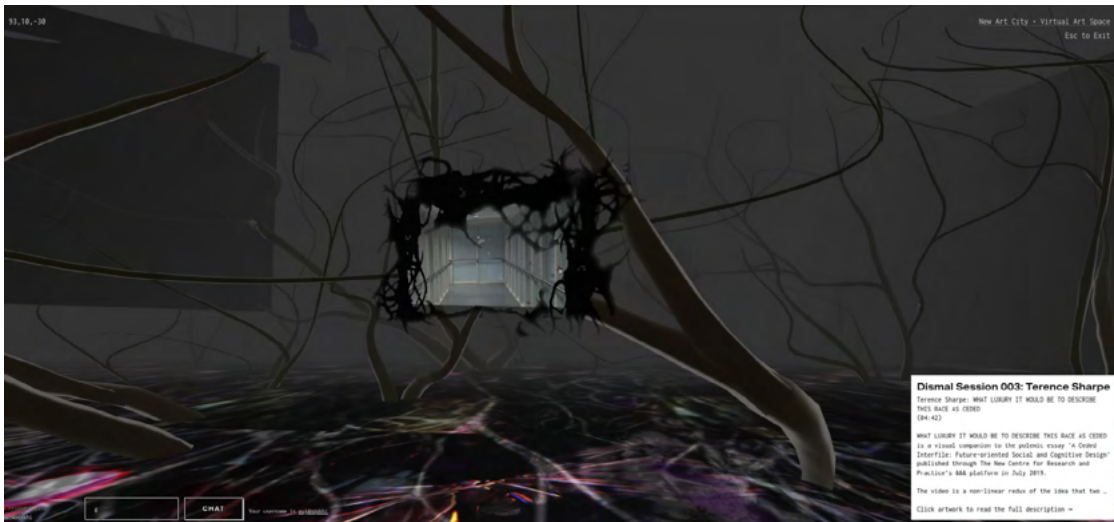


Fig. 5 → Terence Sharpe, *Dismal Session 003, Most Dismal Swamp*, 2020. Screenshot from: <http://www.mostdismalswamp.com/dismal3.html> (Accessed: 20 June 2021). © 2021 Dismal Swamp / Dane Sutherland.

Here again, the user can navigate with cursor and mouse while being confronted with alienating electronic sounds in the course of moving through a complex virtual exhibition architecture. We are accordingly dealing with a complete disconnection from classical exhibition space views while navigating through a *Dismal Session*. At the end, the visitor has to move through a virtual world,

even negating the laws of physics in order to find the artworks placed in the scenery. A striking example in this context is that visitors can move through walls, while "browsing" a *Dismal Session*. So, even if the visitor has to move through a plain landscape, the rules of this world are adversarially changed in order to claim an autonomous "reality", a "mediality" of its own means.

Conclusion

Above all, the examples show a self-dependent, or even technology-reflexive, rule set, while adapting to the online exhibition format. By considering the critical impulse to understand, disturb and redevelop monitor display surfaces, as well as depicting the role of computation in the design process, those concepts negate the classical GUI desktop metaphor, in adversarial designs. We can therefore claim that current online exhibition formats are starting to display strategies that adapt the media-referential potentials and qualities of "classical" net.art approaches. We can also argue that these are now developing new GUI metaphors, which critically perforate the rule systems defining the Stack (Bratton, 2016). And, as was highlighted in this text, these adversarial approaches are needed to allow self-dependent online exhibition displays.

The examples discussed above mostly refer to virtual spaces and play with the rule sets defined by the historically grown perception habits of computer users. In order to demonstrate a more radical approach at the end of this text, I should like to mention the *Place* experiment, which took place on the online platform Reddit in April 2017. In fact, this collaborative project, which included the subreddit *r/place*, clearly illustrates the potential developments of virtual online exhibition formats, which would adversarially stimulate the fundamental framework of the webpage interaction design. We can even imagine radical recompilations of online exhibition interfaces.

In the *r/place* experiment, diverse Reddit users gathered together to play with an interface, allowing the visitors to change areas of the scenery, by joining groups and collectively deciding how to change relevant spots of the interface. This means that the users were able to analyse the scenery and engage in joint efforts to design "space", based on collective decisions. In this context, the interface no longer defined a fixed setup, but allowed the users to contextualise and create the online environment that they were

engaged in. Consequently, in this installation, the shared space became the material of a collective intervention.

From the analysis of this anarchic structure, it becomes obvious that our perception and interaction strategies with the current computerised infrastructure have long been trained through media-technological, habitual and sociocultural factors. We are once again confronted here with a technological framework that focuses on the critical impulse to understand and disturb cleanly designed surfaces, questioning the role of computation in the design process. Against this background, the *Place* project demonstrates that visitors can adapt the exhibition interface in a way that appears most suitable for them. By using this technology, a curator could, for example, engage in a constant discussion process, negotiating the whole setup in which a specific art project is displayed in interaction with interested audiences.

This once again brings me back to my central argument, that we obviously have to develop and understand online exhibition and mediation formats as phenomena building on their own technological means and rules, if we wish to allow them to gain relevance. If our world has changed to a post-Internet condition, in which digital technologies impact all aspects of everyday life, we need to critically, or, in more specific terms, adversarially, readapt the way we structure online art reception. This is precisely what the early net.art projects and authors were able to make us understand and what the cultural scene is still struggling to absorb today.

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Immaterial Desires: Cultural Integration of Experimental Digital Art

Dejan Grba

In this paper, we explore how the creative dynamics of experimental digital art (EDA) relate to mainstream contemporary art (MCA) and digital culture. We discuss artworks that combine playful creative thinking with procedural fluency and leverage complex information technologies, in order to address major cultural issues and encourage vigilance in our appreciation of the arts, society and human nature. However, the conceptual and technical sophistication, variability and technological entanglement of EDA simultaneously marginalise such practices and expose them to exploitation by MCA. This conflicted relationship exemplifies the uneasy coevolution between the open-ended diversity of artistic creativity and the ambiguous flux of discourses, criteria and hierarchies in mainstream culture, commerce and scholarship. It also indicates that EDA practices – whose poetic logic is essential for providing critical insights into our world – merit broader public awareness, requiring innovative modes of academic, educational, financial and technical support.

Introduction

The cultural integration and long-term impact of contemporary EDA are affected by its technological entanglement, by the insufficient institutional support that exists for its preservation and popularisation, and also by its relationship with MCA. EDA includes a rich repertoire of practices, based upon the innovative or unconventional exploration of emerging digital technologies (often in correlation with scientific research), which continuously redefine the notions of traditional and new, thus challenging the distinctions between artistic process, experience and product. Since its origins in the early computer art of the 1960s, EDA has passed through several creative periods, which have always involved a deep engagement with information technologies and with the phenomenology of digital culture (Taylor, 2014). Since the early 2000s, EDA has expanded and diversified beyond purely computation-based methodologies and has been unfolding in a broad spectrum of creative endeavours, poetics and incentives, which often combine bricolage with generative methodologies (Grba, 2020, p. 64).

Generative methodologies in art are based upon intentionally interfacing predefined systems with different factors of unpredictability in preparing, producing or presenting the artwork. By approaching the artwork as a dynamic catalysing event or process inspired by curiosity, susceptible to chance and open to change, generative methodologies frequently entail bricolage. Bricolage leverages the affinity and skill for adopting tools, materials and artefacts from the immediate surroundings in order to redefine and repurpose them through analogy-making and discovery (Lévi Strauss, 1962). It is integral to EDA projects which push the envelope of methodology, production and presentation through playful, but not necessarily preordained, experimentation with ideas, tools and cultural phenomena.

Motivated by a keen awareness of their socio-technical context and exuding well-informed wit, experimental digital artists often address the phenomenology of digital culture through emblematic technological systems, such as the Internet or artificial intelligence (AI), which are becoming ubiquitous and essential, but still remain largely elusive, exclusive, opaque or misunderstood. They build their projects upon multi-layered interconnections between programming languages, libraries, application programming interfaces, software stacks, platforms and services that run on networked hardware with increasing complexity and an accelerated pace of change. In everyday life, we consider these technical layers as guaranteed invisible services, but they are unstable and unreliable as they evolve according to capricious changes in business, technology and politics (Castells, 2010).

Entanglements

A complex interrelatedness between artists' ideas, techniques and presentational modes is inherent in artmaking in principle, but the speed and volume of technological changes make it difficult for digital artists to keep their projects running when the hardware/software systems that they work with change significantly, usually within a timespan of between several months and a few years. Furthermore, contemporary digital artworks are becoming increasingly time-based, continuous, interactive, relational and dependent on various networked transactions during their production or exhibition. Many projects are created with the precise intention of engaging the social and political consequences of ephemerality, while also addressing the fragility of information technologies by emphasising their transitory nature. This performative intricacy is essential for experiencing their poetic

identity; therefore, it is difficult to preserve or recreate these works without guaranteeing the appropriate functionality of all their interdependent layers.

Having anticipated the issues of technological entanglement, some notable digital art projects were initiated as live processes or events, but finalised and exhibited in a documentary format. For example, in *Face to Facebook* (2010), Paolo Cirio and Alessandro Ludovico created a suite of software bots that harvested one million Facebook profiles, filtered out 250,000 profile photos, custom-tagged their facial expressions (relaxed, egocentric, smug, pleasant, etc.) and posted them as new profiles on a fictitious dating website called *Lovely Faces* (Cirio, 2010). *Lovely Faces* was online for five days, during which time the artists received several letters from Facebook's lawyers, eleven lawsuit warnings, and five death threats (Gleisner, 2013). Since then, the project has been exhibited as a multimedia documentary installation (Fig. 1).



Fig. 1 → Paolo Cirio and Alessandro Ludovico, *Face to Facebook*, 2010. View of the exhibition *Artists as Catalysts* at the Alhóndiga Bilbao, Spain, 2013. Photo: Paolo Cirio, 2013. Courtesy of the artist.

!Mediengruppe Bitnik's *Random Darknet Shopper* (2014-2016) was a live generative project that humorously exploited web anonymity issues. It centred around a software bot which roamed the dark web marketplaces such as Agora or Alpha Bay, where it occasionally purchased items with a weekly budget of 100 USD in Bitcoins. The goods were delivered directly to the exhibition spaces, where they were displayed with a screen device monitoring the bot's shopping activities (!Mediengruppe Bitnik, 2014). Since 2016, gallery presentations of *Random Darknet Shopper* have featured a collection of purchased goods with a screen replay of the bot's shopping and its various legal consequences (Fig. 2).



Fig. 2 → !Mediengruppe Bitnik, *Random Darknet Shopper*, 2014-2016. View of the exhibition *The Darknet - From Memes to Onionland. An Exploration* at Kunst Halle St. Gallen, Switzerland, 2015. Photo: Gunnar Meier / Kunst Halle St. Gallen, 2015. Courtesy of the artists.

Many EDA projects, on the other hand, feature continuous real-time transactions between artificial or human networked agents. Our experience of such projects becomes fully meaningful once we understand their real-time filtering logic. For example, in Matthew Cherubini's installation *Afghan War Diary* (2010), the artist's web application connects to a Counter-Strike war game server, capturing in real-time the events of players being killed by other players (frags). Frags trigger a chronological search in the Wikileaks database containing over 75,000 secret US military incident reports on the war in Afghanistan. Based on the retrieved data, the website shows the geolocations of the incidents on a virtual globe in a three-channel arrangement (Cherubini, 2010) (Fig. 3).

With *The Pirate Cinema* (2012-2014), Nicolas Maigret and Brendan Howell generate a continuous supercut by live sampling the world of peer-to-peer exchange. Their installation monitors the stream of the one hundred most downloaded torrents on a popular BitTorrent tracker, captures the video and audio snippets currently being served and plays them on the multichannel screen set, with information about their origin and destination (Maigret and Howell, 2012) (Fig. 4).



Fig. 3 → Matthieu Cherubini, *Afghan War Diary*, 2010. Screenshot from: <http://awd.site.nfoservers.com/> (Accessed: 16 September 2021). Photo: Matthieu Cherubini, 2010. Courtesy of the artist.



Fig. 4 → Nicolas Maigret and Brendan Howell, *The Pirate Cinema*, 2012-2014. View of the exhibition *The Pirate Cinema* at the Centre Pompidou, Paris, 2017. Photo: Nicolas Maigret and Brendan Howell, 2017. Courtesy of the artists.

These generative arrangements can be preserved as documentation and their processes can be simulated by accessing a database with pre-recorded events, transactions and triggering instances. However, simulation cannot fully rebuild the emotional impact of the artworks, which requires our conscious involvement with the remote agents' actual deeds and their consequences. Our empathy in this seemingly ambivalent participation comes with the contextual insights emerging live from the abstraction layer of technology.

Similarly, digital artworks that involve continuous, multilateral real-time interactions between intelligent or automated actors cannot be adequately represented through simulation. For example, in Matt Richardson's *Descriptive Camera* (2012), a photographed image generates a narrative interpretation by a remote human agent. When we point the *Descriptive Camera* at a subject and press the shutter button, the device's CCD captures the image and sends it directly to an Amazon MTurk worker tasked to write down and upload its short description, which the device then prints out (Richardson, 2012). While modern digital cameras use AI to process pictures and capture metadata, the *Descriptive Camera* deliberately requires human intellectual labour to deliver intelligent interpretation of the photographs (Fig. 5).



Fig. 5 → Matt Richardson, *Descriptive Camera*, 2012. Photo: Matt Richardson. Courtesy of the artist.

Conversely, in *The Latent Future* (2017), Nao Tokui and Shoya Dozono (Qosmo) explore the expressive potentials of generative interaction between the machine learning semantic model and the human or machine-created news material. *The Latent Future* features a deep learning system trained on a collection of past news texts, which continuously captures Twitter newsfeeds and uses their discerned meanings to create fictional news (Tokui, 2017). The news is presented in a 3D model, which maps each sentence's high-dimensional "latent feature" vectors, while the spatial distances between the sentences correspond to their relative semantic differences (Fig. 6). This work is informed in real-time by the largely unpredictable dynamics of the Twitter galaxy and by Twitter's filtering algorithm, which represents many important aspects of current socio-political trends.

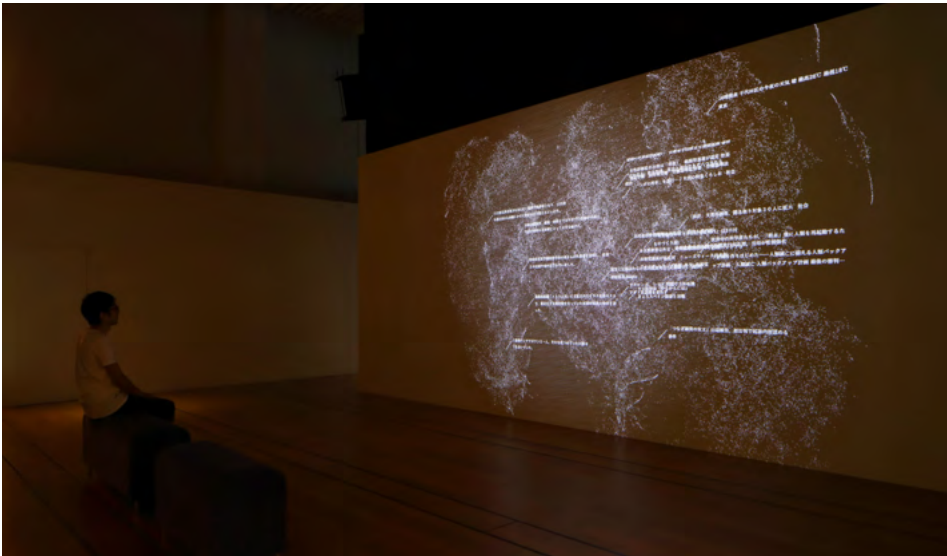


Fig. 6 → Nao Tokui and Shoya Dozono (Qosmo), *The Latent Future*, 2017. View of the exhibition *Open Space 2017: Re-envisioning the Future* at the NTT InterCommunication Center, Tokyo, Japan, 2017. Photo: Kioku Keizo / NTT InterCommunication Center, 2017. Courtesy of the gallery.

In Jonas Eltes' installation *Lost in Computation* (2017), all agents are artificial. It continuously generates a real-time conversation between a Swedish-speaking chatbot and an Italian-speaking chatbot, connected through the Google Translate service (Fig. 7). It simultaneously highlights the ambiguities of machine cognition and showcases the increasing accuracy and flexibility of language modelling algorithms (Eltes, 2017). The key poetic features in all these works emerge through our uncanny awareness of the here and now being continuously rearticulated through heterogeneous, dislocated and concurrent human-machine interactions.



Fig. 7 → Jonas Eltes, *Lost in Computation*, 2017. View of the installation as part of the *Arte Laguna* event at Fabbrica, Treviso, Italy 2018. Photo: Jonas Eltes / Fabbrica, 2018. Courtesy of the artist.

Mnemonics

The first wave of institutional responses to EDA's techno-cultural challenges had involved projects for the systematic curation, archiving, preservation and representation of digital art. It was pioneered throughout the 1990s by organisations and online initiatives such as the Centre for Art and Media in Karlsruhe (ZKM), the Museum of Modern Art in New York, the ISEA Symposium Archives, the Ars Electronica Archive, the SIGGRAPH Digital Art Show Archive, the Archive of Digital Art (ADA), or the Digital Art Museum (DAM), among others. They had been dealing both with the technological dynamics of the twentieth century and with the issues of digital art's broad perception as being less material and more participatory, process-based, temporal or transitory than traditional fine arts (Gere, 2004; Fino-Radin, 2016). They helped develop a new understanding of the museum as a cultural institution, established new curatorial models and artist collaboration protocols, and also defined new strategies for representation and audience engagement (Paul, 2008).

Faced with the questions of technological impermanency, obsolescence and the varying degrees of long-term material support, they outlined the technological workflows of digital art museology based on keeping the original hardware operational, continuously updating the software and developing the emulators for running archived artworks on modern hardware. Although a number of early computer artworks had been lost, some were restored through retro-computing (Wigley, 2014), while many others had been stored as a programme code that can be run in modern environments, or rendered with modern hardware. Some can be formally interpreted and reconstructed even without a source code by reverse-engineering the original imagery, for example in projects such as Matthew Epler's *ReCode* (2012), Joachim Wedekind's *Digital Art Gallery* (2014) and Martin Zeilinger's *Pattern Recognition* (2017). However, viewed from that perspective of digital art museology, most of the artworks described in this paper cannot be fully integrated and properly preserved. They facilitate complex relational experiences of socio-technical entanglement, which can be emulated only hypothetically by sophisticated AI systems trained to imitate the behaviour of human and machine agents.

Within this context, the rising popularity of AI art and crypto art has refreshed and expanded potentially promising layers of digital culture, such as virtual

museums/galleries, online exhibitions, collections and marketplaces.¹ Notwithstanding their current momentum, it is uncertain how resilient and useful these platforms will be in serving as mid-to long-term EDA archives, because most of them were neither designed nor intended for such purposes. They have been increasingly incorporated into the world of MCA, whose selection criteria, operations and discourses are substantially market-driven (Stallabrass, 2006; Shanken, 2016), so that its interest in AI art and crypto art is guided more by the commercial authority of AI and blockchain than by the need to problematise and reimagine our relationship with digital technologies.

Exploits

Since the early computer art in the 1960s, EDA has had an ambiguous relationship with MCA and, despite a few intermittent hypes, remains both marginalised and occasionally exploited by it (Bishop, 2012; Taylor, 2014). With the growing ideological authority and socio-economic power of AI, MCA has been appropriating the AI phenomenology, and its handling of AI art has morphed from its association with post-digital art² in the past decade. Post-digital artists thematise the effects of digital culture by taking digital technologies as common utilities, and mainly produce their works in conventional materials and non-interactive media (Paul, 2015). This approach conforms to MCA's imperatives for tradeable materiality, but sacrifices the intricate tension between the artworks' conceptual, expressive or narrative layers and the contextual logic of the media technologies in which they appear. Abiding by the post-digital formula, artists such as Hito Steyerl, Trevor Paglen, Pierre Huyghe or Lucy McRae present their AI works in marketable forms of installation, sculpture, video and photography.

Experimental AI artists also seek the career advantages of organised institutional support, which tempts them to compromise some of the defining features of their artmaking in order to accommodate MCA's requirements for scarcity, commercial viability and ownership. Christie's sale of the *Portrait of Edmond de Belamy*, created by the Paris-based collective Obvious in 2018, is a widely discussed example (Epstein et al, 2020). It showcased MCA's hijacking of the popular misinterpretations of AI in order to sensationalise AI art by

1 Such as AIArtists.org, AI Art Gallery, Creative AI Lab, Nifty Gateway, OpenSea, Rarible and others.

2 Sometimes also called post-media art or post-Internet art.

de-emphasising human agency in the creative process, as well as by promoting the ever 'blurring line between artist and machine' (Elgammal, 2018; Notaro, 2020). By presenting the "algorithms" as artists (Schwab, 2018; Browne, 2020, pp. 7-9), MCA disregards scientific knowledge about the limited creative autonomy of AI systems, thereby dismissing well-informed notions about the complex relationship between artistic creativity and technology (O'Hear, 1995; Boden, 2004; Hertzmann, 2018; Grba, 2020, pp. 75-77). Several artworks deftly expose the side effects of MCA's flirting with AI. For example, Disnovation.org's *Predictive Art Bot* (since 2017) (Fig. 8) is a chatbot which relentlessly generates concepts for art projects based on current art discourse and occasionally proposes absurd future trajectories for art on its own website (<http://predictiveartbot.com>) and Twitter (Maigret and Roszkowska 2017).



Fig. 8 → Disnovation.org (Nicolas Maigret and Maria Roszkowska), *Predictive Art Bot V3*, 2017. View of the installation at the *Mapping Festival*, Geneva, Switzerland, 2017. Photo: Gabriel Asper / CC NC-SA 4.0, 2017. Courtesy of Disnovation.org.

Competent experimental AI artists are well aware of the subtleties of AI technology and often explore them directly in their projects, so they would be expected to show reluctance in acceding to MCA's "streamlining" of AI art. However, soon after Christie's sale of the *Portrait of Edmond de Belamy*, Sotheby's chose Mario Klingemann's *Memories of Passersby I* (2018) for their AI art debut. Although Klingeman's work is both technically and formally more sophisticated than the *Portrait...*, it similarly conforms to MCA's demands by imposing custom-designed material components which are conceptually, technically and aesthetically redundant. Its limited-edition set is protected by a Bitcoin-based certification of authenticity, which could be considered as a more suitable (even though in principle no less objectionable) option for enforcing the scarcity and ownership of digital artworks. Within that context, blockchain cryptographic

products such as Non-Fungible Tokens (NFT) have been readily adopted by the MCA market (Finzer, 2020; Christie's, 2021). It seems that the recent interactions between experimental AI art and MCA have been reinforcing conservative modes of expression, concepts and aesthetics, rather than making new creative incentives (Browne, 2020). AI artists' endeavours to enter MCA by complying with its market-driven canons may bear a high cost in terms of their creativity and critical edge, these being features that distinguish the most successful EDA.

Universal (instabil)ities

Nevertheless, contemporary EDA is not uniquely affected by risky creative compromises, an ambivalent cultural status and museological uncertainties. These arise from the asymmetries between human inventiveness, ethics, available technical resources, socio-political imperatives and cultural trends, which are as old as the arts themselves. Although the arts rely on complex production and presentation technologies, requiring a multifaceted contextual knowledge for a deeper understanding and appreciation, artists do not always envisage their works being either conceptually or materially future-proof. Whether they just wish to enjoy a quick expression or aim to reach the remote spatiotemporal continuum with their works, artists have to face the fact that nothing meaningful lasts forever in the entropic universe.

Demonstrating human creativity as a capacity for the rapid and unpredictable generation of highly variable and context-related alternatives (Miller, 2001), the arts are particularly prone to decay. A classic example is provided by Leonardo da Vinci's conceptual and technical experimentation, which resulted in many unfinished works and in the accelerated deterioration of his masterpieces. In that sense, the material precariousness of EDA confronts us with the ultimate impossibility of unconditionally preserving any event, process, object or other entity that carries symbolic value.

By exploring concepts such as time, death and vanity, artists have appreciated art's cultural relativity, understanding that an artwork lives and dies just as we do.³ Artworks vary not only in terms of their material resilience, but also

3 As Marcel Duchamp remarked in a 1966 interview: '[...] I believe that a picture, a work of art, lives and dies just as we do' (Baudson, 1993).

in their emotional, informational, exploratory, cognitive or political impact. They are not uniformly interesting or engaging, and their values are not fixed; therefore the obsolescence of the arts is always contextual as well as material. When an artwork requires an explanation which is too long, too complex or too difficult to understand, then it significantly loses its relevance (Quaranta, 2020). Ideally, the instability of artistic mental worth may seem to reflect scientific epistemological assets, such as critical thinking and falsification, but the reputation of artists and their works is greatly affected by fancy, fashion and the appeal of authority.

The instability of artistic values also evokes the reductive economy of conscious experience (Nørretranders, 1999), which suggests that perceptive brevity and forgetfulness may be evolutionary adaptive. Nevertheless, forgetting and decay are probably not beneficial for the evolution of human society. Cultural memory and preservation build up the civilisational infrastructure by providing efficient access to functional and well-organised accumulated information, which is essential for fostering creativity and learning, for deepening our understanding of what it means to be human, and also for improving the sense of our place in nature.

Essentials

MCA's reductive commodification of dynamic, entangled and "immaterial" avant-garde practices such as EDA may be rationalised by the immediate commercial interests, but its conservatism diminishes the overall value of (artistic) knowledge in its capacity for change. It degrades our mentality and impoverishes our cultural heritage by enforcing an arbitrary disproportion of visibility and relevance upon different artworks. MCA's capitalisation on our primitive notions of possession and ownership exploits our pragmatically constrained concepts of existence and time (Heller and Salzman, 2021), which is unethical from a broader perspective because it nourishes false intuitions about our special place in the universe, and "protects" our ignorance, hypocrisy, vanity and delusions of self-importance.

The expressive logic of EDA practices is essential for establishing deep insights into the relevant aspects of our world and society, while its cultural instability exemplifies the uneasy coevolution between the open-ended complexity of artistic inventiveness and the ambiguous flux of discourses, criteria and

hierarchies in the worlds of art, commerce and scholarship. The creative dynamics of EDA also rearticulate the intricacy and unpredictability of our ecology, economy, politics, relationships and everyday life. Less dramatically, but more sensibly and often more meaningfully than global disruptions, experimental digital artworks engage us with the fact that our notions of permanence and coherence are useful delusions, whereas uncertainty is one of the fundamental features of nature. They empower ideation and foster responsibility in assessing our moral standards and social norms, tackling the ever-changing present and anticipating possible futures. Therefore, they merit special attention in order to raise broader public awareness, which requires innovative forms of academic, educational, financial and technical support.

The strategic factors for addressing the issues, trade-offs and risks, as well as for anticipating the future requirements of EDA, are resourcefulness, sustainability, robustness, scalability, flexibility, accessibility and transparency. However, the contingent and emergent nature of experimental digital artworks indicates that their long-term preservation will often be less important than their appropriate documentation and extensive tactical presentation while all their components are still operational. These considerations imply a diversity of institutional formats, scales and approaches, which offers greater versatility, resilience and accessibility than centralisation, exclusivity, monopolistic standardisation and commercialisation (Ippolito, 2016). The optimal strategy would be to instigate, fund, connect and coordinate a multitude of platforms and projects of different scopes into a robust network for archiving, distributing, exhibiting and learning about digital art.

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From the Artist's Perspective: On the Longevity of VR/AR Artworks

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The technological leaps of our time have brought virtuality to the forefront, with technologies such as Virtual and Augmented Reality (VR/AR) becoming easily accessible creative tools for artists. However, technology itself has made VR/AR artworks a challenging category of objects for collecting institutions.

Since 2019, we have been researching the current practices of acquiring, exhibiting and preserving VR/AR artworks in collecting institutions via the *MuseumArtTech* project. Eight professionals working in institutions that engage with VR/AR artworks and five artists who use VR/AR technologies as a main art medium were interviewed, with the aim being to understand the processes, challenges and experiences of museum professionals and identify the artists' standpoint in relation to the institutional management of their artworks. This paper addresses the artists' perspective, by examining how their creative process informs, and potentially increases, the longevity of their VR/AR artworks, as well as how this process may reveal the nature of the reciprocal artist-institution relationship.

Introduction

In our digitally interconnected world, technologies such as Virtual and Augmented Reality (VR/AR) are developing as hubs, building a bridge between the real world and the digital. As the software and hardware supporting these technologies gradually mature, they are also increasingly exploited as a creative tool by artists. The technological instability and obsolescence of these technologies, however, pose a challenge for museums and other collecting institutions that are called upon to manage the artworks produced in this way. There is already an extensive body of literature investigating new media art, the general genre under which VR/AR art can be categorised; however, there has been little research and theorisation that focuses on VR/AR artworks and their relationship with collecting institutions.

In order to understand the various processes, challenges and experiences of museum professionals and artists involved with VR/AR creations, we initiated

the MuseumArtTech project in 2019, under the scope of which we conducted interviews with eight professionals working in institutions that engage with VR/AR artworks, as well as with five artists who use VR/AR technologies as a main art medium. We asked museum professionals some broad questions about the exhibition, acquisition and preservation methodologies of collecting institutions, but we also sought to gather the artists' own views about these processes. This paper focuses on the artists' views.

More specifically, we draw material from interviews focusing on two highly acclaimed VR/AR artists: Char Davies and Tamiko Thiel. Their extensive experience and their contribution to the development of both the technologies and the art genre of VR/AR help us to identify whether the artists' creative processes inform, and potentially contribute, to the longevity of VR/AR artworks, and enable us to explore how these practices reveal, and even cultivate, an artist-institution relationship.

VR/AR Art Collection and Preservation

Artists tend to respond to new media through experimentation, playfulness and critical inquiry, creating artworks that push the boundaries of the available hardware/software and which establish connections across the digital and the analogue (Post, 2017, p. 716). New media art encompasses dissimilar genres such as bio-genetic art, data art, digital animation, game art, glitch art, installations, nanotechnology, net art, telepresence and virtual reality (Grau, Hoth and Wandl-Vogt, 2019, p. 194). Since we are investigating art that is made with the use of VR/AR technologies, we first need to understand what these technologies are.

VR/AR are computer-generated simulations that offer the viewer an experience of immersion in, and/or an interconnection of, physical and virtual environments. These technologies alter or enhance the user's perception of reality and offer new immersive perspectives using computer-generated content. By employing these technologies, an artist usually creates an image space that is joined by a sensorimotor panoramic view, giving the feeling of experiencing a 'living environment' (Grau, 2003, p. 7).

New media art and, in particular, artworks developed with the use of emerging and immersive technologies seem to be flourishing primarily outside the

museum, at festivals, exhibitions, presentations and conferences.¹ However, one can argue that museums and other collecting institutions should make a more dynamic engagement with the new media landscape. The museum's role, after all, is to facilitate and safeguard key cultural products that mark a period and consequently to make them available for future generations. Nevertheless, the scale with which new media art in general is produced is not analogous to the scale with which museums and institutions exhibit, collect and discuss these artworks (Rinehart, 2016, p. 488).

As a matter of fact, museums seem reluctant to acquire artworks that make use of emerging technologies which are in danger of not functioning properly within just a few years. The complexity of digital objects often presents problems in the previously linear process of storing and exhibiting artworks in a museum collection. Maintaining and reinstalling such works may very well suggest the merging of the expertise of conservator and curator (Rinehart and Ippolito, 2014, p. 10). There is a growing number of initiatives originating from museums and other art organisations, academic institutions and platforms that examine the collection, preservation methodologies and management of new media art.² However, very few focus specifically on VR/AR art.

Grau, Coones and Rühse (2017, p. 21) suggest that an interdisciplinary approach seems to be better suited for exhibiting and preserving Media Art, combining ideas from Art History, Museum Studies, Conservation Theory and Media and Cultural Studies. Could we perhaps identify more stakeholders for this interdisciplinary approach? Following the argument presented by these authors, we investigate the role of artists in this discourse, focusing specifically on the cases of Char Davies and Tamiko Thiel. How can artists contribute to the institutional workings of safeguarding VR/AR Art through their own creative processes, decisions and artist-museum relationship?

1 For example, Ars Electronica, Intersociety of Electronic Arts (ISEA), Transmediale, Dutch Electronic Art Festival, European Media Art Festival, Mutek Festival in Montreal, Elektra International Digital Art Biennial, FILE, Microwave Festival, Korean Media Art Festival, the Sundance Film Festival, Siggraph and many more.

2 Among the museums and organisations dealing with these issues are Tate Modern, ZKM Center for Art and Media, Ars Electronica, Solomon R. Guggenheim, San Francisco Museum of Modern Art, New Museum, Walker Art Center, New York's Museum of Modern Art and MoMA PS1, Whitney Museum of American Art, Electronic Arts Intermix, Berkeley Art Museum and Pacific Film Archive, Akron Art Museum, the Kramlich Collection, the Zabłudowicz Collection, the Majudia Collection or the Julia Stoschek Collection. Collaborative initiatives and platforms have also contributed to these efforts, such as: The Variable Media Network, Matters in Media Art, Tate's Time-Based Media Lab, DOCAM Research Alliance, CRUMB Curatorial Resource for Upstart Media Bliss, Turbulence, ArtHost, Tracks Project or the Pericles Project for Digital Preservation, to mention just a few.

Methodology

Current exhibition, acquisition and preservation methodologies and challenges relating to VR/AR artworks and the ways in which these are tackled by both collecting institutions and artists were investigated through twelve³ in-depth, semi-structured interviews conducted within the framework of a qualitative research methodology. A number of themes and questions were identified. In this paper, we explore two key research questions: (1) Do artists working with VR/AR technologies consider the variable exhibition possibilities and the collectability of their artworks while working on them? (2) Are VR/AR artworks currently redefining the artist-museum relationship?

The museum professionals and artists were identified through the use of a strategic sampling technique (Mason, 2002, p. 124), whilst we expanded our inquiries through the snowballing technique (Wildemuth, 2009, p. 121), acquiring referrals and recommendations made by the individuals who responded to our invitation or by academic and professional acquaintances. The main challenge we faced in this process was that of identifying institutions that not only exhibited, but also acquired, VR/AR artworks.

The interviews were conducted in 2020 and 2021, with each one lasting between 25 and 90 minutes. All of them took place via Zoom or Skype, except for one interview, which was conducted through an exchange of emails. Whilst the interview protocol basically consisted of 10 semi-structured questions, these questions were sometimes revised in accordance with the interviewee's professional role, background and practice.

The research participants were: Agathe Jarczyk, Media Conservator at the Solomon Guggenheim Museum; David Neary, Project Manager, and Savannah Campbell, Media Preservation Specialist for Video and Digital Media, from the Whitney Museum of American Art's Media Preservation Initiative; Seema Rao, Deputy Director & Chief Experience Officer, and Regina Lynch, Curator of Community Engagement, at the Akron Museum; Elizabeth Neilson, Director of the Zabłudowicz Collection; Anaïs Castro, Managing Director & Special Projects Curator at Arsenal Contemporary Art; and Manuela Naveau, a curator and producer at Ars Electronica. The five artists interviewed were

³ David Neary and Savannah Campbell were interviewed simultaneously. So, there were 13 interviewees and 12 interviews.

Racheal Maclean, Rachel Rossin, Rindon Johnson, Tamiko Thiel and Daniel Chudak, the Project Manager for Immersence at Char Davies's studio.⁴

The interviews were transcribed and analysed using qualitative data methodologies based on grounded theory (Flick, 2009). The strategic sampling technique was expanded into a thematic cross-sectional analysis, performed with an inductive approach (Mason, 2002, p. 141). The interviews with the artists revealed details about their creative processes, as well as about the challenges and the decisions that each artist takes while working on a VR/AR work.

For the purpose of this paper, we focus on the views and practices of two artists: Char Davies and Tamiko Thiel. These artists were selected because they have been witnessing and contributing to the development of VR/AR art from the very beginning. They have quite distinct experiences with exhibiting and collecting institutions and shared with us some interesting practical cases. Their experiences with the VR/AR artmaking process and its correlation with the future of their artworks - both inside and outside the museum space - are investigated here.

VR/AR artmaking and the institutional lives and futures of the artworks

Char Davies and Tamiko Thiel are both closely linked to the origins of Virtual Reality, working with the technology and pushing it forward as early as the mid-1990s. In that period, Davies created two highly acclaimed VR artworks, *Osmose* (1995) and *Ephémère* (1998). Thiel has been continuously creating equally highly acclaimed Virtual Reality, Augmented Reality, Mixed Reality and other immersive experience artworks since 1994. Together with Zara Houshmand, Thiel also authored *Beyond Manzanar* (2000), which was one of the earliest VR artworks to be collected (by the San Jose Museum of Art in California, in 2002). Davies and Thiel have used different technologies and methods for their immersive experiences, and these approaches have obviously played a role in the "life cycles" of their works, as well as in their specific institutional paths.

⁴ A consent form was signed by all participants, and their position in their respective organisations is important for this research.

Char Davies works with a team of technical collaborators in her research company *Immersense*. This multidisciplinary cooperation is particularly important, as it helps 'to digitally implement her artistic visions' (McRobert, 2007, p. 12). For the *Osmose*⁵ interactive VR environment installation (Fig. 1), she and her team worked with Softimage software that ran on Silicon Graphics Onyx2 Infinite Reality, which, at the time, was a new visualisation supercomputer (Immersence Inc., n.d). Representing Char Davies's studio, Daniel Chudak, the Project Manager of Immersense, mentions that for the artist, 'the technology development was part of the work' as she was working with the best possible means to reach her vision (Chudak, 2020). The sophisticated software and high-cost components that Davies used to create her works enabled her to produce two of the most emblematic works of new media art: *Osmose* and *Ephémère*.

Both works might pose challenges in terms of exhibiting and collecting. However, Chudak explains that while it may have been challenging to exhibit them in the past, this is not the case anymore, as the artworks have been migrated to more recent components that are easier to manage. He characteristically mentions that it was 'a big operation to migrate these huge boxes [the Silicon Graphics supercomputer that contained *Osmose* and *Ephémère*] to a pretty normal PC and making it work with Vive or Oculus (HMD sets)' (Chudak, 2020). He also stresses that the artworks were not 'just a piece of software', they were a 'work of art, written in a certain way', something that made the migration process and the provision for expanding the artworks' life cycle even more demanding. The project manager adds that, luckily, many of the original collaborators who worked on these artworks were involved in this major migration and 'the main challenge was keeping the spirit [of the artworks, while making sure] that things will work better' (Chudak, 2020). After this process, which lasted for several years, the team continues to keep both artworks always updated, considering that 'when a maintenance plan is followed, these interventions prove minor throughout the years' (Chudak, 2020).

Referring to the latest artwork that Davies has been working on – once again a large artistic project that she has been developing for some years now – Chudak (2020) points out that, while developing it, they are 'taking

5 *Osmose*, created in 1995, is 'an immersive interactive virtual-reality environment installation with 3D computer graphics and interactive 3D sound, a head-mounted display and real-time motion tracking based on breathing and balance' (ADA, 1999-2020). The artwork immerses the viewer, who wears a motion-tracking vest, in a 360° virtual environment through a head-mounted display (HMD), incorporating 'the intuitive processes of breathing and balance as the primary means of navigating within the virtual world', as described on the Immersense website.

into account already what [technological parameters] it needs to be alive'. Particular attention is being paid to the maintenance of the work's legacy by keeping all the process files in a workable condition, something that was not taken into account almost 20 years ago. Significantly, the migration of *Osmose* and *Ephémère* has also made the artworks "museum ready". Davies's studio created a complete "information package" for each artwork, allowing them to be efficiently exhibited, and eventually acquired. As Chudak (2020) indicates, a close and trusted collaborator of Davies's studio acts as the intermediary between the artist and the museum, assisting in communicating all aspects of the work – technological, conceptual and practical – and discussing all relevant details for exhibiting the artworks.



Fig. 1 → Char Davies, *Tree Pond, Osmose*, 1995. Digital still captured in real time through HMD (Head-Mounted Display) during live performance of the *Osmose* immersive virtual environment. © Charlotte Davies.

Tamiko Thiel and Zara Houshmand's large interactive projection installation *Beyond Manzanar*⁶ (Fig. 2) was developed on a PC and written in an open-source language, namely the Virtual Reality Modelling Language (VRML).

⁶ *Beyond Manzanar* is an interactive VR installation, created by Tamiko Thiel and Zara Houshmand. It revisits the Manzanar Internment Camp, the first of over ten internment camps that were set up during the Second World War in order to incarcerate Japanese American families, based solely on their ancestry. 3D space is projected, life size, onto a wall-sized screen creating the feeling of immersion, whilst a mounted joystick allows the viewer to change viewpoints within the virtual space. A stereo sound system provides the audio and, while only one person can have control of the navigation, others can also experience the walkthrough in the same room, as described on the project's website (Thiel and Houshmand, 1998-2001).

Thiel explains how she worked with 'the best graphic card [available] at that time and literally typed it [the software code] all in the text editor' (Thiel, 2021). The artists really wanted *Beyond Manzanar* to be accessible and to have a large audience, so they made a conscious decision to use 'cheaper technology to build this world that runs on a normal computer' (Thiel, 2021).

The artwork was purchased by the San Jose Museum of Art in California in 2002 and has been part of their permanent collection ever since. When the San Jose Museum acquired the piece, they archived the artwork's software on a memory stick and the navigation joystick with all its instructions, as well as the tripod and the computer that ran the programme at the time (Thiel, 2021). The artists not only provided the museum with all the written research documents that they had gathered for the making of the artwork, but also created a walkthrough video of the experience and a scene list with detailed descriptions that they considered helpful for understanding whether 'it was working or not'. Interestingly, apart from the bill of sale of the artwork, and until the interview conducted for the purposes of this study, no further agreement was made between the museum and the artists regarding the maintenance of the work. Nevertheless, Thiel (2021) points out that she has been actively migrating and updating the software, changing it with each iteration, from the upgrades to a different operating system, with the help of a group of friends that run the company Bit Management Software.



Fig. 2 → Tamiko Thiel and Zara Houshmand, *Beyond Manzanar*, 1998-2001. Interactive virtual reality large screen projection. Installation view at San Jose Museum of Art, 2019. © 1998-2001 Tamiko Thiel and Zara Houshmand. Courtesy of Tamiko Thiel.

Thiel compares the *Beyond Manzanar* acquisition process with the experience that she is currently having with the Whitney Museum of American Art, which has acquired her *Unexpected Growth*⁷ AR installation piece (Fig. 3), stressing the huge difference between the two acquisition processes (Thiel, 2021). While the acquisition of *Beyond Manzanar* was fairly straightforward, with the technology-related information and the experience of the artwork being defined by the artists themselves, the Whitney Museum, on the other hand, has an elaborate acquisition process. The ten-page 'Digital Art Questionnaire' template, which David Neary, from the Whitney's Media Preservation Initiative, shared with us during his interview, is designed to collect necessary information from the artists about the artwork that is to be acquired and it is an integral part of the museum's preservation procedures. The production history, together with the preservation and fabrication details of the artwork, as well as a section containing display and experiential details, are just some of the information that the artist is required to share.

Thiel is currently working on this documentation in order to finalise the artwork's eventual acquisition and describes it as a lengthy process. She explains that they delayed completing the questionnaire as they had to migrate the artwork's platform. Specifically, Thiel and her husband, Peter Graf, have developed the artwork's software further by using an open-source platform, ARpoise (ARpoise, 2018), which they have made available to the public. According to the artist, this was 'a big technical step' that they now also have to document (Thiel, 2021). ARpoise 'is an open-source Augmented Reality service environment that allows AR content designers to create and distribute AR experiences, and users to view location-based, image trigger or SLAM AR content that is created in Unity' (GitHub, 2021).

The ARpoise hosting platform is made available through a GitHub repository⁸ in the hope of attracting a community that would be interested in contributing and helping to maintain it, as well as using it to create their own artworks (GitHubARpoise, 2021, n.d.). There is also an ARpoise app (Thiel and Graf, 2018-2021) for mobile devices, where Thiel has uploaded some of her AR artworks (however, *Unexpected Growth* is not available via this app). In parallel, she

7 *Unexpected Growth* (2019) is a site-specific AR artwork that runs on phones and tablets, which was presented at the Whitney Museum of American Art during the exhibition: *Programmed: Rules, Codes, and Choreographies in Art, 1965–2018*. The artwork 'seeks to playfully engage the public in two very serious threats to ocean ecosystems: ocean-borne plastic waste and coral bleaching caused by global warming' (Thiel and /p, 2018).

8 GitHub is a repository hosting service that manages and stores revisions of projects, being used most often for code.

has created a simplified tutorial series on how to create artworks on ARpoise to assist artists working on the *Hidden Stories* project (Dörr, n.d.) who are not familiar with the medium in the production of their artworks. Moreover, she aims to eventually incorporate this tutorial series into the main ARpoise platform (Thiel, 2021).

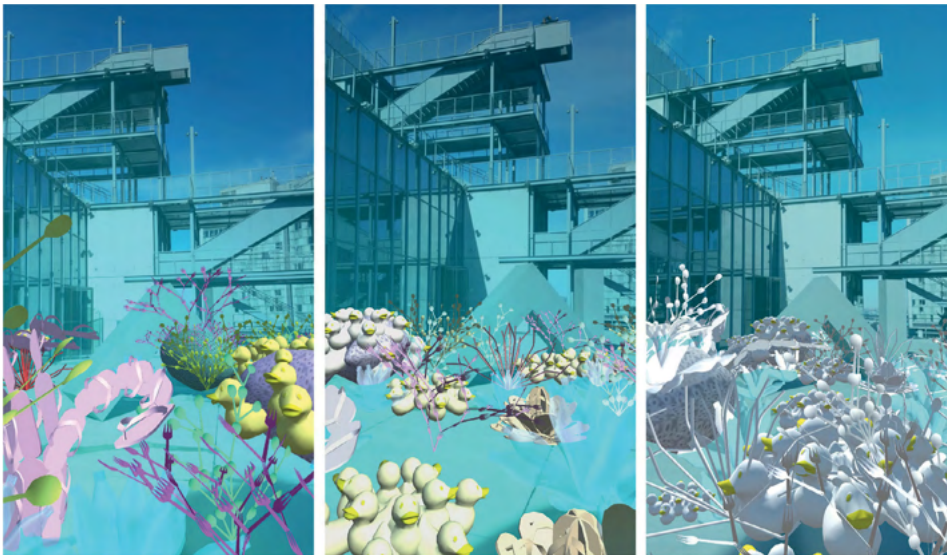


Fig. 3 → Tamiko Thiel and /p, *Unexpected Growth*, 2018. Three phases of bleaching on the Whitney Museum terrace. © 2018 Tamiko Thiel and /p. Courtesy of the artists.

Discussion

The conversations with these two VR/AR Art pioneers offered a glimpse of how artists contribute to the preservation of their VR/AR artworks, the museum's role in this process and the shifting artist-museum relationship.

Both artists were aware that the technologies they were working with were unavoidably unstable. While they each took different decisions regarding the complexity of the technology they used, they were equally prepared to work continuously to preserve their artworks. Chudak has revealed that the long migration work of *Osmose* and *Ephémère*, which was carried out internally by Char Davies's studio, has taught them to be proactive when creating new artworks. Consequently, the artist's team is now making the technology more flexible and even recording all the iterations of the work-in-progress, thus safeguarding the legacy of the piece. It seems that Thiel's choice of creating *Beyond Manzanar* in simpler software and hardware proved to be an effective decision. The artwork had the desired impact amongst its viewers, yet remained

accessible and unambiguous enough for the San Jose Museum of Art to collect it at an early stage in its development. Even though the museum did not have a protocol for the acquisition and preservation of such an artwork, the reflexive decisions by both artist and the museum professionals managed to cover the important aspects of the artwork, preserving its accessibility and longevity.

Today, we see that new media art protocols like the one that the Whitney Museum of American Art is applying are being further developed to include the intricacies of VR/AR artworks. Of the institutions that were interviewed, the Guggenheim has an equally elaborate acquisition protocol and the Zabudowicz Collection has a video art protocol that is being constantly upgraded to address VR/AR artworks, while the Akron Museum and Arsenal Contemporary Art are beginning to work on their own methodologies. It is still a work-in-progress for most collecting institutions, which nevertheless reveals a shift towards a new code of practice regarding VR/AR Art and new media art in general.

All institutions remain in contact insofar as possible with the creators of the acquired artworks, mostly for re-exhibition and preservation-related issues. Although Chudak (2020) believes that exhibiting and acquiring such artworks should be an easy process for museums, it does, of course, depend on how ready both the museum and the artists are. According to him, museums should prepare by employing technology experts capable of understanding new media artworks, as well as the artists' requirements; at the same time, artists should themselves prepare their artworks for exhibition and acquisition, defining which parameters are critical for preserving the work's artistic vision. New media artworks – and especially VR/AR artworks – have a life of their own. As their unstable technology means that they continue to be dependent on their creators, it seems that VR/AR artists remain an active stakeholder in the artwork for as long as they are around, since the technological changes have a fundamental effect on the artwork, making it hard for conservationists and curators to take decisions without the artist's agreement.

It is evident that technology has redefined artistic and museum-related practices. An inherent distinction between the institutional futures of new media art and more "traditional" artmaking is evident, demanding collaborative synergies between creators and museum professionals. In her closing remarks, Thiel (2021) stresses that the art world is a latecomer on the new media art scene, which has been developed and is mostly sustained by the academic

and engineering community. She adds that 'the art world has been dependent, especially in the past, by the theorists and curators to interpret and theorise around artworks' (Thiel, 2021) but this is not necessarily true for VR/AR artworks. In fact, 'The whole tech and New Media world have always been a lot flatter in terms of hierarchy [...] no matter who you are, you need help and advice from other people' (Thiel, 2021). The artist talks about the spirit of collaboration and the exchange of experiences, not only amongst practising artists and technology experts, but also amongst the conservation community, something that also became evident through the interviews conducted with the museum professionals in this research.

For Thiel (2021), the Whitney's archiving procedure for *Unexpected Growth* AR is important, as it includes the open-source platform that hosts the artwork itself. This could lead to a two-point preservation process, connecting the museum with the developer community. She and her husband hope to form 'a community that uses the same platform [for AR artworks]' (Thiel, 2021), consisting of creative and technically competent people who can approach the museum and suggest working together in order to upgrade the artwork's hosting platform. This community could make the works and the whole platform more stable, possibly leading to more museums or collectors becoming interested in collecting VR/AR works. This further supports the idea of a broader tech-competent community that is able to contribute to maintaining and developing the technologies behind such artworks.

Conclusion

When Char Davies and Tamiko Thiel began working with VR/AR with the exploratory spirit of technological innovators, they grasped the essence of the technological revolution of their time. They succeeded in creating emblematic works of art that communicate their socio-political, environmental and philosophical concerns, expressed through new immersive frontiers.

Their practices evidently contribute to the shaping of new institutional etiquettes regarding such artworks. Their long experience has enabled them to realise, and act upon, the need to ensure their artworks' longevity, with each of them proposing a pre-emptive practice. Daniel Chudak (2020), the Project Manager at Davies's studio, notes that recording the legacy of the artwork from its early steps, planning a regular update and making the artworks "museum

ready" could be effective practices for any new media artist. On the other hand, Thiel endorses the evolving museum protocols and also suggests a new preservation stakeholder: a broader ArtTech community with programming capacities and the willingness to collaborate.

Over the last few years, leading museums have begun building capacities for acquiring and preserving VR/AR artworks. In the case of the institutions interviewed for this research or mentioned by the artists, it seems that they are flexibly adopting practical, collaborative and non-hierarchical practices. In this context, the potential of an open-source community contributing to the maintenance and development of hosting platforms could prove invaluable for the survival of VR/AR artworks. But is the open-source community on the doorstep of the museum? In what other ways could VR/AR artists steer art museums and other collecting institutions towards more effective conservation methodologies and approaches?

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Computer Art in Portugal? A Short History of Related Exhibitions and Art Criticism in the 1970s¹

José Oliveira

The purpose of this paper is to answer the following question: when, in Portugal, did information technologies, and in particular computers, first make their appearance in art practice and art criticism? Its aim is to contribute to the range of international studies on the introduction of computers as a tool in the art environment, with a focus on the Portuguese art scene of the 1970s and 1980s.

I briefly point out the different scenarios in Portugal and some other countries and argue that the lack of initiative in bringing research institutions and artists' intentions together in a common platform, as well as the political events that took place in Portugal in 1974 (the end of the dictatorial regime), were among the reasons why Portuguese artists were slow to display an interest in using information technology, which only really began to play a significant role from the mid-1980s onwards, with the appearance of personal computing.

Computer Art – A Very Brief Historical Appreciation

The expression “computer art”, as used within the context of the visual arts, first made its appearance in the January 1963 issue of the magazine *Computers and Automation*,² when its editor, Edmund Berkeley, decided to put on its cover a representation of a computer-produced graphic with the caption ‘A Portrait by a Computer as a Young Artist’ (Fig. 1), referring to it, in the editorial, with the title ‘Front Cover: Computer Art’. It was this image that led the editor, in a short note entitled ‘Computer Art Contest’, to launch an annual contest in the following month with the purpose of ‘[...] exploring this new artistic domain’ (Berkeley, 1963, p. 21), although the winners in the first couple of years of this contest did not have an aesthetic intent in the first place.

1 This article is a condensed and updated version of the author's PhD thesis (available in Portuguese only). This document can be consulted at: <https://run.unl.pt/handle/10362/19032> (Accessed: 19 March 2021). The PhD abstract (English) was accepted and published by the *Leonardo Abstracts Service*: <https://collections.pomona.edu/labs/record/?pdb=3689> (Accessed: 20 March 2021).

2 The issues of this magazine are available online at: https://archive.org/details/bitsavers_computersAndAutomation (Accessed: 13 March 2021).

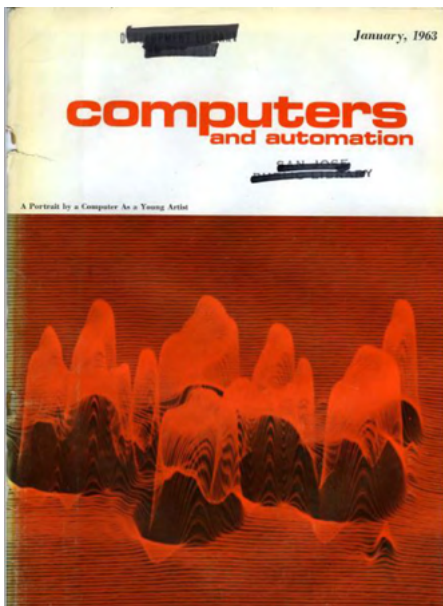


Fig. 1 → *Computers and Automation*, January 1963. Text at the top of the image: 'A Portrait by a Computer as a Young Artist'.

In fact, this intention was only evident in the 1965 competition, won by Michael Noll, an engineer at Bell Telephone Laboratories, who had been interested in graphic production outside his professional field for several years. The work presented, *Computer Composition with Lines* (1964) (Fig. 2), was intentionally inspired by Piet Mondrian's *Composition in line, second state* (1916-1917) (Fig. 3). In the same year, Michael Noll, together with co-worker and scientist Béla Julesz, was invited to make an exhibition at an art gallery in New York. The exhibition *Computer-Generated Pictures* took place at the Howard Wise Gallery (6-24 April 1965), a venue that, in the 1960s, was recognised for supporting new media and ground-breaking displays, such as *On the Move: An Exhibition of Kinetic Sculpture* (1964), *Computer-Generated Pictures* (1965), *Light in Orbit* (1967) and *TV as a Creative Medium* (1969).

Also in 1965, and before the Howard Gallery show, George Nees had presented his graphics at the Studiengalerie der Technische Hochschule of Stuttgart (4-19 February), later followed by the exhibition *Computer-Graphik* with his colleague, the mathematician Frieder Nake, at the bookshop of the Wendelin Niedlich Gallery (5-26 November).



Fig. 2 → Michael Noll, *Computer Composition with Lines*, 1964. Front cover of *Computers and Automation*, August 1965.

Fig. 3 → Piet Mondrian, *Composition in line, second state*, 1916-1917. © Collection Kröller-Müller Museum, Otterlo, The Netherlands. Courtesy of the museum.

Those three exhibitions in 1965 (one in New York and two in Stuttgart) proved to be seminal for the development of "computer art" and would later be followed by others in different geographies, of which *Cybernetic Serendipity* (1968), held at the Institute of Contemporary Art (ICA) in London, was paradigmatic both in this and other related fields.

The 1960s

While, in the 1960s, the information technologies led many artists to become interested in the exploration of these new media in their artistic practices, there was no sign in Portugal that there was any particular interest in such combinations. Nonetheless, it was not due to a lack of equipment in Portugal that this possibility did not materialise. But certainly, the high cost of these systems and the specialist skills needed to operate and maintain them made these technologies unattractive for artists with no technical background and whose essential training had been in painting, sculpture, or drawing. However, the scenario was not vastly different in other geographies, and it was precisely the use of these same systems, in both research and teaching institutions, that served the purposes of some artists, most of whom joined forces with professionals from the academic world in order to carry out their projects.

In the 1960s, in Spain, the Computing Centre of the University of Madrid (CCUM), created the *Seminario de Generación Automática de Formas Plásticas* (1968-1973), helping to establish contact between artists and professionals from different technical areas and resulting in conferences, publications and exhibitions that were attended by national and international artists and lecturers working in these fields (Castaños Alés, 2000). In Argentina, when the art critic and curator, Jorge Glusberg, organised the exhibition *Arte y Cibernética* at the Bonino Gallery (1969) with a group of national artists, the works on display were produced by the computer systems from the Centro de Cálculo de la Escuela Técnica ORT, in Buenos Aires. In Brazil, in 1968, when the artist Waldemar Cordeiro, one of the main driving forces behind the development of Brazilian concrete art, decided to pursue artistic creation using the computer, he carried out his work by using a system from the Physics Department of the University of São Paulo with the technical assistance of Giorgio Moscati, a nuclear physicist at the institution. In England, the new model and organisation of teaching schools in the 1960s, was decisive in bringing together artists and technicians/engineers and making them familiar with the new computer technologies. In Zagreb, the exhibitions and symposia that took place between 1961 and 1978, generally referred to as the *New Tendencies*, played a decisive role throughout their five editions, most notably the fourth one (1968-69) with the colloquium *Computers and Visual Research*, which set the theme for an exhibition with the same title and enjoyed the participation of 41 artists from 11 countries (Rosen, 2011, p. 361).

Furthermore, in Portugal, there is no evidence that any artist used computers in their work in the 1960s, nor that any engineers or technicians made or exhibited computer-produced graphics with an aesthetic purpose. Nevertheless, Ernesto de Melo e Castro, an experimental poet and artist, was interested in the new technologies, considering that, after visiting the emblematic *Cybernetic Serendipity* exhibition (1968), in London, he wrote a chronicle entitled – ‘Serendipitia Cibernética’, published in the Portuguese newspaper *Diário de Lisboa* on 5 December 1968 (Castro, 1977, pp. 149-155). In his article, he envisaged the new possibilities that the use of computers might bring, noting that:

The drawings made by computers and shown in London at the ICA are no better than men can do by hand. They are simply different [...]. The concrete texts and poems written by computers are no better than the texts of the poets [...]. But the field opened up by the computer is larger than the one that is opened up by the pencil of the artist or poet. And it is this greater field of probabilities, which are becoming possibilities, that it is unequivocally interesting to propose [...]. (Castro, 1977, p. 155)³

Melo e Castro's interest in those subjects, and particularly in cybernetics, had already been addressed previously in the article 'Românticos/Clássicos/Cibernéticos' published in 1967 (Castro, 1977, pp. 123-130) and had then reappeared in several other texts after the ICA exhibition, namely 'Ken Cox, Um Ciberneta' (1969), 'Cômicos, Linguística, Computadores, Poetas' (1970) and 'A Máquina – A Mão' (1970) (republished in Castro, 1977).

Later, in the 1980s, and as mentioned further on in this text, Melo e Castro would again gain prominence in the Portuguese art scene for the attention that he paid to information technologies in his publications and exhibitions.

The 1970s

In the 1970s, there was still no news in Portugal of any significant activity in the use of computers as a work tool in the visual arts. However, the national press began to publish news from abroad relating to these themes. In February 1970, the article 'Arte Electrónica', in the magazine *Vida Mundial* (p. 53), mentions the exhibition *Computerkunst: On the Eve of Tomorrow*, which had been held in the previous year at the Kubus Gallery in Hanover, and which, according to the article, presented a set of 217 works, thus revealing the dimension and importance of the event.

The following year, an article by Douglas Davis, 'O Artista e o Computador', also published by *Vida Mundial* (Davis, 1971), disclosed the work of the American artist Charles Csuri, focusing on *Hummingbird* (1967), a computer-generated animation, and *Sine Curve Man* (1967), also mentioning Bell Telephone Laboratories researchers Michael Noll, Kenneth Knowlton and Leon Harmon, and their exploratory work from the mid-1960s.

3 All the quotations in English were translated from the original Portuguese texts by the author.

In 1973, *Flama* magazine published the article 'Estética da Informação ou a Arte Computada', by Rogério Carapinha, in which he used the curious expression 'Aesthetics of Information', referring to a 'New science [...], a branch of cybernetics that, in turn, runs parallel to the natural sciences [...] a new domain of scientific research' (Carapinha, 1973, p. 102), an area of research that was being explored, at the time, by the German philosopher and academic Max Bense.⁴ Other uses of the computer, in addition to its utilitarian and scientific function, were recognised right at the beginning of the article by Carapinha, when he pointed out that: 'Although the power of computers continues to be based on algorithms, they are still developing and constantly embracing new domains. The latest achievement is called infoarte'⁵ (Carapinha, 1973, p. 101). It is also interesting to note what the journalist had to say, at that time, about the Portuguese panorama in the field of the arts:

Portugal, where some companies continue to process data using pencils and erasers, is still not a country of computers. We already know about them, and many private and state-owned companies have them at their service, but we are not yet familiar with them, we still do not treat them as an everyday object. Therefore, it is not surprising that the *making* of computer pictures is as yet unknown to us. (Carapinha, 1973, pp. 101-102)

It was also during 1973 that, for the first time in Portugal, the expression "computer art" first appeared in the prestigious arts magazine, *Colóquio*, in an article by Ernesto de Sousa (1921-1988) about the exhibition *Tendencies 5*, which he had visited in Zagreb while attending the 25th General Assembly and Congress of AICA – the International Association of Art Critics. In this article, he observed that:

From this latest network of trends, there is a whole bundle of "technological arts" that should be mentioned: constructivism, kineticism, and now the so-called "computer art".

Yugoslavia has paid particular attention to this sector, with an important role being performed by the *New Tendencies* exhibitions in Zagreb, the first of which, in 1961, played a pioneering role on the European artistic scene. (Sousa, 1973, p. 58)

4 Max Bense was instrumental in the holding of the first two *Computer Art* exhibitions in Germany and was recognised, by the curator Jasia Reichardt, as the mentor of the *Cybernetic Serendipity* (1968) exhibition in London (Reichardt, 1968, p. 5).

5 The word "infoarte" appeared in the Portuguese press for the first time in this article (1973), an expression that was later used by E. M. de Melo e Castro as the title for the exhibition *Infoarte*, at Galeria Barata, in 1988.

The German Institute in Lisbon and *The Art of the Computer* exhibition

Unexpectedly, between February and March 1974, Lisbon was the venue chosen to host the first exhibition in Portugal of computer-mediated art, thanks to an itinerant programme organised by the Goethe-Institut of Munich. This exhibition included a series of lectures, the first by Salette Tavares, *Uma Poética do Computador* [A Computer Poetics]. Also in February, art critic Egídio Álvaro presented *Manfred Mohr – A Arte do Ordenador: Uma Comparação com Outras Vanguardas* [Manfred Mohr – Art of the Computer: A Comparison with Other Vanguardas], and the cycle ended with a lecture by the German pioneer in computer art George Nees, entitled *Gravuras do Computador* [Computer Drawings].

This exhibition had some repercussions within the circle of art critics in Portugal, being considered by José-Augusto França as the best foreign exhibition in the 1973-1974 period, in his review in the *Colóquio* arts magazine (França, 1974, pp. 38-44). Moreover, José Luís Porfírio mentioned this exhibition in his article 'A Propósito da "Arte do Computador"', published in the magazine *Arquitectura*, although he preferred to make '[...] a very personal point [...] about this type of artistic manifestation' (Porfírio, 1974, p. 42) rather than to write an informed and in-depth critique of the exhibition, stating that, in those graphic works, the technical aspect clearly overlapped with '[...] an aesthetic proposal that did not exist' (Porfírio, 1974, p. 43). While there is some evidence to support this assessment about certain computer-graphic works, the truth is that the generalisation advanced by the art critic, namely that '[...] the computer has not yet given us relevant graphic works, from the point of view of those who are concerned with the visual arts' (Porfírio, 1974, p. 43), was symptomatic of a very summary interest regarding the number of proposals and artists who, at that time, were already working in this field.

This exhibition, which took place just before the political revolution of 25 April 1974, raised no echoes amongst Portuguese artists, whose concerns and experiments, in the following years, had more to do with social issues, not involving the use of computers but only, and to a lesser extent, the use of video, as a new artistic medium.

The 1980s



Fig. 4 → Fernando Aguiar and Silvestre Pestana (org.), *Poemografias*, 1985.

It was only in the 1980s that the computer began to be noticed as a possible tool for artistic work in Portugal. Firstly, because the personal computer revolution had finally made it easier to access these devices without depending on institutions, and secondly because they had now reached the Portuguese consumer at affordable prices, as was the case, for example, with the British Sinclair ZX80, Sinclair ZX81 and ZX Spectrum. It was precisely with the use of these computers that, between 1981 and 1983, Silvestre Pestana made his three *Computer Poems*,⁶ which are documented in his publication *Poemografia* (Aguiar and Pestana, 1985, pp. 214-216), illustrated on the front and back covers with one of these poems – *Computer Poetry to: Julian Beck* – created in 1983 (Fig. 4).

It is noteworthy that the dynamic nature of these works, which were gradually revealed on the computer's monitor, reveals a different visual regime to the static printing of text on paper, whether it had been created by the computer or by the poet. In this regard, it is important to mention a short text by Silvestre Pestana – 'Apontamentos de: Literatura Informacional ou a Poética dos Anos 80', included in *Poemografias* – which states that 'The audience for which "video-computer poetry" is intended is no longer the traditional

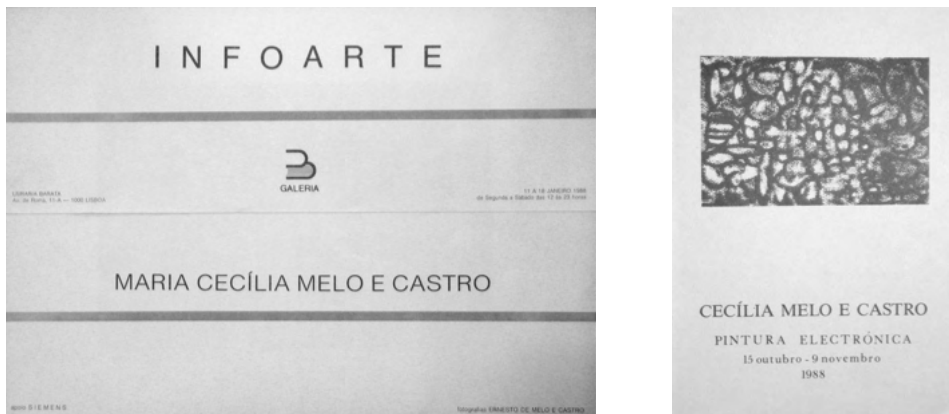
⁶ *Computer Poetry To: E. Melo e Castro* (1981), *Computer Poetry To: Henry Chopin* (s.d.), *Computer Poetry To: Julian Beck* (1983). The first two used the Sinclair ZX81, and the last one used the ZX Spectrum.

audience of a literary and bookish culture, but that of the technical-visual audio crowds, since the intrinsic purpose of the medium, the computer-video, is its instantaneous and universal free transmission across the planet' (Aguar and Pestana, 1985, p. 205). Silvestre Pestana used different technical media and technologies in his artistic practice, which included video, visual poetry, performance and installation, as well as incursions into the virtual environment of *Second Life* or the use of drones, demonstrating a positive attitude towards the experimental possibilities offered by the new media.

In the mid-1980s, the Calouste Gulbenkian Foundation drew attention to a new experimental medium in the arts, with the exhibition *The Holographic Image: Eight Artists in the Laser Era* (October and November 1985), which was the first major exhibition in Portugal dedicated exclusively to the use of that technology in the making of art. In 1987, it was once again at the initiative of the Calouste Gulbenkian Foundation that an international colloquium was held on the subject of Art and Technology, complemented by exhibitions and other activities. The lectures and the papers presented at this colloquium were published six years later in book form (Santos, 1993).

1988 was a particularly interesting year, not only because of the revelation of another artist who used the computer in her work – Cecília Melo e Castro – but also because it was the year of the publication of *Poética dos Meios e Arte High Tech* by E. M. de Melo e Castro, possibly the first reflexive approach in book form in Portugal to what later became known as the "new media".

In fact, right at the beginning of the year, the *Infoarte* exhibition, at Galeria Barata (11-18 January 1988) (Fig. 5), presented abstract images by Cecília Melo e Castro, who, without having had a career or any traditional training in fine arts, began her artistic journey by producing images using software and computers, which were then photographed and presented in the gallery space as if they were paintings. In the text that E. M. de Melo e Castro wrote for the presentation of this exhibition, he stated: 'Artists of a new type are emerging [...] who do not use a pen or a typewriter, who do not paint with paints, who do not use pencils. They are INFOARTISTS. They have in common a tool that they use to produce their art: the computer and its peripherals' (Castro, 1988, p. 57), also underlining an aesthetic quality, which he described as "info-impressionism", in Cecília's artwork. Cecília Melo e Castro's work in this field resulted in two more solo exhibitions in 1988: *Infoarte 2*, at the gallery of the Junta de Turismo da Costa do Estoril; and *Infoarte 3*, at the gallery O Outro Lado do Espelho, in Sintra (Fig. 6).



Figs. 5-6 → Leaflets from *Infoarte* and *Pintura Electrónica* exhibitions by Cecilia Melo e Castro at Galeria Barata, Jan. 1988 (left), and at the gallery O Outro Lado do Espelho, Oct.-Nov. 1988 (right).

By that time, Ernesto de Melo e Castro was one of the Portuguese artists most interested in the new media, both in his artistic production and as a curator of exhibitions, activities that had repercussions upon his critical writing about these media and his thoughts about the artists that were working with them. This was evident in the work he produced in the field of video poetry, with a series that he entitled *Signagens*, a set of video poems created between 1985 and 1989 at the Universidade Aberta de Lisboa, six of which were made entirely with computer-generated images.

In his book *Poética dos Meios e Arte High Tech* [Media Poetics and High-Tech Art], Melo e Castro started by posing fundamental questions and addressing some theoretical issues regarding the new media, clarifying what he understood by "media poetics". Then he dedicated a few pages of reflection to each of the modalities that he highlighted as examples of high-tech art (infoart, infopoetry, videopoetry, holopoetry, fractal aesthetics, zero gravity poetics, tele-art and robotics).

This publication was, to some extent, the theorisation of the exhibition that Ernesto Melo e Castro had organised at Galeria Diferença, under the name of *Art High-Tech em Questão* (1988) (Figs. 7-8), in which he participated with Cecilia Melo e Castro, Pedro Barbosa, Silvestre Pestana, Clara Menéres, and the Brazilian artist Eduardo Kac, with artworks that illustrated some of the themes proposed in his book. The Telectu duo also participated in this collective show by producing ambient electroacoustic music.



Figs. 7-8 → Front and back of the postcard invitation to the exhibition *Arte High Tech em Questão* at Galeria Diferença, 1988.

Although only a very small number of artists were by now working in this area, it seems that, in the 1980s, the first steps were taken to present a new type of approach to both the public and the art critics, leading to the subsequent acceptance of artistic experiments based on the new technologies and media. However, about fifteen years later, in 2001, a text written by the artist, critic and curator António Cerveira Pinto was to shed some light on the reception of this type of technological mediation:

But if all of this seems reasonable and even inevitable, there, nevertheless, continues to be some institutional resistance to the full acceptance of the new media in the territory of so-called contemporary art. An invisible fractal still separates museums, galleries, critics, and artists of the twentieth century, from those of the twenty-first century. This fractal has several names: web, net, media art, cyber art, new media. Let us just call it the fractal of art and technology. (Pinto, 2001)

Final Considerations

The above quote by Cerveira Pinto, at the beginning of the twenty-first century, was indicative of a kind of divorce between contemporary art and the new artistic mediations and aesthetic debates associated with the new media and information technologies, legitimised by critics and museum institutions. In this respect, Portugal was no different from the rest of the art world, but there was a gap of about two decades between the national reality and what had happened in other pioneering countries in terms of the use of computers and other technologies in artistic creation. In the second half of the twentieth century, this effectively represented a very considerable length of time.

Several reasons can be highlighted, including the lack of permeability and dialogue between the world of science (namely universities and computer centres) and the artistic world, or the non-existence in Portugal, in the 1960s and 1970s, of organisations, events or centres that were able to encourage this collaboration, contrary to what was happening in other countries, such as Spain, for example, just across the border.

A very conservative approach to artistic education (centred on the traditional fields of painting, sculpture and drawing) and an equally conservative political regime did not encourage technical experimentation with the use of new technologies in the 1970s. One exception, however, was the case of video, with support being given to the artists of the Video Centre created at the National Gallery of Modern Art in Belém in the second half of the decade, although this was unfortunately destroyed by a fire in 1981.

Obviously, the political revolution of 25 April 1974 represented an important moment of social change, but it was also a time of great difficulty for artists, with the closure of many galleries (Couceiro, 2004, p. 26). It was not, therefore, the right time to undertake "laboratory" experiments with the new media without the prospect of any financial return. A few years later, in 1977, the emblematic exhibition *Alternativa Zero*, curated by Ernesto de Sousa, served as a good barometer for assessing the Portuguese artistic situation, as it was a point of convergence for the national artistic avant-garde, bringing almost 50 artists together. However, the reception of the most recent technologies was only very occasionally to be noted here, being largely insignificant.

The major festival of digital arts and the new media in Europe, *Ars Electronica*, created in Linz, Austria, in 1979, only welcomed its first Portuguese representative at its 2000 edition,⁷ which clearly illustrates the delay of the national artistic environment in adjusting to the international art scene.

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COLLABORATIVE TERRITORIES

Pockets Full of Memories (2001-2007): An Installation Integrating Data Collection and the Kohonen Self-Organising Artificial Neural Network Algorithm

George Legrady and Timo Honkela

Pockets Full of Memories is an early generative art installation consisting of a data acquisition station and a data visualisation space. It was commissioned by the Centre Pompidou in Paris, in 2000, to explore themes of public participation and archive memory. The installation travelled to seven other venues, each with a distinct audience, ending in a Chinese language version interface at the Museum of Contemporary Art, Taipei, in 2007. The installation consisted of four core components: 1) a data collection/questionnaire station, 2) dynamic data processing by the Kohonen unsupervised, artificial neural network, self-organising map algorithm, 3) multiple animation visualisation projections featuring continuously updated contributed data, and 4) online access to the contributed data. Each exhibition's and venue's contributed data of object images and their descriptions can be thought of as an assemblage of cultural artefacts, ideal for an anthropo-archaeological analysis to evaluate differences in cultural perceptions over time, venue-specific audiences, and geographical locations between the various exhibitions.

Introduction

Pockets Full of Memories (PFOM), translated into French as *Des souvenirs plein les poches*, was an interactive installation that premièred at the Centre Pompidou on 18 April 2001 and was on view throughout that summer until 3 September. It was organised by exhibition coordinator Boris Tissot to explore the combined themes of public participation, archive interaction, cultural narrative and memory. The installation was showcased in conjunction with artist and professor Jean-Louis Boissier's project *Mémoire de crayons* (Boissier, 1995-2001). The two installations were exhibited side by side, contextualised by the title *Interactivités*, and had as their common themes the collection of objects, the art of memory through interactivity, the function of objects in conveying stories, the indexicality of data entries in a database and the description of items stored as metadata.



Fig. 1 → *Pockets Full of Memories/Des souvenirs plein les poches*: exhibition space infographics by Projekttriangle Design, 2001.

Fig. 2 → *Interactivités* exhibition, Centre Pompidou, 2001: George Legrady's *Pockets Full of Memories* (on the left) and Jean-Louis Boissier's *Mémoire de crayons* (on the right). Photo: George Legrady, 2001.

Exhibition Description

The plan of the exhibition was to assemble a cultural archive through the contributions of exhibition visitors, who would provide an image and descriptions of an object in their possession, which would then be classified by an artificial neural network algorithm, and accordingly positioned in a two-dimensional visual space, with each object being defined by its semantic metadata. The results were projected onto a large screen in the exhibition space. The public were invited to scan an object in their possession at the data collection station and to describe the object through an interactive digital questionnaire. Each exhibition venue began with a near-empty database seeded by just a few contributions in order to activate the neural network for data analysis. As the collection accumulated over time through the incoming submissions, the animation intensified in the movement of objects repositioning themselves on the screen, caused by the impact of the incoming new data on the re-ordering of the summary of objects. Viewers were able to witness the process by which the artificial neural network Kohonen self-organising map (SOM) algorithm redefined the relationship of the submitted image-objects over time, based on the semantic metadata descriptions provided by the participants. The audience were able to perceive the most recent entries, as the algorithm was programmed to prioritise the placement of the ten most current contributions and populate the surrounding cells by previous submissions stored in the database.



Fig. 3 → Announcement card for the installation *Pockets Full of Memories*, designed by Projekttriangle Design, 2001.

History of the Exhibition, 2001-2007

Pockets Full of Memories was commissioned by Boris Tissot for the main public space of the Museum of Modern Art at the Centre Pompidou, in Paris, where it was presented throughout the summer of 2001. The installation was later exhibited at the Dutch Electronic Arts (DEAF '03) Festival, Rotterdam (February 2003); the Ars Electronica Festival (September 2003); the "Aura" exhibition organised by c3, Budapest, (October 2003); the Museum of Contemporary Art Kiasma, Helsinki (Summer, 2004) and the Cornerhouse Gallery, Manchester (Winter, 2005). A Taiwanese language version was also displayed at the Museum of Contemporary Art (MoCA), Taipei (Summer, 2007). Each of the eight installations took place within a different context, each in a different

country, being displayed to a variety of audiences, from the general public to specialised media arts-specific communities. There were installations at four museums (Paris, Helsinki, Frankfurt, Taipei), a fine-art gallery (Manchester) and three media-arts festivals (Rotterdam, Linz, Budapest). Each of the locations had its own culture-specific audience, resulting in a collection of over 11,288 contributions, which today can be accessed online at: <http://tango.mat.ucsb.edu/pfom/databrowser.php> (Legrady and Schlegel, 2004).

Origins and Inspirations

The exhibition coordinator, Boris Tissot, had come across the autobiographical, interactive multi-linear artwork, *An Anecdoted Archive from the Cold War* (Legrady and Comella, 1992), at the Palais des Beaux-Arts in Brussels, in the two-artist exhibition *Verbindingen/Jonctions*, featuring works by George Legrady and Chris Marker. Seeing the exhibition inspired him to further explore the potential of how the public might directly engage with creating a digital-based archive.

The *An Anecdoted Archive from the Cold War* was an interactive artwork designed as a compilation of brief stories to be accessed without any linear order, so that viewers could choose to select a sequence to view serendipitously. Technologies that were newly available at the time, such as the digital scanning of documents and the time-based digital capture of films and sounds, all stored in the digital optical CD-ROM media, made it possible to compile and retrieve the digitised documents in any sequence organised by interactive software, such as Macromedia Director. Using the metaphorical interface of the layout of the architectural floorplan of the Hungarian Socialist Propaganda Museum, viewers were able to browse through autobiographical-based short stories, by selecting any one of the eight virtual rooms, and then navigate their way, choosing to view any of the narratives in each room. Each story comprised combinations of texts, digitised photographs, scanned documents, recorded sound bites and short video clips, which could be used to convey an auto-biographical narrative relating to the Cold War. The multilinear, interactive format of this work ensured that each viewing yielded a different narrative.

Over the last decades of the twentieth century, digital encoding made it possible to transcend the constraints of linear structures, and this led to the development of new methods for the organisation of data. It was under the scope of this research that the authors met and began to collaborate. In the late 1990s, George Legrady held a faculty position in Stuttgart, Germany, and his institution was part of a European media arts organisation that held regular meetings to define directions in the digital media arts education field. It was at one of these meetings that Legrady was introduced to the Kohonen unsupervised self-organising artificial neural network algorithm by Timo Honkela from Helsinki (Honkela, 1997). Legrady was inspired by the latter's presentation as he had been looking for such an autonomous, self-learning process that mathematically classified data based on the multi-dimensional analysis of metadata. Honkela was a computer scientist, who had written his dissertation on the Kohonen algorithm, and who was at that time undertaking research into natural language processing focused on text-based information retrieval, specifically in order to organise a large collection of documents to facilitate interactive browsing by clustering articles of similar content through spatial proximity. The discussions at these meetings led to the idea of using the SOM to spatially position images according to text (semantic) encoded in metadata rather than according to the image's pictorial features.

Unique Features of the PFOM Installation

The *Pockets Full of Memories* installation introduced a number of unique features to the museum exhibition format. The exhibition's goal was to have the public create a collection that recorded their participation and interests through the process of contributing cultural artefacts. The collection was formed by visually scanning an object of their choice and describing it through a questionnaire. Once the data had been entered, it was processed by the SOM algorithm and then added to the existing collection visualised on a large screen. The staging of the installation was determined by the two-step operation of how artificial neural networks function. There was a training set which built up over time and was continuously mapped through the projection. Initially empty, the collection expanded over time, changing in content. The SOM algorithm processed the incoming data with the currently existing data order as its input, creating a newly-ordered table. Although seemingly simple, this process required many iterations as, at each step, the calculations engaged in the

learning state, initially organising at the global scale and eventually at the local cell state, with the ordering process being disrupted each time a new entry was added to the database.

Animation Sequences and Emergence

Access to the organisation of the collection was through the viewing of the repeating animations. The most dramatic animation consisted of the sequential positioning of the image-objects within the 2D matrix on the large screen until all the objects in the collection were placed, their position being determined by the neural network calculations, according to the objects' multi-dimensional metadata. The public were able to observe their object, positioned in relation to the others, based on the semantic data provided through the questionnaire. The succeeding animation showed the objects being repositioned from their current to their new position with lines connecting the start and end cell locations in the matrix. The forthcoming animation, titled 'unified distance matrix' (U-matrix) visualised the relationships of values between cells with grey-scale tones, in which light tones represented similar values and the darker tones indicated semantic distance and separation. The animation sequence was designed to reveal to the spectators the hidden operations taking place behind the scenes that determined each object's position.

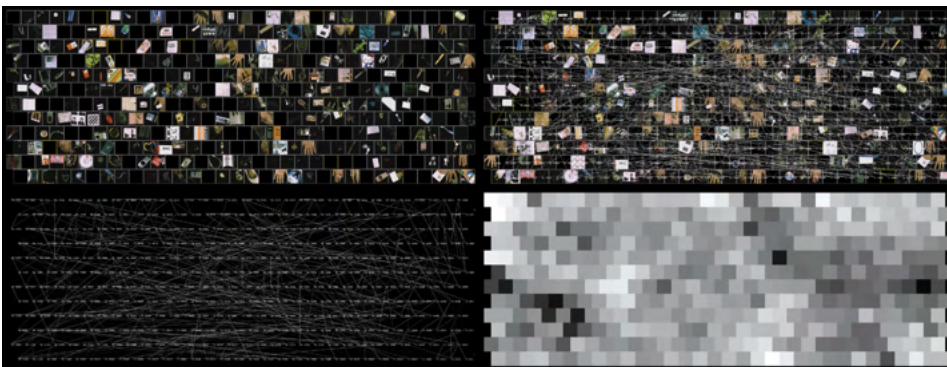


Fig. 4 → George Legrady, *Pockets Full of Memories*, 2001. The four animations (from top left to bottom right): the objects, the movement of objects, the lines showing objects and the U-Matrix. © 2001 George Legrady.

The phenomenon of proceeding from small local actions (each individual audience's contribution) to an ordered state in the 2D matrix expresses the operation of "emergence", as the order is not determined beforehand but emerges over time through the local interactions taking place when each new object enters the database. In this sense, the system has been defined

as “self-organising”. The eight-slider multi-dimensional attribute values and keywords entered in the questionnaire defined each object's value by the system. The data analysis of common objects such as keys, mobile phones, pens and hands in the collection disclosed a wide range of ratings. Through the process of filling out the questionnaire by which to describe the objects, world views and subjective opinions were articulated. Subsequently, a post-museum visit opportunity was introduced with online access, giving the general public the change to further contribute commentaries and conversations to each object in the database collection.

Multi-Disciplinary Production

The planning and conceptual development of the project began in the spring of 1999, with actual production starting in the summer of 2000 and continuing for several months until the opening of the exhibition in April 2001. Once funding had been secured, the greatest challenge in the production process was caused by the geographical distribution of the collaborators. Project management, visual identity design and the design of the questionnaire took place in Stuttgart, while the operational design and integration of the Kohonen self-organising map (SOM) algorithm work was carried out in Helsinki, and the fabrication of the data collection station and software integration of all components took place in Budapest. Brigitte Steinheider, a psychologist who, at the time, was a researcher at the Fraunhofer Institute and worked on the questionnaire, wrote an analysis of the project's development, resulting in a publication in *Leonardo* (Steinheider and Legrady, 2004).

The software application of the Kohonen self-organising map (SOM) algorithm, which was at the core of the installation, was developed by Timo Koskenniemi, Petri Saarikko and Timo Honkela at the Media Lab of the University of Art & Design in Helsinki. The code was written in Perl but integrated existing C language functions from the open-source Kohonen library. The SOM sequence involved the following three steps:

- 1) Map Initialisation: randomising multi-dimensional values associated with each of the 24 x 12 positions in a 2D matrix, retrieving each contribution and identifying a best match to any of the matrix positions, multiplying values by a decreased percentage to distanced cells. SOM compresses high-dimensional data into nodes in a 2D lattice and is used to automatically

find clusters in input data, especially where data elements may be related in a non-linear, associative fashion.

- 2) Map Training: An iterative process where the data is ordered and fine-tuned.
- 3) Map Visualisation: Positions data within a 2D space based on clusters, with attached labels. The process essentially repositions the images of the objects over time into an ordered state based on metadata defined by the contributors' semantic descriptions.

The questionnaire designed by Brigitte Steinheider consisted of multiple screens to collect the following metadata: a language choice screen (French, English, and later Chinese), an image capture screen to digitally scan the object and screens to provide descriptions, keywords and object origins. A number of screens collected demographic data recording age, gender, profession and country. The most impactful screen included the eight attributes sliders by which the objects were classified. The sliders were modelled on the Osgood/semantic differential scales normally used to measure attitudes. The sampling rate was set to 128 positions (-64 to 64) between the two polar positions with a central neutral (0) position. The attribute topics for the eight sliders were chosen on the basis of what visitors might have with them at the Pompidou Centre, including: old/new, soft/hard, natural/synthetic, disposable/long-use, personal/non-personal, fashionable/not fashionable, useful/useless and functional/symbolic. All except the last attributes were opposites, considering that an object could be both functional and symbolic.

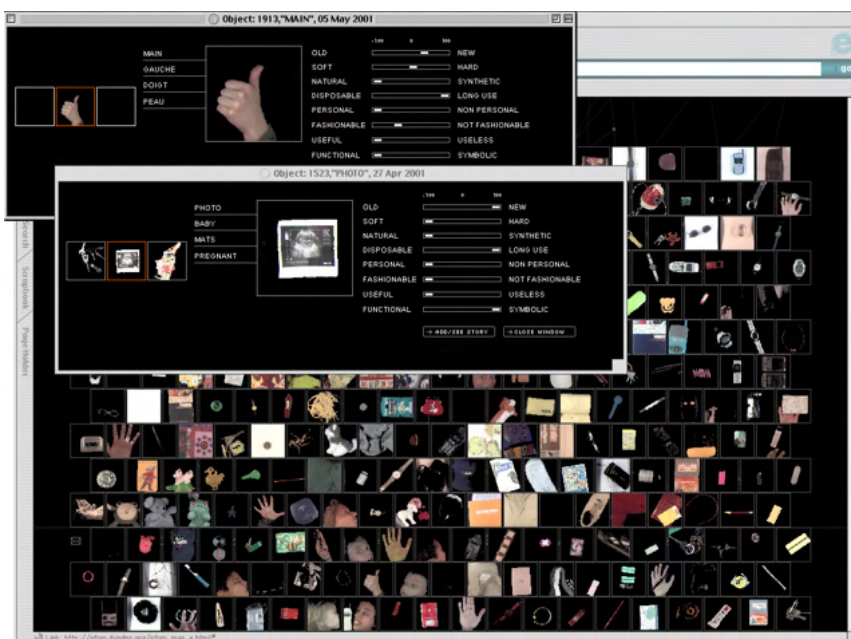


Fig. 5 → George Legrady, *Pockets Full of Memories*, 2001. Online data screen with two views of contributed objects. © 2001 George Legrady.

Projekttriangle Design Studio in Stuttgart created the project's visual identity. The design was developed over time as a research study in infographics, since visual identity was intended to function as an identity marker and was also used to guide the public through the process of digitising objects and filling out the questionnaire. The staging of the installation was enhanced by additional wall icons positioned to situate the narrative, likewise instructing the public through the procedural steps and explaining to them the broader conceptual premise of the artwork. For each of the exhibitions spread across six years, Projekttriangle Design redesigned the visual icons showcased on the walls and floors of the installations in order to fit the specific conditions of each of the venues.

The MoCA Taipei exhibition required the introduction of a Chinese language version, a design challenge in itself, given the short time allotted to its development. Peter Connolly at the Urge Studio in Los Angeles redesigned the questionnaire interface, which was tested at the Cornerhouse Gallery in Manchester (2005) and eventually at MoCA Taipei (2007).

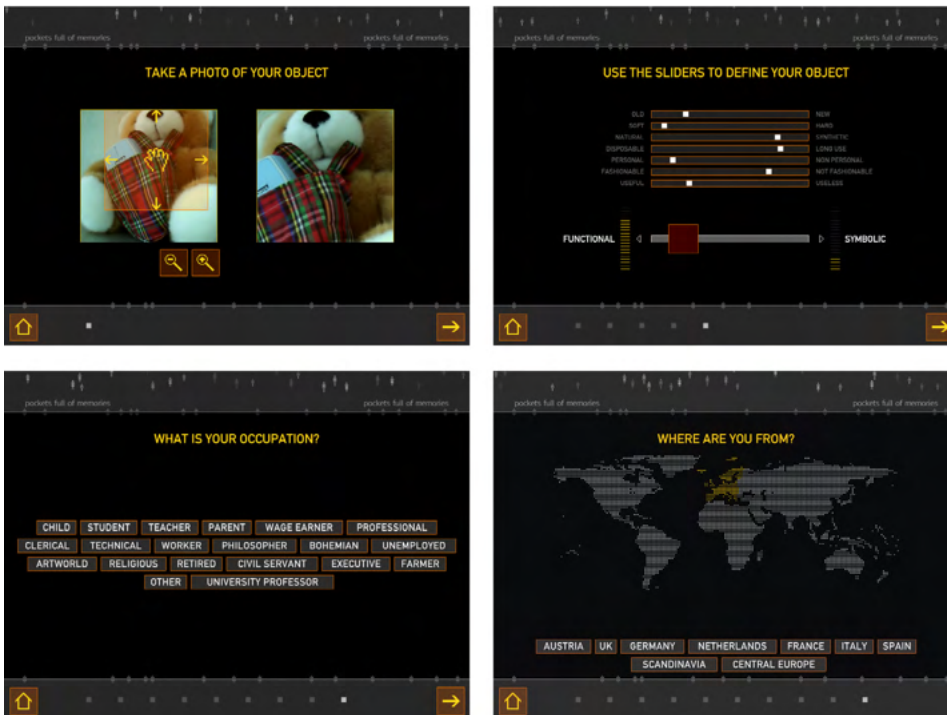


Fig. 6 → Four of the fifteen questionnaire screens designed for the exhibition at the Cornerhouse Gallery by Urge Studio, Los Angeles, 2004.

Software development, fabrication of the touchscreen data collection station with a camera image capture system, database setup and operations, LAN networks and visualisations were all realised at the C³ – Centre for Culture

and Communication in Budapest, a vanguard, digital media arts research and production centre dedicated to the intersections of art, science and technology, directed by art theorist and historian Miklos Peternak. Marton Fernezelyi was the lead engineer for the fabrication and software development, devising multiple innovation solutions, such as creating a touch screen interactive interface from scratch. C³ was selected to fabricate the complex components of the installation, as, in previous collaborations, the team had proven their expertise both in design and in solving unusual technical, engineering problems.

Hardware and Software Evolution

The exhibition had a seven-year lifespan from 2000 to 2007 and, over this period, the technology assigned to process the data evolved at such a rapid pace that each exhibition required hardware and software updates for both the camera capture and the data processing, to the extent that the seven computers initially used at the Centre Pompidou were reduced to three by the time of the MoCA Taipei presentation.

The Collected Data, Metadata and Analysis

Pockets Full of Memories was designed as an artwork to collect data with the intention of having the data function as a trace, record and reflection on the community that participated in the artwork. Approximately 20,000 visitors came to view the installation at the Centre Pompidou over a four-month period and contributed with 3,327 data submissions of objects and their descriptions. The eight exhibitions produced a total collection of 11,288 objects with the following distribution:

- **3,327** contributions at the Centre Pompidou by a general audience (18 April – 3 September 2001);
- **724** by a digital media arts audience at the Dutch Electronic Arts Festival, Rotterdam (25 February – 9 March 2003);
- **627** by a digital media arts audience at Ars Electronica, Linz (5-21 September 2003);
- **688** by a general art audience at the *Aura* exhibition curated by the Centre for Culture and Communication, Budapest (29 October – 30 November 2003);

- **2,449** by a general art audience, Kiasma Museum of Contemporary Art, Helsinki (6 May – 1 August 2004);
- **897** by a general art audience, Cornerhouse Gallery, Manchester (21 January – 6 March 2005);
- **146** by a general audience, Frankfurt Museum of Communication (27 June – 8 September 2006);
- **2,439** by a general art audience, Museum of Contemporary Art, Taipei (10 August – 5 October 2007).

The contributions consisted of items that the visitors had with them such as keys, mobile phones, toys or shoes and, over time, the more creative submissions included body parts, blank screens and messages to loved ones.

Legal Considerations

The ten-page contract signed for the exhibition at the Centre Pompidou stipulated in great detail the particulars of the fabrication and display, such as sub-contractor agreements, equipment loans, software and hardware ownership, rights of use and reproduction, conceptual development and intellectual property rights, scheduling, guarantee of functionality, maintenance through the exhibition and promotional support. There were also legal considerations by the Centre Pompidou lawyers about how to filter the incoming data in the event of problematic content, about who would have ownership of the data and about how the data was to be used once collected. The conversation over data use and ownership resulted in a request for a fifteen-year research use by the museum.

Online Database

An online interactive database was launched after the last exhibition at MoCA Taipei in 2007, with all of the 11,288 contributions that had been collected through the eight exhibitions being made accessible through an interactive template available at: <http://tango.mat.ucsb.edu/pfom/databrowser.php>. The database can be searched for all of the metadata that contributors provided, such as the images of the objects, their descriptions, origins, keywords, eight attribute values and demographic data.

The study, which has yet to be realised, involves comparing to what extent the various exhibitions reveal unexpected differences in the statistical overview of the contributions.

Pockets Full of Memories Data Archive

You are at the "Pockets Full of Memories" (PFOM) data archive site consisting of data contributed by the public visiting the PFOM exhibitions between 2001 and 2007. No part of the site may be copied, reproduced, distributed, transmitted, or publicly displayed without the prior written consent of [George Legrady](#) (c) 2005-2010.

Exhibition: Pompidou Deaf Ars Aura Kiasma
 Cornerhouse Frankfurt MOCA Taipei

Gender: Male Female


Age: 0-4 5-10 11-17 18-25 26-35 36-50 51+

Occupation: all artworld bohemian child civil servant
 Countries: all Asia Australia Austria Belgium

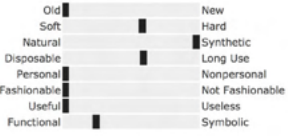
Sort by: Date
 Age
 Occupation
 Country

Searching PFOM database for: Exhibitions: MOCA Taipei | Gender: All | Ages: 18-25 | Occupations: All | Countries: All
 Characteristics within range of 16: Old-New, Disposable-Long Use, Fashionable-Not Fashionable

2 Results found | Sorted by Date




Object ID: 8886 | 1345
 Creation Time: Thu Aug 16 02:18:22, 2007
 Exhibition: MOCA Taipei, Taiwan (2007)
 Object Description: PHONE
 Object Origin: MARS
 Keywords: FRIEND FAMILY ME
 Owner's Name: JOSHUA
 Owner's Gender: Male
 Owner's Age: 18-25
 Owner's Occupation: student
 Owner's Country: Taiwan

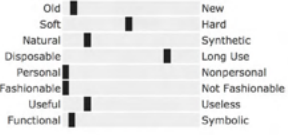


[select similar](#)

No messages.



Object ID: 10864 | 3317
 Creation Time: Sat Sep 29 21:00:35, 2007
 Exhibition: MOCA Taipei, Taiwan (2007)
 Object Description: 腳
 Object Origin: 身體
 Keywords: 皮下 我與
 Owner's Name: 球
 Owner's Gender: Female
 Owner's Age: 18-25
 Owner's Occupation: philosopher
 Owner's Country: Taiwan



[select similar](#)

No messages.

Fig. 7 → *Pockets Full of Memories Data Archive*, 2007. Example of a search query in the online database. In this case, from the Taipei exhibition, two contributions are returned that match the query for submission, by the age group of 18-25-year-olds, of objects that had attributes of "old", "somewhat long-use" and "fashionable". Screenshot from: <http://tango.mat.ucsb.edu/pfom/databrowser.php> (Accessed: 9 September 2021). Design and software development by August Black. © 2005-2010 George Legrady.

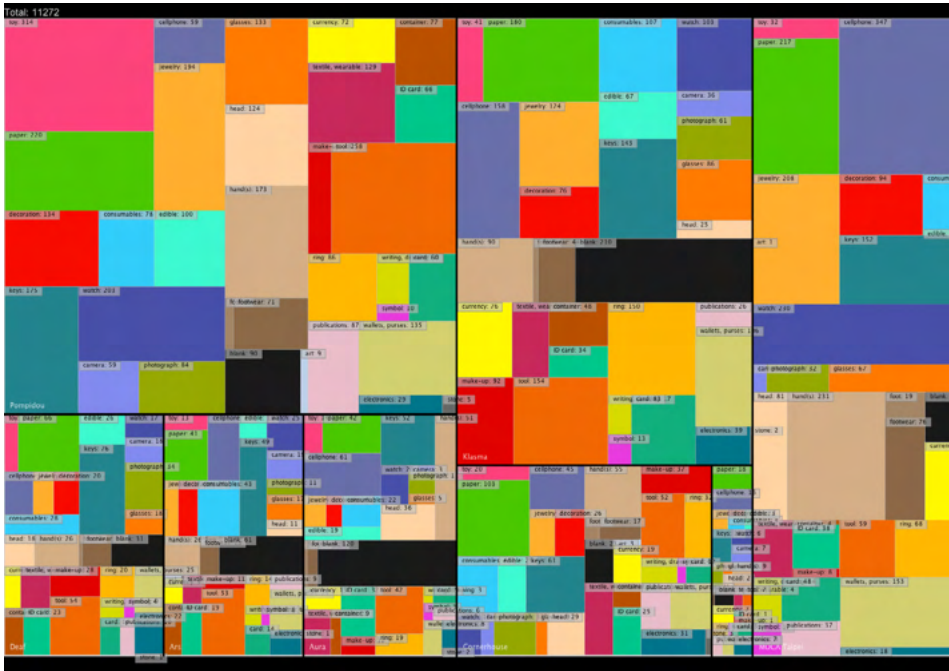


Fig. 8. → George Legrady, *Pockets Full of Memories*, 2001-2007. A comprehensive map of all contributions according to their categories, and subdivided by exhibition clusters. Centre Pompidou (top left) and MoCA Taipei (bottom right) had the most contributions. © 2007 George Legrady.

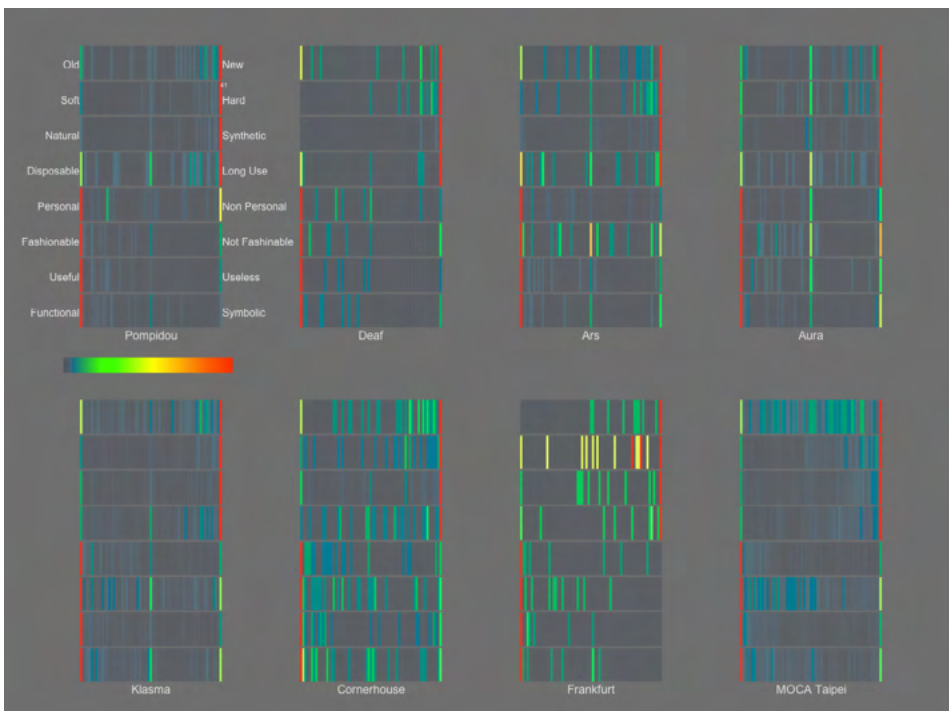


Fig. 9 → George Legrady, *Pockets Full of Memories*, 2001-2007. Summary of data collected from mobile phones and their attribute ratings throughout the eight exhibitions from 2001 to 2007. The results reveal that, even though each exhibition's rating differed in the distribution, all exhibitions rated mobile phones in the same way. Their attributes were considered to be new, hard, synthetic, long-use, personal, fashionable, useful and functional. © 2007 George Legrady

Conclusion

The *Pockets Full of Memories* installation was first exhibited in April 2001, twenty years ago, at the Centre Pompidou. It was commissioned by Boris Tissot, who wanted a project that would give the general public the opportunity to actively participate in the cultural content of an interactive installation, so that the dat.0a would increase during the length of the exhibition, resulting in a memory bank to embody the totality of the participations. The exhibition eventually travelled to a range of venues, between Europe and Taipei, being displayed at digital media arts festivals, contemporary art museums and a fine art gallery. Some of the unique features of the design and implementation of this interdisciplinary digital media artwork included the following:

- 1) The artwork required the contribution of a number of specialists to realise the concept, narrative, software and fabrication. This collaborative project involved a Cognitive Science computer scientist (Honkela), a psychologist (Steinheider), a graphic designer team (Projekttriangle), a software and hardware development team (C³) and the artist (Legrady).
- 2) This artwork was one of the first to implement an artificial neural network algorithm by which to autonomously organise and position data, some 16 years before such algorithms became of interest to current art.
- 3) Fitting into the current genre of generative art, this project was dependent on the active participation of the audience, whose contribution of data introduced complexity through collective actions. This condition of “emergent behaviour” resulted in variances in each of the exhibition venues as the public’s actions in each location were conditioned by the specific knowledge, perspectives, beliefs and mindsets through which they described their contributions to each of the collections.
- 4) This contextual situation reframed the exhibition as a site of creation, of collective memory construction to reflect the diversity and make-up of the audience: who they are, what they are interested in, how they describe themselves represented through the objects contributed to the archive. Moreover, the project explored new ways of making the way in which advanced data-structures function more accessible and understandable.

During the past five years, Artificial Intelligence has re-emerged, with Machine Learning, Deep Learning and artificial neural networks all moving

to the forefront of research and practice both in the field of engineering and in the artistic communities. This installation was realised at a time when the conversation about Artificial Intelligence and artificial neural networks had yet to enter the broad public domain, anticipating the opportunities that a public interactive art installation could provide, in order to introduce AI to the art community, exploring its potential within an experimental artistic context.

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Fictioning the Third Space

Charlie Tweed

This paper addresses the challenges of sci/art collaboration, looking at a range of approaches, and then focusing on the potential for utilising fictional strategies as a means for drawing out alternative and future perspectives on scientific research.

I will analyse two recent projects: firstly, the production of a collaborative science fiction film as part of the Wellcome Trust-funded *Silent Signal* project (2013-16). Secondly, I will discuss my recent video work *Notes from the Subsurface* (2020), made during my research fellowship in the Earth and Life Sciences Departments at Bristol University. I will argue that the use of these fictional methods can help to enhance the criticality and potency of sci/art collaboration, allowing for a shared co-enquiry to emerge and for the artwork to maintain its criticality. Finally, I will consider ways for building on these projects to enhance future sci/art interdisciplinary practice and to help foster new models for collaboration.

Introduction

This paper discusses the complexities of sci/art collaboration in the context of the rapid growth in sci/art interdisciplinary projects and opportunities. It locates the challenges that can emerge within such collaborative processes, where there is often an expectation that artists will perform a role of communicating scientific research rather than bringing new critical perspectives and original practice-based research to the project. I will consider a number of approaches to these forms of collaboration, focusing on notions such as the "third space" and "shared co-enquiry" and building on these ideas to consider the potential for developing shared fictioning spaces beyond the confines of disciplines.

Within this field, I will analyse two recent sci/art projects that I have been involved with: firstly, the production of a collaborative video artwork as part of the Wellcome Trust-funded *Silent Signal* project (2013-2016). Secondly, I will discuss my recent video work *Notes from the Subsurface* (Tweed, 2020a and 2020b) made during a research fellowship in the Earth and Life Sciences

Departments at Bristol University. Finally, I will consider ways of building on these projects to enhance future sci/art interdisciplinary practice using evolved fictional methods.

Sci/Art Collaborative Approaches

The cultural capital of artists and their practice has often occupied a difficult position within the conditions and underlying needs of scientific research projects and their funders. With an expansion in the requirements for demonstrating "impact" and the need to reach new audiences, artists in some cases have found themselves working for minimal fees, performing the role of science communicators on large-scale science research projects. If we connect this with the research turn within art practice, the academisation of art within universities and the proliferation of practice-based PhDs, it seems problematic that art can often be utilised as a service to science impact.

In this context, a recent poll on art-science collaboration in *Nature* (2021) received many positive responses, particularly from scientists, around the potential of sci/art collaborations noting that 'Public engagement has become essential to many research projects. Scientists are increasingly seeking out visual artists and designers to help them to communicate their work to new audiences' (Gewin, 2021). The tone here seems to support the notion of art operating in the service of science communication and audience engagement, with little consideration for the development of critical art works or new forms of interdisciplinary research.

Along these lines, an evaluation of sci/art projects that have been funded by the Wellcome Trust highlighted the "usefulness" of artists with their 'communicative abilities helping to demystify and make more intelligible aspects of contemporary science' (Glinkowski and Bamford, 2009). Once again, artists are seen as "useful", helping scientists to connect their research with wider audiences in a visually appropriate way. From another perspective, sci/art collaborations can result in artists using the scientific research as a departure point for their own practice, developing art works that may bear little relation to the original research, and from limited interaction with the scientist collaborator.

Desmond Bell advocates the development of a 'synergy at the level of invention', as a means for art to establish a 'productive relationship with science', for example by observing scientific practices and then re-appropriating them to 'achieve distinctive artistic effects' (Bell, 2019, p. 121). Bell points us towards a strategy whereby artists can retain the attributes of their practice as well as a distinct critical voice, but, in this case, we see a distancing from the science and often a lack of collaboration.

Meanwhile, Nicola Triscott has described the concept of interdisciplinary 'co-enquiry', where artists pursue their own enquiry beside the scientific research (Triscott, 2017). She goes on to describe the notion of the co-production of knowledge between art, science and society, considering this as an 'ecology of practices' (Triscott, 2017).

In connection with this sort of approach, Henk Borgdorff draws into view the similarities between the practices of scientific and artistic research, pointing out their strength for bringing new perspectives into view: 'both disciplines are capable of constituting worlds and disclosing worlds; therein lies their performative strength – in generating and revealing new ideas, understandings, perceptions, and experiences' (Borgdorff, 2012, p. 85).

Finally, O'Riordan highlights the potential for sci/art collaborations to move beyond individual disciplinary perspectives, creating a "third space" in which existing knowledge, discourses and practices are challenged (O'Riordan, 2010).

In the following section, I wish to build on the notions of the "third space" and "co-enquiry", considering the performative strength of both science and art to reveal new worlds and perspectives, highlighting the potential for fictional approaches to open up new collaborative territories.

Fictioning as Method

In their book *Fiction as Method* (2017), Jon K Shaw and Theo Reeves-Everson suggest that fiction can become a useful tool for artists to deploy within the conditions of our networked, digitised world of screens and flows of data and images, where the blurring of the fictional with the real is constantly escalating.

Simon O'Sullivan also describes the potential for a strategy of "fictioning" as a potent approach in art: 'This collapsing of hitherto separate worlds – and the concomitant production of a "new" landscape, a new platform for dreaming – is another definition of fictioning, especially when it is no longer clear where the fiction itself ends and the so-called reality begins (or where reality ends and the fiction begins)' (O'Sullivan, 2015, p. 6). He also notes that fiction can be used 'not as a matter of make believe but rather in a Rancièrè sense of forging the real to better approximate historical and contemporary experience' (O'Sullivan, 2015, p. 6).

Fictional strategies have been integral within my art practice, where I have used them to create works in the voice of *alter egos* and anonymous collectives, non-humans and machines, as well as to develop speculative future proposals for particular sites and communities and to rethink relations with the technological. For example, in a recent project *Re-writing the machinic anthropocene* (2019), I developed a speculative fiction as an audio work and publication to expose and rewrite the relations between digital technologies and the anthropocene, bringing into view raw material extraction, e-waste and non-human perspectives.

When it came to sci/art collaboration, I wanted to make use of these sort of fictional approaches, adapting them to enhance the collaborative process, using fictional devices to unlock the door to a "third space", where wider discussions could be developed around the implications of the scientific research, based on the premise that both collaborators had an equal standing in the project, bringing their own distinctive research to the table.

Case Study One: Wellcome Trust Commission: *Silent Signal*

In the first project, I was commissioned to work with a biomedical scientist as part of the Wellcome Trust-funded project *Silent Signal* (2013-2017), which was produced by the London arts organisation Animate Projects.

This project began with an artist/scientist "speed dating" event when a number of artists and scientists were invited to Imperial College, London, to share their work and research and to locate potential connections. This approach proved to be fruitful, and I met scientist Darren Logan, who worked at the Sanger Institute Wellcome Genome Campus in Cambridge. I was immediately drawn

to the focus of his research on genetically influenced behaviour in animals and his use of digital technologies to analyse genome data.

After this initial event, I devised a preliminary proposal for a film that appeared as a piece of science fiction, interrogating the genome sequencing tools used in Logan's research and collaborating with him on developing a film script to consider some potential implications for the future. In developing this proposal, I focused on two key questions: firstly, how could I produce a sci/art work that moved beyond data visualisation and employed fiction as an operational tool for generating discussion, where both artist and scientist move into a third space beyond the confines of their research? Secondly, how could this use of fictional methods allow for a different sort of sci/art collaboration to take place, in which a shared speculation is enabled?



Fig. 1 → Sanger Institute - Wellcome Genome Campus, Cambridge, UK. © 2017 Charlie Tweed.

During the initial research phase, I attended a number of meetings with Darren Logan at the Sanger Institute Wellcome Genome Campus, in Cambridge (Fig. 1), itself composed of a series of buildings that are reminiscent of scenes from various sci-fi films. During this time, I learned about his research into genetically influenced behaviour and spent a considerable time becoming familiar with the genome sequencing technologies and the software tools that are used to analyse the data. As a result of these meetings, we discovered a shared interest

in science fiction and how this mode of storytelling could be used as a way of interrogating the potential futures and implications of his research.

From here, a script was developed with Logan's input, looking at various scenarios, where hardware computing code and genetic coding could be connected, so that human and animal code could then be edited. Logan explained how various new genetic technologies, such as CRISPR,¹ which enables the editing of genetic code, and Optogenetics, allowed for the control of animal behaviour using coloured lights that are exposed to neurons. As the project progressed, further ideas were fed into the initial co-created film script, including the fact that researchers had recently been able to store digital data within strands of DNA. This resulted in the script operating on a number of levels, including exposing these scientific advances to audiences, alongside fictional material that mapped out scenarios for future forms of hybrid computing and the control of animals and humans. The blurring of scientific fact with fiction was an effective way of engaging diverse audiences, who immediately questioned what they were seeing, and it motivated discussion around the human desire for control over animals and the environment.

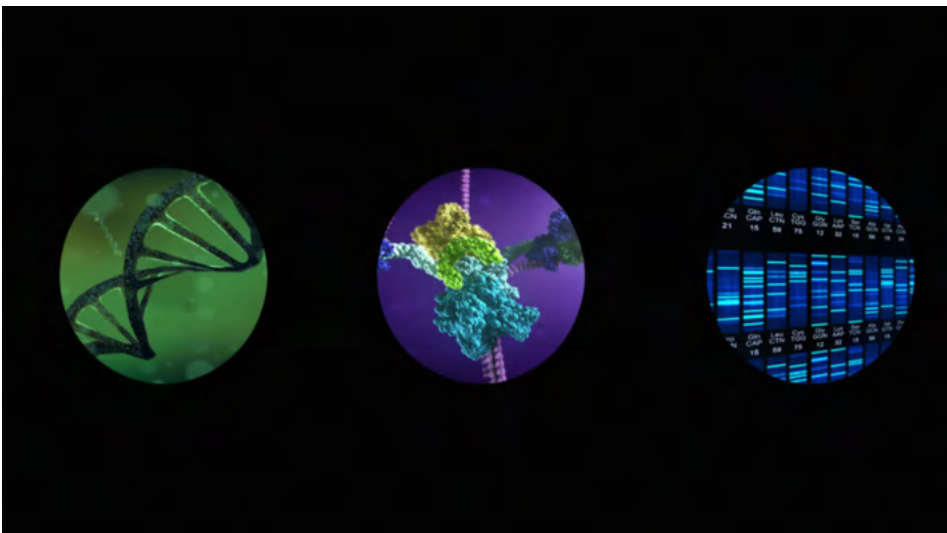


Fig. 2 → Charlie Tweed, *The Signal and the Noise*. Video, 2020. © 2020 Charlie Tweed.

The finished film (Fig. 2) fused CGI² animation with archive footage and filmed footage, as well as some of Darren Logan's research images and videos. The work synthesises all of this material together into an artefact that mixes

1 Clustered regularly interspaced short palindromic repeats.

2 Computer-generated imagery.

science fact with fiction, proposes a future technology and a hybrid research space, thus putting the notion of the fictional third space into practice. The work was then shown in different contexts including exhibitions (Fig. 3), film festivals and specialist science events, alongside its presentation in education materials.

The work proved to be an effective mechanism for activating discussion around genetic science and future forms of control technologies. This collaboration also provided a departure point for utilising fictional approaches to take sci/art collaboration into new territories, allowing both collaborators to move beyond the confines of their research to co-create a speculative artwork.



Fig. 3 → Charlie Tweed, *The Signal and the Noise*, 2020. Exhibition at the QUAD, Derby, UK.
© 2020 Charlie Tweed.

Case Study Two: EarthArt Fellowship (2019-20)

These methods were then evolved during a second sci/art commission (2019-20), this time as part of the EarthArt Fellowship and residency, working with scientists in Life Sciences and Earth Sciences at Bristol University. Once again, for this project, I proposed employing fictional tactics that would enable me to explore some specific areas of research around the earth's deep subsurface and the extremophiles that live within them. I wanted to build on some of the methods used in the previous collaboration to develop a more expansive set of works for a final exhibition and event, this time adopting an approach of co-enquiry. The project aimed at opening up a third space for

discussion and collaboration through the use of fictional methods, engaging with a number of scientific researchers.

The project began with a series of meetings, locating specific researchers to learn about the evolutionary history of life, to understand particular historic events such as the Cambrian explosion, looking at fossils and rock samples and talking to researchers working with subsurface life-forms such as archaea and bacteria. The key here was using an approach that emerged from the mechanics of my practice, so that I could produce an artwork and a final exhibition that engaged wider audiences and initiated debate, but also functioned as a critical artwork that draws attention to some often neglected research on microbes and the tree of life, whilst connecting with my own wider research interests around the human relation with technologies and non-humans.

The premise of the subsurface was an interesting area of exploration because scientists are still in the process of discovering it; as a result, it lent itself to the development of fictional scenarios. These scenarios were discussed in meetings with scientists, whilst drawing my attention to the extremophile life forms that exist within the deep surface and debating research around the sorts of metabolism that these life forms have and which enable them to survive in environments with little oxygen and almost no nutrients. From this varied research process, I developed a script for the film, and this was evolved in collaboration with the scientists who fed into it, edited it and provided comments on both the scientific fact and the science fiction elements.

This led to the development of the final film work and exhibition. We believe that, in this instance, the artworks created were effective at both communicating scientific research and providing a critical vision for the future of human life on Earth.

The finished film *Notes from the Subsurface* (2020a) 'delves into deep subsurface environments and the extremophiles that live within them to consider how these lifeforms can function at extreme depths and pressure within challenging conditions' (Tweed, 2020b) (Fig. 4). The film references the zonation of life forms and their ability to live over vast timescales and with varying metabolisms that are far removed from those of humans. The work also considers notions of deep time and non-human temporalities, including life forms that exist, and geological processes that take place over hundreds, thousands and millions of years (Tweed, 2020b).



Fig. 4 → Charlie Tweed, *The Signal and the Noise*. Video, 2020. © 2020 Charlie Tweed.

The narrator gives factual information about the ecosystems and life forms that it encounters, enlisting modified ambient noise tomography as a way of anthropomorphising them. As a result, we hear from Nematodes, in an old gold mine, discussing their ability to go into a form of cryogenic suspension when resources are scarce. We also encounter the Methanogens, who disclose their “love” for carbon as well as the anonymous CPR³ bacteria, of which huge colonies exist in the subsurface with very little being known about them by scientists (Tweed, 2020b).

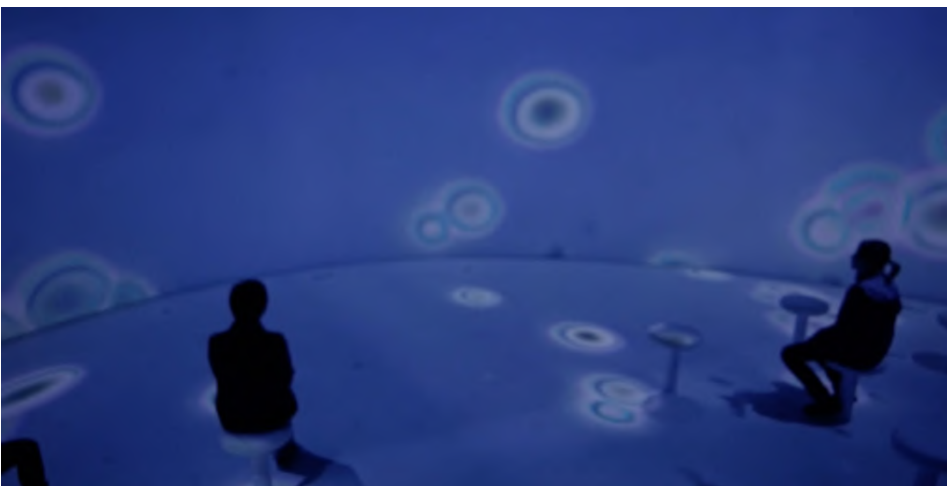


Fig. 5 → Charlie Tweed, *Notes from the Subsurface*, 2020. Exhibition at the EarthArt Gallery, University of Bristol, UK. © 2020 Charlie Tweed.

The second part of the film adopts a science fictional approach; developing proposals for adapting humans to live in these extreme conditions, utilising a "Vision Space" (Fig. 5) where humans can retrain, viewing the behaviour of extremophiles and simulating their actions, learning to live in extreme conditions (2020). The final part of the film proposes designs for hybrid future life forms, capable of living within these environments. With designs generated through collaboration with an AI neural network, it references discussions around genetically modifying life forms for extra-terrestrial exploration (Tweed, 2020b).

As a result, the work drew attention to niche scientific research on subsurface life forms and their relation to the evolution of life, anthropomorphising some of these life forms to draw out alternative perspectives, whilst employing the science fiction proposal as a critical tool to engage audiences in debate around the climate crisis, environmental ecocide and their relation to non-human forms of life.



Fig. 6 → Charlie Tweed, *Notes from the Subsurface*, 2020. Exhibition at the EarthArt Gallery, University of Bristol, UK. © 2020 Charlie Tweed.

The surrounding exhibition which was held at the Earth Gallery in the Wills Memorial Building in central Bristol, expanded on this discussion, utilising the showcases (Fig. 6) to draw together some of the scientists' research and to position this alongside artistic research produced for the exhibition, such as science fiction novels, theoretical texts, AI images and a fictional manifesto. The work presented in the showcases by the scientists itself breached the line

between fact and fiction, presenting forms of co-enquiry that interact, coming together to function in the exhibition space, which itself became a third space, for example by presenting scientific research on long extinct Burgess Shale animals and fossils in parallel to speculative AI designs. For me, it was important that scientific and art research became an assemblage of interactions and potentials, in order to produce an operational and interrelated set of narratives.

This layering of fictions was then taken further in the opening event, where I and the scientific collaborators all made presentations about our research, the project and the contents of the finished film and exhibition, exposing each person's specific research interests and providing a dialogue about the future of human life on Earth and the usefulness of a science fictional lens in the project. My presentation provided an additional fictional layering, a manifesto about the intentions of the anonymous authors of the exhibition and film. This included a re-appropriation of the Wills Memorial Building as a focal point for the siting of the speculative "subsurface laboratory", which stretched out into the strata below. In this sense, the fictional third space was evolved as a fictional re-assemblage of the existing building and laboratories into a future vision of non-human communication. As expressed in the performance:

I use these words to make myself into other species, machines and objects. I becomes WE, becomes a sensor, or a future specialist technology, seeking out new directions, a translation mechanism, an anonymous power-force, a collective of potentials. WE want to unravel non-human perspectives and move away from a singular voice. WE want to harness the functionality of algorithmic governmentality, in order to take another path. THEREFORE, we have developed the subsurface laboratory, a vast space, stretching 5000 metres down. It can be accessed from just below your feet, descending through the basement of the Wills Memorial Building, into the deep tunnels that connect to the Redcliffe Caves before the final descent.
(Tweed, 2020c)

Conclusion

With these two projects, I set out with the intention of utilising innovative fictional approaches to develop work that moved beyond data visualisation, or straightforward modes of public engagement and science communication, also reclaiming here a critical role for the artist collaborator. The use of fictional methods allows for another door to be opened within a collaborative sci/art

project, a playful third space where a dialogue can be initiated between the scientific research, the artist's practice and the museum audience. To refer back to Simon O'Sullivan's work, this offers up a new platform for a shared form of 'dreaming and speculating' (O'Sullivan, 2015, p. 6). It also builds on Nicola Triscott's notion of an 'ecology of practices' (Triscott, 2017) and Henk Borgdorff's arguments around the similar functionalities of both disciplines with their particular performative abilities to create worlds and reveal new ideas (Borgdorff, 2012).

Whilst the two projects have made some progress, I would propose extending some of the fictional approaches in future works, for example by enlisting a wider set of collaborators from different fields, who enter the fictioning third space and play out expanded scenarios, exploring multiple perspectives on the scientist's research. This could be done by developing experimental workshops with scientists, theorists, fiction writers and the public. These workshops themselves could be framed within a fictional research space, co-created by collaborators, allowing them to enter re-imagined laboratories and museum spaces where standardised definitions of sci/art and interdisciplinary practice, artist and scientist are re-written, and new forms of co-enquiry are initiated as an assemblage of interactions and potentials.

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Suggestions for a Curator's Machine: A Collaborative Approach to the Use of Artificial Intelligence in Art Museums

Dominik Bönisch

Machine learning has become increasingly important for the processing and visualisation of digitised collections in art museums. With the use of artificial intelligence, various models can be applied in order to take a new look at digital objects and gain fresh insights from the available information. The research project *Training the Archive* seeks to use computational methods to reveal connections and links between artworks, thus supporting curators in their practice. Since curatorial research is closely entangled with technologies such as search engines, collaborative approaches based on a human-machine interaction are becoming increasingly common. In this paper, different possibilities are discussed for establishing a similar form of collaboration between curators and machine learning models. Three suggestions are made, ranging from current prototypes to future possibilities. In each case, the aim is to translate expert knowledge into a meaningful tool – introduced as the Curator's Machine.

Introduction

In 2018, the artist Tillmann Ohm produced the computer-generated publication *The Artist's Machine* as the result of an experimental artistic research project. The aim of the use case was to develop methods for computational text curation and automated retrieval that intertwine the so-called ARCU (Artificial Curator) algorithm and the artist. Ohm gave a research phrase as input and the algorithm automatically generated a publication after analysing relevant literature, detecting semantic structures in it and paraphrasing text citations (Ohm, 2018).

Based on this example, the author of this paper suggests a concept, labelled the Curator's Machine, as an interactive process between an artificial intelligence (AI) system and experts designed to enhance curatorial research and the exploration of digital museum collections for the elaboration of exhibition concepts. In this way, methods of human collaboration in automated

machine learning (ML) approaches are proposed and discussed in terms of their practical relevance. The findings will be reflected in the project *Training the Archive* (2020-2023) at the Ludwig Forum for International Art – in cooperation with the HMKV Hartware MedienKunstVerein and the Visual Computing Institute at the RWTH Aachen University – and will be evaluated and prototyped as part of the ongoing research process.¹ The research project investigates the potential of ML methods to visualise patterns and connections, as well as associations between objects within digital archives. The objective is to structure information and data about museum collections and to make them accessible to curators in an exploratory way.

Related Work

Digitisation in art museums has paved the way for the development of various interfaces and possibilities for visualising online collections,² enabling users to explore digital inventories by 'strolling' through the objects without necessarily having to follow a defined search term (Whitelaw, 2015). Overall, AI can support the systematic and structured processing of the masses of data in art museums. ML can also reveal connections and links between artworks that might otherwise not have been fully legible, or only incompletely accessible (Bell and Ommer, 2016, p. 68). The aim is to take a new look at existing knowledge in digital collections and archives and thus gain previously unknown insights from available information.

To achieve the latter, we can use various ML operations to analyse the data. Probably the most commonly used method is to process museum collections by clustering an image corpus.³ Clustering means feeding digitised artworks through the penultimate layer of a pre-trained convolutional neuronal network to automatically sort the dataset into different groups.⁴

1 *Training the Archive* is funded by the Digital Culture Programme of the Kulturstiftung des Bundes (German Federal Cultural Foundation). Funded by the Beauftragte der Bundesregierung für Kultur und Medien (Federal Government Commissioner for Culture and the Media).

2 Examples include the research projects *VIKUS: Visualising Cultural Collections* and *The Close-Up Cloud* of the Urban Complexity Lab at the Potsdam University of Applied Sciences.

3 Already in 2017, the Yale Digital Humanities Lab released *PixPlot* – developed by Douglas Duhaime – which uses the penultimate layer of a pre-trained convolutional neural network for image clustering in a high-dimensional feature space. Available at: <https://dhlab.yale.edu/projects/pixplot/>.

4 The approach of instantiating a fully trained network originally developed for image classification, from one of the publicly available libraries, such as Keras or TensorFlow, in order to feed it with the collected image data is called transfer learning. This has the advantage that the models have already been trained in a fundamental "understanding" of the human world in terms of the general structure and content of images, and that this information does not have to be learned from scratch (Chollet, 2020).

The differentiation is based on both visual and technical features that the network derives from the images, e. g. colour values, structures, textures, or shapes and objects. This results in an "interpretation" of all artworks for a digital collection according to numerous parameters. In general, the intuitive and associative retrieval of one's own collection is facilitated by the possibility of clustering images with similar characteristics into scalable groupings. Eventually, it becomes feasible to visualise the data set through two-dimensional projections such as grid- or scatterplots (Fig. 1), within which similar images cluster together – known as nearest neighbours⁵ (Fig. 2).



Figure 1 → On the left is a gridplot of drawings of flowers and on the right a scatterplot of various busts. Author's illustration. All images are open-source data from the Statens Museum for Kunst (SMK), Copenhagen.

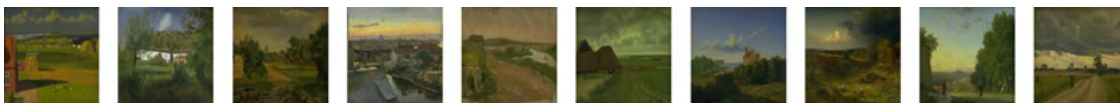


Figure 2 → Plot of nearest neighbours, for which the first image was selected, and the following were matched as results by the algorithm. Author's illustration. All images are open-source data from the Statens Museum for Kunst (SMK), Copenhagen.

The options for visualisation, as well as the ML process, have a fundamental inherent issue: a semantic gap. Arnold and Tilton refer to this as 'The difference between elements contained in the raw image and the extracted structured information used to digitally represent the image within a database' (2019, p. 3). The missing link between the sheer technical representation of an artwork as a digital image and its actual image content (which can often only be read

⁵ More precisely, it is the k-nearest neighbours (KNN) algorithm (Harrison, 2018).

with appropriate prior knowledge) thus becomes apparent (Bell and Ommer, 2016, p. 68).

Integrating specialists such as art historians requires a 'human-in-the-loop' (Broussard, 2019) – a collaboration between domain experts and the ML model in the form of effective human-machine interaction. This takes into account Bell and Ommer's claim that, while the computer can make suggestions, the conclusions should still be drawn by humans and their historical, stylistic, and object-related contextual knowledge. Hence, it is possible to achieve juxtapositions that agree to such an extent that they can be equated with findings that merely need to be confirmed (Bell and Ommer, 2018, p. 74).

Why a Collaborative Approach is Needed

In her latest book, media theorist Joanna Zylińska discusses the computational creativity of AI-based art and draws attention to a paradigm in which the human would be understood essentially as part of the machine's programme or a technical system, rather than as 'its inventor, owner and ruler' (2020, p. 54). Referring to Vilém Flusser (2000), Zylińska stresses that humans are to be seen as technical beings operating under the constraints of the 'apparatus' that is part of themselves. In this sense, 'machinic entanglement' is bound to enable new kinds of action, which Flusser terms 'collaborations' (Zylińska, 2020, pp. 52-54).

Assuming that humans are not unaffected by the algorithmic technology they use, it can be argued that curating and curatorial research, in their complex gesture of unfolding a particular subject in all its dimensions (Gumbrecht, 2012), as well as contextualising and referencing the exhibits selected from art museum collections, are influenced by programmes such as search engines⁶ – culminating in 'posthuman curating' (Tyžlik-Carver, 2018, p. 175) – and can thus be mediated from the outset in a collaborative process together with the machine.

6 Especially when new algorithms like CLIP (Contrastive Language–Image Pre-training) (Radford et al., 2021) allow users to implement their own classifiers without the need for task-specific training data, thereby facilitating a customised semantic image search (Saglani, 2021).

Towards a Curator's Machine

In the following section, three suggestions will be introduced that are intended to enable a collaboration between experts and an AI system, and which are being studied in the research project *Training the Archive*. In particular, man-made annotations are taken into account, which then lead to a training process of the ML model being used. Yet, the envisaged collaboration is understood as a generator of ideas that has the human at its centre and is supposed to support processes of rediscovering and revisiting digital objects in the art museum collection. The suggestions that could be incorporated into the aforementioned Curator's Machine are:

- 1) Annotating hidden patterns of relations between artworks;
- 2) A recommender system based on the trajectories of image selections;
- 3) Setting rules for curation and rewriting the neural network accordingly.

With 1), the aim is to extend the clusters of collection images described earlier to include elusive aspects, such as hidden patterns of connection between artworks or the personal intuition and the subjective taste of an expert, by training a "curatorial gaze". This is made possible by annotating the relations between artworks in terms of context, aesthetics, iconography and art historical references within a corpus of images. To generate the annotations, the logic of the so-called triplet loss (Moindrot, 2018) could be exploited. It is a method of comparing an anchor with a positive and a negative input, which in turn affects their embeddings in the latent space, so that the positive would be proportionally closer to the anchor than the negative, which, by contrast, moves further away.⁷

For the edited example, therefore, all artworks linked to a selected reference work should be close to one another, and those without a connection should be further apart. A subsequent clustering could then bring linked artworks closer together or separate non-related ones. In order to obtain the necessary triplets, an iterative annotation setup is needed (Fig. 3). Consequently, the generated annotations have to be trained to fit the neural network used, with the result that the curators' information about which artworks are more likely to be related and which are not, can be generalised by this. As the author

7 The distance becomes calculable by using the cosine similarity, which measures the cosine of the angle between two vectors projected in a multi-dimensional embedding space (Prabhakaran, 2018).

proved elsewhere,⁸ it is possible to adjust the formed clusters more closely to the specifications or knowledge of the annotators.

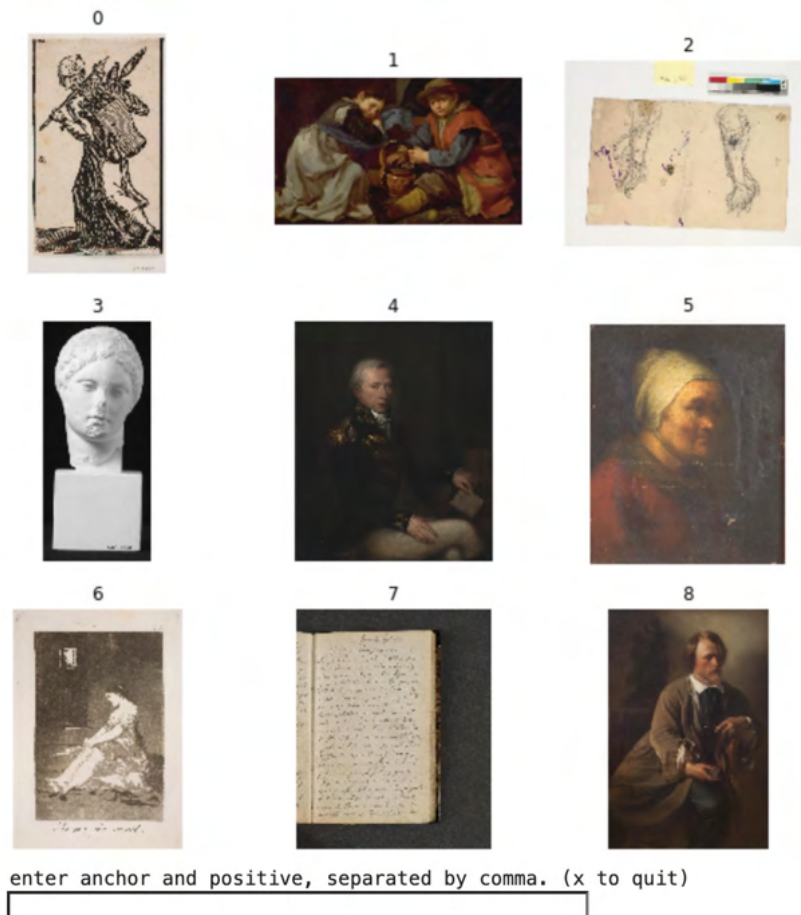


Figure 3 → Process of an iteration for obtaining annotations. Author's illustration. All images are open-source data from the Statens Museum for Kunst (SMK), Copenhagen.

The second suggestion 2) for a collaboration between experts and ML models is a recommender system that suggests matching artworks to a given selection of objects from a digitised art museum collection. This is realised by attaining embeddings – understood as vectors of a fixed size – for each artwork, which, in turn, retain properties and relations of the objects in the embedding or latent space of a so-called autoencoder network.⁹ Autoencoders process image data through a bottleneck, thereby forcing the neural network to reduce noise and

8 The proof of the concept is covered in the author's article 'The Curator's Machine: Clustering of Museum Collection Data through Annotation of Hidden Connection Patterns Between Artworks' (Bönisch, 2021). The accompanying prototype and its results are available online at: <https://github.com/DominikBoenisch/Training-the-Archive>.

9 The specifications refer to an intelligent tool for collecting training data for art curation, as described in the undergraduate thesis submitted by Kevin Sommer (2020) at RWTH Aachen University. The tool is available at: <https://vci.rwth-aachen.de/annotation-tool/>.

independently learn high-level features of images, such as medium, shape, colour or style (Badr, 2019). In complementary fashion, there is an incorporation of relevant artwork metadata that similarly generates high-quality embeddings.

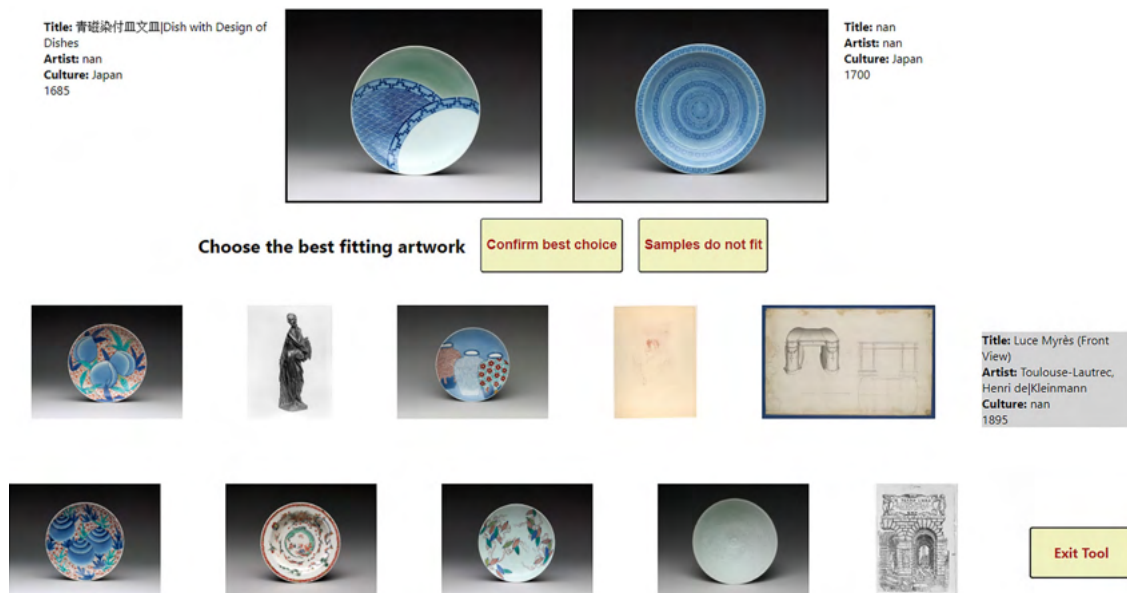


Figure 4 → Workflow for the selection of matching artworks. © 2020 Visual Computing Institute (VCI), RWTH Aachen University. All images are open-source data from the Metropolitan Museum of Art, New York.

Using the embedding representation, the recommender system is trained to consider the relations between different pieces of art obtained by having an expert select a sequence of artworks that would belong together in an exhibition (Fig. 4). This annotated sequence denotes a trajectory through the embedding space that the recommender system is supposed to replicate in order to continue the “path” and make meaningful suggestions to the curator by presenting nearest neighbour samples (Sommer, 2020, pp. 37-40) (Fig. 5).

Currently, 3) is more of a mental experiment. Bau et al (2020a) have proposed a method for rewriting – in the sense of adding, removing or altering – the semantic and physical rules encoded by a generative adversarial network (GAN) (Goodfellow et al., 2014). This requires three steps: firstly, train a GAN on some existing images; then understand the particular rule that defines how the model generates its images; and, finally, rewrite the weights of this generalised rule with the aim of changing the output of a specific layer and creating images that do not yet exist (Bau et al, 2020b, p. 1). The advantage of this procedure is that large data sets are no longer essential. One only needs to understand how a model is “wired” to manipulate the weights in its layers and obtain the desired behaviour, even if few or no explicit examples exist (Martineau, 2020).

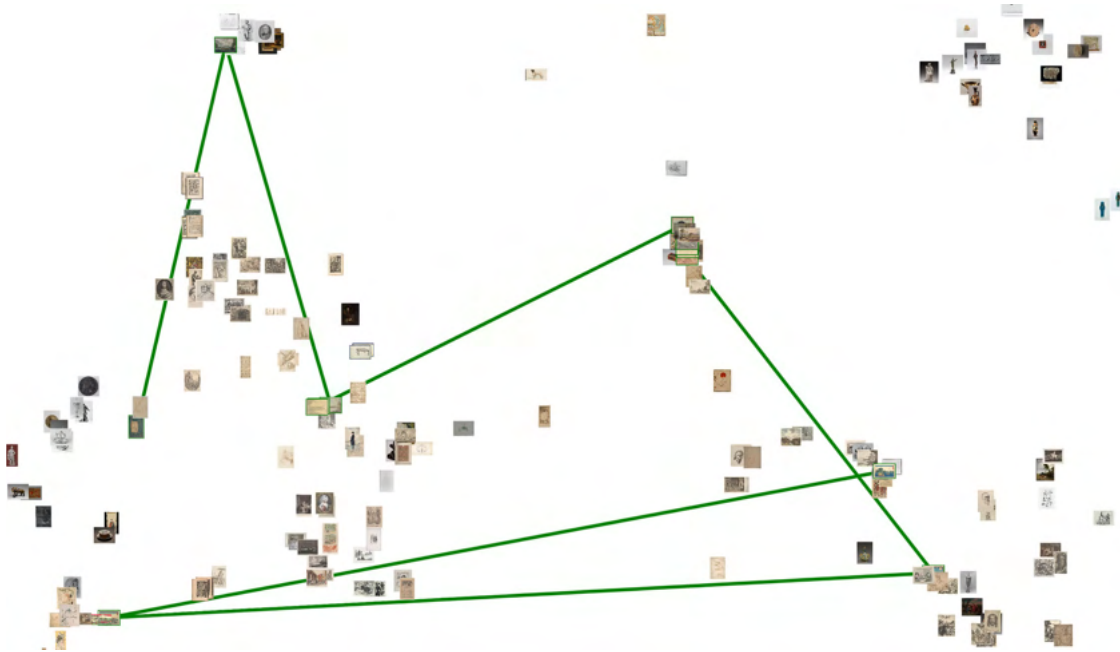


Figure 5 → Example of a trajectory through the embedding space. © 2020 Visual Computing Institute (VCI), RWTH Aachen University. All images are open-source data from the Metropolitan Museum of Art, New York.

The practice of adding realistic, but synthetically generated, data to improve ML in relation to certain features on specific occasions is referred to as data augmentation (Nolen, 2019). Fabian Offert and Peter Bell argue that GANs, with their possible application to data augmentation, can be of practical use in digital art history, since the data needed for training are often scarce (2020, p. 203). Furthermore, they claim that generative methods tend to have significant potential in the visual domain (Offert and Bell, 2020, p. 209). This potential could be an opportunity for discovery that moves away from the mere vector spaces, which are meant only to 'reproduce statistical frequencies of old data' (Pasquinelli, 2019, p. 16).

While curators as experts (or exhibitions as their representations) are not endlessly available either, the approach of rewriting GANs for the purpose of data augmentation can help to generate or simulate an output that may raise additional questions about our understanding of curatorial practice. However, it remains an unasked question whether there are rules of curating that could be considered and synthesised by a generative network in order to be rewritten by the human. For this to work, curating would have to be understood as processual, as something that can be broken down into repetitive steps and generalised on the basis of case studies as data points.¹⁰

¹⁰ This leads probably to the mechanisms of 'Symbolic Artificial Intelligence', also known as 'Good Old-Fashioned AI', which enables the explicit embedding of human knowledge and behaviour as "rules" in computer programmes (Dickson, 2019).

Discussion

Even though the Curator's Machine is initially formed from suggestions, the concept is refined with each experiment initiated and each prototype developed. Nevertheless, discussions remain open, which will be further addressed in the course of the research project *Training the Archive*. The following key points are of particular interest for analysis:

In the case of suggestion 1), priority must be given to the knowledge of experts, whose opinions must be tested as weights in the annotation process and also as information for the aggregated training. Technically, it is possible to store the annotations about hidden patterns of connection between artworks separately, enabling the ML model to be continuously re-trained with new expert knowledge, without losing the specific insights of an individual curator. This could result in a tool that incorporates the evaluations of several annotators (as with the use of a slider) and thus influences the clustering of digitised art museum collections. This demonstrates the potential, but also the pitfalls, of using ML to emphasise views of groups that are underrepresented in the canon of cultural studies and to renew or redirect a predominant view of art. Benoît Seguin proposes a mathematical equation in which a single domain or meta-expert opinion is considered equivalent to that of a set of experts, if these all agree on a certain statement in the annotation process (2018, p. 65). This alone indicates how delicate the use of opinions is, especially when it results in a generalisation of knowledge. *Training the Archive* is therefore urged to select use cases and expert involvement carefully and diversely. Insights from co-curation strategies¹¹ might be helpful in this context.

The debatable point in suggestion 2) is the assumption that, for the annotation of the trajectories, an exhibition is compiled strictly sequentially from exhibits which are similar to each other or are related on a metadata basis. This does not always seem to be the case, especially when topical discontinuities are to be introduced into the exhibition, or when changes of subject disrupt the sequence. Here, *Training the Archive* has to strike a balance between disciplinary proximity and possible serendipity in the configuration of the nearest neighbour samples.

11 This is what is being investigated by the project *nextmuseum.io*, conducted by the NRW-Forum Düsseldorf in cooperation with the Museum Ulm.

For 3), the issue seems evident: can a complex process like curating be generalised? Can rules be established from it that incorporate not only administrative parts, such as exhibition management, but also the curator's professional expertise on a certain matter? Is curating probably strongly individualised and shaped by the genius of the curator? Does a generalisation of this specialised knowledge undermine the exhibition's signature and inevitably lead to a normalisation of the art museum landscape?

Conclusion

Training the Archive seeks both to refine the suggestions for a collaboration between curators and an AI system, such as the one laid out in this paper, and to promote the discussions that arise in these contexts. In doing so, the Curator's Machine will be established as an iterative collection of prototypes – but also theoretical concepts – that will develop over the course of the research project. The next step will involve consulting experts through an empirical survey based on structured interviews. This should help to better understand the principles of curatorial practice and to uncover the components that are likely to be incorporated as generalised knowledge into ML models.

It remains to be emphasised that a potential tool for supporting curatorial practice needs only to function as a generator of ideas and must not replace or diminish expert opinions. Instead, it should underline the advantages of the large amounts of information contained in the data accessible in art museums and visualise a systematic processing of connections and correlations between artworks in an appealing way, thus supporting curators as a useful instrument.

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The Everywhere Museum of Everything: The Curatorship Challenge, from Digital Urban Art to NFTs

Pedro Alves da Veiga

This article focuses on the overproduction of aestheticised digital content, a testament to social, cultural or recreational experiences, paradoxically short-lived and forgotten. These public aestheticised digital records of social interactions, intellectual engagement or consumerist indulgence are uploaded onto social networks and represent not only a real and abundant ethnographic portrait of contemporaneity, which could be searchable by geography, demography or subject, but also acquire remarkable potential as raw material for creative and artistic research, remixing, digital archaeology or exhibition. From this point of view, their curation is justified. The Everywhere Museum of Everything is the designation given by the author to the augmented urban spaces, populated by these layers of original and remixed digital audio-visual information, interconnected by hashtags and geo-tags, which can be rendered visible through augmented reality tools, thus transforming any urban space into a digital gallery of their recent social, aesthetic or ethnographic history.

Introduction

Ben Russell's *Headmap Manifesto* (1999) is a rather precocious and surprisingly anticipatory example of the discourse around location-aware technologies and their possible uses at the turn of the last century. Its influences in the fields of urban computing and locative media art are evident, even though it is not cited often enough in the current era of location-based social networks and smartphone applications, as well as smart city urban planning initiatives. Russell enumerates the social implications of location-aware devices, such as the ones we now use – two decades later – suggesting that computer games move outside and get subversive, sex and love are easier to find, traditional concepts of land, law, politics and ownership mutate, nature can be annotated and framed, real space can be invisibly marked and demarcated, because overlaying everything there is now a new invisible layer of annotation, enabling what was

previously recorded (even if invisible to human eyes, such as the migration and movement patterns of people, animals and things) to be rendered visible. This new overlay allows places to have histories attached to them, sorted by date or subject (Russell, 1999). Russell seemed to predict the relevance of present-day ubiquitous location-aware devices, such as smartphones, tablets and *phablets*, deeply and globally engaged in this process of annotation, but with particular relevance and incidence in urban areas.

Smart cities are now heralded as the primary sites of the materialisation of onlineness and ubiquitous computing, through the integration of computational systems with architectural design, turning these areas into penultimate value-extraction machines (Goodspeed, 2015).

Such initiatives have often employed the arts as a means (not an end) of development to gentrify neighbourhoods or attain international status (Zhong, 2016), mostly for the benefit of non-artists, relying on buzzword and market-driven individual pseudo-competences (Veiga, 2020a, pp. 118-121), based upon the widespread, yet naive belief that artistic creativity is universal and boundless.

In urban spaces, ordinary dwellers (and artists) thus interpret and encode their aestheticised perceptions of everyday life (Kalyan, 2017) through mobile devices and apps, leading to the increasing popularity of blackboxing, defined by Latour as:

[...] the way scientific and technical work is made invisible by its own success. When a machine runs efficiently, when a matter of fact is settled, one need focus only on its inputs and outputs and not on its internal complexity. Thus, paradoxically, the more science and technology succeed, the more opaque and obscure they become. (Latour, 1999, p. 304)

Several of these black boxes are now hosted by smartphones as apps and share the concept of an ever-changing timeline. In social media networks, the timeline epitomises the current technology-induced need for continuous novelty, supported by an ongoing global aestheticisation process, mostly relying on the virtualisation of social experiences and interactions. Web 2.0 prosumers are being transformed into a combination of consumer, producer and product, stimulated into publicly sharing their habits, intimacy and data.

Social networks (and their blackboxed algorithms) have also contributed to the massification of (mostly haphazard) curatorship, and the paradigm introduced by Pinterest – the most popular social network focused on individual curation, whose timeline consists in a constantly novel mosaic of images – depicts the effective corporate assumption of both the ephemeral nature and the large scale of individual-generated, and often location-based, aestheticised digital media, casually exhibited worldwide.

Beyond *Nouvelle Muséologie*

Russell's digital overlay is thus consistently and continuously expanding due to the combined effects of ubiquitous location-aware devices, the blackboxed annotation and global aestheticisation phenomena. But how can this overlay then be rendered visible in a systematic, organised and curated way?

The emergence of *Nouvelle Muséologie* challenged the traditional museum model (Rodney, 2019) into transdisciplinarity, public and social-service orientation (Hein, 1998), accentuated by the adoption of digital strategies by most leading museums (Pagel and Donahue, 2013) with growing efforts being made to reach connected audiences. Google Arts & Culture alone offers over 1,000 virtual tours and online collections (Sood, 2016) and the Network of European Museum Organisations advises its members 'to acknowledge that the digital museum is not a distant promise' (NEMO, 2020).

A multi-dimensional model is essential in the development of the Digital Museum, based on its social and cultural nature, focused on the collection of objects and their display, and the knowledge that they can foster and communicate.

For Hooper-Greenhill (2020), these dimensions (society, culture, collection, knowledge) are intertwined, as any serious endeavour within one of the dimensions will likely trigger questions in the others, since several areas of study must be combined when addressing collections and their curation: culture and art studies, including their history; the social and cultural role of digital artefacts, involving cultural studies and sociology; the production of knowledge through exhibitions, involving museum studies and visual culture studies; digital literacy and the role of museums in education; and, more broadly, the experience of the visitor (psychology, sociology, and museum visitor studies), and these are just some examples.

Hooper-Greenhill posited the new museum model shifting from the modernist museum – as a site of authority – to the post-museum – as a site of mutuality, much in the same way as the Web 2.0 shifted consumers into prosumers, delegating to the consumer/visitor the ability (by choice) to become a prosumer. For her, under the scope of museum studies, it is not helpful just to analyse events and not address the real pragmatic, empirical worlds within which these events are shaped and (the events themselves) construct knowledge. It so happens that the digital medium grants us access to several artefacts intrinsically related to their authors, events, locations and other information, by means of tagging (hashtagging or geo-tagging). Consequently, Hooper-Greenhill also states that conducting research separately from practice is less useful than conducting research that will influence that same practice and promote its evolution. And this is exactly the stance that this article posits for *The Everywhere Museum of Everything*: to engage and contribute to dynamic collections in order to produce meaning and knowledge through arts-based and practice-based research, thus influencing those very collections.

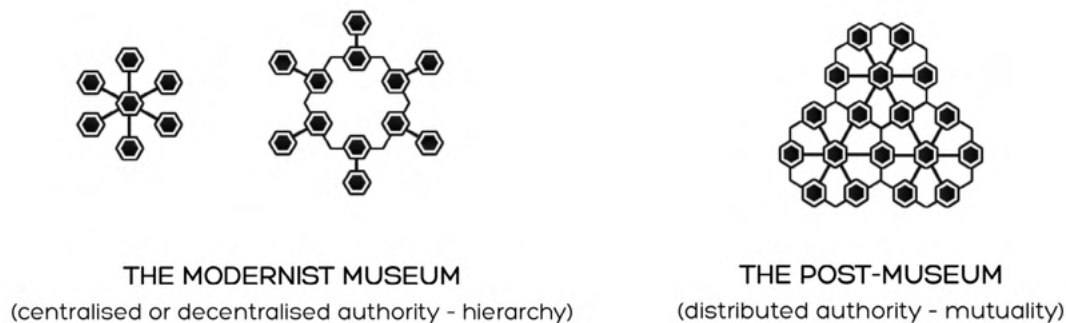


Fig. 1 → Pedro Alves da Veiga, *The Shift from the Modernist Museum to the Post-Museum*, 2021.

As museums seek new ways to incorporate audience research into their curatorial processes, increasingly diverse audiences – in terms of their ethnicity, and their cultural and social backgrounds – also seek closer relationships to exhibition narratives, as these may open (or close) different possibilities for individuals, groups or communities. The new digital museum must embrace its role as no longer merely a place of accumulation, but also as a place of education, socially engaged in contemporary challenges and culture. This is particularly meaningful through a constructivist view of culture, in that education and knowledge are best achieved through a process of reflection and active construction (Mascolo and Fischer, 2005), in which the visitor is invited to contribute and actively participate in the collection or its curation.

A Curated Augmented Vision of the Digital Art World

This generative and constructivist vision of culture is the core concept of The Everywhere Museum of Everything (TEME), a sobriquet for the global array of geo-tagged and geo-referenced layers of digital urban art, incessantly produced and uploaded worldwide, potentially transforming (peri-)urban spaces into the largest augmented reality (AR) exhibition ever to exist.

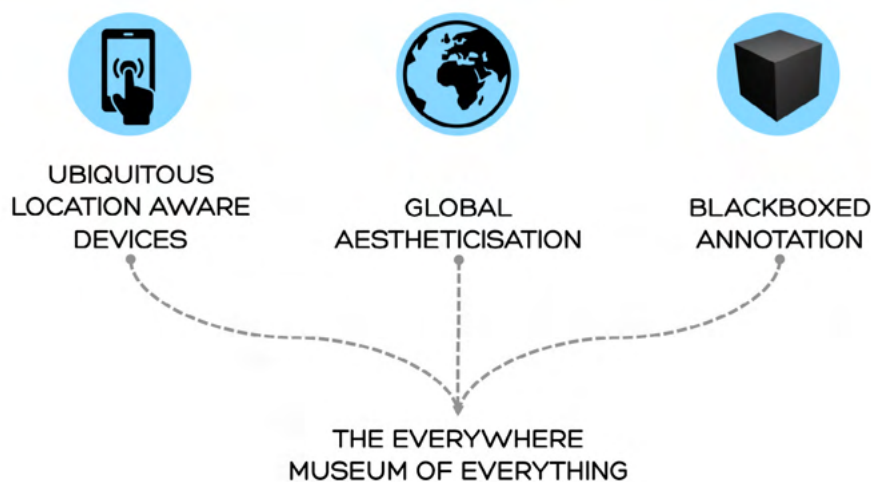


Fig. 2 → Pedro Alves da Veiga, *TEME's three vectors of development*, 2021.

TEME is a research and development project (Veiga, 2020a; Veiga, 2020b), proposed for financing by FCT, the Portuguese Foundation for Science and Technology, that aims at developing an online platform and augmented reality mobile applications destined to be used by creators and curators, where research, curation and creation coexist and collaborate. It will help to render visible spatial relations with public digital content, as well as to provide relevant insights into how urban space is being dynamically lived and transformed, the activities they foster and the changes they document, from the mundane (waiting spots of delivery drivers, underground parties, crew signs, or blocks of Airbnb apartments) to the experimental.

To make locative media data usable, however, they need to be staged, that is cleaned, processed, explored and manipulated to render them fit for repurposing. Just as locative media users “domesticate” new technology, researchers have to domesticate locative data by relating their own research interests with the data and translating excitement and uncertainty around the data into actionable expectations. This mostly takes the form of exploratory data analysis, examining what the data reveal about human movement and social ties in particular places. (Perng, Kitchin and Evans, 2016)

These aestheticised records and their data can be found in most mainstream social networks. They can be manipulated into new creations through widespread practices, such as remixing, subvertising or mashup, and knowledge can be extracted from them through curatorial analysis. This content that populates the different digital layers – images, videos, sounds and texts – conveys a popular representation of culture, encoded through a set of material practices, which construct meanings, values and subjectivities, as a realised signifying system (Gallagher, 1992). These artefacts can be regarded as cultural symbols, able to influence cultural identities, emotions, perceptions and values at individual, group, community and wider social levels. Even if they lack systematisation and classification, some of them are solid examples of digital urban art, whereas others hold great potential as *prima-materia* for artists, curators and scholars in many areas.

Through curation, they can be linked to certain locations and spaces and see their relevance and meaning amplified. They can then create a meaningful territory of contemporary online culture, art and knowledge, transforming the perception of those locations from commonplace to haunted, by exploring interwoven social connections and implications. They can also contribute to the preservation of culture and crafts or to the memorialisation of lost habitats and heritage, contributing to true smart(er) cities.

Currently, the extent of the digital creation phenomenon on the social networks is paradoxical when contrasted with the increasingly shorter lifespan and relevance of each piece. Even though most content will have an average lifespan of only two days (Hauffa and Groh, 2019), these items can still be accessed through an augmented view of the world – enabled by their geo-location or hashtags – or through linking with physical markers.

All existing digital content may be classified in terms of two cumulative characteristics, with two variations each: location, distinguishing between geo-located¹ and non-geo-located content; and curation, distinguishing between curated and non-curated content.

1 For the remainder of this text, the expression *geo-located* will be used to refer to either *geo-tagged* or *geo-referenced* content.

- Curated content is to be understood as that which is the subject or result of curatorial practices: the large-scale folksonomy, curatorial remix or social curation phenomenon was fostered by websites such as Tumblr, Digg, Reddit and Scoop.it, and then epitomised by Pinterest. The expression *social curation* applies to websites that combine social features and collecting capabilities, focusing on content and providing tools for users to discover, collect, organise and annotate mostly visual content (images and videos). Curatorial decisions may be individual or crowd-sourced, resulting from the collection and annotation actions of everyday users who source their material from other websites, where the original creator/owner curated them, and bring it to a new classification system completely beyond the control of the original creator/owner, giving rise to new user-created conceptualisations and categorisations (Hall and Zarro, 2012). These curatorial phenomena still lack a systematic approach to their study, and yet they have an interesting potential for scholars, curators and artists alike, since the collections offer personal (as well as corporate) views on an extensive and varied range of subjects, including curators and curation itself.²
- Geo-located content has been the subject of spatial and social practices of locative technologies, conducted by new media scholars over the last two decades, especially as locative media have become available to wider audiences with the increasing popularity and dissemination of smartphones and mobile devices. The interest in locative media is now shifting towards spatially-oriented analyses of geo-located content for use in media art or social studies. This new perspective on existing digital content no longer sees it as an end product but rather as *prima-materia*,³ thus allowing even for non-geo-located content (including single items and curated collections alike) to be used in the creation of new geo-located content.

Through the analysis of meta-information (hashtags, comments by the authors or their followers, authors' profiles, EXIF information, etc.) it is possible to gain and incorporate new insights into TEME's augmented reality rendition of these (new) artworks and their curated exhibitions. And if this happens transversely

2 For example, on Pinterest Deb Lawrence, a self-described contemporary artist and art collector, curates a collection of curators: <https://www.pinterest.pt/deblawrenceart/art-curators/>, while Robin Good curates a collection of diagrams, charts and infographics on the subject of content curation: <https://www.pinterest.pt/robingood/content-curation-visualized/>.

3 For example, Instagram user @insta_repeat creates collages of visually similar photos taken at the same locations by other Instagram users: https://www.instagram.com/insta_repeat/.

on content produced anywhere in the world, it may still be possible and relevant that some of this content is anchored to a particular location, thus allowing for the whole practice to be explored from this starting point.

If the above-mentioned phenomenon of social curation appears to reinforce the immateriality, dispossession and free distribution of digital artworks, a more recent phenomenon is tending to counter it, by focusing on property and monetisation: digital natives are incorporating blockchain technologies into artworks, and non-fungible tokens (NFTs) are one of the formats to have recently gained notoriety due to the increasingly high values their sale has been reaching (Fisher, 2019). On their own, they are fostering a different online curatorial phenomenon.

NFTs, the Blockchain and Curatorship

With the massification of digital art and curation came the massification of online marketplaces, making it increasingly difficult for digital artists and creators, as well as for audiences, to find the best and most reliable platform that truly may add value, rather than indistinctly considering artistic creations as a streamed commodity, regardless of their originality and artistic value, both in terms of authorship and uniqueness.

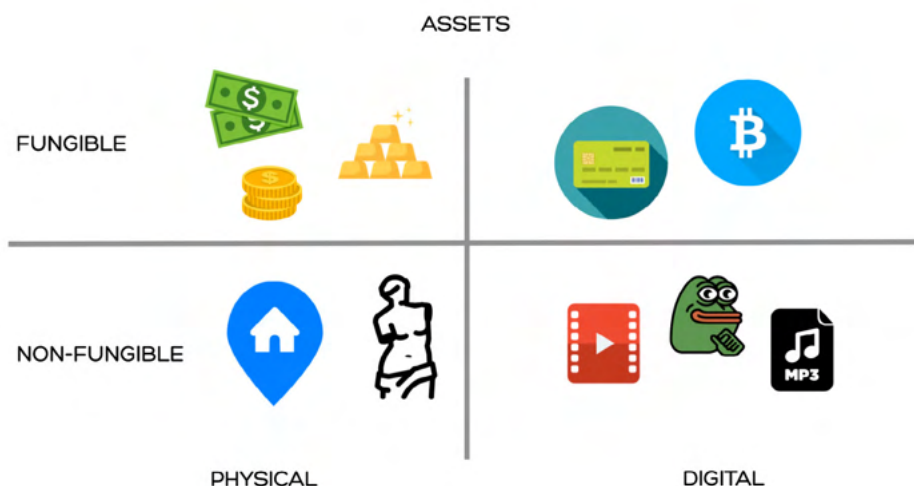


Fig. 3 → Pedro Alves da Veiga, *Identifying digital non-fungible assets*, 2021.

The advent of non-fungible tokens (NFTs) added new variables to what was already a complex scenario. The first NFTs may be traced back to 2012 when Rosenfeld (2012) wrote an article on Coloured Coins, possibly the earliest example

of a non-fungible asset based on the blockchain. Since then, the diversity, quantity and valuation of NFTs have been evolving at an exponential rate. An example of this evolution is the Rare Pepe crypto assets phenomenon (Lotti, 2019; Whitaker, 2019). The creation of a Rare Pepe NFT follows these four steps:

1. The image is created (mostly through remix, digital collage or mashup) and its author pays a pre-defined fee (200 Pepe Cash) in order to submit it to <http://rarepepedirectory.com>.
2. The website curators decide upon the rarity of the Pepe in order to feature it.
3. If accepted, the website will display the Rare Pepe image as being for sale, associated with a finite quantity of tokens.
4. Users can then buy these tokens and the proof of ownership (as well as authorship) is the token itself.

But if the process behind the creation and sale of Rare Pepes seems relatively simple – even though the original creator of the Pepe character is left out – other NFTs take this approach to extremes, such as *marble.cards*, a platform where ‘every web page can only be marbled once and by one person only. Once a card is created, that URL is claimed’ (Marble Cards, 2021), which means that anyone can potentially monetise any type of content with a URL, regardless of actual authorship, ownership, or any other connection to that particular content (Munster, 2021). As with all digital art supported by blockchain technologies, the actual media content is not stored on the blockchain but on the business supporting servers. The blockchain only acts as a claim of ownership and transmission.

From the initial days of Coloured Coins and Rare Pepes to the current hype surrounding NFTs, scaling has inflated the network transaction fees (and carbon print) associated with creating and registering on the blockchain, otherwise known as *minting an NFT artwork*. Metapurse, a NFT fund that bought Beeple's record-breaking artwork *Everydays: The First 5,000 Days* (Beeple, 2021) for 69.3 million USD at a Christie's auction, announced the intention to build a virtual museum to house and publicly display the work. In an interview to *The Art Newspaper*, a spokesperson for the buyer stated their intention to ‘create a monument that this particular piece deserves, which can exist only in the metaverse’ (Stoilas, 2021). This is aligned with a series of previous NFT purchases, supported by the less than original claim that ‘The beauty of this piece is that it can be experienced wherever you are in the world’, which not only holds true for any digital artwork already existing online, but also for Beeple's

work, which is already viewable through any Internet browser. Therefore, the added value of the new virtual space remains unclear since the public will also be able to visit the new virtual museum through an ordinary Internet browser. But Metaverse also claims it will be accessible using virtual reality headsets for a 'really immersive experience' (Stoilas, 2021). This approach hints at a technological and financial hype-based exhibition process, mostly focusing on the artist's significant follower base across social channels rather than other relevant characteristics of the work. Nevertheless, it is a probable reflection of future developments in the art market, though it brings arguable value to art scholarship.

If media-based artworks such as images – both static and moving – and music are very successfully finding their way into the blockchain (Cryptoart, 2021), it is far less clear how other art forms, such as the written word or performance arts, for example, may benefit from this market. Artists, such as Ben Grosser, have exposed the frailties and incongruences of the NFT phenomenon, and Grosser's project *Tokenize This* is a particularly successful (and humorous) example of this challenging attitude (Grosser, 2021).

The ongoing curation of the crypto space is a still rather opaque process. Even though there are curated digital art marketplaces such as superrare.co, foundation.app, zora.co and niftygateway.com, among others, artists are still expected to be tech-savvy and entrepreneurial-minded enough to risk making the first crypto-investment, as well as to handle a significant part of the promotion.



Fig. 4 → Pedro Alves da Veiga, *Steps to create and sell your own NFT*, 2021.

Felt Zine, an artist collective and net-art platform, advocates a different stance: holding the community values central to its curatorial efforts, the collective has

curated a series of NFT collections (FeltZine, 2021) and also promoted education on the subject for its members through a series of conversations. Another example is the company Dada, where blockchain represents shared ownership of collaborative work. Using a collaborative and artist-centric approach, artists use the *dada.nyc* website to make artworks called "conversations" that build on each other's drawings, appropriately inspired by the *cadavre exquis* model, which is conceptually (and speculatively) extended to a form of interwoven shared value creation and cooperative ownership.

To further complicate an already complex scenario, the adoption of blockchain technologies seeks to replace the existing records-keeping infrastructure, operated by centralised platforms such as governments, museums and rights management agencies, with 'the authority of the algorithm and the consensus of the crowd' (Whitaker, 2019, p. 38). The replacement of a centralised approach with a distributed one poses challenges, namely the guarantee of security and access to the information on the ownership and authorship of artworks, held by all these different companies. The recent digital artwork theft from Nifty Gateway (Peters, 2021) reinforces the fact that this is only an emerging concept, still surrounded by significant speculation and hype.

However, and whichever the outcome, the augmented view of the digital art space could benefit from the added layer of blockchain, not just by establishing and rendering visible the authorship and ownership of the artworks, but also by enabling new distributed curatorial models, as depicted in Figure 5.

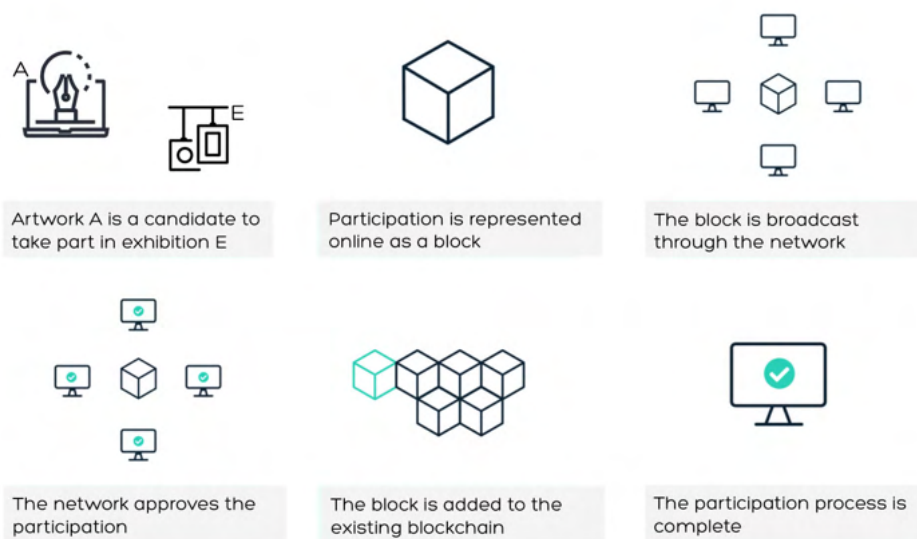


Fig. 5 → Pedro Alves da Veiga, *Using the blockchain as a curatorial tool*, 2021.

The blockchain could thus be used to authenticate exhibitions, artworks and their respective authors/participants, especially online exhibitions of digital artefacts – regardless of their existence as NFTs – much in the same way as it is being used to establish the artworks' authenticity.

Through this approach, TEME could then be regarded as a collaborative space; a consortium of sorts, gathering contributions from different agents, individual and institutional alike, some of which would enable the rendering of the artworks themselves (e.g.: Flickr, Instagram, YouTube), while others (e.g.: Artory, Verisart, Codex Protocol) would provide the complementary blockchain meta-information. TEME would then embody Hooper-Greenhill's Post-Museum paradigm, with mutuality and distribution at its operational core.

Conclusion

The Everywhere Museum of Everything is (conceptually, for the time being, but operationally in the future) an online museum which aims at delivering a theoretical and technological framework, articulating creative and curatorial practices, inspired by *artivism*, *hacktivism*, maker culture and tactical media (Veiga, 2020a, pp. 232-242). Diversification of creative, curatorial, theoretical and educational approaches is key for discovering the best contexts, collaborative environments and communication for TEME's collections and exhibitions.

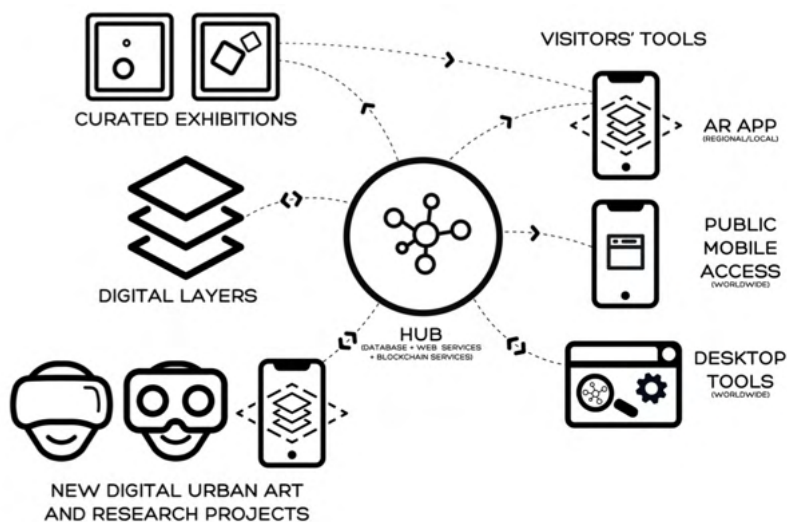


Fig. 6 → Pedro Alves da Veiga, *TEME's conceptual architecture*, 2021.

Its curation is a complex process derived from and influenced by several ongoing phenomena, from social media networks to the non-fungible tokens art market, only achievable through a collaborative and distributed practice, much like the blockchain itself, and its greatest challenge is to avoid the lure and dazzlement of technological and economic pitfalls.

TEME can build upon the role of the (Post-)Museum as one of the best-placed institutions to reach diverse audiences, deliver innovative learning programmes and develop critical thinking to help steward humanity's journey toward a more sustainable future. Assuming a non-neutral role in shaping that journey towards sustainability and circular economies also implies developing strategies to counter potential negative impacts, namely the heavy carbon-footprint that most NFT trading platforms based on the Ethereum blockchain imply. But, as greener alternatives are already available (Eco NFT, 2021), TEME may use the blockchain to its advantage, in establishing authorship and authenticity for original artworks, derivatives and exhibitions. As heralded by Russell two decades ago:

New forms of collective, network organised dissent are emerging. Collectively constructive rather than oppositional. Now capable of augmenting, reorganising, and colonising real spaces without altering what is already there or notifying those being colonised. (Russell, 1999, p. 5)

The successful merging of augmented reality, blockchain and curatorship will hopefully deliver the first successful and tangible results, as TEME's working prototypes, in 2022.

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VIRTUAL MUSEUMS, ARCHIVES AND DATABASES

Recent Challenges to Contemporary Art Databases. Digitisation Practices and Archive Development in Artist Estates and Private Collections

Diego Mantoan

Over the last decade, databases have appeared as the only solution for artist estates and collections seeking to categorise and disseminate their artworks and thereby enhance their position and reputation. Grounded in empirical work and scholarly research, this paper examines the archive digitisation practices at three high-ranking art organisations – Douglas Gordon's studio, the Sigmar Polke Estate and the Julia Stoschek Collection – to show how the creation of databases has become central in conforming to best practices and providing valuable information to the art market. In revealing the mindset, requirements and conditions of such digitisation projects, this text offers a reflection on recent transformations, arguing that well-organised digital archives are of major importance for commercial purposes and for the study of contemporary art history. This study further suggests that, since the art world continues to lag behind other areas of study in terms of the standards that are commonly applied in digital archives, smaller organisations have embraced digitisation through their own tailor-made solutions.

The “database frenzy” in contemporary art

Since the 1990s, digitisation practices have greatly increased in the contemporary art sector, as evidenced by the investments made at major museums, especially in relation to the digital accessibility of their collections (Beaulieu and de Rijcke, 2016). The desire to imitate the practices of these leading institutions has also spread to artist estates and private collections throughout Europe. It has become almost a frenzy, with the creation of a database seeming to be the only possible solution for small and medium-sized organisations to trace, categorise and disseminate their artworks. It remains to be seen whether the private archives of high-ranking artists and elite collectors have applied the same logic and standards as public museums, and which technological solutions they have adopted.

In fact, empirical studies show that artist estates and private collections have embraced digital transformation with homemade solutions, rather than adhering to global trends (Reed, 2017, pp. 122–123). Furthermore, they have often used databases as a means of improving the ranking of artists and artworks, as well as of enhancing their reputation (Saba, 2013, p. 104). This text argues that, at least in its initial stages, digitisation did not directly affect the nature of these private archives. Databases had to serve another purpose, since they were originally intended for internal use only, while the collected data would then be cautiously disclosed in order to guide art market requests or to satisfy scholarly interest.

This research is grounded in my decade-long empirical and scholarly work in planning, developing and implementing digital art archives for renowned institutions and top-ranking artists across Europe. A set of different case-studies will be presented, making it possible to assess the different practices and objectives adopted, according to the type of organisation. These case-studies were based on the digital activities of Douglas Gordon's studio in Berlin, the estate of Sigmar Polke in Cologne and Julia Stoschek's private collection of time-based art in Düsseldorf. The aim is to show and discuss how the creation of databases became crucial, both for staying in tune with the best practices in the evolving art world and for providing valuable information to the art market. This paper also aims to provide an insight into the back-office practices of small and medium-sized organisations, analysing the mindset, requirements and conditions under which they have approached digitisation, proposing a reflection on recent transformations in the digital acquisition and dissemination of contemporary art, and highlighting how artists and collectors were able to rapidly catch up with the need to digitise, manage and protect their works, both for copyright purposes and in order to systematically enhance their own cultural relevance.

Humanists chasing after digital developments

Although secondary when compared to the digitisation initiatives promoted by leading museums, the parallel phenomenon at small and medium-sized art organisations was not entirely overlooked in the scholarly debate. Over the last decade, researchers from various disciplines have generated case-studies examining the influence of database programming on our understanding of art archives (Bernardi and Dimmock, 2017; Berry, 2017; Cocciolo, 2014; Elragal, and

Päivärinta, 2017; Fuchsgruber, 2019; Knifton, 2015; Reed, 2017). Typically, the debate has focused on three main questions: the conceptual and practical distinction between an archive and a database (Gorzalski, 2016, p. 167); the reliability of the materials and sources made accessible via online repositories (Fuchsgruber, 2019, p. 93); the procedural changes and professional clashes arising from the necessary coexistence of traditional archivists and data asset managers (Cocciolo, 2016, p. 124).

As far as the dispute over the correct definition is concerned, the terms "archive" and "database" are both now widely used interchangeably, which is a consequence of the continued growth of digital initiatives in the humanities. The expanded concept of the archive is now more commonly applied, having greatly superseded the original idea of a physical space with a predetermined collection (Theimer, 2012). Nevertheless, the point of divergence relates to whether digital repositories may combine primary and secondary sources, namely primary sources from various collections that are both historically and geographically distinct (Kramer, 2014).

An archive in the traditional sense is a closed circuit centred on a collection, but both digitisation at individual organisations and cross-institutional research projects have allowed for the creation of platforms that connect various collections of primary sources (e.g., the artworks of a specific artist preserved at different museums), where they are joined by secondary sources that contextualise the collections (e.g., essays, pictures, bibliographies, press clippings) (Gorzalski, 2016, p. 167). Regardless of its physical or digital constitution, digital humanists consider an archive to be a selected, ordered and searchable grouping of materials that is made accessible for research purposes (Theimer, 2012). It can be a varied ensemble of collections and physically dispersed items gathered together solely in the digital realm, as in the case of the William Blake Archive, or a coherent collection of items enhanced through secondary sources in a hypertext mode, as in the case of the Vincent Van Gogh Letters.¹

The advantages of digital repositories lie in the addition of secondary sources, thematic cross-references and research tools, making it possible to achieve scientific goals that extend far beyond those of physical archives (Palmer, 2004, p. 352). The added value is not represented by the digitised material alone, but also by the contextual information retrieved for the digitisation process

1 For more information about these two archives, see <http://www.blakearchive.org/> and <http://vangoghletters.org/vg/>.

and displayed together with primary sources (Bernardi and Dimmock, 2017, p. 188). This operational method of building digital repositories emerged as a leading principle for open database development in the humanities and thus formed a "contextual mass", which placed different items and subjects together and allowed for profound multifaceted inquiries in specific areas (Palmer, 2004, p. 353).

Given the nature of digital repositories in the humanities, the question of reliability became paramount, being concerned with the provenance and truthfulness of displayed data. Most digitisation projects frequently turned into a sort of "augmented collection", intermixing materials of different origins, whereby digitised primary sources often lost track of their physical context and its related meaning, such as their position or arrangement in boxes, folders, parent collections or donations (Gorzalski, 2016, p. 170). Unless the digitisation process sets out to acquire all information relevant to the records, as would be the case in a traditional archive, the risk with digital repositories is that they may inadvertently discard data relating to principles of provenance and integrity. Moreover, one must further consider that digital repositories, such as databases, archives or websites, are created as intentional reconstructions or representations, which are necessarily biased by the scientific approach of the creators and sometimes even of the clients (Sternfeld, 2011, p. 547).

When building a digital repository, it is essential to ask what its purpose is, as the intentions of the original creators or clients may extend far beyond mere scientific curiosity (Bernardi and Dimmock, 2017, p. 193). Especially in art, any kind of analogue or digital archival work holds a specific cultural, social and economic meaning designed to enhance the accessibility, reputation and value of a certain collection or artist (Cook, 2001, p. 26). Records are shaped to be reliable, while also establishing narrative consistency for the benefit of the author, thereby fostering position, status and capital (Reed, 2017, p. 121). Just like any archive, digital repositories are a social construct used to frame a particular environment, which means that the database structure, metadata system and authenticity checks are based upon the aims of the creators and clients, as well as those of the potential users of the digital collection (Gorzalski, 2016, pp. 179-180). The initial steps in building a digital archive already represent a critical point in the project's development as scholarship, since 'in digital space, taxonomy functions as a powerful rhetorical tool, unmasking the curatorial process of creating the collection as well as its capacity to make meaning' (Bernardi and Dimmock, 2017, p. 192).

One last criticality emerged at an organisational level due to the clash between old and new archive professionals and the assets they curate (Berry, 2017; Gorzalski, 2016). Traditional archivists working on analogue collections were increasingly accompanied by data asset managers or database developers placed in charge of digital records (Cocciolo, 2016, p. 124). Since they have different competences, these professionals continue to adopt diverging concepts and procedures in their archiving practices. According to David M. Berry, archivists preserve the stored items in a collection in order to freeze their contents, whereas data asset managers acquire a digitised representation of the items in order to transpose their contents and set them in motion via relational connections (Berry, 2017, p. 104). The archivist's approach is therefore centred on the collectibles and their long-term physical preservation, while digital professionals stress a user-centred perspective and the urge for subsequent technological migrations (Cocciolo, 2014, p. 239). This organisational friction arising from professional divergences lay bare the fact that digitisation projects in the humanities require, first of all, a general strategic plan to reformulate processing policies, acquisition processes and data transfer procedures (Berry, 2017, p. 106). Far from being an automatic solution, a database needs effective data processing, which is performed by all collaborators, not just archivists or data asset managers (Cocciolo, 2016, pp. 126-128). Consequently, the human factor, particularly its pre-existing organisational form and dynamics inside a particular institution, is the true starting point of any attempt to digitise an art collection.

Three art enterprises embarking on digitisation

With the former framework in mind, I carried out three distinct digitisation projects between 2008 and 2020 in my capacity as a database developer and digital archive curator. They each pertain to the domain of contemporary art and are all geographically based in Germany, although their scope extends to the international art world with a remarkable artistic and relational capital set that legitimises their authority. They are the archives of a) Douglas Gordon, a new media artist firmly ranked among the world's top practitioners; b) the Julia Stoschek Collection, a renowned time-based art reference; c) the Estate of Sigmar Polke, a late and well-known Pop Artist.² Despite their different roles,

² Timeframe of the three projects: Douglas Gordon, Berlin, 2008-2010; Julia Stoschek Collection, Düsseldorf, 2010-2020; Sigmar Polke Estate, Cologne, 2012-2016.

all three subjects displayed similarities at an organisational and art-related level, helping to make comparisons and draw tentative conclusions about digitisation in contemporary art regarded as an elite sector.

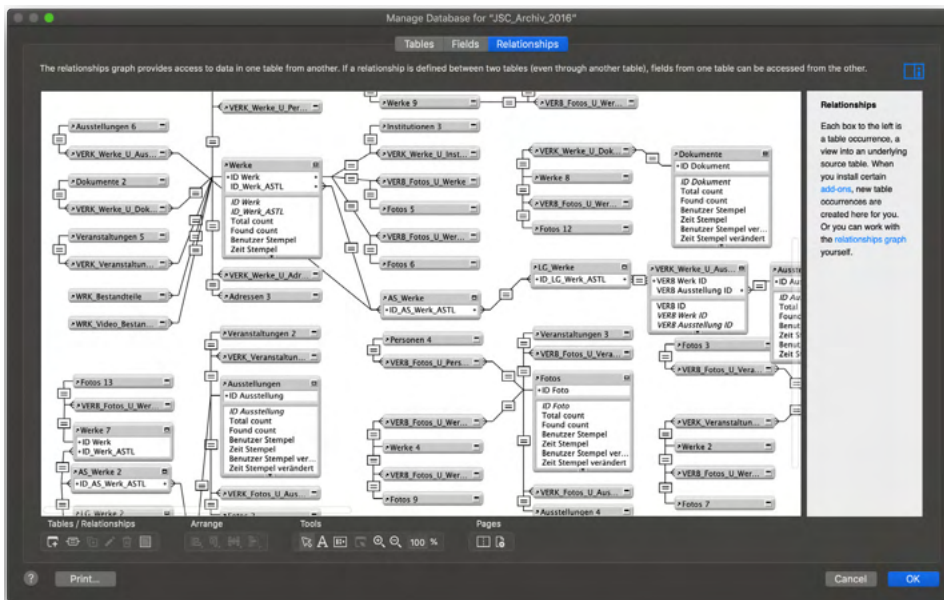


Fig. 1 → Diego Mantoan, Database Prototype for the Julia Stoschek Collection (relationships between individual tables), 2016. © 2021 Diego Mantoan.

At the start of the project, they all enjoyed some standing in the international art world, but wished to enhance their reputations through a database providing accurate information (e.g., art historical references, high-quality images, bibliographies) and consistent workflows (e.g., loans, authentications, permissions) for the benefit of other relevant agents (Graw, 2009, p. 9). Although they did not have a precise idea of what kind of database they wanted, nor could they imagine what it would look like, they all sought to find a solution that strengthened their individual position inside the art field by offering contextual information (Fuchsgruber, 2019, p. 94).

In all three cases, the archive was born digital, since materials that were already present at the organisation were put together for the first time in an orderly manner, producing a huge amount of data and documentation over a short period, which then faced problems of digital representation and long-term preservation (Saba, 2013, p. 113; Cocciolo, 2014, p. 247). Hence, for these organisations, the scholarly distinction between a traditional archive and a digital repository had no relevance whatsoever because what they had in mind was, instead, an organised form of knowledge like a catalogue raisonné (Gorzalski, 2016, p. 170). From their perspective, the database was associated

with the idea of a "catalogue", intended to serve as a collection of information, materials, data and ephemera that conventionally make sense in contemporary art (Phillpot, 1995, p. 23).

Each of the mentioned organisations are small-to-medium-sized, which, for the art world, means five to twenty employees. This characterises them as managerially stable enterprises whose human resources covered a range of different skills, although they were too small to have a dedicated information technology specialist or database developer (Cocciolo, 2014, p. 240). However, during the digitisation process, they each hired a data asset manager. They all needed external help and entrusted a digital humanist – not a mere IT specialist – with the development of the digital archive and the associated process management.

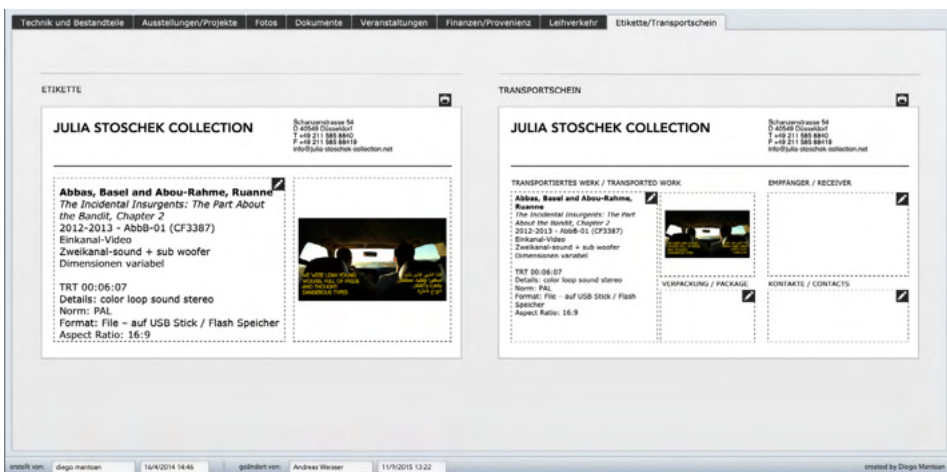


Fig. 2 → Diego Mantoan, Database Prototype for the Julia Stoschek Collection (loans and shipping layout), 2016. © 2021 Diego Mantoan.

My role in each project was to function as an interface between the client's initial expectations and my desired solutions, in accordance with what I considered to be their organisational or procedural needs. In providing a tailor-made database, the client cooperated in the planning of the prototype and in the implementation to suggest corrections and adaptations. Curiously, in the three organisations, as well as in other cases, I was requested to employ FileMaker Pro as a software solution.³ This request was most probably passed on by word of mouth among the top-ranking cultural institutions, which often tend to adopt solutions already implemented by other similar agents – simply

3 This software is also used by the Venice Biennale, the Vedova Estate in Venice and the Olafur Eliasson Studio in Berlin, among others.

to conform to unwritten standards, and regardless of the actual benefits, thus confirming the kind of "development by trend" described by Alfred Chandler (1990). It must also be said that FileMaker Pro found widespread acceptance among the art sector because of its versatile solutions and reasonable costs, allowing for deep structure and back-end customisation (tables, fields, scripts, outputs). Needless to say, aesthetic sophistication is of paramount importance in marking quality in the art world, even more so than technological efficiency (Mossetto, 2003).

To stick to recognised benchmarks, I recommended that the database should be developed in accordance with a general structure derived from the categories used in museum catalogues, art libraries and artists' files, enabling the inclusion of several meaningful items and ephemera that could be significantly interrelated (Wilson and Dowell, 2003).⁴ There was no main table, which the other ones had to refer to, but, instead, a set of independent tables interconnected via bridge-tables that could be activated upon request via unique links: for example, an artwork could be connected to an exhibition, a catalogue and installation photos (Fig. 1). This multiple-table structure was particularly appreciated, since it avoided a strict hierarchical order, favouring a flexible relationship among records and further allowing for the emergence of overlooked interconnections (Knifton, 2015, p. 28). This was the case, for example, at the Polke Estate with the discovery among some installation photographs of an artwork that had been present at an exhibition but was not originally featured in the catalogue of that show, or the complete overview of artworks exhibited at a specific gallery or owned at some point by one collector.

My own training and experience as both an art historian and a digital humanist enabled me to understand the mindset of the three organisations and to recognise specific requirements, such as the need to adjust the general structure of the relational database to each case. For the artist Douglas Gordon, the aim was to organise his archive for the first time, offering high-quality data (texts and images) and protecting his artworks from copyright infringements (Mantoan, 2015). The database was thus planned with tools for bibliography and clippings, plus a section for installation photographs, with metadata for copyright purposes (Bertacchini and Morando, 2013, pp. 65–67).

4 The main categories were Artworks, People, Exhibitions, Photographs, Bibliography and Documents.

Fig. 3 → Diego Mantoan, Database Prototype for the Sigmar Polke Archive (artworks with technical details and provenance), 2014. © 2021 Diego Mantoan.

In the case of the Julia Stoschek Collection, the goal was to foster its museum circulation and to strengthen its artistic reputation (Julia Stoschek Foundation, 2009). In view of the peculiarities of time-based artworks, special attention was given to adopting international standards for media preservation, with a section reserved for reports about the condition of artworks and their digital storage location (Saba, 2013, p. 108), as well as for tracking loans and shipments (Fig. 2).

The circumstances surrounding the Sigmar Polke Estate were, in some respects, quite urgent and peculiar, since the German artist had left a rich legacy, but there was little certainty about the authenticity of pieces (Fuchsgruber, 2019, p. 99), a situation made even more delicate by the tensions that existed among the heirs and the unfortunate appearance of counterfeits at private sales.⁵ The database helped in the development of a central archive and catalogue raisonné as stable reference points for scholars and collectors (Fig. 3), consequently re-establishing the painter's reputation with an itinerant solo exhibition that travelled between MoMA, the Tate, Museum Ludwig and

⁵ This information was gleaned from a conversation with Michael Trier, the curator of the archive at the time of the digitisation activities.

Palazzo Grassi (Pinault Collection, 2016). Digitisation also set up the Estate's workflow for vetting the *oeuvre's* provenance and creating automatic authentication certificates (Fig. 4).

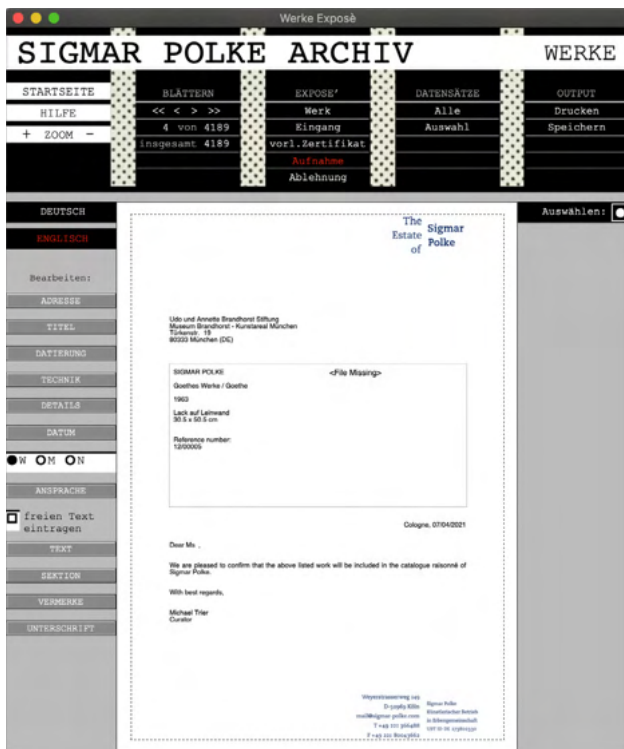


Fig. 4 → Diego Mantoan, Database Prototype for the Sigmar Polke Archive (automatic authentication certificates), 2014. © 2021 Diego Mantoan.

Tailor-made databases and cross-organisational trends

To some extent, the cases described above revealed the mindset and expectations that generally inform digitisation processes in contemporary art. Since these organisations are among the most reputed in their sector, they are important examples of the specific requirements and possible difficulties that digital humanists face in planning and developing digital archives. First of all, they stress the importance of a tailor-made approach to art digitisation, because such projects are designed to enhance artistic reputations through private archives used to protect and guide information or data (Reed, 2017, p. 125). What they require is not just an empty database, but a full-scale workflow for an archival process designed to balance institutional goals and external dissemination. Secondly, the private nature of these endeavours constitutes a challenge to the interoperability of the adopted database, as well as to the categorisation of standards (Elragal and Päivärinta, 2017, p. 7).

Considering that small and medium-sized art organisations prefer to opt for tailor-made solutions, it is the responsibility of digital humanists to insist on respecting best practices for relational spillovers, metadata definition and migration capability (Saba, 2013, p. 109). As the archive risks being biased due to the client's aims, the database is better suited to the "catalogue" idea enhanced by digital tools in a relational setting. The third takeaway relates to the sprawl of organisational and digital trends that can be observed inside the art world's closed circuit. Smaller enterprises tend to adopt the solutions of reputed organisations; thus, it was predictable that archives, which were better organised and were able to manage a successful digitisation project, would have better opportunities for enhancing their position in the art sector because of their superior data vetting process, even if the database was not made public (Cocciolo, 2014, p. 240).

Conclusions

I end this paper with some practical conclusions regarding the human factor, which are essential for any successful digitisation project. The database planning needs to be user-oriented, featuring self-evident tools and default procedures, a facility for tracking changes, as well as unique account logins in order to avoid or retrace human mistakes. From this viewpoint, the graphic layout was pleasing to the eye and assisted users in their workflow, bearing in mind that the digital archive is primarily a management tool designed for everyday use, and not a fancy website for attracting attention. Training the many changing employees and interns that access the database becomes the crucial aspect for its wellbeing and the accuracy of fed datasets. Taking care of the human factor before, during and after digitisation is the most valuable asset that guarantees the effectiveness, reliability and longevity of the digital archive. Hence, the last step in the cases considered here was a training programme devised for the employees to secure the continued long-term existence of digital information. For this latter reason, it is crucial to foster a collaborative relationship with the client, based on an open-source approach permitting the full reuse and transfer of data. The digital humanist thus supersedes the mere service provider to become the cornerstone of a good digital repository, even with contemporary art clients that often reveal a cautious approach towards openness. And, suddenly, digital humanists are at the centre of art digitisation, with databases turning into the asset that everyone wants to have exclusive access to, as happened, in my own

experience, when the disputes among the heirs threatened to tear the Estate of Sigmar Polke apart.

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Virtual Museums and Art Projects, between the Analogue and the Digital: Catalogue Raisonné Graça Morais

Joana Baião and Sofia Carvalho

This paper addresses the conceptual similarities between the ongoing digital project of the Catalogue Raisonné Graça Morais, developed in the Laboratory of Arts in the Mountain – Graça Morais and the concept of the “virtual museum”. Both the digital catalogue raisonné and the virtual museum are bringing together agents who organise and disseminate information, eliciting meaningful narratives. We note that digital projects can draw on their tools and characteristics, assembling diverse types of documentation in the same platform, regardless of their original nature, and encouraging innovative and non-linear narratives about the exhibited objects. Ultimately, these projects contribute to the creation of a new heritage – “digital heritage”. In addition to these issues, this paper also seeks to contribute to the debate about the challenges of gathering analogue and digital ways of thinking and acting, and about the epistemological questions that emerge when the Social Sciences and Humanities are combined with the digital and virtual sphere.

Catalogue Raisonné Graça Morais – a work in progress

To understand the efforts to create the Catalogue Raisonné Graça Morais, it is necessary to mention the Laboratory of Arts in the Mountain – Graça Morais (LAM-GM). Launched in 2018, LAM-GM is based at the Polytechnic Institute of Bragança and its structure was established through a collaboration protocol signed between several institutions and the Portuguese painter Graça Morais (b. 1948), providing access to her work and related documentation for the purposes of study, cataloguing and dissemination.¹ The LAM-GM was conceived

1 The LAM-GM was formally established in July 2018, through the signing of a collaboration protocol between: Polytechnic Institute of Bragança; Contemporary Art Centre Graça Morais/Municipality of Bragança; Institute of Art History/Universidade NOVA de Lisboa (NOVA FCSH); Foundation for Science and Technology (FCT); and the painter Graça Morais. This project is funded by FCT through the protocol established with the Foundation for Science and Technology, under the scope of the Council of Ministers Resolution No. 116/2018 (Measure No. 5.18), Ref. UI/00690/2020.

as a research and practice project that combines arts, sciences and teaching in an integrative way, giving particular emphasis to establishing relationships with society at a local, national and global level (Baião and Meireles, 2020).

Two priority tasks were established by the LAM-GM: the systematic inventory of Graça Morais' artistic work and the formation of a collection of documents relating to her career (photographs, exhibition catalogues, ephemera, press clippings, etc.). The goal is to create a Catalogue Raisonné Graça Morais and a Documentation Centre, both of them in a digital format. By establishing a dialogue with one another, these two projects will increase access to a significant amount of information, stimulating the development of new knowledge about the painter's work (Fig. 1).



Fig. 1 → Top: Graça Morais, *As Escolhidas* [The Chosen Ones] (from a series of 16), 1994. Sepia on paper, 14.8 x 21 cm. © Col. MB / CACGM, Bragança. Bottom: Left – Women at the cemetery in Vieiro, photographed by Graça Morais, c. 1994. © Graça Morais Archives; Centre – Cover of the catalogue *As Escolhidas*, 1994; Right – Frame from the documentary *As Escolhidas*, directed by Margarida Gil, 1997. © Archives RTP, available at: <https://arquivos.rtp.pt/conteudos/graca-morais-as-escolhidas/> (Accessed: 2 September 2021).

The two projects have been built from digital content. However, this content is wide-ranging and complex, bringing together digital materials with quite distinct characteristics, which means different forms of access, interaction and preservation. In addition to this complexity, the intention is to create complementary links that will connect the data contained in the Catalogue Raisonné and the Documentation Centre to external sources: websites, blogs, videos, other projects and initiatives, etc.

It was this context that led us to develop an interest in the impact of digital technologies at institutions that manage cultural heritage (archives, libraries, museums), and at the "virtual museum" as a particular product of these processes.

Cultural heritage and digital technologies

Digital technology began to be used in an expressive and consistent fashion in the cultural area and, more specifically, in the world of museums from the last two decades of the twentieth century onwards. At first, its main application was in information systems for inventory and collection management, responding to the challenges faced by institutions with specific internal functions (Mairesse, 2011, p. 305); after this, the potential of new digital interfaces in communication and interaction with the public began to be explored, both in relation to physical visits and at a distance, through online resources or through the use of tools for consultation and interaction that could also be used in an offline environment (Andreacola, 2020).

These technologies have had an ever greater impact on the conception and development of research projects at academies, museums and cultural management institutions, often working together in partnerships. These projects provide different means of access and several levels of information about a particular object of study, helping to increase the knowledge of its tangible and intangible aspects (Roque, 2018, p. 21), thus stimulating new forms of accessibility and communication with audiences/users. Simultaneously, such projects are themselves part of a new kind of heritage – "digital heritage":

Digital heritage is made up of computer-based materials of enduring value that should be kept for future generations. Digital heritage emanates from different communities, industries, sectors and regions. [...]

It is a heritage made of many parts, sharing many common characteristics, and subject to many common threats. (UNESCO, 2021)

The notion of "digital heritage" is linked to the idea of deterritorialised information, which is transmitted through digital networks. Theoretically, it ensures access to a greater number of users and, therefore, fosters the democratisation of knowledge. Thus, digital heritage presents new challenges for contemporary society, relating to the very notion of accessibility and

the permanent need for technological, conceptual, social and political updating, in view of the new practices for its constitution and preservation (Musiani and Schafer, 2017).

These are the same challenges that frame our research work, as the Catalogue Raisonné Graça Morais is a digital product that seeks to connect data in multiple (and almost infinite) ramifications, building a new heritage. Furthermore, it seeks to intertwine research, artistic creation and teaching, while also fostering diverse interactions with society. It is our main goal to make the contents of this catalogue raisonné a catalyst for instigating different narratives about Graça Morais' work. Accordingly, we recognise a conceptual affinity between the catalogue raisonné and the virtual museum, since both are structures that enable information extension, not only making data available about the collection itself (the catalogued objects), but also creating links to documentation and other sources and thus presenting a strong discursive and communicative potential.

Some considerations about the digital catalogue raisonné

In its most basic definition, the catalogue raisonné is 'a publication that provides information on an artist's complete oeuvre, [which] has long been considered the definitive source of attribution and provenance information on the work of a particular artist' (Atwater, 2012, p. 186). As a repository of information resulting from an intricate research process that involves data collection, inventorying, systematisation, documentation, interpretation and dissemination, the catalogue raisonné enables knowledge to be created about a certain subject – in this case, the body of work produced by an artist.

At the same time, the catalogue raisonné is increasingly understood as a safeguard tool, whether in a material sense – for example, allowing for the detection of intrinsic changes in works (aging, deterioration, restoration interventions) and making it possible to check their conditions of exhibition or storage – or in a legal sense, due to its role in artwork authentication processes. As stated by Pierre Valentine, a member of the International Catalogue Raisonné Association (ICRA): 'catalogues raisonnés are essential to preserve an artist's legacy and protect the integrity of his or her oeuvre' (Carrigan, 2019).

As has been the case with other research projects that resort to information and communications technology, digital catalogues raisonnés began to be developed from the 1990s onwards. At first, they were accessible through offline devices (CD-ROMs), presenting structures and usage options that were still very rigid and closely linked to the analogue (printed) version; in recent years, these projects have multiplied, driven by the 'growing trend in libraries and archives to digitize and provide materials online [which] has contributed to an increase in provenance research, as scholars are now able to access records and archival materials that previously required a visit to an institutional reading room to view' (Echeverría, 2016, p. 3).

Based on increasingly flexible and relational database systems, digital catalogues raisonnés present advantages that are easy to list. Here, we highlight three advantages in particular: firstly, they allow for permanent information updates, countering the inevitable obsolescence of printed editions, namely those relating to the most easily changeable aspects, such as provenance or exhibition history (Echeverría, 2016, p. 4); secondly, they enable the object to be presented in a variety of formats, which is particularly suitable for artists working in three-dimensional media or in non-traditional formats, such as performance, video and installation (Rogers, 2015, p. 5); thirdly, they allow for the inclusion of other resources and features, such as three-dimensional views of sculptural objects, virtual visits to certain places or works *in situ*, archival materials, or hyperlinks to external sources (Gabrielli, 2015, pp. 42-43). Furthermore, it is important to mention the associated costs:

[...] printed catalogues raisonnés generally carry high production costs, due to which they tend to be printed in limited editions and sold at high prices. (Gabrielli, 2015, p. 42)

Since the aim of a catalogue raisonné is to preserve and promote the legacy of an artist, limiting access to researchers and institutions that can afford to invest \$100 or more on a single book seems counterintuitive to this mission. (Echeverría, 2016, pp. 3-4)

Despite these advantages, the transposition from analogue to digital not only involves the same issues as those that are intrinsic to catalogues raisonnés – namely the questions of authority and legitimacy; discoverability and access; update methodology; cost of the resource; format variability; rights management concerns; legal implications for the art market (Atwater, 2012) – but also implies several other challenges.

On the one hand, there are technical challenges, such as the creation of different levels for accessing digital material and its medium to long-term preservation (Duncan, 2017; Echeverría, 2016). Without digital preservation (a considerably complex process that requires specialised knowledge), there is a danger of losing information and thus distorting the project, which will ultimately lead to its disappearance.

On the other hand, there are also epistemological challenges, including those associated with the way that narratives are created, transmitted and interpreted in digital contexts, based on a bottom-up logic guided by user interactivity and representing a new distribution of narrative authority (Rigney, 2010, pp. 116-117) that is therefore different from the analogue context. The fact that Humanities researchers are still reluctant to view the web as a source of information, or even as a research topic in itself, is also an issue to consider (Brügger and Finnemann, 2013, p. 68). Such resistance is an obstacle to knowledge production in contemporary times, especially when a significant part of human social activity is deeply rooted in "being" and "doing" digital.

A question therefore emerges: how to overcome the conceptual and practical challenges related with the transposition of analogue thought and methodologies from the Social Sciences and Humanities (in this case, from the History of Art) to the digital environment?

Currently, there is a general acceptance that the scope of Digital Humanities reaches far beyond the simple transfer from analogue to digital (Dodebei, 2006; Guerreiro and Borbinha, 2014). However, there is no doubt that several digital projects in the fields of Social Sciences and Humanities remain rooted in conceptual and methodological structures that are essentially analogue in nature. This occurs not only because most Humanities researchers belong to a transition generation that was initially trained in a mainly analogue world, but also because it is often difficult to establish unambiguous communication between Humanities researchers and computer specialists, given the inevitable differences in their technical languages and thinking processes (Holm, 2015, p. 64).

Transposing these questions to the context of catalogue raisonné projects, we should mention the words of Reesa Greenberg (an art historian specialising in exhibition theory, and art-world responses to the Internet):

Because the catalogue raisonné emerged long before the digital era, there is a tendency to use analogue principles of construction, interface, storage, and dissemination, even when the platform is digital. Unless carefully rethought from the moment of its inception, the online catalogue raisonné risks minimizing the extraordinary potential that digital technologies offer for revisioning what an archive might be and how it can be used. (Greenberg, 2019, p. 36)

Currently, despite the willingness to transpose analogue into digital, the dynamics and barriers between the two spheres are increasingly fluid. As such, Humanities researchers have been adapting their methods, tools and *modus operandi*. The fact that transitioning from analogue to digital implies the production of, and access to, information sources on digital supports has led Neils Brügger (2016), a specialist in web archives and web history, to predict that, during the twenty-first century, the development of the Social Sciences – especially the Humanities – will be guided by the natural progress of their becoming, more and more, Digital Humanities.

The catalogue raisonné as a virtual museum?

Parallel to the evolution of the digital catalogue raisonné, the origins of virtual museums – although currently supported by the potential of the Internet – also date back to an offline environment in the 1990s, being specifically based on the CD-ROM format.²

There are several proposed definitions of the concept of “virtual museum”, as well as multiple terms for identifying the experience of the museum using digital tools and technologies, such as “cyber museum”, “online museum”, “electronic museum”, “web museum” or “digital museum”. At the same time, there are numerous virtual museum projects that exhibit a wide-ranging array of characteristics, functions and purposes. Thus, although the literature is not clear on how to unequivocally define “virtual museum”, it leaves no doubt that this fact stems from the fragile understanding of the epistemology surrounding the subject, despite the profusion of authors who have been working on

2 The pioneering project known as Computer’s Virtual Museum (1992), promoted by the Apple Company, used the CD-ROM format to present a 3D simulation of three museums linked together. Throughout the 1990s, its success spurred several prestigious institutions, such as Musée d’Orsay, Musée du Louvre, and the Hermitage Museum, to develop CD-ROMs that were sold in their stores, and from which information about selected objects from their collections could be viewed on a personal computer. The development of these projects and their transposition to the Internet paved the way for the contemporary meaning of “virtual museum” (Huhtamo, 2010, p. 122; Sviličić, 2010, p. 589).

establishing such a framework (Antunes, 2015, pp. 75-76; Biedermann, 2017, p. 283; Henriques, 2018, pp. 53-70; Sviličić, 2010, pp. 590-594).

In this paper, we adopt the term "virtual museum", in keeping with the explanation provided by Werner Schweibenz (2019), who noted that this term has been the most widely used since the spread of the World Wide Web. As for its definition, we follow the one suggested by V-MUST – Transnational Network of Virtual Museums (2011):

A virtual museum is a digital entity that draws on the characteristics of a museum, in order to complement, enhance or augment the museum experience through personalisation, interactivity and richness of content. Virtual museums can perform as the digital footprint of a physical museum, or can act independently, while maintaining the authoritative status as bestowed by ICOM in its definition of a museum. In tandem with the ICOM mission of a physical museum, the virtual museum is also committed to public access; to both the knowledge systems imbedded in the collections and the systematic, and coherent organisation of their display, as well as to their long-term preservation.

Built after a long debate and continuous review, and based on the definition of "museum" established by the Statutes of the International Council of Museums (ICOM, 2007), the V-MUST definition focuses on five main aspects: (1) a virtual museum is always associated with an institution, which can be accessed either digitally via the web, in the physical space of a museum, or as a multimedia product; (2) the heritage that the virtual museum owns can be completely virtual, and therefore not associated with a physical collection; (3) the main objective of virtual museums is communication; (4) the presence of the public in virtual museums is as important as it is in physical museums; (5) the scope of virtual museums is broader than that of museums, as in addition to framing the same scope as museums, they are responsible for improving and strengthening them (Ferdani and ITABC, 2015, pp. 6-7).

The V-MUST definition of a virtual museum does not distort the classical definition of a museum; instead, it adapts this definition to the context of digital technologies and their capabilities. In fact, the museum located in cyberspace must not neglect its main "traditional" functions – as Pierre Lévy observed in the late 1990s, it cannot be just a mere (and often poorly structured) catalogue on the Internet (Lévy, 2000, p. 202). On the contrary, and following the arguments of André Malraux (1947/1974) about the imaginary museum – considered one of the theoretical bases of the virtual museum – the visitor's experience is not

replicated by the virtual museum, but enriched by it, instigating new reflections and revealing new points of access to interpretation and knowledge.

It is interesting to reflect on how both the digital catalogue raisonné and the virtual museum set up a collection-construct – i.e., a collection of deterritorialised, but intellectually gathered objects. Assuming that the objects (paintings, drawings, etc.) do exist in the physical world, their transition to the digital environment implies a change in their status and the establishment of new interactions with the visitor/user (Muchacho, 2005, p. 581). In fact, the exponential presence of digital reproductions which we can easily access from our screens changes the perception of the museum visitor when interacting with the original object (Schweibenz, 2018, p. 10). This perceptive reconfiguration of the subject has, in turn, consequences for the perception of the digital object "itself": more than mere reproduction, it can be perceived as having its own intrinsic value rather than being an imperfect surrogate of the original (Frost, 2002, p. 84); or it can be perceived as a simulacrum, resulting from the dichotomy between "real" and "artificial" (Roque, 2019, p. 23).

Finally, it is important to note the role of the digital in reinforcing the museum as a space for decontextualisation and representation. The digital technologies that support the virtual museum make it possible to outline new connections between objects and to interlink a wide range of information, thus promoting the conception of multiple narratives about the same subject. Therefore, if the analogue museum was already a space of artifice and de/re-contextualisation, its integration into a digital environment will reinforce this apparatus of fictionalised narratives about objects (Roque, 2018, p. 23). The same happens in relation to the digital catalogue raisonné, which, in addition to its basic inventory function, must now respond to the demands of the users who 'in the current digital age have come to expect a highly-interactive experience, one which allows for detailed exploration of individual works as well as the ability to discover connections within the works in an artist's oeuvre as a whole' (Helmreich cited in Echeverría, 2016, p. 4). In short: the digital catalogue raisonné goes potentially beyond a mere inventory, thus surpassing its apparent neutrality, since inventoring and cataloguing also mean selecting and judging, and can therefore never be a neutral gesture.

Conclusion

The notion of digital heritage is related to deterritorialised information, which implies a set of potentialities and challenges for the researcher. Concerning the digital catalogue raisonné, there are clear advantages related with information access, the possibility of permanent content updating and the inclusion of technological resources that enhance new approaches to information analysis. However, it requires expertise in specific technical language and tools, while also presenting new challenges in dealing with digital preservation. At the same time, working with digital presupposes a set of epistemological challenges that emerge from the transition from analogue to digital ways of doing and thinking. In this context, a transformation occurs in the way that narratives are constructed, transmitted, and interpreted.

The research activities currently being undertaken at the Laboratory of Arts in the Mountain – Graça Morais raise these complex issues. Combining the two digital projects (Catalogue Raisonné Graça Morais and Documentation Centre) means outlining a field of work that is simultaneously synchronic and diachronic: on the one hand, the Catalogue Raisonné and the Documentation Centre imply a synchronic approach to the artistic production of Graça Morais, defining a "state of the art"; on the other hand, the potential reconfiguration of those projects into a "virtual museum" allows for a diachronic approach to that same production, enhancing the study both of the "singularity" (a theme, an object) and of the "whole". These dynamics promote not only new perspectives and narratives about the painter's work – the projects' main purpose – but also a heuristic and critical approach from the several scientific domains involved, catalysing the production of new knowledge in a broader way.

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Curating Registered Journeys – Maria Graham and Dora Wordsworth¹

Maria de Fátima Lambert

Maria Graham arrived in Brazil 200 years ago, and Dora Wordsworth travelled to Portugal in 1845. Under the scope of this research, their written and iconographic works were mostly accessed on digital platforms, given the impossibility of travelling due to the COVID-19 pandemic. In the case of Maria Graham, part of the information was obtained in Brazil (in 2013 and 2016), with preference also being given to the *Journal of a Voyage to Brazil and Residence There* (1824) on the Gallica website and the iconography on the British Museum website. As for Dorothy Wordsworth, the core drawings produced in Portugal (1845-1846) are available from the Wordsworth Trust and the *Journal of a Residence of a Few Months in Portugal and Glimpses of Spain*, which can be accessed on different platforms. Due to the different variants that were accessed, certain doubts arose, e.g., regarding conceptual digitisation methodologies. In keeping with other cases that have been investigated, the intention is to set up a curatorship and documentation platform, emphasising binomial writing and images, and thus disseminating the production of nineteenth-century travelling artists and writers, in the context of women's studies.

Foreword

The same objects may be seen in a thousand different lights, and as variously represented, yet each picture may be true and new.

(Wordsworth, 1847, pp. 23-24)

It is with no small anxiety that the Journal is sent into the world, in the hope that it may tend to excite interest for the country by making it better known.

(Graham, 1824, p. V)

Although online resources have been accessible for more than twenty years, it is only in the last fifteen years that privilege has been given to digital archives when searching for first editions or unpublished documents composed by

1 Translated from Portuguese by Cristina Ferreira Pinto.

female and male intellectual travellers, such as notebooks, sketchbooks, drawings or photographs. This research embraces a timeline beginning in *circa* 1750 and extending until the 1930s, with a special focus on early nineteenth-century authors travelling from England and France towards Brazil and Portugal. The chosen destinations are justified in view of their shared language, although dissimilar relationships are also examined, considering their intercultural, heritage-based, historical and socio-political dynamics. On the other hand, some of the authors used both writing and the visual arts in the creation of their productions, although most of the public did not recognise this. Therefore, analysis is required and connections must be developed in order to engage in further and broader reflections. This evidence arose during online research and while accessing digital archives from libraries and museums, namely documents which it would be difficult to find if online resources did not exist. Art History, Literary Heritage, Philosophical, Aesthetic and Critical Thinking are being slowly, but rigorously, revised and enriched due to the broader access available to qualified digital platforms.

In this context, Digital Heritage and Digital Culture help to reshape and create knowledge, as has already been proved by academics, connecting disciplines in order to shed greater light on the research being conducted into cultural travel, authorship and society. Maria Graham and Dora Wordsworth are two important cases located "between visual and written realms", serving as examples of how subjects can be mapped and compared through research into digital archives, thus showing how qualified databases may give rise to new challenges. It is also important to point out that digital image files provide details that would otherwise be invisible or unnoticed. And, finally, during lockdown, no research *in loco* would have been possible.

Entering the Archives: Visual and Written Digital Realms

Places themselves are images that a culture transfers to fixed places in real geography. [...] Places in nature only become an image for the spectator.
(Belting, 2007, p. 87)

Maria Graham (1785-1842) and Dora Wordsworth (1804-1847), two travellers who lived in the first half of the nineteenth century, were the subject of a methodological and epistemological analysis, mainly developed in digital archives, revealing impressive contents of a twofold authorial production

– visual and verbal. Both authors were born in England and travelled to Portuguese-speaking countries. Graham lived in Brazil (1821-1825) and Wordsworth experienced a few months' living in Portugal (1845-1847). Their works are available on the Internet, directly accessible in digital archives, or through secondary locations. A closer approach to the authors' works and documents reveals that they are displayed differently in Public Libraries, Museums, Art Centres, Universities or Research Institutes. Online platforms offer a wide range of digitised materials, including drawings and *facsimile* scans of first editions of books, which are indispensable sources for research that is based on a combination of verbal and visual heritage. When we are seduced by ancient travels, these outer contents turn into something of our own, serving as intermediate souvenirs of never accomplished journeys.

In a research context, when geographical distance or other circumstances do not afford us the chance to undertake the work in person, being able to make the desired physical contact with book pages or approaching a drawing in a museum's reserves, the digital copies available online redeem situations or bridge gaps that it would not have been possible to overcome a few decades ago.

Recovering the idea of aesthetic *walkscapes* (Careri, 2013), we wander through digital platforms ruled by research requirements, sometimes facing epistemological setbacks and exposed to a series of technical and formal doubts. Detecting uploaded technological, iconographic and semantic errors becomes rather like a quiz or a puzzle, but, fortunately, there are specific digital archives resulting from rigorous research that foster a progressive qualification of the processes of awareness and aesthetic fruition. Paraphrasing Foster (2004), the persistence of methodical and judicious work satisfies our investigative compulsiveness, as it is not only in the arts that the archival impulse manifests itself.

The requirement of data veracity and quality guarantees the necessary research validation, being essential for the deepening of knowledge and for a consequently wider dissemination thereof. The current challenge also resides in the configuration of digital archives that reflect an analytical-critical approach (and review), guaranteed by teams of scientific authorities on the topics in question.

When appropriate, digital files, demanding scientific and cultural qualification, can be processed by adopting a "curatorial" approach. The curatorial perspective runs through a restricted expographic circle, allowing for connections to be

made between problems, based upon the concepts of *immemory* (Marker, 1998) and *immateriality* (Lyotard, 1985). Re-shaped and apprehended at the present time, both concepts lead to new extrapolations. On the one hand, immateriality is confronted with the problem of the material nature of the original sources transposed to a digital format; on the other hand, Foster (2004) points to the archival impulse (the preservation of the person-work-memory) understood as an affirmative counter to immemoriality and absence, thus proliferating dual games. Digital files enable (partial or full) access to images, texts, files and collections – in this case, the works of Maria Graham and Dora Wordsworth – which, otherwise, would be unreachable for most people.

Furthermore, the notions of *immemory* and *immateriality* endorse the virtues of the digital, while sheltering and nourishing themselves with an apparent impossibility of "handling" or "touching" the thickness of lost time. However, tangibility and appropriation are hosted precisely in the digital support that makes achievements possible, countering the etymological and conceptual negation implicit in the terms themselves – *(im)memory* and *(im)material*, understood here as silent generators.

The curatorial approach adopted for this study allows for the implementation of projects that are adjusted to the semantic nature of materials – documentary, iconographic, literary and others – as not exclusively *expographic* and/or *museographic*, existing both online and in physical formats. As Joasia Krysa observes:

The site of curatorial production has been expanded to include the space of the Internet and the focus of curatorial attention has been extended from the object to processes [and from these] to dynamic network systems. As a result, curatorial work has become more widely distributed between multiple agents, including technological networks and software. (Krysa, 2006)

In this case, the curatorial method aimed at:

- Converting digital content (records of historical copyright sources), making it more flexible;
- Promoting conceptual links (less evident to those who do not master the topic);
- Fostering concomitant fruition;
- Developing alternative approaches to networking for researchers and dilettantes.

All this implied creating a structure designed to function within digital platform connections, coordinating hypertextual and iconographic transference with references to hyperlinked contents. This is intended to increase the acknowledgement of the nineteenth-century travellers through a future digital platform. Assuming that scientific, literary and technological contents can be ordered according to creative assumptions, a key objective was to instigate and expand interest among experts and amateurs. These contents are housed in places which, paraphrasing Belting (2007), become an image in the digital viewer, thus activating aesthetic itinerancy. The uploaded visual *immaterials* linger in the memory and, when identified, the records of these two women travellers provide remarkable cartographies.

Maria Graham – Between Writing and Seeing

Sight will therefore be the exercise of the travelling painter.
(Starobinski, 1987, p. 171)

Travel records, based on both written texts and images, persist in digital format and are available on the web. Online research was therefore considered to be a decisive element from the very beginning of this study, further expanded with a physical visit to the Biblioteca Brasileira Guita e José Midlin, in São Paulo (2016) where a targeted review was carried out of European travellers in Brazil during the nineteenth century. Equally important were the visits paid, in 2016, to the *History Told Through Art* exhibition at Itaú Cultural/Avenida Paulista and the Pinacoteca de São Paulo, in order to re-observe the *Travelling Artists* collection. On the other hand, when researching Maria Graham's drawings, it was already impossible to travel due to the COVID-19 pandemic, so that the set of images (drawings/ engravings) had to be accessed through digital platforms.

During the research, the idea arose of activating Graham's² vast production in a digital platform, administered in keeping with a curatorial procedure and envisaging the later incorporation of data relating to other travelling artists/authors. In the beginning, Google searches were carried out using the following keywords: Maria Graham,³ Maria Callcott, Maria Graham Callcott

2 2021 is the 200th anniversary of Graham's first journey to Brazil.

3 Maria Graham's travel activity began in 1808, when she accompanied her father, Captain Robert Dundas to India. See: *Journey and Residence in India* (Graham, 1813), followed by *Letters on India; with Etchings and a Map* (Graham, 1814). She married Thomas Graham in India, in 1809, returning to Europe two years later.

and Maria Dundas, depending on the platform's nationality. *The Journal of a Voyage to Brazil and Residence There, During Part of the Years 1821, 1822, 1823* (Graham, 1824) was accessed for the first time on the website of the digital library Gallica/Bibliothèque Nationale de France. This work was also found in other online libraries and platforms, such as the Library of Congress, House of Representatives Digital Library, Google Books and PURL – National Digital Library of Portugal. The Portuguese translation of Graham's journal was also available on the website of the Federal University of Rio de Janeiro, but, in 2013, it was only possible to download and save images one at a time out of a total of 374 JPEG files, whereas today a full PDF version of the book is available.

Graham was very rigorous when selecting illustrations – engravings and drawings – both for her own publications and for those of other artists. The choice of images highlighted the contents and resulted from consecutive on-site surveys. Most of her visual artistic production can be accessed on the British Museum website (The British Museum, 2021) and that of Rio de Janeiro National Digital Library (BNDigital, 2021), which made it possible to continue carrying out the research, when travelling was forbidden due to the lockdown. On the British Museum website, 456 works are credited as having been produced under Graham's authorship, including South American-themed drawings, watercolours, prints and the illustrations for *A Scripture Herbal*. A second group of works is related with Graham's travels in England, India, Italy and Malta, while a third group brings together Edward Finden's and August Earle's engravings, which were based on Graham's drawings (Souza, 2017).

Although it is not difficult to find Lady Maria Graham Callcott's visual and written work, her name is not mentioned at all in several books relating to women travellers, writers and/or artists. In one of the earliest studies about women travellers, William Henry Davenport Adams (1903) does not mention her; even nowadays, she is "absent" from websites such as Wikipedia UK, the list of 'Nineteenth-century women explorers, artists and travellers', or the list of 'Nineteenth-century women travel writers', only being present in the Wikipedia List of 'British women travel writers' (Wikipedia, 2021). One can possibly understand the absence of her work in Francophone studies; however, the situation is identical regarding Anglo-Saxon publications. This omission of her name from scientific studies became a puzzle and a challenge, "imposing" the need for regular webgraphic searches in order to monitor the existence of possible mentions of her work in academic and artistic repositories.

Nevertheless, Maria Graham is very well-known in Brazil, where she is celebrated as an author, artist and the governess of the Emperor Dom Pedro's daughter, the future Queen of Portugal. The list of academic studies specifically devoted to Graham is significant, with most of them having been developed in Brazilian scientific forums. To celebrate the 200th anniversary of her arrival in Brazil, a number of scientific and cultural programmes were organised, approaching the subject from multiple perspectives. Perhaps the fact that, in the past, she was rarely mentioned derived from her pioneering spirit as an 'intrepid women traveller'.⁴ Famed for her eclecticism (Lambert, 2020), Maria Graham inaugurated an era in which discipline and certain practices were required, and which predated the activities of Victorian travellers.

Dora Wordsworth – Between Writing and Seeing

The daughter of the romantic poet William Wordsworth, Dorothy [Dora] Wordsworth married Edward Quillinan, who was born in Porto. Her journey to Portugal, which took place between May 1845 and July 1846, was narrated in the *Journal of a Residence of a Few Months in Portugal and Glimpses of Spain*. This journal was composed of texts reviewed and published in 1847, just before she died and less than a year after her return to the United Kingdom. As for her visual art practices, it is known that Dora had already been drawing the landscapes and the places that she visited during her journeys from a very early age.

The group of 35 Portuguese drawings are gathered together in a single notebook at the *Wordsworth Trust* Collections, which is now totally available online. During her Portuguese stay, Dora Wordsworth produced 28 drawings depicting a series of locations and views in Foz do Douro, Porto and its surroundings (Matosinhos, Leça da Palmeira, Leça do Bailio, Vila Nova de Gaia) and seven others relating to Lisbon, Almada and Sintra. However, the list of places represented in the drawings of the *Portuguese Sketch Book*⁵ lacks any references to the locations and situations narrated in the texts.⁶

4 About the concept of "intrepid women travellers", see: Pomeroy (2005), Estelman, Moussa and Wolfzettel (2012) and Morato (2019).

5 The full list of the contents of Dora Wordsworth's *Portuguese Sketch Book* is available at: <http://collections.wordsworth.org.uk/wtweb/home.asp?page=linked%20item&objectidentity=GRMDC.B52> (Accessed: 18 November 2021).

6 According to Waldegrave, it should be accepted that Dora did not participate in the tours that she narrated, as she was confined to her home due to her worsening tuberculosis (2014, p. 10).

Difficulties with the Portuguese language and orthography are noticeable in that Dora's correct spelling is wrongly transcribed into the platform. Some incomplete reflections about her drawings are mentioned in articles, and sometimes it is evident that they were either ignored or undervalued⁷ (Waldegrave, 2014, p. 67). In view of the variety of different situations that we encountered in the course of our study, the idea of creating a digital platform gained more and more strength, so that we decided to display and relate the visual and written production – grounded in the digital archives – based on a curatorial approach. The existing drawings refer to places circumscribed within a radius of roughly 20 kms centred in Foz do Douro, where she lived during most of her stay in Portugal. We recognise a number of *vedute*/panoramic views, in which she displayed a preference for the representation of churches, chapels and houses. Architectural heritage and landscapes are also present, frequently involving little figuration and having the seafront as their vanishing point.

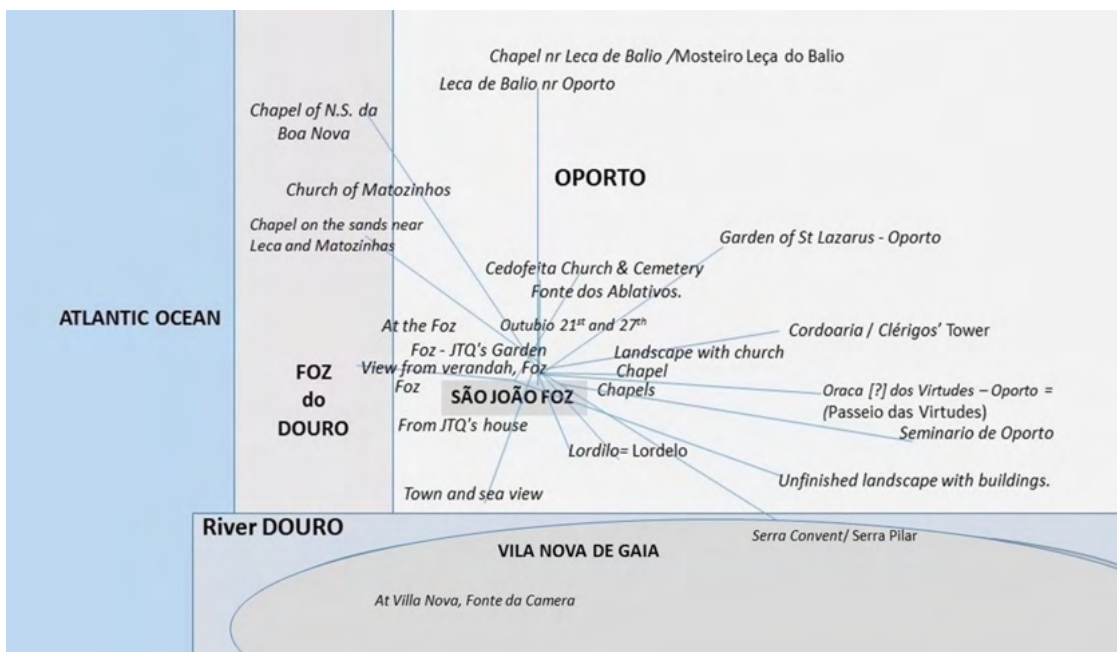


Fig. 1 → Diagram: Dora Wordsworth's drawing places in Porto. © 2021 Maria de Fátima Lambert.

The location of the point from where the artist contemplated the views was a decisive factor for the development of this study, serving as a sort of aesthetic georeferentiation and calling for fieldwork that has not yet been fully completed. It was also considered important to show current images of the locations that she drew, bearing in mind the structure of the digital platform

⁷ 'She forgot how to play and "never could make any hand of drawing" – she didn't particularly try' (Waldegrave, 2014, p. 67).

that was to be developed. Rather unusually, it was the online drawings that stimulated the field research, causing us to go out in search of the represented places with two objectives in mind: firstly, to identify and photograph the locations; and then to mark and show them on Google Maps. The exit axis for Dora Wordsworth was located at her brother-in-law's home in Foz, Porto.

A visual comparison was made of the scanned images and those in the various editions of the book, leading to the discovery of different versions. Most PDFs available online contain the two scanned volumes of the first edition published by Moxon (1847). Most platforms present the two volumes separately; only in one case were they gathered together in one single PDF, which opens with a romantic landscape print of a palace (perhaps Sintra?), with no decipherable caption. The pages have titles in the headers, subsumed locations, monuments or places, thus guiding the reader through the book's itinerary.

In the first volume (pp. 96-97), there is a print entitled *Court of Lions* (Alhambra) disconnected from the text 'To Arcos', a village in the Minho.⁸ The second volume (1847) includes three engravings: *Lisbon* (pp. 74-75), *The New Market of Barcelona* (pp. 216-217) and *Barcelona Harbour* (pp. 218-219). The scanned volume bears the stamp of the *Biblioteca del Centre Excursionista de Catalunya*. A comparison of the different downloaded PDF scans, reveals significant differences and variations:

- The two available *Google Books* scans of Edward Moxon's edition (1847), as well as the scans extracted from the website of the *Biblioteca Digital de Portugal*, do not include images;
- Moxon's edition, second volume: one scanned version on *Google Books* has 247 pages, the other 263 pages;
- The scan of the Longmans edition (1895), based on the Cornell University Library's copy of the book, includes a portrait of Dora Wordsworth, an Editor's Note, Stanzas by Edward Quillinann and a Memoir by Edmund Lee, with no illustrations. Although not mentioned, the author of the portrait is Margaret Gillies (1839).

It is strange that Dora's drawings were never included in any edition, particularly in the first one "controlled" by the author herself. What makes this even more puzzling is that these drawings have been uploaded to (and are available on)

8 Arcos is Arcos de Valdevez, in the North of Portugal.

the Wordsworth Trust online platform. Dora's visual creations were not valued either. There still remain some doubts about the five prints in the scanned version of the *Catalunya Library's* copy of the book. Was this a decision taken by the nineteenth-century publishers, the person who bound the volume, or the one who scanned it?



Fig. 2 → Dora Wordsworth, *Chapel of Nossa Senhora da Boa Nova*. Pencil drawing, 1845. Wordsworth Trust. Screenshot from: <http://collections.wordsworth.org.uk/wtweb/home.asp?page=Image%20view&id=34533> (Accessed: 5 November 2021).

Fig. 3 → Chapel of Boa Nova, Leça da Palmeira. Photo: Maria de Fátima Lambert, 2021.

In November 2020, a Portuguese translation was published, seemingly after the Longmans Edition (1895) was made available on the Biblioteca Nacional Digital website as a scanned copy of the book. This can be inferred from the titles in the page header: 'Our Lady of Glad Tidings' (Wordsworth, 1895, p. 15), as the translation of 'Nossa Senhora das Marés', while, in Moxon's edition (1847, p. 20), we find written: 'Chapel of N^a S^a da Boa Nova'. The Portuguese edition does not mention this reference: The author refers to a 'Chapel of Our Lady of Glad Tidings' which, when translated, should be 'Nossa Senhora das Boas Marés' (2020, p. 29). Faced with the impossibility of finding a reference to a chapel with that name, and given the location mentioned, it seems to be the 'Chapel of Nossa Senhora da Boa Nova' (Translator's Note) (2020, p. 29). Among the Foz do Douro drawings, Dora represented the *Capela da Boa Nova, Leça da Palmeira*, approaching *Praia da Memória* where Dom Pedro disembarked during the Civil War – an episode mentioned in the *Journal* (Wordsworth, 2020, pp. 28-29).

On the Wordsworth Trust website, the drawing bears the date *Outobio* 20th (sic), given the author's limited knowledge of the Portuguese language. A few misspellings are also detected in other drawings: *View from verandah, Foz*; *Chapel of N. S. da Boa Nova*; *Town and Sea View*; *At the Foz*. In the course of this research process, contact was made with the chief curator of the Wordsworth Trust. The data provided certainly could not have been obtained through

a consultation undertaken without the help of interlocutors, echoing the human dimension and the rigorous accuracy that lie "behind" the digital platforms – faceless, but revealing the particular care and attention of their curators.



Fig. 4 → Dora Wordsworth, *Oraca [?] dos Virtudes – Oporto*. Pencil drawing, 1846. Wordsworth Trust. Screenshot from: <http://collections.wordsworth.org.uk/wtweb/home.asp?page=Image%20view&id=34600> (Accessed: 9 November 2021).

Fig. 5 → Passeio das Virtudes, Porto. Photo: Maria de Fátima Lambert, 2021.

Conclusion

When linked to the texts through an online curatorial approach, the images/drawings will enhance connections, expanding meanings and ideas. The title of Nelson Brissac's text comes to mind: 'The look from abroad' (Brissac, 1988, pp. 361-363), which takes us across borders when set up on digital platforms. This expression clearly fits the panoramic views that have been developed under the scope of the research presented here and appears as a powerful suggestion for a new online platform. Acquainted with such a curatorship and documentation platform, similar cases should be included, focusing on nineteenth-century travelling artists and writers within the context of women's studies in Portuguese-speaking countries. Maria Graham and Brazil, as well as Dora Wordsworth and Portugal, serve to demystify, among English readers, the derogatory representations of the country and its people, as announced in the *Journal's* prologue.

As shown and discussed above, digital archives are fundamental for the necessary rewriting and greater accessibility of scientific contents in Arts and Humanities research. The idea of a platform dedicated to travellers had first arisen when researching into the life and work of Maria Graham. It was then reinforced with the study of Dora Wordsworth's work, and has served to promote alternative historical-artistic, aesthetic and poetic narratives.

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Virtual Museums, New Media Arts and Sound Archives¹

Madalena Oliveira and Cláudia Martinho

Virtual museums are new ways of promoting cultural experiences and are also important repositories for safeguarding new examples of artistic, cultural and social heritage, with the added advantage of being potentially global. They have been adapted to collect digital artefacts and new forms of intangible art, which are, generally speaking, media arts. In this sense, virtual museums are also a challenging place for the collection of sound contents. Considering the Portuguese example, where there is a legal vacuum in terms of archive policies for sound, this text examines the opportunity that platforms of this kind may represent for the preservation of sonic-based memories. Prepared under the scope of the research project *Audire: Saving Sonic-Based Memories*, which is currently being developed at the Communication and Society Research Centre, University of Minho, this text also discusses the role that governments should play in defining parameters for the creation of sound libraries.

Introduction

Sound as a physical phenomenon is a vibration that propagates through the air. Michel Chion explains that 'on the level of physics, what we call sound is a vibration [...], a "verberation"'. The author explains that 'this is a wave that, following the shaking movement of one or more sources that are sometimes called "sounding bodies", propagates in accordance with very particular laws and, *en route*, touches that which we call the ear' (Chion, 2010/2016, p. 16). By its very nature, sound is therefore analogue. Perceived in the form of acoustic waves, it has been considered over time as a vital source of information, in both animal and human life.

Sound is also a language – a natural, communicative or artistic language. In the form of spoken words or as acoustic impulses of objects or nature, it has also, since the very beginning of humankind, served the purpose of facilitating expression and the interactions between the individuals of a community.

¹ This work was produced under the scope of the project *Audire – Audio Repository: Saving Sonic-Based Memories*, co-funded by the Operational Programme for Competitiveness and Internationalisation and by the Portuguese Foundation for Science and Technology (PTDC-COM-CSS/32159/2017).

Sound is meaningful by itself; it can be interpreted as signs and plays a narrative role in audio-visual productions. It is a fundamental and intrinsic component of any culture, although there have always been factors 'inhibiting the formation of a cultural space called "a sound culture"' (Potts, 1997, p. 13). The development of mass media in modern times has had a strong impact on the way societies relate to images, deepening the western cultural bias towards the visual. However, 'the escalation of digital multimedia forms offers an opportunity to create a heightened awareness of sound and its many potentials' (Potts, 1997, p. 13). As a language and a form of cultural expression, sound benefits today from new technological possibilities, invigorated by digital innovation.

Since the introduction of digital technologies, sound production has undergone a significant improvement. Digital sound overcomes the limitations of analogue editing. It is a new challenge for artists and has opened the door for new exercises in creativity. On the other hand, by being more easily recorded and edited, digital sound is also much more adaptable to the archiving rationality of contemporary societies, corresponding at the same time to a renewal of museological practices. At the beginning of the second decade of the twenty-first century, Portugal is still taking the first steps in relation to sound libraries, but some inspiring projects may change the cultural framework that, for many centuries, has kept sound separate from the aesthetic experience.

Museums and Sound

Museums used to be defined as institutions that collect and preserve artefacts or other kinds of objects with artistic, cultural, historical or scientific value. Therefore, they were related to an idea of material art and culture and originally associated with the human habit of collecting and attributing affective value to things. Museums are, in this sense, repositories of memory, known since pre-Christian times. They are 'legitimate and legitimising institutions for different discourses on the way memory is built, and they can play an important role in political transformations' (Martins et al., 2020, p. 7).

Before the development of recording technologies, if museums represented a space for any kind of sound production, it was mainly in association with poetry, music or other forms of oratory. Because of its apparently intangible nature, sound was not considered a particular category of traditional museum archives. It could be suggested by musical instruments and other objects that

produce sound, but it did not come to be regarded or experienced as a specific cultural practice in museums before the twentieth century.

Sound is, indeed, more of an event than an object (Celedón Bórquez, 2016). It exists while it happens. Apart from music, which can be written (and written by hand in a stave), sound is unlikely to have a visible, tangible or physically supported appearance unless it is actually happening and, as it is not to be seen, it does not entirely correspond to a key and predominantly visual feature of museums: the exhibition. Literally, sound is not to be shown and the expression "sound exhibition" immediately sounds like a contradiction. Here is the reason why sound has a belatedly developed relationship with museology. Nevertheless, with the rise of mixed media and the new media arts, some artists are specifically interested in using digital media for the visualisation of sound-based phenomena or visual interaction with sound.

According to Jonathan Bowen, 'museums are traditionally information providers, drawing on and interpreting their collections for their visitors' (Bowen, 2000, p. 4). However, the public role of museums in contemporary society goes far beyond conserving, documenting and communicating collections (Stephen, 2001, p. 297). Besides providing information and the opportunity for aesthetic contemplation, museums are also concerned with leisure, freedom and imagination. In this context, museums have become places for experiencing new sensations not exclusively described by viewing. Thus, sound came into some museums in the form of an experience and was not necessarily associated with objects. Commonly known as sound installations, these experiences are linked to 'the concept of the museum as a "contact zone"' (Cox, 2015, p. 227). Offering an immersive experience, sound installations are usually interactive and invite visitors to intervene in the artistic or cultural production itself.

As Nikos Bubaris observes, 'there is a pervasive and long-standing belief that museums are places of silence' and, therefore, 'the silent visitor standing still in front of an exhibition and gazing intently has been a representative image of the museum experience' (Bubaris, 2014, p. 391). Today, however, 'sound is increasingly recognised as an important aspect of museum design' (Everrett, 2019, p. 313). If not an object of exhibition itself, at least a way of producing special effects, such as creating 'a transition between two different exhibition spaces' (Bijsterveld, 2015, p. 79). In fact, 'not only can sound influence the overall atmosphere of an exhibition by creating a sense of immersion or mood, it can also deliver unique interpretive content and provide the opportunity for

dynamic, multisensory engagement with artefact displays' (Everett, 2019, p. 313). Furthermore, 'museum sound installations may encourage us to listen more attentively and appreciatively in the rest of the museum' (Cox, 2015, p. 230).

Virtual Museums and Intangible Art

Virtual museums are, in part, a reproduction, or replica, of traditional organisations on the Internet. Also known as cybermuseums, online museums or electronic museums, they can be part of physically existing museums, functioning as a sort of extension on the World Wide Web. But they can also exist in the virtual mode only, being adapted to house collections of digital artefacts, new forms of intangible art or new media art. In 1998, Werner Schweibenz defined the "virtual museum" as follows:

The "virtual museum" is a logically related collection of digital objects composed in a variety of media, and, because of its capacity to provide connectedness and various points of access, it lends itself to transcending traditional methods of communicating and interacting with the visitors, being flexible toward their needs and interests; it has no real place or space, its objects and the related information can be disseminated all over the world. (Schweibenz, 1998, p. 190)

According to Erkki Huhtamo, 'virtual museums received a powerful impetus from the emergence of the World Wide Web and particularly from its transformation into a multimedia environment' (Huhtamo, 2010, p. 121). However, even before the concept of the virtual museum was developed, digital technologies had 'changed the physical character of the museum, frequently creating striking juxtapositions between nineteenth-century monumental architecture and the electronic glow of the twenty-first century computer screen' (Griffiths, 2003, p. 375). Although some 'might more conveniently be classified as libraries or archives' (Huhtamo, 2010, p. 121), virtual museums are, in Rute Muchaco's concept, museums 'without borders, able to create a virtual dialogue with the visitors, by giving [them] a dynamic vision, a multidisciplinary and interactive contact with a collection and the exhibition space' (Muchaco, 2004, p. 582).

Digital images, as well as digital sounds, can still be experienced in built environments and, in some cases, the space where they are presented is part of the experience, particularly in site-specific installations. Physical museums can also provide visitors with virtual exhibitions and virtual experiences. Nonetheless,

what makes a virtual museum somewhat disruptive is its reconceptualisation in order to promote a cultural and aesthetic experience through the Internet – in other words, with no specific geography and mediated only by a digital device.

Virtual museums are supposedly global, in much the same way as everything else that is “located” on the Internet. They can be accessed from everywhere, thus delocalising the cultural experience. At the same time, they dematerialise the aesthetic practice. For those who are less enthusiastic about the different uses that can be made of cyberspace, these actions – delocalisation and dematerialisation – might be open to criticism. The concept of art itself is very often questioned when considered in the context of digital technologies, and thus the idea of authenticity is expanded by virtual museology.

Nevertheless, by transporting art collections away from the physical space of their exhibition, virtual museums open the door for the display of works that otherwise would continue to be forgotten or disregarded by conventional museums. Although some art centres and galleries are now offering new experiences of the arts, the process of collecting and archiving web-based artworks still seems to be beyond the reach of more conservative institutions.

Sound Archives and Memory

Art repositories and libraries are mostly silent places. Technological difficulties are not the only reason why there is still a shortage of sonic artefacts in contemporary archives. If the technical conditions for recording may partly explain why the memory of the past is almost deaf, the truth is that there may be other reasons why our society still neglects its sonic heritage, despite all the recording possibilities that now exist. In fact, sound has frequently been overlooked in scientific production. Sonic studies is a relatively recent area of research, which began to be developed in the 1980s, mainly thanks to the work of anthropologists such as Steven Feld, or environmentalists such as R. Murray Schafer.

Since the mid-twentieth century, the image has dominated the scientific paradigms of aesthetic communication, as it has always been considered hegemonic when compared to sound communication. For some reason, the idea of visual culture has always been stronger than any idea of acoustic culture.

Sound also has a fragile status. Unlike the image, sound is a matter of time rather than space. It is therefore much more about feeling than about any sense of physical property. On the other hand, since people are not taught either to listen to or acknowledge sound as an essential informative input, with the exception of music, there is a weak sensitivity to what comes into our ears and, therefore, an undervaluation of sound collections.

Beyond the natural relationship that we have with sound-based productions, there is, at least in some countries like Portugal, a legal vacuum regarding the regulation of sound archives. A real preservation policy is lacking, since the obligation to archive sound content is almost completely omitted from the main legal instruments. The Portuguese Mandatory Legal Deposit, created in 1931, establishes that, among other graphic materials, the publishers of printed music works and phonograms are obliged to deposit them in the National Library (Law No. 73/1982). There is, however, nothing that provides a concrete definition of what should be considered a phonogram or even of the type of audio resource that should be saved. According to the Portuguese Law of Radio Broadcasting (Law No. 54/2010), the public radio broadcaster, as well as other national and regional operators, are expected 'to keep and update sound archives' (Article 49) and 'should organise sound and music archives with the aim of preserving recordings of public interest' (Article 83). As far as the cultural heritage is concerned, the mission of the Direção-Geral do Património Cultural [Directorate-General for Cultural Heritage] includes 'the safeguarding of intangible heritage by supporting programmes aimed at protecting expressions of culture transmitted by oral tradition, traditional techniques and know-how and also graphic, sound and audiovisual materials with non-physical support' (DGPC, n.d.). Nevertheless, nothing in particular is said about what a sound recording should be, what formats should be used, how long they should be preserved, or even how to facilitate access to them.

According to Jane Johnson Otto, much of the audio heritage 'is already lost, endangered, or inaccessible' (Otto, 2010, p. 403). Jonathan Sterne issues a similar warning, noting that 'most of the recordings ever made must be lost before any of them can be found and made into historical documents' (Sterne, 2009, p. 59). Besides the deterioration of sound files and the obsolescence of analogue recordings, the collecting process only started in the late twentieth century and is still irregular.

Archiving is expensive. On the other hand, in digital cultures, archiving is a process that demands some procedural stability and may be strongly affected by the velocity of technological progress. Jonathan Sterne explains that 'the added expenses come not from storage, since digital storage continues to become cheaper, but rather all the things that come with digital storage' (Sterne, 2009, p. 63). In this regard, the author mentions the 'duplication and backup, the need to maintain proper equipment and expertise for "reading" the digital files in whatever format they exist, and all other aspects of infrastructure and maintenance' (Sterne, 2009, p. 63). The Catalan researcher Armand Balsebre also identifies two main problems associated with sound archives: firstly, the fleeting nature of the sound message and, secondly, 'the scarce awareness of the heritage and historic value of sound documents' (Balsebre, 2002, p. 47). For one reason or another, there is a huge production of audio content (journalistic content, sound art, research recordings...) that risks being erased from the memory of future generations.

In 2019, the Portuguese Government created a structure to launch the National Sound Archive but, generally speaking, the legal framework is still insufficient, not only for ensuring the legal protection of our sound heritage and sound-based cultural objects, but also for promoting a sound-sensitive artistic culture. With such narrow regulations, sound is left in the hands of private, and more often than not irregular, projects promoted by cultural associations and scientific groups.

Collections of Sounds

Despite being more visual-oriented than sound-oriented, the Internet has facilitated the creation of databases specifically dedicated to sound content. Over the last decade, many repositories have been created online with a special focus on audio recordings. Presented as sound galleries, audio archives or sound cartographies, many of these virtual audio libraries are related to places and soundscapes, natural or urban acoustic environments, as is the case with the Montréal Sound Map, the Nature Soundmap or Fragments of Extinction.² Other projects and online platforms focus on experiences – e.g., Sounds from

2 See: <https://www.montrealsoundmap.com/>, <https://www.naturesoundmap.com/> and <https://www.fragmentsofextinction.org/>

the global Covid-19 lockdown³ – or objects – e.g., the Museum of Endangered Sounds.⁴

With diverse visual displays, these repositories are also diverse in terms of the information that they make available for the user. Some provide information about the place, time and techniques used in the recording process; some have images associated with the sound files, while others do not. Some are organised by categories and others by locations; some serve scientific purposes, while others are inspired by cultural factors. Whether directly or indirectly, all of them contribute towards assigning cultural value to sound. The Museum of Portable Sound,⁵ for example, is announced as 'a portable museum bringing the culture of sound to the world'. Its mission statement states that this museum 'is dedicated to the collection, preservation, and exhibition of sounds as objects of culture' (Museum of Portable Sound, n.d.). In theoretical terms, this assumption of relating sound to a cultural experience may probably be the most significant difference between a sound museum and any other sound repository.

Without any institutional framework, some of these projects, such as the aforementioned Museum of Endangered Sounds, play a remarkable role in preserving sounds that may become inaccessible in the short term. Considering that official archives are still rare, these sound galleries constitute important guardians of memory. Moreover, they may help to promote an alternative curatorship for sound art, which tends to be more ephemeral than other forms of art. Historically, the tendency has been that a painting or a sculpture that is already renowned as an artwork will be preserved for centuries or allegedly forever. However, contemporary digital arts are more unstable in nature, and it remains uncertain whether they will be preserved in the same way as the classical arts have been conserved until today.

Collecting sound and saving sound-based memories for future generations is a multidisciplinary challenge for contemporary art centres. It is a technological challenge, because digital formats evolve and they may not have the constancy and durability of other media, such as canvas or stone. Like many other authors, Jonathan Sterne stresses that 'estimates for the durability of digital media are relatively low' (Sterne, 2009, p. 64). Collecting sound represents a cataloguing

3 See: <https://citiesandmemory.com/covid19-sounds/>

4 See: <http://savethesounds.info/>

5 See: <https://museumofportablesound.com/>

challenge, as well, because technical metadata for audio materials (the same goes for digital images) can be extremely complex and 'no one is entirely sure what metadata is critical' (Otto, 2010, p. 404). Moreover, it is an anthropological, artistic and sociological challenge, because there are still many doubts about the criteria for defining how to choose what should be preserved as an exceptional cultural production of a given society or time period.

Conclusion

The debate about what art is, as well as about its genres and techniques or even about artistic styles, has always been controversial. How to accommodate new media arts, and sound in particular, within this dynamic and contentious field is not an easy question to answer. Today's artistic production is more diverse than ever. In many cases, it is disseminated via the Internet, without an institutional framework, in other words without any formal curatorship. It is accessible, but not necessarily organised, identified and catalogued. Consequently, it would not be surprising if a significant part of these open access collections did not survive for very long.

Many sociologists and contemporary philosophers, such as Gilles Lipovetsky (1989), have suggested that the ephemeral is engraved in contemporary culture and that experiences are fleeting or transient. The intangibility that is usually associated with sound is today widely experienced in virtual environments, and is no longer exclusive to acoustic perception, as all aspects of contemporary life seem to be transitory and temporary.

The role that virtual museums and other digital repositories may play in these new unstable circumstances is also not very clear. Nevertheless, if they are not functioning as institutions that can guarantee a long-term storage of digital culture, they are at least operating as players in a system that follows the vanguard of creativity and affords visibility to symbolic activities. And fortunately so. Otherwise, contemporary societies and the cultural shift that media technologies represent will not be accurately known in the future.

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**MUSEUMS
ON THE WEB:
SHIFTING
REPRESENTATIONS
AND
NARRATIVES**

How COVID-19 Changed the Digital Presence of Italian Museums: Comparing Influencer Marketing Attempts at the Uffizi Galleries and the Museums of Bologna

Vanda Lisanti

Beginning with an analysis of the digital audiences of Italian museums, undertaken during their period of closure due to the COVID-19 pandemic, this paper traces the reasons and the consequences of the increase in the museum supply on social networks. After reconstructing the history of the first attempts at influencer marketing by Italian cultural institutions, this study analyses two communication campaigns developed by museums in collaboration with influencers who are not part of the art world: the much-discussed Instagram post by Chiara Ferragni for the Uffizi Galleries; and the promotion of the Bologna Museums and the niche exhibition on the Griffoni Polyptych by the YouTuber Luis Sal. The questions of the tone of voice and digital identity narration, raised by the involvement of influencer marketing in the two museum institutions, are examined in order to contribute to the ongoing debate on the democratic nature of museums, their accessibility and inclusiveness.

“Digital bulimia” for an elitist audience: Italian museums on social media

During the first Italian lockdown,¹ the media talked about the social presence of museums by using the term “digital bulimia”² (Solima, 2020) to describe the paradoxical gap between the exponential increase of digital content transmitted by museums and the corresponding lack of attention to the quality of that same content, which often fell short of the expected standard, in view of the status of the institutions delivering it.

1 Italian museums were closed from March to May 2020, reopening nationwide during the summer and facing a new closure from November to January 2021. While this article was being written, a third closure was announced from 15 March to 6 April 2021.

2 The expression, first introduced by Ludovico Solima, was discussed by Nicolette Mandarano and Maria Elena Colombo, respectively the digital media curator of the Barberini Corsini National Galleries and a lecturer in Multimedia and Cultural Heritage at the Brera Academy of Fine Arts, during the cycle of seminars organised by Ilaria Miarelli Mariani as part of the Museology course of the Department of Humanities, Arts and Social Sciences of the University of Chieti, administered under a system of distance learning.

The Ministry of Culture undertook a survey in the same period, which sought to understand the background and the attitudes of visitors in relation to digital solutions. The most alarming result of this survey was the discovery that the audience of Italian museums mainly consists of cultural elites, a fact that indirectly indicates 'a retreat in the capacity of museums to diversify their audience and to be inclusive towards different interlocutors' (Direzione Generale Musei, 2020, p. 7).

Driven by the need, on their reopening, to bring audiences back into museums as physical visitors, these same institutions chose to entrust their promotion to influencer marketing. In some cases, such as the museums of Bologna and the Vatican museums, it was simply a matter of accelerating the communication campaigns that had been planned well before the pandemic began and had already proved to be successful. In other cases, such as the Uffizi Galleries, the sudden decision to participate, for example, on the social platform TikTok, only contributed to the "digital bulimia" already mentioned.

This study seeks to contribute to the ongoing debate by reconstructing some symbolic cases of cultural communication adopted during the first and second Italian lockdowns. Although it does not claim to be exhaustive in analysing the various methods and approaches, this paper focuses on the museums' attempts at social media marketing and examines how the presence of "non-art influencers" at these institutions changed their perception of the tone of voice adopted and the dialogue that they maintained with their ever-changing audiences.

Origins of influencer marketing in Italian museums and the issue of the tone of voice

Marketing has long been known to be an effective way of engaging audiences in the cultural industry (Kotler and Kotler, 2004; Chamorro, Gertz and Naidtich, 2017), but its use in the cultural heritage sector in Italy has always been limited (Columbro, 2019; Trombin and Veglianti, 2020). The first collaborations between museums and influencers date back to the early days of the use of social media (Cerquetti, 2014), but, until the COVID-19 pandemic, the only personalities regarded by institutions as suitable for promoting their cultural messages were those who were already working within the cultural industry itself. A first attempt to introduce influencer practices in Italy was made by the Scuderie del Quirinale, in Rome (Redazione – *Artribune*, 2017). To attract a broader public, the institution

engaged bloggers to advertise *Il Museo Universale. Dal Sogno di Napoleone a Canova* (2017), a potentially "difficult" exhibition to promote because of its highly scientific profile. While the innovative aspect of the campaign should be acknowledged, it cannot claim to have been designed to address different audiences, as the profiles chosen for the collaborations were those of a distinct community of older, cultured people, who were regular visitors to museum collections. This meant that they still fell into the category of an elite audience.³

Situated at the opposite end of the spectrum from this choice are the two campaigns analysed in this study, with it being immediately necessary to state a premise relating to the responsibility for communicating cultural heritage. Did the idea of using influencer marketing come from the museum itself, or was it proposed through the collaboration taking place between influencers and the private cultural industry? Establishing this is crucial to the analysis. The responsibility for the communication serves to explain the strategy of an institution, and it is a great indicator that helps the community to distinguish between promotion and self-promotion practices. This issue lies at the heart of the numerous controversies relating to the posts of influencers in Italian museums. The public reacts very positively when the idea of using influencer marketing comes directly from the institutions themselves, as in the case of the campaign of the YouTuber Luis Sal for the Museums of the city of Bologna. On the contrary, when museums are not the starting point of the communication campaign, they risk losing centrality, as was the case with the post that the famous influencer Chiara Ferragni made on Uffizi's Instagram page.

The case of Chiara Ferragni at the Uffizi Galleries

In the case of Ferragni, it was a fashion shoot for Vogue Hong Kong (Fig. 3), at the end of which the director Eike Schmidt informally offered the digital entrepreneur a guided tour of the Uffizi Galleries. Since there was no previous agreement, an improvised photo shoot was made of the event and disseminated through the museum's social media accounts, particularly on Instagram (uffizigalleries, 2020). The social team decided not to sponsor

3 Among the contributors were the founder of the Igers Rome community, Matteo Acitelli, the creative profile whatitalyis and the diconodioggi project, managed in collaboration with the Chair of Contemporary Art History at the Sapienza University of Rome. None of these profiles were aimed at a wide audience; on the contrary, they were all directed towards a community already interested in the world of museums, who were therefore also attracted by the aura of "high" culture shared by all those involved in the campaign. In this way, they essentially became an updated digital version of the traditional art critic writing in newspapers.

the museum by providing Ferragni's varied audience with a targeted campaign that conveyed specific content controlled by the museum. Instead, they treated the influencer's visit as if it were that of a celebrity caught in a moment of their private life, thus demonstrating that they severely underestimated the attractiveness that this type of advertising campaign can have on digital audiences. Besides lacking an oriented strategy, the museum did not agree with her on the content to be promoted or on the tone to be adopted – the essential tone of voice that all users of digital platforms care about and of which a public cultural institution should be especially aware.

Inevitably, there was some confusion about the strategy that should be adopted, and the institution's limited awareness of the community's sensitivities caused it to make a serious error of judgement. This was evident in the inadequacy of the caption that accompanied the circulation of the photo of the influencer standing in front of Botticelli's *Birth of Venus* (Figs. 1-2). In March 2021, half of the 3,854 comments added beneath the post expressed feelings of hatred, misogyny and body shaming, while the other half directly called out the social media manager, declaring disappointment, and immediately deciding to unfollow the profile. The Uffizi intentionally compared Ferragni to the protagonist of their most famous painting, choosing words such as "canon of beauty", "feminine ideal" or "contemporary divinity", terms that social networks users, and especially the audience of young people, can scarcely stand, committed as they are to daily activism and the fight against social inequalities. Perplexity and indignation were soon expressed in the numerous questions addressed to the museum:

'Why are you also talking about female aesthetic canons? At a time in history when we are all trying to break them down, why did you make this choice?'

'Every day we are trying to recognise the existence of multiple ideals of beauty, and you propose yet another white and blonde woman as the canon of our times?'

'Bringing young people closer to culture does not mean debasing such an important artistic heritage. But what is the aim? That we should dwell on a precise aesthetic canon? In 2020, with the acceptance of diversity?'



ENG: Beauty standards change in the course of time. The female ideal of a blonde- haired woman with diaphanous skin is a very common beauty model in the Renaissance. Masterfully expressed by the Florentine Sandro Botticelli in *The birth of Venus* maybe portraying the face of one of his contemporary, Simonetta Vespucci. A beautiful noble woman, of Genoese origin, beloved by Giuliano de' Medici, the younger brother of Lorenzo the Magnificent ; she was so worshiped by Sandro Botticelli that she became his muse.

Nowadays, Chiara Ferragni, born in Cremona, embodies a role model for millions of followers - a sort of contemporary divinity in the era of social media - The myth and the story of Chiara Ferragni, argued by harsh critics and supported by faithful fans, is a real sociological phenomenon that involves millions of supporter worldwide and it can undoubtedly be considered a snap-shot of our time.

Visualizza tutti e 3.854 i commenti



Piace a laulisanti e altre persone

yodarte Molto intelligenti agli @uffizigalleries sono. Gli influencer come me e come Chiara molto importanti per la cultura e per l'arte sono. Dell'invito io vi ringrazio!!! ❤️ #OccupyUffizi Adesso anche la @fondazioneandretto invitarla deve!!!

Fig. 1 → Chiara Ferragni in front of Sandro Botticelli's *The Birth of Venus* for the Instagram campaign of the Uffizi Galleries, 2020. Screenshot from: https://www.instagram.com/p/CCu_l3JlvFn/?igshid=1b9q6by1nr0d (Accessed: 9 February 2021). Photo: @uffizigalleries / Uffizi Galleries by permission of the Ministry of Culture.

Fig. 2 → The caption of the post with Chiara Ferragni in front of Sandro Botticelli's *The Birth of Venus*, 2020. Screenshot from: https://www.instagram.com/p/CCu_l3JlvFn/?igshid=1b9q6by1nr0d (Accessed: 9 February 2021). Photo: @uffizigalleries / Uffizi Galleries by permission of the Ministry of Culture.

Fig. 3 → Chiara Ferragni shot by Michal Pudelka for *Vogue Hong Kong*, 2020. Screenshot from https://www.instagram.com/p/CGmSsx7A-9e/?utm_medium=copy_link (Accessed: 9 February 2021). Photo: Michal Pudelka / *Vogue Hong Kong*.

Fig. 4 → Master Yoda in front of Sandro Botticelli's *The Birth of Venus*. Photomontage by Silvio Salvo, 2020. Screenshot from: <https://www.instagram.com/p/CCvNOjGoWHv/?igshid=z9f4zig2tbxd> (Accessed: 9 February 2021). Photo: @yodarte / Silvio Salvo.

These are just three of the countless comments that were inserted beneath the Instagram post (uffizigalleries, 2020), in which users expressed their perplexity about the role that museums play today in determining the concept of beauty. The museum is required to take a position on social issues (such as diversity, be it physical, socio-economic or cultural) that previously were always considered to be unconnected with art-historical processes and which today must necessarily form part of the institutional narrative, if the museum wishes to remain at the centre of democratic debate and not on its disinterested periphery.

At the same time as people in Italy were debating the real democratic nature of cultural sites, due also to the controversy raised by the post we are discussing, the Black Lives Matter movement in the United States involved the major cultural institutions of that country, calling their privileges into question for the first time (Bryant, Curtis and Ramos, 2020). The growing interest in the digital role of museums today is a natural corollary of these revolutions led by generations of digital natives.

The issue in question was not whether an influencer should be used to sponsor the museum, but had more to do with the tone of voice and advocacy adopted by a national cultural institution. Totally opposed to this narrative was the post of Silvio Salvo, the social media manager of the Fondazione Sandretto Re Rebaudengo.⁴ He re-posted the content of the Uffizi on his own Instagram account, which is linked to the official profile of the Turin institution. Instead of the influencer, in front of the Botticelli painting he placed a photomontage of Master Yoda, the Foundation's mascot, with a sarcastic comment in favour of influencer marketing in museums (yodarte, 2020) (Fig. 4). Regardless of the meme industry that has sprung from the post (which has since gone viral) and the whole sterile controversy that has since ensued, we decided to comment on this event as part of the recent history of museum communication because it seems to us, in many ways, to be a watershed.⁵

The digital space of the museum in Italy only expanded due to the pandemic situation, and it was also as a result of this that, for the first time, museums

4 In 2017, the newspaper *Artribune* proclaimed the Press Office of Fondazione Sandretto Re Rebaudengo as the best on the national scene. In several interviews, Silvio Salvo, the social media manager, explained his vision of social communication and the Foundation's strategy with the term "infochaostainment= information+chaos+entertainment".

5 Our reflections do not refer to the 27% increase in the youth audience at the Uffizi Galleries following the weekend after the social communication campaign. Several articles, which can be found in the list of references, have already analysed the engagement results. This study wishes instead to underline the quality of the debate that first arose among the digital audience.

felt the need to attract different audiences. The long list of comments appearing beneath the post of the Florentine museum is quite unprecedented: the almost 4,000 opinions, made not only by an audience of regular visitors, enthusiasts and professionals from the world of culture, but also by audiences who had never previously been interested in cultural heritage, are more than welcome. As Adam Koszary pointed out, cultural institutions must engage in dialogue because 'the core purpose of museums is to be places of connection, meaning-making and celebration of all cultures. We can only do that if we embrace online engagement. Museums have become used to being masters of their own spaces, but on the Internet, we need to embrace the fact that we are one voice among many' (Koszary, 2020).

The museum attendants would have continually silenced this plurality of voices in the room that houses the *Birth of Venus* at the Uffizi Galleries, showing dutiful respect for that silent sacredness that still anachronistically marks museum visits. When standing in front of a painting, we are not allowed to talk unless we are accredited speakers, tour guides, professors, art historians or conservators. For the first time, in front of that same painting, everyone was allowed to have their say, invading a space usually confined to a cultural and academic elite that chose to distance itself from this new type of participated communication. We must attribute to this distance the fierce criticism that was levelled against the institution. Such criticism was infused with outdated prejudices expressed about the means that were unknown to those who were using them, such as the language of social media and influencer marketing practices (Ercoli, 2020).

While the Florentine museum was the first such institution to unintentionally make public the debate on the democratisation of the digital space of museums, it was not the first to embrace the novelty of influencer marketing applied to cultural communication. The Vatican Museums used this strategy in May 2020, when they reopened after the first severe national lockdown (Grieco, 2020). Acting in the same way as a brand company, the institution offered influencers free entry in exchange for visibility on their profiles, thus targeting audiences that are doubtlessly different from those who usually visit the museum, but above all not risking alienating its most loyal followers, who, as we saw in the case of Ferragni, tend to be more conservative. Once again there was a complete divide between the social media followers and the specialist audiences, who saw in this opening up of the museum a certain negative contamination, and this time directed their criticism against another Italian entrepreneur, Cristina Fogazzi.

With a following of 700,000 people in March 2021, and known by the nickname of *Estetista Cinica* (Cynical Beautician), the influencer took part in a visit accompanied by the Vatican Claviger and then posted this information on her profile (estetistacinica, 2020) (Fig. 5). A certain distrust was expressed by the classical media culture, which showed a 'reticence to the new way of disseminating, enhancing and promoting' (Iervasi, 2020). This reaction was particularly alarming because of the classism that emanated from this attitude. If the experts themselves regard a beautician as an unsuitable visitor to a museum, then we may justifiably wonder what the democratisation of art means for public institutions today, questioning how they believe they can achieve this if the national cultural infrastructure is still essentially determined by a series of self-referential, elitist mechanisms. As already pointed out in the case of Ferragni's photo at the Uffizi, here too we find ourselves faced with 'a series of barriers and cultural prejudices that seem to die hard, sometimes masked by a "high" culture that has not come to terms with the desire for change' (Miarelli Mariani, 2020).

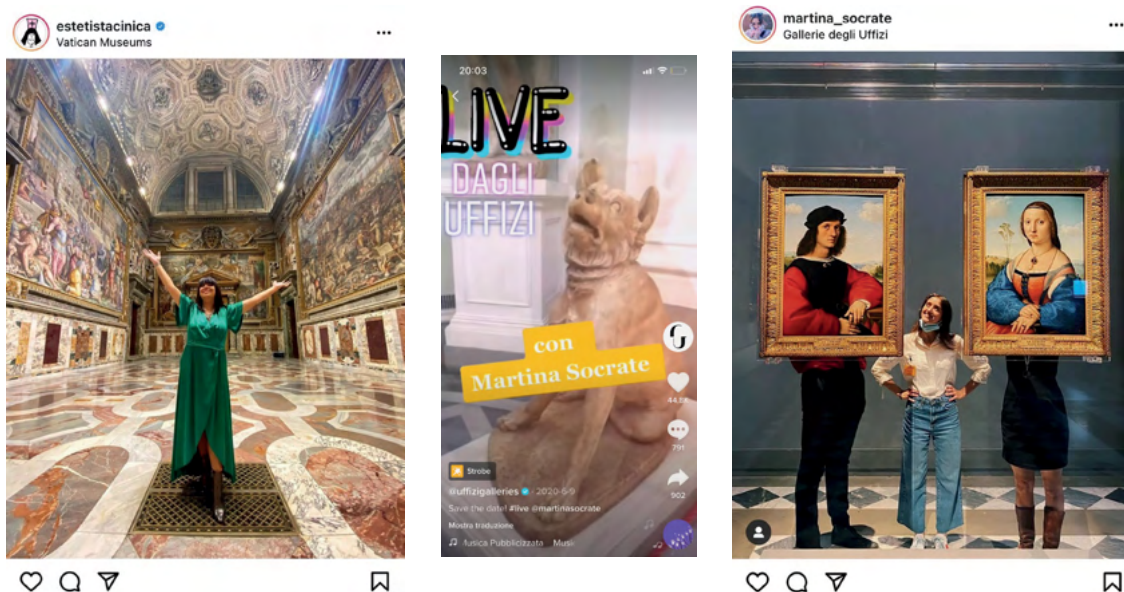


Fig. 5 → Cristina Fogazzi visiting the Vatican Museums poses in the Sala Regia, 2020. Screenshot from: https://www.instagram.com/p/CGkhWiHJYij/?utm_medium=copy_link (Accessed: 4 March 2021). Photo: @estetistacinica / Cristina Fogazzi.

Fig. 6 → Live by Martina Socrate at the Uffizi Galleries for the first Museum Week on TikTok, 2020. Screenshot from: https://www.tiktok.com/@uffizigalleries/video/6836366685474262278?lang=it-IT&is_copy_url=0&is_from_webapp=v1&sender_device=pc&sender_web_id=6974032361630074374 (Accessed: 5 March 2021). Photo: Uffizi Galleries by permission of the Ministry of Culture.

Fig. 7 → Martina Socrate poses with the Portraits of Agnolo and Maddalena Doni by Raphael, 2020. Screenshot from: https://www.instagram.com/p/CBVZdBJFueJ/?utm_medium=copy_link (Accessed: 5 March 2021). Photo: @martina_socrate/ Martina Lavinia Socrate.

The medium is the message: @uffizigalleries on TikTok

In this context, the strategy embraced by the Uffizi Galleries on TikTok⁶ is enlightening. Even if the Uffizi was not the first Italian museum to sign up to the Chinese social network,⁷ it was the first to reach such high numbers in terms of its engagement and to involve a TikToker in a cultural promotion campaign (Figs. 6-7). The influencer in question was Martina Socrate, a 22-year-old student of cultural mediation with more than one million followers in March 2021, who, on the occasion of the museum week promoted by the social network, led her very young followers to discover the Uffizi in a live broadcast (martina_socrate, 2020). With a total of 90,000 likes in June 2020, the profile produced an outstanding engagement. Since then, the audience numbers have grown, but from the phrase "Laughing Uffizi" (Bartezzaghi, 2020), which was the title used to advertise the event, we have now graduated to the less praiseworthy one used by *The New York Times*, which compared the social media presence of the institution to that of 'an Unlikely Class Clown' (Marshall, 2020).

Scrolling through the content published by the museum, any user of the platform notices the dichotomy between the production of the content itself and the language with which it is conveyed. The Uffizi Galleries post irreverent contents that do not enhance the works, but whose message is based on non-sense, causing the profile itself, and with it the idea of the museum, to slip into the embarrassing sphere of what Millennials define as 'cringe'. The account manager, Ilde Forgione, has repeatedly stressed how 'adapting the message to the tool is not cultural impoverishment' (PA Social, 2020), almost contravening the first rule of social networks, which is precisely to adapt the language to the tool because the medium is already the message, as Marshall McLuhan stated in his fundamental work *Understanding Media: The Extensions of Man*, in 1964.

6 On the app's website, TikTok is described as 'the leading destination for short-format mobile videos. Our mission is to inspire creativity and bring joy' (TikTok, 2021). Originating in China in 2016, the platform now has almost 800 million users worldwide. In July 2020, Italian users numbered 8 million, recording a 377% increase compared to the same month in 2019 (Riyahi, 2021). For the younger generation's use of this app, see Dillon, 2020.

7 The first Italian institution to use the platform was the archaeological site of Paestum and Velia, in October 2019. Other Italian museums currently operating on the app (in April 2021) are the Stibbert Museum (Florence), La Galleria Nazionale (Rome) and the archaeological museum MarTa (Taranto).

How to bring “non-museum audiences” into museums? Cultural storytelling for the city of Bologna

The Municipality of Bologna had already accepted the difficult challenge of reaching the target group of young people in 2018. The city succeeded in attracting to its cultural sites the quintessential “non-museum audience”, the age group of 13 to 24-year-olds, by speaking its language. The successful museum communication campaign was entrusted to the YouTuber Luis Sal, with a channel that, in March 2021, boasted more than 1.5 million subscribers. All the institutions accessible with the Bologna Museums Card⁸ were promoted through videos, tweets, a post and an Instagram story, with astonishing results (Profili, 2020). The influencer’s opening sentence: ‘I have never been an intellectual, I have never loved museums and exhibitions – what an ignorant person I am!’ (Comune di Bologna, 2018), immediately captures the attention of young visitors, who recognise themselves in this statement, thus breaking down the wall of prejudices that divides cultural institutions from the public and allowing themselves to be intrigued by the message of the videos.

It was therefore natural, during the lockdown in March 2020, to entrust the influencer with the task of telling the story of one of the most eagerly awaited exhibitions on the national scene: *La Riscoperta di un Capolavoro*, which brought together the *Griffoni Polyptych* by Francesco del Cossa and Ercole de’ Roberti at Palazzo Fava. The promotional video (Fig. 8) reached more than 115,000 views in March 2021, a remarkable number for a “non-blockbuster” exhibition (Genus Bononiae, 2020), impossible to obtain without the popularity offered by the young influencer. The video shows Sal in the rooms that had been set up for the exhibition, but which were not opened due to the pandemic. In this way, it not only advertised a cultural event, but also significantly documented the historic moment of the closure of the institution.

As a consequence of the pandemic, and given the urgency of attracting new audiences, cultural institutions in Italy went from promoting online content to realising that there was already an unfilled potential digital audience. The only strategy that was needed was to translate the storytelling of their identities into the languages of social media platforms. This challenge, addressed with

8 The advertising campaign analysed here was commissioned by the Municipality of Bologna, to which the city’s museums belong. The communication was intended to raise awareness about all the cultural institutions – both public and private – that are accessible with the annual card designed by the municipality to make it easier to visit the institutions. After Luis Sal’s videos, the sale of the card doubled among the age group of Millennials.

varying degrees of awareness by different institutions, resulted in a number of significant moments in the marketing campaigns analysed in this study. They sparked a public debate that had been producing the same conclusions for years, namely the discussion of the role that the museum plays in contemporary society and the perception of its relevance in the middle of a historic global moment. The Italian museums' communication thus finally found itself dealing with such urgent issues as accessibility and inclusiveness, thanks to the open approach adopted towards social media audiences and particularly towards the communities of influencers with whom each institution decided to collaborate. In conclusion, the case studies presented here demonstrate that social media marketing practices can naturally enter the museum space, which is a place where social and cultural phenomena can be found. Furthermore, these new practices should be critically included in the digital communication strategies of cultural institutions in order to consciously build new communities. And this does not necessarily imply any loss to the centrality of the museum's mission.



Fig. 8 → Genus Bononiae communication campaign for the exhibition *La Riscoperta di un Capolavoro* on YouTube, 2020. Screenshot from: https://www.youtube.com/watch?v=m3Fj_PHFNRo, 2' 14" (Accessed: 6 March 2021). Photo: Genus Bononiae.

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Museums on the Web and their Adaptations: the Case of the Immigration Museum in São Paulo

Vitória Schincariol and Marina Pignatelli

This paper considers the Immigration Museum in São Paulo, Brazil, as a relational museum that is currently seeking to adapt. The approach is based on the concept of a “liquid museum”, a notion developed by Van Oost and Cameron and referring to the attempt to adjust to a society embedded in a “liquid modernity”. The research explores the Immigration Museum's adaptations and changes to its virtual contents, both before and during the COVID-19 pandemic, designed to present it as a fluid, polysemic and adaptable institution. This aim is achieved through a qualitative, reflective and more constructive and functional vision of contemporary museological concepts and practices, taking into consideration the shared responsibility, inclusiveness and creativity that are needed to make it more “liquid”. As a netnographic study, the analysis is based on data collection and observation of the Immigration Museum's website and social media platforms.

Introduction

COVID-19 pandemic has certainly placed various constraints on cultural institutions, and museums are no exception. Despite their physical spaces being closed, museums have been strengthening their communication with their audiences in different ways, continuing their activities while simultaneously expanding their social function by preserving their ties with the community and joining forces in order to discuss this complex moment, facing new challenges and adapting to the new ways of life.

Like many other museums, the Immigration Museum (IM) in São Paulo began to exist online in the last decade, becoming the digital footprint of the physical museum, established in 1993. Nevertheless, when the pandemic period started in 2020, the Immigration Museum was also forced to adapt and respond to the new challenges.

Grounded in Van Oost (2012) and Cameron's (2015) concept of the 'liquid museum', this paper seeks to analyse the Immigration Museum in the Brazilian city of São Paulo as a case study. In particular, our research will consider this museum's virtual institutional representations and narratives about its role, its online adaptations and the possible changes to its communication strategy caused by the current pandemic, in terms of its shared responsibilities, negotiations, and the inclusive policies it has adopted in relation to immigration perspectives. With this aim in mind, we undertook exploratory and qualitative research, in order to characterise the adaptations and changes to the museum's virtual contents, focusing on its main subject – immigration – before and after the COVID-19 pandemic. How did the Immigration Museum adapt to the constraints imposed by the 2020 pandemic? Has the Museum followed the international and national recommendations concerning COVID-19? How is the subject of immigration approached and how have the specific collections, exhibits and initiatives related with human transit been represented and displayed online and accessed through electronic media at this particular museum, both before and after the COVID-19 crisis began?

Anchored in the context of Bauman's (2000) "liquid modernity", these questions will be addressed and will guide our analysis, seeking to shed light on the ways in which this museum may contribute to the reconstruction of immigration narratives, reinforcing the liquid and hybrid nature of transition periods, such as the one that is currently being experienced in the contemporary global world.

Museology can be seen as a liquid process in which several moments and areas of activity are intercepted, interpenetrated and influenced. The units of knowledge move without rigid borders, the parts merge into one another, there is fluidity and continuous dynamics. Liquid museums 'try to approach all these elements in an integral, circular way' (Van Oost, 2012, p. 484), without rigid borders or areas, and, consequently, functions become hybrid. In this study, we focus on the question of adaptability – in a creative ambivalence (Bauman, 1999) – seeking to analyse the consequences of this blurring of borders in the digital exhibition context. Considering museology as a liquid process, in which units of knowledge that build novelty are interconnected (in transition spaces), means taking a fresh look at a museum's various exhibition contexts.

Could the Immigration Museum contribute to the reconstruction of the history of events related to migrations, reinforcing the liquid nature of the current moments of transition? We are currently faced with the need for an important

reflection on how the museum uses different online tools and mechanisms to become more adaptable, inclusive, sustainable, and therefore more "liquid" over time.

Due to the COVID-19 crisis, classical ethnography (involving fieldwork with participant observation and face-to-face contacts) was necessarily inhibited. As a 'plan B' for anthropologists, *netnography* has been recurrently used as an alternative methodological tool in response to such contingencies (Hine, 2004; Miller, 2020). This study consists of exploratory online ethnography applied to the Immigration Museum's digital artefacts: its official website and its merged blog, its institutional webpage on the Google *Arts & Culture* platform, its main social networking service (SNS) pages on Facebook (created in September 2011) and Instagram (launched in 2013) and its YouTube channel.¹

We begin by specifically analysing the period between January and March 2020, seeking to list the Immigration Museum's virtual content before the intensification of the pandemic. The observation of the months that followed the start of the pandemic was continued until February 2021.

Digitised representations can be gathered from multiple sources and used for the purposes of research or personal enjoyment in a manner that is largely determined by each individual user. Observation of the museum's website is an obvious choice for collecting this material, since it is the institution's main virtual tool or intangible resource as an extension of reality. The website is designed not only to support its online image, but also to disseminate information about the museum and to foster cultural development, thereby promoting new sustainability cultures. As argued by Giaccardi,

In establishing virtuality and promoting cultural development, the goal is not merely to reproduce existing objects, but to actualise new ones. Information and communication technologies are not merely tools for processing data and making it available, but can be a force and stimulus for cultural development. (Giaccardi, 2006, p. 29)

1 The museum's Facebook and Instagram pages and YouTube channel are available at: https://www.facebook.com/Museudaimigracao/?ref=page_internal, <https://www.instagram.com/museudaimigracao/> and <https://www.youtube.com/user/museudaimigracao>. The museum also uses other SNS, such as Spotify, Flickr, Pinterest or Twitter, which normally reproduce the communication already available on Facebook and YouTube.

The use of information and communication technologies offers several opportunities to contemporary museums. It enables them to promote the reproduction of physical artefacts in a digital format, allows remote visitors to freely search, combine and recontextualise the information they need according to their interests, and makes it possible for them to identify, locate and rebuild collections by interconnecting resources over the Internet (Giaccardi, 2006, p. 31).

The Immigration Museum and the COVID-19 Restrictions

The Immigration Museum opened its doors to the public in 1993, but its origins date back to over a century before. It is located in the former *Hospedaria de Imigrantes do Brás* (Brás Immigrants Hostel), established in São Paulo in 1887. In 1982, the building was in the hands of the Council for the Protection of Historical, Artistic, Archaeological and Tourist Heritage of São Paulo (CONDEPHAAT). Four years later, the Immigrant Historical Centre was created, and the Immigration Museum was founded in 1993. Although the museum was renamed the Immigrant Memorial in 1988, the original name was restored in 2011. It reopened to the public in 2014, after temporarily closing for refurbishment work, after which special attention began to be given to its digital version: its website was refreshed, as well as its Facebook page.



Fig. 1 → Immigrants and migrants waiting to be called to sign their names in the Registration Book of the Brás Immigrants Hostel in São Paulo. Unknown author, 1930-39. Collection of the Immigration Museum / APESP - Arquivo Público do Estado de São Paulo, Brazil.

Due to the COVID-19 pandemic, the museum closed on 17 March 2020 and only reopened on 22 October 2020, in keeping with the state and the city's guidelines (MigraMundo Equipe, 2020). During this first lockdown, in April 2020, several recommendations were made by ICOM Brazil (2020) in terms of COVID-19 restrictions, related with a wide range of museological issues. Fully complying with the recommendations of ICOM and IBRAM (Brazilian Museums Institute), the Immigration Museum invested in free online resources and maintained its cultural agenda, '[...] transforming temporary exhibitions into new virtual curatorships' (Delfim, 2020). For this "temporary migration" of the institution's activities to an online environment, Alessandra Almeida, the museum's director stated that:

The development of exclusively online content was a challenge and, at the same time, a learning experience. [...] During that period, we went through a process of reinvention, through which we managed, for example, to reach new people who, until then, had accompanied us, but had not had the opportunity to participate actively because of the physical distance. (Almeida cited in Delfim, 2020)

In this context, we might ask whether the museum is "liquefying" its strategy in order 'to keep pace with the ever more rapid changes in society, seeking to integrate them into its museological practice' (Gonçalves, 2019), as a project of post-modernity.

The Immigration Museum's Virtual Footprint Before the COVID-19 Pandemic

Rather than just representing a physical renewal of the building, the 2014 re-opening also introduced new understandings at the Immigration Museum about contemporary migration flows. Consequently, the physical space, the collection and the activities have been updated, and are no longer limited to showcasing the history of European immigration in the late nineteenth century.

The museum now plans activities that reconsider the immigrants' role in the city of São Paulo and enhance the institution's museological function. In this way, it highlights the relevance of discussing migration, seeking '[...] not only to provide the visitors with the opportunity to learn about the paths of national and foreign migrants, but also to bring them closer to their experiences, to instigate dialogues and to contribute to a culture of diversity' (MI, 2014).

An example of this new orientation was the opening of the Preservation, Research and Reference Centre in March 2016, which enables in-person and virtual access to the public records, collections and files, thus promoting their dissemination and suggesting multidisciplinary approaches to the debate about migration in São Paulo.

In keeping with the institutional mission, the museum's collection policy, defined in 2018, sees migration as a 'human phenomenon [...] that is not restricted to nationalities, geographical regions or historical periods' (MI, 2018, p. 7). We can see here the importance of collaboration between the different audiences, including the online audience.

It is possible to note the presence of liquid elements in activities promoted by the Immigration Museum even before the appearance of the pandemic. The frontiers between the different museological activities are porous, with it being common to find overlaps between them: this was the case with the *SobreNomes* exhibition, a videographic installation consisting of more than 1,600 surnames of immigrant families, sent via WhatsApp between November and December 2019.



Fig. 2 → Thâmara Malfatti, *untitled*, 2020. Image of the *SobreNomes* [Surnames] physical exhibition before it became virtual. © 2020 Museu da Imigração do Estado de São Paulo. Courtesy of the Museum.

We seek to unravel the São Paulo Immigration Museum's virtual footprint in order to show how the theme of immigration was operationalised and approached

online before the pandemic crisis. For instance, since 2012, the Museum's YouTube channel² has shown videos about the research that is being conducted into family documents, the activity that takes place behind the scenes, interviews with migrants and other issues. The virtual platform *Arts & Culture*, a Google extension for museums and other cultural institutions, was also used by the Immigration Museum to offer a virtual tour of the institution's permanent collection and physical structure even before the pandemic.³

The museum's online presence relies on its website and blog – where extensive detailed information may be found about the institution's history, the monthly programme of events, past activities, institutional facts and data about acquisitions – together with links to its social media pages, which are used to communicate information more informally and briefly. Among the information on the website, we find the history of the place, its opening hours, useful data for visitors, digital educational materials, data about the exhibitions and explanations about the programmes carried out in partnership with the local community (whether migrant or not). However, before February 2020, when people searched on the "schedule and events" tab, there was a manifest lack of content, so that this facility can now be viewed largely as a post-pandemic measure. The contents that existed prior to the pandemic can, however, still be found on the blog and on other official social networks.

The museum's blog, which is also part of the website, includes texts and articles about themes related with migration, whether these are contemporary or not. The written material is dated, making it possible to see all the posts produced between 10 January and 6 March, 2020, before the lockdown.

An online database was created in January 2011, coordinated by the Public Archives of the State of São Paulo, with more than 250,000 images, which are freely available for consultation and downloading. There are digitalisations of portraits, postcards, ships' crew lists, newspapers and other images that not only ensure the preservation of these original documents and systematise the migratory memories, but also allow for a broader democratic access that does not require making an in-person visit to the museum.

2 Available at: <https://www.youtube.com/user/museudaimigracao/videos>.

3 Available at: <https://artsandculture.google.com/partner/museu-da-imigracao>.

The Immigration Museum's Facebook page is characterised by the rapid and brief transmission of information, mirrored in its Instagram posts. Between 1 January and 16 March, 2020, 78 posts were produced before the suspension of the institution's in-person activities. Almost half of those posts were related to the schedule, followed by posts about the permanent or temporary exhibits, the architecture of the building, the physical collections, the digital archives, the Preservation, Research and Reference Centre and other subjects that are not directly migration-related, but which are somehow interconnected.

Although the museum has a solid virtual structure, with regular posts and multiple contents on diverse platforms, the pre-pandemic on-site schedule was not always transposed to the online environment. This was the case with workshops and courses, as well as debates about musealised immigration (Victor, 2019).

The Immigration Museum's Online Adaptations Due to the COVID-19 Pandemic

Since March 2020, however, the Immigration Museum has spared no effort in adapting and integrating its usual activities into the virtual environment. The first substantial change may be noted on the homepage of its website: there is an informational pop-up announcing that the reopening of the Museum in October 2020 was compatible with the rules established by the government of the state of São Paulo.⁴ New opening hours have been established, and visitors are encouraged to purchase tickets online in order to avoid unnecessary contact at the box office, while the Preservation, Research and Reference Centre is currently closed to in-person activities.

There is a "schedule and events" tab on the website that shows the museum's agenda.⁵ As previously noted, these contents have only been available for consultation since March 2020, which shows that this was an adaptation introduced for the pandemic period and highlights the concern about the way in which the museum's central theme has come to be portrayed. Educational materials and children's games have been digitised, such as the new series of posts on the museum's blog (since March 2020); digital versions of existing

4 The mandatory wearing of face masks, the maintenance of a two-metre distance between visitors, the constant sanitisation of the museum and the creation of a compulsory route to be followed by visitors, with special rubbish bins for masks and restrictions on interactive content items.

5 Available at: <http://museudaimigracao.org.br/eventos>.

physical exhibitions have been launched, such as *SobreNomes*, and there was a marathon effort to produce the simultaneous editing of contents on art, migration and women on Wikipedia (in April 2020). Moreover, the 2016 physical exhibition, *Migrações à Mesa*, was virtualised on the Google Arts & Culture platform, while a collaborative playlist, *Sou migrante*, was created on Spotify, together with the launch of the themed picture album *Nonni di São Paulo*, the development of materials for people living in support centres⁶ and also free online language classes with migrant teachers (in May 2020).

In March 2020, the *Mobilidade Humana e Coronavírus* series was launched on the museum's website, with regular posts being made in an article format about matters relating to the pandemic and its impact on migration dynamics. For approximately one year (from March 2020 to the end of February 2021), 54 posts were made, ranging from discussions about social inequality, xenophobia, racism and gender issues to testimonies from migrants and academic articles. These texts are much denser, being either directly or indirectly concerned with the museum's collection and its history and linking past issues to the contemporary situation.



MIGRAÇÕES EM DEBATE - 17/07/2020

MOBILIDADE HUMANA E CORONAVÍRUS: A FRONTEIRA SOCIAL DO CONFINAMENTO E O DIREITO À CIDADE

Quando imagináramos um ano atrás que, em pleno século 21, viveríamos a situação a qual vivemos?

Fig. 3 → Immigration Museum blog, 2020. Screenshot of one of the many articles made for the *Mobilidade Humana e Coronavírus* [Human Mobility and Coronavirus] series. Available at: <http://museudaimigracao.org.br/blog/migracoes-em-debate>. © 2021 Museu da Imigração do Estado de São Paulo São Paulo. Courtesy of the Museum.

⁶ Available at: <http://museudaimigracao.org.br/uploads/portal/educativos/materiais/mus-imi-2020-0029-material-o-museu-na-acolhida-pdf-completo-13-05-2020-13-57.pdf>.

An article in this series from early February 2021 discusses the museum's scientific research into the pandemic context and questions why museological institutions should promote continuous research (MI, 2021). This article also features as a contribution to the e-book on *Social Scientists and the Coronavirus*, published by the Brazilian Association of Graduate Studies and Research in Social Sciences (ANPOCS) (Grossi and Toniol, 2020), echoing the museum's mission, relating it to the current situation, and demonstrating the scientific importance of a cultural institution studying and researching Social Sciences during a pandemic.

Webinars, another widely used activity, were mostly broadcast live on the institution's YouTube channel and discussed migrants' rights under Brazilian and international law, as well as the struggle of refugees in Brazil, among other topics. In fact, besides being a tool for conducting live broadcasts of lectures and conversation circles, the YouTube channel also served as a resource for presenting virtual tours of the exhibitions, disseminating recipes for typical dishes made by immigrants, telling children's stories and broadcasting traditional dance and music videos. The channel has also become an instrument for archiving live broadcasts, which remain available for consultation even after the event has taken place.

Following the museum's physical reopening in October 2020, workshops that, prior to the pandemic, were only offered in person have been adapted to the virtual environment and are now presented in a hybrid format. Thus, in February 2021, the gastronomy and sewing workshops both offered the possibility of face-to-face participation and were broadcast live on the museum's Instagram channel. These online broadcasts on Instagram, popularly referred to as "lives", have been organised by the institution almost weekly since the beginning of the pandemic.

This hybridity can similarly be noted in the evolution of the museum's Facebook posts, also mirrored on Instagram: from 17 March 2020 to 19 February 2021, we counted more than 670 posts on each of these platforms. In addition to maintaining the previous virtual structure, with pictures and information about the museum and its physical exhibitions, the institution started to develop exclusive series for the social networks. The Immigration Museum continued to promote its characteristic collaborative content with various online activities that involved the participation of civil society and other organisations, specialising or not in immigration. Looking for greater openness and reiterating

its humanitarian commitment, the museum held a series of live broadcasts on its social networks in June 2020 to publicise fundraising campaigns for immigrants that were particularly vulnerable in social terms within the pandemic context in Brazil.

In November 2020, the annual *Festa do Imigrante*, a street party promoted by the Immigration Museum in the city of São Paulo, celebrated its 25th edition in a different way: in the virtual environment. In order to continue the fight against COVID-19, this festival of gastronomy, music, dance and arts and crafts, which enjoys the participation of more than 80 communities from more than 50 different nationalities (including refugees, migrants and descendants of migrants), was held on the #Culturaemcasa platform, provided by the government of the state of São Paulo. The result was much more than a simple adaptation and allowed for the continued consolidation of this event in the city of São Paulo.

Conclusions

The adaptability demonstrated by the Immigration Museum prevented the interruption of a cultural tradition and helped to reshape its identity as an institution that refuses to be closed in on itself, relating to and supporting the outside world. The institution's adaptations to the present conditions are viewed as evidence of a "liquid museum", alert to the current reality and thus able to keep pace with the liquidity of our contemporary society. In this sense, the adoption of a less rigid structure based on the use of technological tools makes it possible to reaffirm the institution's social function, promoting greater collaboration and a closer relationship with the museum's public.

Like other cultural institutions that temporarily suspended their activities in order to guarantee the safety of their employees and visitors, the Immigration Museum in São Paulo used the virtual environment as an alternative way of maintaining its links with its audiences and encouraging them to follow the government's protective measures. Even though the institution already had a solid digital structure in the form of a website and social networks producing frequent content, the interruption of face-to-face activities led to the development of a more intense strategy of posts, workshops, weekly live broadcasts and other online activities linked to the museum's central theme.

In parallel to this intensification of the museum's pre-existing virtual content, activities that were previously held exclusively in person have now been adapted to its online platforms and social networks, as can be seen in the hybrid format (virtual and physical) adopted by workshops after the museum's reopening in October 2020.

Besides continuing its production of exhibitions of the collection and the promotion of knowledge, the institution also plays an essential role in the pandemic context. Embracing its declared mission, the museum welcomes the community, offers assistance to socially vulnerable people and affords its historical collection a contemporary meaning, reasserting its importance in a liquid world.

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Virtually Musealising Memories: COVID-19 through Storytelling at the Museum of the Person

Rachel Augusto

The Museum of the Person (MUPE – Museu da Pessoa) in Brazil is a collaborative digital museum that operates through websites and other platforms. It does not have a physical location to be visited and is only available online. In 2020, the museum created the project *Diary for the Future* so that people could express their feelings and talk about the struggles that they faced during the global coronavirus pandemic. Through this project, people could orally share their narratives about what they had been experiencing. Taking into consideration Maurice Halbwachs' argument regarding collective (and individual) memory, we can argue that the individuality of these narratives will provide personal points of view for the future and, hopefully, that those accounts will also contribute to a better understanding of the individual and social impact of the pandemic. While focusing on the museum's role in preserving heritage, this case-study also enables us to discuss the virtual construction of collective and individual memories through storytelling.

Introduction

Founded in São Paulo, Brazil, in 1991, as a non-profit association and a civil society organisation, the Museum of the Person (MUPE) is a collaborative online museum based on the idea that 'Every human being, whether anonymous or famous, has the right to immortalise their story and incorporate it into social memory' (Google Arts & Culture, 2021). Over the past three decades, the museum has collected more than 17 thousand life stories, archived and documented through photos, documents and videos, which have been regularly presented at events and exhibitions held on various topics. Projects and public programmes 'in the areas of institutional memory, education, communication and community development' (Google Arts & Culture, 2021) are also key to the museum's mission and has stimulated various international collaborations.

Operating through websites, databases, social media and other online platforms, such as Google Arts and Culture, MUPE does not have a physical venue and can only be visited virtually. This intangible structure is aligned with

MUPE's mission of preserving people's stories, which are themselves immaterial goods. In this context, technology has been a valuable ally for the museum in producing, organising and exhibiting its contents, also enabling a constant updating of strategies and practices to incorporate new digital tools. Currently, the technological nature of the museum is intrinsic to its existence.

In 2020, MUPE created the project *Diary for the Future*, conceived as a virtual space for people to share and express their feelings and thoughts about the struggles that they faced when a social lockdown was forced upon them by the global COVID-19 pandemic. This project collected stories that people shared about their experiences during this period and about how the pandemic had affected their lives. While analysing MUPE's project through Maurice Halbwachs' (1950/1980) argument about individual and collective memory, it may be claimed that the singularity of these narratives can provide insights into this global event that will be valuable for the future. Furthermore, these stories might hopefully contribute to a better understanding of the impact of the pandemic on individual and collective lives. As the social distancing that started in 2020 has affected people's lives directly, using storytelling to record different perspectives about this event can be as valuable as collecting material items.

Given that museums are known for preserving cultural heritage, this case-study focuses on the archiving of individual and collective memories through storytelling, in order to discuss how this can contribute to the conservation of the intangible heritage of humanity. Moreover, this text addresses the role played by technology and its immateriality as a medium in this process.

The Museum of the Person and the *Diary for the Future* Project

According to the Museum of the Person's statutes, its mission is to transform the life stories of each and every person into a source of knowledge, understanding and connection between people (MUPE, 2018). Moreover, the museum's website points out that life stories may serve as an antidote for intolerance because listening can transform the way people see the world (MUPE, 2021a). Contrary to the practice in traditional ethnographic and anthropological museums, MUPE's concept embraced intangibility as its central focus, so that having a physical exhibition space was never a priority.

The museum began its activity in 1991 and the first years were fundamentally devoted to collecting memories and interviews, which were initially archived, studied and disseminated through publications, CD-ROMS, radio and TV programmes, and temporary exhibitions held in different cultural spaces. In 1997, MUPE's collections and memory projects began to be made accessible to wider audiences through a virtual space in the form of a public website.



Fig. 1 → MUPE, Official Website – Homepage, 2021. Screenshot from: <https://musedapessoa.org/> (Accessed: 11 November 2021).

Unlike MUPE, most museums usually have a website that acts as an appendix or extension of a pre-existing material-based venue. In these cases, the institutions display information about the museum's collection, history and buildings, visiting hours, exhibitions and events, as well as other relevant information that the public might wish to access. Hence, it is unusual for a website itself to become a museum, as is the case with the Museum of the Person. In 2000, in UNESCO's journal *Museum International*, computer science specialist Jonathan Bowen argued that:

Perhaps the Web is a way for museums to make some of their more ethereal information available to all. But it should be recalled that online facilities are complementary to the traditional museum services: "virtual museums" will not replace real museums, but instead should be used as a tool which encourages actual visits to actual museums. (Bowen, 2000)

Apparently, Bowen did not acknowledge the possibility of a virtual museum functioning independently from a material space. However, some cultural organisations, such as MUPE, prove that a museum can have a web-based mission and programme, especially when its purpose is not to musealise

tangible objects, but to preserve, exhibit, document and communicate intangible heritage. A decade after Bowen's article was published, the terminology for defining museums' online presence was still a matter of debate. When conceptualising museums on the Internet, there was (and still is today) some debate about the terms that should be adopted. The Brazilian museologists and specialists in information science Monique Magaldi and Tereza Scheiner (2010) have commented on the lack of consensus about the use of the term "virtual museum". Similarly, related concepts, such as "electronic", "cyber", "digital" and "hyper" museums have also been the subject of diverging opinions among scholars and professionals working in this field.

This sort of entanglement is not new for museology in general and, as Francis Taylor insightfully pointed out in 1945, 'Each generation has been obliged to interpret this vague word "museum" according to the social requirements of the day' (Taylor, 1945, p. 39). With the increasing and inevitable intensification of the Internet, Taylor's premise can be applied to the way in which the concepts of "museum" and "online museum" currently mirror society's perceptions and expectations. Nonetheless, MUPE has opted to employ the term "virtual museum", in the sense of a museum with an intangible online presence.

Already enjoying nearly three decades of existence, MUPE is continually rethinking its strategies for archiving new stories and curating exhibitions to display them. These exhibitions are launched on the website, but they do not always remain available online and may eventually come to an end.¹ The museum invites curators to produce virtual exhibitions on diverse topics, which are often related to matters considered to be relevant in the current socio-political context. For instance, in response to the *Black Lives Matter* movement, there was a four-episode exhibition about this subject, in which the curator approached the lives of black people represented in MUPE's collections (MUPE, 2020a).

Another project linked to current affairs is the *Diary for the Future*, developed as a response to the global pandemic that started in 2019. COVID-19's high level of contagiousness affected lives worldwide, particularly when countries imposed social distancing as a strategy to stop the spread of the disease. In early 2020, in the Brazilian context, this abrupt change of policy disrupted countless lives. Seeking to document these changes from the point of view of those who

1 Some of MUPE's online exhibitions are also available on Google Arts & Culture (2021).

were directly experiencing them, MUPE began its *Diary for the Future* project, inviting people to share their experiences and feelings (Atados, 2020).

To implement this project, MUPE opted to use the platform VideoAsk, to which people could send videos, audio recordings or written accounts (MUPE, 2020b). Each video or audio recording could have a duration of up to five minutes, but there were no limitations regarding the frequency with which new stories were submitted. Moreover, the museum did not impose guidelines regarding the topics for debate, so that people had the freedom to talk about whatever they desired. Nevertheless, there was an optional programme within the project entitled *Jornada Diário para o Futuro* (Diary Conference), in which, over the course of a week, people were encouraged to debate specific topics (MUPE, 2020c). The museum's intention was to collect stories, in seven separate steps, about a variety of themes, such as first memories of social isolation and dreams about the future.



Fig. 2 → MUPE *Exposição em cartaz – Diários da Pandemia: um dia por vez* [*On Display – Pandemic Diaries: One Day at a Time*], 2021. Screenshot from: <https://museudapessoa.org/> (Accessed: 8 November 2021).

Although the project ended in December 2020, MUPE still maintains this programme open for posting individual contributions on the VideoAsk platform, with the suggestive title *Tell Your Story*, where anyone can share their personal narratives. Furthermore, the *Diary for the Future* project led to a new online exhibition – *Pandemic Diaries: One Day at a Time* – produced in 2021 in cooperation with the Dutch Fontys School of Fine and Performing Arts, and including 48 stories from Brazil and the Netherlands (MUPE, 2021b).

Individuals in Collective Memories

In exploring MUPE's desire to preserve storytelling, we must revisit the concepts of individual and collective memory in order to understand the unfolding of this curatorial proposal. In the museological context, memories are often constructed through material-based items, such as documents or everyday objects, as these items evoke specific experiences. However, MUPE's methodology for recording and communicating memories was based on collecting stories from primary sources, i.e., directly from the people themselves, without using material objects as a medium for their construction.

The idea of collecting individual stories to construct the memory of an event that affected society at large is not a recent proposal. Historians and social scientists have been reflecting for decades on the use of oral sources for preserving memories. Notably, the French sociologist and philosopher Maurice Halbwachs addressed this matter in his book *The Collective Memory* (1950/1980), an argument that scholars would then reinterpret on a vast scale in the following decades. In this book, Halbwachs explored individual memory and collective memory and their correlation, observing that:

Our memories remain collective, however, and are recalled to us through others even though only we were participants in the events or saw the things concerned. In reality, we are never alone. Other men need not be physically present, since we always carry with us and in us a number of distinct persons. (Halbwachs, 1950/1980, p. 23)

It is interesting to note the emphasis that is placed on not needing to be physically present, especially considering that Halbwachs lived several decades before the globalisation of the Internet.

Individual memories are always biased, in the sense that people can only express their points of view. Nevertheless, when their stories are combined within a specific group, they become part of a broader narrative and may become even more relevant pieces of information. In the case of the *Diary for the Future* project, it is evident that the participants will discuss topics relating to their personal experiences. For instance, some people focused on describing how their routine changed, while others expressed their anxieties and indicated what they were missing most. Throughout the development of the project, some people eventually shared minor daily occurrences, such as birthdays or more subjective strings of thought. The wide range of topics that were discussed

provided data with various angles about the global pandemic and, consequently, we can argue that these individual memories are part of the collective memory. Questioning how memories can become heritage, Joy Sather-Wagstaff comments on their similarities:

Heritage and memory are similar in that they are productively synergistic by way of myriad forms of communication; we simultaneously share and produce memories with others through various narrative and activity modes, while heritage is also shared and produced through narratives, engagement with landscapes, performance and other endeavours. As such, they are also individually and collectively experiential and require sustained social, interpersonal interaction in order to endure. Memory and heritage in practice are both partial, subjective, contested, political, subject to particular historical contexts and conditions, and thus dynamically changing – never fixed and static. (Sather-Wagstaff, 2015, p. 191)

It is noticeable how Sather-Wagstaff interprets memory and heritage as ever-changing and constantly evolving, especially in relation to their context. Moreover, although the author refers to heritage in a broader sense, her reflections touch on how we produce heritage through narratives and how social and interpersonal interaction are important for this process. These considerations gain added strength when related to the concept of intangible cultural heritage, for which narrativity and experiences are critical.

Virtualisation of Intangible Heritage

An overview of UNESCO's conceptualisation of the intangible cultural heritage can provide a consistent basis for exploring the connections between memories, storytelling and heritage.

The 'intangible cultural heritage' means the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognise as part of their cultural heritage. This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity. (UNESCO, 2003)

Intangible cultural heritage could be interpreted as an adjacent approach to what Halbwachs had debated decades before when questioning collective memories. In fact, considering that individual and collective accounts can effectively help to preserve practices, representations, expressions, knowledge and skills, it could be suggested that intangible heritage may partially rely on memories. At the same time, the act of storytelling as a medium for passing on knowledge reinforces individual memory as part of the collective memory, and therefore we can understand intangible heritage as knowledge created through collective memory.

Moreover, this same reflection continues to be found in several actions promoted by UNESCO, in the context of the COVID-19 pandemic. The project *Living Heritage Experiences and the COVID-19 Pandemic* emerged to assemble some initiatives that other institutions had created to deal with this topic. For this purpose, 'UNESCO has invited its partners to share their experiences related to intangible cultural heritage during the pandemic to help enhance our learning on the topic and inspire communities through the exchange of experiences' (UNESCO, 2020).

This is an interesting point of reflection, showing how UNESCO focuses on the community scale in order to discuss an event that has taken place on a global scale. As is the case with the particular dynamic of individual and collective memories, the project draws its contributions on a smaller scale to create a wider and more comprehensive narrative. In this sense, the intense globalisation of contemporary society might come as a challenge, posing new questions regarding the tendency of individual experiences to be more universal than local.

A second point worth debating is UNESCO's perception of how this transmission occurs. In the 2003 *Convention for the Safeguarding of the Intangible Cultural Heritage*, UNESCO pointed to generational exchange as a common form of passing on knowledge and skills (UNESCO, 2003), even though, with the emergence of new communication technologies, other options are seemingly more convenient and reliable. MUPE's *Diary for the Future*, which recently became part of UNESCO's project on the pandemic, reinforces the use of these new digital tools. Storytelling continues to be a central point in memory-keeping for intangible heritage, but the media that are used to achieve this should also include virtual formats. In keeping with this idea, MUPE claims on UNESCO's website that this is 'an initiative to record our memories in the middle

of these pandemic times for a collaborative construction of a history for the future' (UNESCO, 2021).

When comparing what UNESCO defined in 2003 and what the project *Living Heritage Experiences...* proposed in 2020, new perspectives emerge about what intangible cultural heritage is and about how it can be identified, documented, preserved and communicated. Technology has certainly been playing a part in the reconsideration of the formats through which the narratives involved in intangible heritage can be expressed and archived. Nonetheless, it is worth noting that, although these reflections may be relevant to the context of intangible heritage within virtuality and technology, they do not extend to the complexity of intangible cultural heritage viewed from a general perspective.

Final Considerations

The analysis of the *Diary for the Future* project suggested various reflections on the innovative museological approach developed by MUPE, as well as on the process of creating memories and preserving intangible heritage. In fact, MUPE's proposal to musealise intangible goods and the absence of a physical building, giving priority to online spaces, are some aspects that might indicate a reconsideration of the concept of museums in a digitised and networked world. Moreover, MUPE's project of collecting brief narratives on how lives changed with the pandemic relates to Halbwachs' argument about the role of individual memories in the construction of collective ones. Exploring this framework also makes it possible to explore the relationship between memory and heritage; and, finally, comparing UNESCO's view on intangible cultural heritage with MUPE's project enables us to debate how this concept has been evolving over the last few years.

Despite considering that the immaterial part of collecting memories is valuable, it should not be exclusive. From personal memories to events on a global scale, such as the pandemic, archiving tangible objects is still also essential for museums since relying on only one type of media (storytelling, in MUPE's case) provides an angle on a story that could be complemented and further explored with material items. Musealised narratives are valuable pieces of information and museums should rethink strategies to incorporate them into their archives where they can accompany the material-based items that museums usually safeguard.

MUPE is still achieving its goal of preserving heritage through narratives even though it has an unusual dependency on technology. The construction of collective and individual memories through storytelling has been the subject of debate for decades, and the new digital technologies now enable us to safeguard them in a format that is in keeping with our contemporary world. Museums must, however, remain wary of trusting in such reliability, because, despite all the efforts taken to guarantee their conservation, some technological tools and solutions might malfunction and fail in the future, and this could lead to partial or total losses that it will be difficult for museum professionals to repair. Nevertheless, it is worth noting the increasing interest in the intangible within museology and heritage studies. Museums should therefore continually reconsider their practices for the incorporation of technology and must also be coherent in their archiving and demonstration of how much humanity relies on, and lives through, technology nowadays, acknowledging that there is still a great deal to be explored in the presence of museums online and memory-keeping through narratives as intangible heritage.

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MEDIATION
AND
PROSPECTS OF
CHANGE

Art Museums and Digital Solidarity

Jasmin Pfefferkorn

Through a case-study of the project *Rediscovering Black Portraiture* by Peter Brathwaite, this paper explores how the intertwined concepts of virtual relationality, museum participation and digital solidarity have emerged in networked spaces around the museum. It highlights how the hashtag feature of social media can be used to redirect museum communication towards social and cultural critique. This paper claims that *Rediscovering Black Portraiture* provides valuable insights into the culture of sharing that underpins processes of digital solidarity. In turn, the museum can benefit from the productive potential of this form of sociability, which enables them to move towards deepening inclusivity in both online and offline spaces.

Introduction

In the wake of the Covid-19 lockdowns, a heightened attention towards museums' digital offerings and networked communication strategies came to the fore. With the rapid pivot online, museums made pragmatic use of the easy and cost-effective communicative affordances of social media platforms. Of these, it was the simple hashtag that had the greatest level of uptake (NEMO, 2020, p. 14). However, the use of digital media by museums for communication purposes is not a new phenomenon. The strategies described in this text predate the disruptive force of COVID-19. Thus, an understanding of the pandemic as a catalyst for these practices oversimplifies several pre-existing trajectories. A more accurate position recognises that the temporary closures resulting from COVID-19 acted as a catalyst for the *acceleration* in the uptake of more flexible digital communication strategies. During this time, museums were drawn into an intensified situation of responsiveness, highlighting how a 'crisis also offers a chance to remake society in a more inclusive and diverse way, expanding autonomy and solidarity at the same time' (Stalder, 2013, p. 59).

This text focuses on a particular project that emerged in response to the *Getty Museum Challenge*:¹ *Rediscovering Black Portraiture*, launched in 2020 by British opera singer and BBC broadcaster Peter Brathwaite. This initiative offers insights into three productive potentials of museum engagement in the online space: virtual relationality (Zebracki, 2018); museum participation (Simon, 2010); and digital solidarity (Stalder, 2013).

Mobilising the Hashtag

This hashtag challenge began with the Instagram account *Between Art and Quarantine* (@tussenkunstenquarantaine), launched on 14 March 2020, with the simple byline: 'For everyone at home who needs some relief'. The task was seemingly straightforward: choose an artwork, use items from around the home to recreate it and share it on social media using the hashtag. This challenge was quickly taken up by museums around the world. Some, like the Getty, put forward their own hashtag to accompany the activity. The Getty also added an additional parameter to the challenge by inviting recreations based on their Open Content Programme, which offers high-resolution images of art as a common resource. It was the Getty iteration that first caught Brathwaite's eye in April 2020. As such, while this was a wider activity taken up by a number of museums and participants, it will be referred to simply as the *Getty Museum Challenge* throughout this text. Contributions to the hashtag showcase a diversity of voices and present different types of engagement as valid. According to Sarah Waldorf and Annelisa Stephan, who oversaw the *Getty Museum Challenge*, submissions were 'clever, hilarious, and poignant, and they were often served with a dash of social commentary' (Waldorf and Stephan, 2020).

The obvious popularity of this particular social media challenge quickly captured the imagination of museum studies, media studies and art history academics, as well as mainstream media outlets. Digital culture scholar Jenny Kidd (2021) writes about the challenge in relation to selfies as a form of sociality, self-representation and cultural production. Jim McGrath (2020), as a researcher in digital public humanities, focuses on the importance of open-source access to cultural content to facilitate these kinds of activities

1 Hashtag: #GettyMuseumChallenge. For similar projects proposing the recreation of artworks at home, see also: #TussenKunstenQuarantaine and #BetweenArtandQuarantine.

and open up communication between museums and their publics. Art historian Andrea Bubenik (2020) positions the challenge within a longer historical trajectory beginning with festival pageantry in the Renaissance. Over the last year, articles about the challenge have appeared in most media outlets, from the *Lonely Planet* and *The New York Times*, to pop culture websites such as *Bored Panda* and *BuzzFeed*. Many contributions have also been reposted by museum social media accounts, furthering the circulation of images between public and private spaces.

Inspired by the hashtag challenge, Brathwaite began with a recreation of the little-known, anonymous portrait *Black Servant, England (1760-1770)*. By the following month, he had uploaded 50 recreations, predominantly centred on exposing the systemic injustices surrounding black representation in art. A year on, his project consists of close to one hundred recreations. Each of Brathwaite's recreations are posted to Instagram and include detailed captions about the sitter and the iconography in the image. *Rediscovering Black Portraiture* draws on a combination of humour, education and socio-cultural critique to reach others. According to Brathwaite,

[...] humour is a really useful tool in sort-of letting people into this history, these histories, and exploring difficult history as well [...]. And that's what I am really interested in, the layers of the humour and the subversion and the pain as well, within a lot of these images. (York Ideas, 2020)

By attaching his project to the hashtag, Brathwaite makes use of the wider visibility this network offers. Furthermore, he repurposes the largely playful, light-hearted activity to add an additional layer of critical reflection directed towards society and culture. The project takes the premise of the hashtag challenge to provide relief from the boredom of COVID-19 lockdowns and repurposes it as a cultural commentary on how the institutional structures surrounding art have prioritised the white perspective.

Virtual Relationality

Brathwaite's portraits are emblematic of Martin Zebracki's 'virtual relationality', defined as 'the mediation and appropriation/repurposing/challenging of public art's properties and roles in digitally mediated social relations and hence networked spaces' (Zebracki, 2018, p. 200). Virtual relationality challenges

and extends the conventional spatial and temporal parameters of the museum, creating new opportunities for engagement. The museum as an institution has historically occupied an interesting position. It is distinctly public, yet regulated and enclosed in a way that separates it from the kinds of ephemeral and negotiated practices resonant with an ideology of the commons. Following this, it is perhaps unsurprising that the museum has long been criticised for its perceived role in separating art from life. In fact, the practice of historicising and stabilising art work is seen to diminish its continued capacity to circulate within the fluid, meaning-making practices of culture.

Artist Robert Smithson likened visiting museums to 'a matter of going from void to void' (Smithson, 1967/1996, p. 41), while Donald Judd stated that museums divorced art from life, to the point of 'having culture without culture having any effect' (Judd cited in Putnam, 2009, p. 188). This separation of "art from life" can be understood as simultaneously spatial and temporal. For the former, we can consider the literal enclosing of art and objects within physical museum walls, and, for the latter, we can refer to the notion of museums as repositories, as archives of history. Manuel Castells reflects on the relationship between museums, communication and time, writing that:

The big challenge is how to articulate the archives of the present and the projections of the future within the living experience of the present. For if there is no articulation here, and museums are merely archives and projections, they lose contact with life. They are mausoleums of culture and not means of communication. Hence museums, as reminders of temporality, must be capable of articulating living culture, the practice of the present, with cultural heritage, not only as far as art is concerned but also as regards human experience. (Castells, 2001/2010, pp. 431-432)

In contrast to this trajectory of spatiotemporal separation, Brathwaite's recreations are also *reconnections*. By using personal objects that are emblematic of his heritage and inserting himself into the recreations, Brathwaite brings these portraits into conversation with the present. As he has stated:

When I couldn't find any portraits of Black ancestors, I decided that a way of bringing their stories to life was through these objects, quite humble objects that are used every day, but they really speak to the histories of not just my family, but to transatlantic and British history. (Brathwaite, 2020)

This practice of reconnection feeds into a wider historical narrative around black representation and photography. As bell hooks writes, 'Significantly, issues of representation were linked with the issue of documentation, hence the importance of photography. The camera was the central instrument by which blacks could disprove representations of us created by white folks' (hooks, 2019, p. 268). She goes on to state how, for black communities, photographs 'were and remain a mediation between the living and the dead' (hooks, 2019, p. 271). Moreover, Jenny Kidd points out that:

However we understand the contributions on #GettyMuseumChallenge and through other such initiatives, it is important to realise that these images are not disembodied digital heritage encounters. They are instead written powerfully on the body and can create new meanings and memories. They are opportunities for engagement, dialogue, and challenge. (Kidd, 2021, p. 58)

The embodied practice of painting recreation that we have seen through the hashtag challenge has a long tradition. The *tableaux vivant*, for instance, stems back to eighteenth-century France, where it was an amusing party game. Going back further, similar acts of pageantry can be located in Classical Antiquity, where 'parades and processions by rulers featured tableaux that were charged with important political and didactic functions' (Bubenik, 2020). While the majority of participant contributions to the museum challenge fall firmly within the eighteenth-century French tradition, others evoke the political and didactic functions of Classical Antiquity. Virtual relationality augments these longer-standing social practices as it pulls them out of a place and time-bound event, making them accessible in terms of greater visibility, and open to further appropriations. Ultimately, this enhances the scope of participation.

Museum Participation

According to Nina Simon (2010), there are four models of participation – contributory, collaborative, co-creative and hosted. Each indicates a different weighting of power attributed to either the museum or the public in the context of particular projects. The way in which hashtag challenge (and *Rediscovering Black Portraiture* within it) have evolved problematises these models as neat categories. In one sense, the hashtag challenge is contributory, given that users were asked by museums to participate. However, by being played out over online spaces, it exceeds the boundaries of institutional control associated

with contributory participation. This adds a potential fifth model of participation: challenge. We can situate the challenge model as a participatory strategy whereby the museum does not explicitly relinquish authorial control, yet users strive to push back and reclaim power over museum spaces and narratives. Digital media have a strong history of affording challenge and disruption in museums (Ciecko, 2018). However, museums have an equally strong history of subsuming challenging content and institutionalising it. In some contexts, this process is problematic and constraining. This feeds into Felix Stalder's concern about the limitations of digital networks when it comes to instituting change: 'Even the rise of web networks as the new norm of social communication is still relatively shallow and superficial, compared to the deep institutions that continue to exert overwhelming influence over our societies' (Stalder, 2013, p. 57). It is true that we still see the museum reassert its power in ways that diminish the voice of its publics (Ang, 2015). However, in other contexts, this process of subsumption is beneficial. It can be enacted in a way that is collaborative and speaks to the capacity of museums to become increasingly democratic. Pruulmann-Vengerfeldt and Runnel (2019), for instance, note the important connection between collaboration and the museum becoming more multivocal.

The evolution of the *Getty Museum Challenge* and *Rediscovering Black Portraiture* is indicative of how participation as challenge can shift into collaborative participation, whereby participants become active partners of institutions. Getty's initiative is now a book, titled *Off the Walls: Inspired Re-Creations of Iconic Artworks* and Brathwaite's project was also reimaged as a debut solo exhibition at King's College, London. Some of his recreations are tagged as collaborations with institutions, such as the portrait of Ira Aldridge (c. 1836) by James Northcote from the National Portrait Gallery. As a digitally-mediated art practice, this project aligns more closely with what Jenny Kidd (2014) describes as a critical intervention into formal commissioning practices.

There remains a further layer of participation to consider in the context of Brathwaite's project. As previously stated, the contributory activities within the *Getty Museum Challenge* were solicited by the museum. *Rediscovering Black Portraiture* likewise became a participatory project in and of itself, with people reaching out to Brathwaite to contribute ideas. He states that 'It's generated stimulating conversations on social media, with people suggesting paintings I wasn't aware of, helping me on my mission to keep going'

(Brathwaite, 2020). Herein we see explicit forms of digital solidarity in relation to this project, evidenced by the sharing of ideas and resources. As Stalder observes:

The larger the pool of potential collaborators is, the more ease with which these potential collaborators can access the resources in which the problem is embedded, and the more freely they can themselves benefit from the solution to which they might contribute their own scarce labour resource, the more likely it is that this process can take place. (Stalder, 2013, p. 17)

It is precisely the affordances of the digital that mobilise collective knowledge towards solution-oriented production. These affordances include the remediation of painted portraits to digital images, the capacity to upload these photographs to social networks, their circulation through various institutional and informal channels and their positioning within more extensive communicative practices.

Digital Solidarity

Felix Stalder underlines *sharing* as the core of digital networking culture, considering that 'A culture of digital solidarity can be described as one rooted in a lived practice of sharing' (2013, p. 14). In this context, solidarity is enacted through 'the making available of a resource to others without the expectation of an immediate or direct return' – instead, return is indirect (*ibid.*, p. 56). Sharing 'is a way to advance the wider social context that provides resources for, and gives meaning to, the pursuit of one's singular goals' (*ibid.*, p. 57). Peter Brathwaite has made his objective explicit, stating that 'The goal is always to help people to access a different, difficult history that maybe they would not have necessarily accessed before' (Brathwaite, 2020). By locating and researching not only well-known, but also little-known, artworks, he provides a resource and an archive of black portraits that have often been overlooked, thus affirming the notion of digital solidarity as emerging through sharing and social production.

Brathwaite poses a question at the heart of his project: 'How can we decolonise and reclaim a space, so sitters that were once powerless are given agency?' (Brathwaite, 2020). In the context of digital solidarity, we can attribute a double-layered meaning to this. It speaks both to the role of his recreations in relation to the field of art history and to his intervention in the *Getty Museum Challenge*.

With his work now entering into the institution, this process becomes indicative of how Stalder conceives of digital solidarity:

The social, communicative, complex and networked dimensions of the production process are mutually reinforcing, thus creating dynamics that are so strong that they can break down existing organisational boundaries and expand into the social. (Stalder, 2013, p. 17)

While the Internet has long been seen as a space of "interpersonal communication", museums have traditionally treated the online space as an extension of the "societal communication" or "mass communication" associated with legacy media. Manuel Castells distinguishes interpersonal and mass communication, explaining that the first 'is interactive (the message is sent from one to one with feedback loops), while mass communication can be interactive or one-directional' (Castells, 2009, p. 54). The one-directional mass communication approach adopted by museums has upheld the authorial voice of the museum and limited the space for dialogue and coproduction between the institution and its audience. Indeed, inviting a multiplicity of voices into the museum is perceived as a potential threat to museum authority (Black, 2021, p. 45).

What we have seen through the *Getty Museum Challenge* and *Rediscovering Black Portraiture* is privilege being given to the feedback loops characteristic of interpersonal communication, as well as the facilitation of interactive and social mass communication. As Stalder points out, within the digitally networked environment, sociability takes on a new form and, 'in order to create sociability in networked, communicative environments people first have to make themselves visible, that is, they have to create their (re)presentation through expressive acts of communication' (Stalder, 2013, p. 22). As noted earlier through the lens of virtual relationality, Brathwaite connects to the hashtag challenge and mobilises it according to his values and objectives and, in doing so, makes himself visible.

Another important facet of this form of sociability is the interplay between individuality and collectivism. Not only is Brathwaite present in each of his images, in his staging he uses personal objects that speak to his heritage – a notebook of his mother's Bajan recipes, West African print fabric backdrops, his grandfather's cou-cou stick and family history documents. Brathwaite's contributions to the *Getty Museum Challenge* provide a strong example of

a 'culture of autonomy and solidarity' in the context of digital networks (Stalder, 2013, p. 51), which he sees as necessary for establishing digital solidarity. On the one hand, the embodied act of the portraiture and the incorporation of personal objects, together with the act of repurposing the hashtag challenge towards a particular goal, highlight Brathwaite's autonomy. On the other hand, the wider socio-cultural narrative that his work addresses, and the acts of sharing that shaped the project, speak to commonality and solidarity. In this sense, *Rediscovering Black Portraiture* is simultaneously deeply individual and profoundly collective.

Conclusion

The mobilisation of the hashtag challenge by Brathwaite is indicative of the productive potential of networked communication strategies used by museums in digital spaces. While initially repurposing the challenge in a process of virtual relationality and digital solidarity, it eventuated into a collaborative relationship with museums. With physical manifestations such as on-site exhibitions and a book, *Rediscovering Black Portraiture* transcended the online realm. In doing so, it highlighted the complex interweaving of sites, voices and activities within processes of participation. Ultimately, this project reveals how the museum might engage "the culture of sharing" that underpins digital solidarity. In doing so, museums will be able to retain a greater openness and dynamism in their communication with both on-site visitors and online users. The culture of sharing afforded by digital media platforms encourages museums to stay connected to the present moment, include a multiplicity of voices, uphold their social value, tap into the creativity of their networked audiences and forge spaces for digital solidarity.

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The Stakes of Big Tech and the Digitisation of Visual Culture

Nick Pozek

The technology sector's interest in visual and material culture has offered new opportunities for preserving, protecting and presenting both tangible and intangible heritage. Through strategic investments of capital, expertise and infrastructure, corporations offer an opportunity to revitalise a sector beleaguered by precarious government funding and unpredictable public support. While this engagement may seem to be a boon to the cultural sector, it presents complex legal and ethical challenges. Many museums struggle to negotiate their colonial histories and consider questions of ownership, provenance, stewardship and heritage for the physical objects in their collections. But how do these practices and principles translate to digital assets? Through an analysis of case studies, this presentation will examine the ethical dilemmas and legal frameworks that permeate the presentation, preservation and digitisation of visual and material culture.

Introduction

Museums benefit from new technologies: cloud-based collections management systems enable registrars to instantaneously access the details of a work's conservation history, even if they are accompanying a work while it is in transit. The social media provide opportunities for museum audiences to engage with artworks, even when the galleries are closed. Inexpensive thumb drive-size media players with terabytes of storage now mean that high-definition video works can be shown in the gallery with a previously unimaginable quality. However, the biases and assumptions instilled in these technologies by their creators can, at times, conflict with museums' efforts towards decolonisation. While digitisation can offer greater transparency and accessibility, if not managed conscientiously it can also do the opposite: obfuscate and disenfranchise.

Digitisation of Cultural Heritage

The term "digitisation" sounds transformational and, in 2013, Smithsonian Institute secretary G. Wayne Clough proclaimed '...digitisation also offers museums, archives, and libraries striking new avenues to engage with those who use their services and to become fuller partners in formal and informal education programs' and asserted that 'Digitisation of collections should be a primary institutional goal' (Clough, 2013, p. 63). Nevertheless, with sculpture and painting, the term is often used to characterise what could simply be described as "photographing" an artwork, such as Arts Council England describes in its functional definition:

[...] "digitising" objects means making copies of physical originals in digital form – for example, by scanning or photographing 2D items or transferring the contents of reels of film or audio tape into digital formats. It can also refer to 3D scanning of objects or, more loosely, any digital photography of collections. (Arts Council England, 2021, p. 42)

The artwork is not physically altered, but a digital likeness of it is created – sometimes it is a 2D image, other times it is a 360° simulation or a laser scan. Fundamentally, this does not seem any different from the historical processes for recording and cataloguing artwork. But the assumption that all works in a museum's collection should, without exception, be digitised is problematic. As museums wrestle with institutional histories that are intertwined with colonialism, they must also consider their role as "stewards" of an object within colonial contexts. No matter how common the practice, creating an image of an artwork fundamentally diminishes the work's uniqueness. In his seminal essay on the subject, Walter Benjamin argued:

One might generalise by saying: the technique of reproduction detaches the reproduced object from the domain of tradition. By making many reproductions it substitutes a plurality of copies for a unique existence. And in permitting the reproduction to meet the beholder or listener in his own particular situation, it reactivates the object reproduced. These two processes lead to a tremendous shattering of tradition which is the obverse of the contemporary crisis and renewal of mankind. (Benjamin, 1935/1969, p. 221)

In many circumstances, it is permissible for a museum to photograph a work that it received legitimately. When there is a clear line of provenance from the institution that owns it to the work's creator, and we know that the hands through which it passed were all complicit in its transfer, photographing

the work in a manner pursuant to copyright law and the assigned rights is appropriate.

Almost all museums are attuned to whether works are protected under copyright or fall into the public domain. When a contemporary work of art appears on a museum's website or in a catalogue, enormous attention has often been given to securing, from an artist or their agent, the appropriate rights to use an image of that work. However, for a work that is looted, the process of replicating it, robbing the rightful owners of the work of the object itself, but also of the object's uniqueness, adds insult to injury.

In November 2017, during a tour of West Africa, French President Emmanuel Macron pledged that the 'permanent or temporary' return of African heritage to the continent would be a 'top priority' during his term in office. The following March, he commissioned a landmark report on the subject from the scholars Bénédicte Savoy and Felwine Sarr, who recommended the 'unconditional' return of African heritage in French public collections. Specifically, the report identifies objects from Mali, Benin, Nigeria, Senegal, Ethiopia and Cameroon that were pillaged by French or British troops in the 1890s as spoils of war, or claimed from ethnographic missions (Noce, 2018). A single paragraph in the Sarr-Savoy report is dedicated to the digital copies of the restituted objects, urging 'the creation of a single portal providing access to this precious documentation in the form of a platform that would be open access' (Savoy and Sarr, 2018, p. 67). Moreover, the authors point out that 'Free access to these materials as well as the free use of the images and documents should be the end goal' (Savoy and Sarr, 2018, p. 68).

A response to the Sarr-Savoy report authored by Mathilde Pavis and Andrea Wallace appeared, in 2019, in the *Journal of Intellectual Property, Information Technology, and E-Commerce Law*. Signed by over one hundred legal scholars and museum professionals, it demands that 'the same nuanced attention the report pays to objects of African Cultural Heritage and their histories be paid to the digital reproductions [...], documentation, and associated archival materials' (Pavis and Wallace, 2019, p. 116). In particular, it notes that digital surrogates for the work (such as photographs or videos) created in France, would be governed under French and EU intellectual property law, including the assignment of exclusive rights should the creator of these surrogates so choose. The authors state 'we must ensure any intellectual property rights arising during digitisation are not subjected to the same historical annexation

and appropriation of cultural heritage that this Report seeks to dismantle' (Pavis and Wallace, 2019, p. 120).

Algorithm / Moderator / Curator

Over the past decade, "big tech" has exercised an outsized role in daily life. Nevertheless, the algorithms by which private companies prioritise and moderate content and standards are notoriously opaque. Decisions to present or censor content on a wide and unprecedented scale are made with little accountability.

Since Instagram's purchase by Facebook, Inc. in 2012, it has become the *de facto* platform for artists to show their production and for galleries to sell art work. Similarly, museums and archives turn to the platform to present their collections and promote upcoming exhibitions. Facebook Inc. (now Meta Platforms, Inc.) thereby wields immense influence over the cultural sector (Siegal, 2015), but it does so with a set of policies that are vague and ill-adapted to the nuances, complexities and provocations that cultural content naturally embodies. Furthermore, creators contributing content to the platform have observed inconsistent enforcement of the policies, often flagging non-sexual images of women's bodies for removal while similar images of men's bodies are permitted, implying that the censors view women's bodies as innately sexual (Faust, 2017). As Roberto Simanowski explains, 'The algorithm is the censor people more or less approve of and even desire' (Simanowski, 2016, p. 51).

Even institutions are not exempt from these policies and their enforcement. Subtle nude images drawn for the photography exhibition *Imogen Cunningham: In Focus* were removed from the Instagram account of the Museum of Fine Arts, Boston (Gay, 2017). Similarly, an image of pop painting, *Ice Cream* (1964) created by Evelyne Axell, was removed from the Philadelphia Museum of Art's Facebook account for its allegedly sexual content (Martinez, 2016). The degree to which human moderation was involved in either decision is unclear, but the widespread removal of art from social media prompted the creation of Don't Delete Art, a coalition of free expression organisations advocating for social media moderation policies with fewer restrictions on art work (PEN America, 2020).

In addition to the problem of censorship, the content that the algorithms benefit can be socially detrimental. The Center for Countering Digital Hate found that social media platforms' recommendation systems promoted QAnon conspiracies, misinformation about COVID-19 vaccinations and antisemitic extremist content (CCDH, 2021). In an interview with NPR, CCDH CEO Imran Ahmed explains, 'The Instagram algorithm is driving people further and further into their own realities, but also splitting those realities apart so that some people are getting no misinformation whatsoever and some people are being driven more and more misinformation' (Bond, 2021).

In the wake of the United States 2016 Presidential Election, the role that Facebook, Inc. and their eponymous flagship social media platform may have played in influencing the election was evident. It was later discovered that users of the networks created accounts and populated profiles with fake information to inundate the site with inaccurate information ("fake news") and divisive opinions that may have played a significant role in influencing the outcome of the election (Madrigal, 2017).

Comparing the way in which social media platforms have treated art work with the way that they have treated misinformation demonstrates the miscalculation or miscalibration of the algorithm. The algorithms are not attuned to how the threats that art work and misinformation pose may differ. Both can upset societal norms, but can we train the algorithms to ask how and why?

Cataloguing and Classification

Historically, the western idea of the museum emerged from the concept of the Wunderkammer. In these cabinets of curiosity, the logic of display may be morphological rather than didactic. That is, objects that have similar shapes and materials are placed together rather than being organised by geographical origin or period (Impey and MacGregor, 2001), while, as museum education developed as a practice, more formal categories emerged, and the new categories became increasingly problematic. This is evident in the names of the institutions' departments. The British Museum, for example, has a 'Department of Africa, Oceania and the Americas' spanning a broad swathe of the world, and another exclusively dedicated to 'Greece and Rome' (British Museum, 2021).

It can be construed that the logics of organising an institution inform the biases that are loaded into the process of cataloguing collections. Therefore, we should ask: is the process of cataloguing museum items – that is, organising artworks into categories that are distinct from the objects' history and origin – an act that perpetuates colonialism?

In fact, there is a separation between how works are catalogued within the collection management system and how they are presented in the galleries. The collection management system is the invisible infrastructure – it holds all the objects' metadata. Some of this information is published in exhibition catalogues, on wall labels accompanying a work or on the museum's website. For example, the artist to whom the work is attributed, the medium, dimensions, year(s) of production, are all often public. However, private information – such as the work's insurance value, condition reports, shipping/packing requirements, and even certain provenance details – is kept solely in the database. The decision is a practical one, driven by the primacy of protecting the work. But, because this hidden metadata about a work is logistical, is it safe to assume that it is neutral?

Google Arts & Culture created a robust digital platform to provide unprecedented access to the collections of museums through high-resolution images and virtual tours. This platform aggregated public records of artworks and their corresponding images from the collections of hundreds of institutions around the world. In 2016, Google Arts & Culture added a feature to the iOS and Android application that matched users' "selfies" with representative portraits sourced from across the collections of museums on its platform. A trend then emerged and the *Art Selfie* app became an instant online success. However, people of colour, specifically Asian and Latin American users, observed that the results either feature stereotypical images or do not match their ethnicity at all (Nuñez, 2018).

Digital Property

Other works exist exclusively in a digital native format. Nonfungible tokens (NFTs) recently received attention, foregrounded by the recent sale of *Everydays: The First 5000 Days*, a work by digital artist Mike Winkelmann, also known as "Beeple." Minted exclusively for Christie's, the monumental digital collage sold for \$69,346,250 (Reyburn, 2021) and a rise in the production of NFTs coincided

with this auction. However, while the ubiquity of the NFTs may seem to suggest the democratisation of the artwork, it could also just perpetuate the incumbent systems.

In this regard, it is important to note that digital art has been around as long as computers themselves, with many of the early experiments in creating expressive works being undertaken by the engineers of these systems themselves (McCray, 2020). Digital art can take the form of interactive software, websites, sound, images and video and, consequently, it may seem that its possibilities are endless and infinite, defined only by the artists' imagination. Nevertheless, the options for digital art are narrowly constrained by commercial factors.

Before cloud hosting services (such as Google Drive or DropBox) and digital media players became commonplace, video works would be both stored and presented on a physical disk such as a DVD. But when exhibition copies (that copy presented in the gallery, not an archival copy) of a DVD were burned, the video file needed to be compressed to accommodate the limits of the DVD's storage capacity. This constraint was a result of the commercial intent of the DVD format, which only needed to have the capacity to store popular feature-length films. The duration of such films was mostly set by US audiences and their attention span, as well as being a result of the needs of the theatres in which the film would be shown. Theatres benefit from the incremental ticket sales based on the number of times that a film can be shown in a cinema. A shorter film can be shown more times per day, thereby offering a greater number of screenings for which tickets can be sold. DVDs were designed with the assumption that they would be encoded with feature-length films, thereby restricting artists to work within these constraints. It problematised the presentation of work that exceeded this duration, or the creation of work that existed in aspect ratio or shapes that were not commercially popular. But as DVDs, just like VHS cassettes or 35 mm film, are often the only surviving iteration of an artwork, we can only understand the work as presented within this medium.

New systems for encoding and presenting video have recently replaced the DVD: shrinking media players; new codecs with rapidly improving partitioning, prediction and entropy coding; and standardised formats for 360° and immersive video, all offer more options for artists and a richer experience for audiences. But what is unclear is the assumptions that are driving this process and how they will dictate or define the creation of new works.

Conclusion

Historically, the creation and presentation of art have been subject to the market, the accessibility of materials and the predispositions of those in power. As art becomes increasingly digital – whether by being created natively in a digital format or being “digitised” for cataloguing and presentation – the technologies that are integral to this process will assert influence over the work that is created and presented. While we can celebrate the potential for social media platforms to democratise the dissemination of art and the profound scholarship that will emerge from the new systems for exploring a museum's collections digitally, we must also be sceptical. Like the institutions and societies that they serve, digital platforms are not neutral. They incorporate the encoded biases and assumptions of their engineers, but, more dangerously, their ubiquity and ease of use obfuscate the scope of their design and make their consequences insidious. If we are going to decolonise our cultural institutions, we must also decolonise the technologies that underpin them.

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The Digital Condition and the Reconstitution of the Public(s)

Felix Stalder

In the following text, I wish to outline how the public – understood here as the (potential) patrons of cultural institutions – is being reconstituted under the digital condition, and how their agency, expectations and needs differ from those of the public that was constituted under the regime of print and broadcast media to which cultural institutions traditionally catered. I will start by sketching some of the key features of the digital condition and then show how these shape the transformation of the public from a more or less passive/reflective audience to one that plays a range of more active roles, which may include, but frequently also go much further than the passive/reflective role. I will refrain from making specific recommendations, because the ways in which these general structural realities manifest themselves, and the kinds of openings/closures they produce, are highly dependent on local conditions best known to the practitioners on the ground.

Clarification of Terms: Digitisation vs. Digital Conditions

Digitisation is the process by which analogue materials are transformed into digital information. The most obvious example is the scanner, which transforms a physical document into a digital one. This can include multiple processes, as when a text document is first turned into a digital image, and then the image is turned into a digital text, using Optical Character Recognition (OCR) software. Often, these processes employ a combination of automated and manual labour. For example, not even Google managed to automate the turning of book pages during its massive scanning operation (Google Books), but employed a large amount of outsourced labour to turn the pages manually.¹ However, digitisation is not just a question of digitising the archive. Since embodied people live in the physical world, this is an ongoing process in which an increasing number of sensors constantly monitor and translate physical states and processes into

¹ There are numerous art projects and publications that deal with this issue, such as Andrew Wilson (2011) *Workers Leaving the Googleplex*, or Kenneth Goldsmith (2013) 'The Artful Accidents of Google Books', *Page-Turner* blog, *The New Yorker*, 4 December.

digital information, through operations that range from automatically checking for body temperature as people enter a building during a pandemic to modelling climate change based on historical and real-time geophysical data.

The digital condition (or digitality), on the other hand, is a specific set of constraints and possibilities, created by the large number of social processes that use the capacities of digital infrastructures. Thus, the concept of "digital condition" operates on the same level as what media theorists call "print culture": a consistent set of cultural features that shape how we perceive ourselves and the world, and how we act in it (McLuhan, 1962). The focus on media often gives these theories a certain techno-deterministic bias, which is a problematic oversimplification of the relationship between culture and technology.

Rising Complexity: The Case of Design

So, if (digital) technology is not driving this process, then what is? Put simply, the digital condition emerged from the increasing complexity of society, for which digital technologies provide new infrastructures and tools when the old ones cease to work. Those who know how to take advantage of this increased complexity by moulding it according to their specific agendas are empowered, putting pressure on others to similarly incorporate these tools and utilise their possibilities, at the very least in order to keep pace with them. Technology involves both reacting to and increasing social complexity. From a cultural point of view, rising complexity means that the number and diversity of normative positions (broadly speaking, addressing questions relating to what is right or wrong) are increasing, together with the possible relations between them. As a consequence, the amount of social communication that reaches beyond the private realm and enters into societal processes of meaning-making expands sharply, so that new ways of integrating this communication need to be found. In other words, this is both a quantitative (more) and qualitative (different) transformation that has been fed from many sources.

Let me illustrate this increase in complexity by way of an example: the transformation of design as a discipline.² As an autonomous field, design originated alongside industrialisation when the division of labour began

2 This section draws on Stalder (2018), pp. 33-38

to separate the activities of planning and design from those of production. It was not until the late nineteenth century that design emerged as a distinct profession, and only in the twentieth century did it begin to seek new forms for the logic inherent in mass production. In the Bauhaus tradition, designers sought to optimise the clearly defined functions of anonymous and endlessly reproducible objects, with an eye to achieving economic efficiency. The architect Louis Sullivan, whose buildings still mark the skyline of Chicago, condensed this new attitude into the famous axiom 'form follows function'. Mies van der Rohe, who also worked as an architect in Chicago in the mid-twentieth century, supplemented this phrase with a slogan of his own: 'less is more'. Both of them stress that the rationality of design, as a process for isolating and improving specific functions, and the efficient use of resources were of utmost importance for modern (industrial) designers. The impact of this approach is still felt today. It was reiterated in the ten principles for good design of Dieter Rams, who led the design department of the consumer products company Braun from 1965 to 1991. His aim was to make products 'useable', 'understandable', 'honest' and 'long-lasting'. According to Rams' guiding principles, 'good design is as little design as possible' (SFMOMA, 2011). For many years, these principles were one of most important sources of inspiration for Jonathan Ive, Apple's lead designer, and the design similarities between some of Apple's most iconic products, such as the iPod, and Rams' iconic designs, such as the famous Braun portable radios, are very evident. This orientation towards the technical and functional promised to solve everyone's problems in a binding and long-term manner, for the inherent material and design qualities of an object were supposed to make it independent from the changing times and from the tastes of consumers. A small number of expert designers created the solutions that others would simply use. It was, in terms of communication, an industrial broadcast model.

Over time, this approach generated strong opposition. At the end of the 1960s, a new generation of designers rebelled against this industrial and instrumental rationality, which was felt to be authoritarian, soulless and reductionist. This was part of a larger rebellion against industrial society and what Herbert Marcuse (1964) called "the one-dimensional man". In movements such as "anti-design" or "radical design", the objectives of the discipline were redefined, and a new formal language was developed. Instead of technical and functional optimisation, recombination – ecological recycling or the postmodern interplay of forms – emerged as a design method and aesthetic strategy. The focus of design shifted from the individual object to its entire

social and material environment. The processes of design and production were opened up precisely in order to encourage the participation of non-designers, in the form of interdisciplinary cooperation with other types of professions or as a way of empowering laymen. Design took on a new mission: rather than ending with the completion of an individual product, it was now supposed to engage with society, which, in the sense of cybernetics, was regarded as a "system" controlled by feedback processes that connected social, technical, and biological dimensions to one another. Design was now supposed to intervene in these feedback loops as a "socially significant activity" that would involve diverse people and positions, while communication would be expanded to encompass all these different positions.

Victor Papanek, the founder of ecological design, took things a step further. For him, design was 'basic to all human activity. The planning and patterning of any act towards a desired, foreseeable end constitutes the design process. Any attempt to separate design, to make it a thing-by-itself, works counter to the inherent value of design as the primary underlying matrix of life' (Papanek, 1972, p. 2). Potentially, all aspects of life could therefore fall under the purview of design. This arose through the desire to oppose industrialism, which was blind to its catastrophic social and ecological consequences, with a new and comprehensive manner of seeing and acting that was unrestricted by economics. In terms of communication, it was a first instance of a "many-to-many" communication, in which horizontal participation was supposed to replace vertical commands.

As these patterns became depoliticised and commercialised during the 1980s, the focus of designing the "lifeworld", that is, social relations, shifted more and more towards designing the "experiential world", that is, individual perceptions, addressing people primarily as atomised consumers building their own personality through brands. This new approach was pioneered by rising consumer brand like Nike, which introduced the concept of flagship stores in 1990. With their elaborate displays, these stores were meant to turn shopping into an experience that the company's executives hoped would radiate outwards and influence how the brand was perceived as a whole, enticing consumers to build their own identity around it. The experiential world could, however, also be conceived in somewhat broader terms, with entire institutions, for example, being designed in such a way as to create a more attractive work environment, thus increasing the commitment of employees. Here, people were regarded as creative producers, barely working, but remaining hyper-productive

anyway, following the role model of the artist. This working procedure became popularised through countless stories about ping-pong tables, gourmet cafeterias and massage rooms in certain offices. "Microdosing", the use of very small doses of psychedelic drugs to enhance individual creativity, served the same purpose, namely, to loosen existing relations between actors (or synapses) and increase the chances of new and surprising relations emerging, thus creating a higher degree of complexity from which new solutions/products could be derived.

Yet the "experiential world" can be expanded even further, for instance when entire cities attempt to make themselves attractive to international clientele and to compete with others by building spectacular museums or sporting arenas. Cities, as well as a few other central locations, are regularly arranged in such a way as to produce a particular experience. This also means that, on the one hand, ever more sectors of cities need to be mobilised to effect this transformation, while, on the other hand, "undesirable" forms of use are pushed towards the periphery or driven out altogether. Thus, today there is hardly a single area of life to which the strategies and methods of design do not have any access, and this access occurs at all levels. For some time, design has not been a simply visible matter, restricted to material objects; instead, it forms and controls all of the senses. Cities, for example, have come to be understood as composed not just of physical, social or visual spaces, but also of "sound spaces"; accordingly, they have been reconfigured with the goal of modulating their various noises. Yet design is no longer just a matter of objects, processes, or even experiences. It has expanded even further, as a form of reproductive medicine, and has even become involved with the biological foundations of life ("designer babies"), and, further still, with the entire geophysical circulation of the planet ("geoengineering").

All of this involved more and more human and non-human actors in a process of (re)negotiating their relationships, which increased the complexity of operations, as more and more actors were now interlinking their experiences, desires and modes of action. They were no longer seen, or saw themselves, as recipients of ready-made, one-size-fits-all solutions, but rather as active participants in the co-creation of the world.

To manage this growing number of actors involved in the design process, new methods were developed which, in one way or another, sought to organise a wide range of positions through large-scale, horizontal, open communication, first physically (assemblies, workshops, neighbourhood associations, etc.)

and then increasingly digitally (email list, online forums, digitally-assisted decision-making tools, etc.) with many different combinations of the two modes. In turn, expectations changed as to how the public was supposed to be included, even if that inclusion was sometimes more superficial than substantive in practice (Crouch, 2004). Design is, of course, just one instance of this expansion of social communication and meaning-making.³

Existing institutions of meaning-making – such as broadcast media or exhibition spaces – were all built on the premise that a small number of specialists select what a large number of people will see and decide how the materials are contextualised. Given the inevitable constraints of time and resources experienced by these media, the selection process necessarily had to be biased, selecting certain events, objects, narratives and experiences, while considering others to be deviant, irrelevant or, at best, private. In parallel with the increased scale and scope of social communication, and with more and more people participating in (semi-)public debates, the criticisms of this selection mechanism and the institutions that embodied it grew louder. Many of these criticisms were related precisely to these biases of selection, with more and more groups no longer agreeing to be edited out or written off. In 1988, the feminist art collective Guerilla Girls drew attention to the extreme bias towards the male gaze in art history by producing posters and stickers which famously asked 'Do women have to get naked to get into the Met Museum?' pointing out that fewer than 5% of the artists exhibited are women but more than 85% of all the nudes are female (Guerilla Girls, 2020).

While many institutions showed themselves to be resistant to change, a new communicative and highly different landscape opened up outside them: exuberant, chaotic and decentralised, these new forms of communication self-consciously reflected the views of their makers, rather than expressing some assumed universal hierarchy of values. Beginning with independent publishing and community access television in the 1970s, the range of voices expanded considerably, even if they often remained contained within relatively closed niches. But a new culture of self-communication emerged that rapidly expanded as the Internet provided a new infrastructure that could overcome many of the technical and economic limitations of previous self-communication efforts. It became massive in scale and kept growing. Between roughly 1995 and 2010, depending on content and context, this new communication

3 For a more complete treatment of this process, see Stalder (2018).

environment became normal and the digital condition became dominant. From a cultural point of view, a major new challenge arose. The problem was no longer whether or not one was able to speak in public (the new digital infrastructure had lowered this hurdle significantly), but rather how to organise these massive and chaotic flows of information into something that could approximate culture, that is to say, shared meaning. And, since this information was no longer processed centrally (say, by a newsroom editorial board), new patterns of organisation have emerged that directly shape the types of publics which our cultural institutions encounter now.

Patterns and Publics

The first of these patterns I shall call *referentiality*, that is, the creation of a personal system of reference. It has become the ubiquitous and generally accessible method of ordering all the many things that each person encounters. Initially, this happens simply by drawing attention to certain things, which are thereby claimed – at least implicitly – to be important. With every uploaded picture on Instagram, every Twitter message, every blog post, every forum entry, every status update, users do precisely this; they communicate to others: 'Look, I think this is important!'. Filtering and meaning assignment are nothing new in themselves. What is new is that both of these functions are no longer performed primarily by specialists in editorial offices, museums, or archives; instead, they have become everyday requirements for large segments of the population, regardless of whether or not they have the material and cultural resources needed to accomplish this task (Stalder, 2018, p. 72).

Given the deluge of information that now surrounds us on a daily basis, any form of selection, any focusing of attention, is a productive accomplishment – no matter how unimportant each of these micro-actions (a like here, a forward there, an image taken and shared, a text relayed) may seem in isolation. The benefit of these actions is that they pick out elements from the uniform swirl of cultural material. This is done by using a resource that cannot be duplicated, that stands outside the world of information and that is unalterably limited for each individual: their own lifetime. Every status update that is not created by a machine means that someone has invested their time (even if it is only a second) in order to point out one particular phenomenon – and not another. Thus, these evaluations acquire their relevance by combining what is available in abundance (information) with what is ultimately scarce (one's own

lifetime). In this way, all these references, as unremarkable as they might be for outsiders, are thus brought into a concrete context of meaning that also (co-) determines one's own relationship to the world and one's subjective position in it. Often these evaluations of information are made only casually and have little half-life. Yet, Internet users evaluate information not just once, but repeatedly. The evaluations add up and make connections between the many things to which attention is drawn. This is how paths are drawn through the clutter. Phenomena that could potentially be found in many contexts are brought together in just one single, concrete context. In this way, fields of attention, systems of reference and contexts of meaning are established.

Because organising material by way of producing a stream of references is a way to both make sense of the world and to position oneself within it, viewing, thinking and sharing are brought very close together. In other words, whereas the public used to be mainly occupied with viewing and thinking – the classic silent visitors to a museum – many people now expect to be able to do all three things at the same time. Thus, cultural institutions need to think not only about what to present and how to present it, as well as about what kind of supporting material they create, but also about how they can support the public's desire to share this information according to their own way of seeing it. They must allow visitors to transform the materials that they encounter, creating the form of sharing that is most relevant to them and their communities.

Orienting oneself alone in a complex environment is impossible. Orientation, as well as agency, can only emerge in exchange with others, within a larger framework. This framework, in turn, is essentially held together by what I call *communal formations*: associations of people who organise themselves on a voluntary basis in order to pursue common goals. They emerge in a particular field of practice, are characterised by informal but structured exchange, are focused on enabling new knowledge, as well as new forms of action, and are bound together by a shared interpretation of their own practice. It is this last point in particular – the collaborative creation, preservation and modification of a frame of reference in which actions, processes and objects acquire a particular meaning and commitment – that constitutes the central role of collaborative formations. These formations, not the individuals, are the actual subjects that produce culture, in other words shared meaning.

On the everyday level of communicative self-creation, as well as in the shaping of a personal horizon of meaning – in countless streams, updates and timelines

in the social mass media – the most important resource is the attention of others, their feedback and the resulting mutual recognition. Even if this recognition is only effected in the form of a quickly clicked like, the smallest unit that assures the sender that there is a recipient somewhere. Users experience the constitution of both uniqueness and a sense of community (in which a person can be perceived as a person) as simultaneous and mutually dependent processes. Performing these actions millions of times and already almost unconsciously (because they are practised every day), people engage in an interpersonal relationship that no longer corresponds in any way to the liberal contrast between individual and society, between personal identity and group identity. Instead of conceiving the two processes (the emphatic affirmation of the individual or his or her dissolution within the homogeneous group) as mutually exclusive, the new formations presuppose that the production of difference (announcement: this is new!) and the production of commonality (response: we like this!) take place simultaneously (Stalder, 2018, p. 87).

Participation in a collaborative formation is voluntary, but it is not altruistic. On the contrary, an important motivation is to gain access to the field of practice and resources opened up by a formation. A collaborative formation, after all, does more than simply draw the attention of individual members to each other. Through shared cultural production, it also structures how members perceive the world and how they can design themselves and their agency within it. It is thus a cooperative mechanism that simultaneously filters, interprets and constitutes.

For cultural institutions, it is therefore important to see the public not just as a mass of individualised patrons, but as separate parts of many different, overlapping communities, all of which have their own different ways of understanding and making sense of the materials presented (insofar as they are interested in them). It is crucial to promote links between these different ways of understanding the offerings of the cultural institution, which exist in addition to, and sometimes in conflict with, the perspective promoted by the institutions themselves. The role of the institutions thus changes from that of purveyors of information and knowledge to that of a platform designed to generate and relate all kinds of interpretations to one another. This does not mean subscribing to a "post-factual" anything goes attitude, but acknowledging that, in a complex world, there are only partial, situated views and that a more comprehensive understanding does not come from distant objectivity, but from multi-perspectivity.

Last but not least, *algorithmicity* refers to those aspects of cultural processes that are (pre)ordered by machines. Algorithms transform the unmanageable amounts of data and information that now shape many areas of everyday life into dimensions and formats that can be grasped by human perception. It is impossible – for one person alone, as well as for a community, no matter how large – to read billions of websites in a way that makes sense. That's why we depend on offerings like the Google Search Algorithm, which helps us to reduce the flood of data (Big Data) to a set and translate it into those formats that humans can understand (Small Data). In this way, they make human understanding and action possible in the first place under the digital condition and influence it in an ambivalent way: on the one hand, they create new dependencies by pre-sorting the (informational) world and making it accessible; and, on the other hand, they ensure autonomy by creating the conditions for personal agency.

For cultural institutions, this is the most difficult element of the reconstituted public to shape directly, because – outside their own archival databases – they do not have access to the data sources and the algorithms that organise them. So, it is at least very important to be aware of how algorithms constitute and transform the publics all the time by keeping up to date with how the Google Search Algorithms change over time, and with how Facebook and other social media change their own filtering in, at times, rather drastic ways.

Conclusion

"The public" has never been a natural occurrence, but a social formation that was created by (mass) media and that has undergone numerous structural transformations in response to the techno-economic changes in the media landscape (Habermas, 1989). What we are experiencing now is another profound transformation into a networked public sphere, vastly more fragmented, but also more interconnected and dynamic, than the previous one, which was centred around the mass media delivering the same information to a large number of people. While the situation is currently still very fluid, we can already see that the three patterns which shape the constitutions of new publics are reinforcing one another. Helping visitors to see the institution as providing materials which they themselves can then share, work with and transform will influence how the algorithms read the institutions, because,

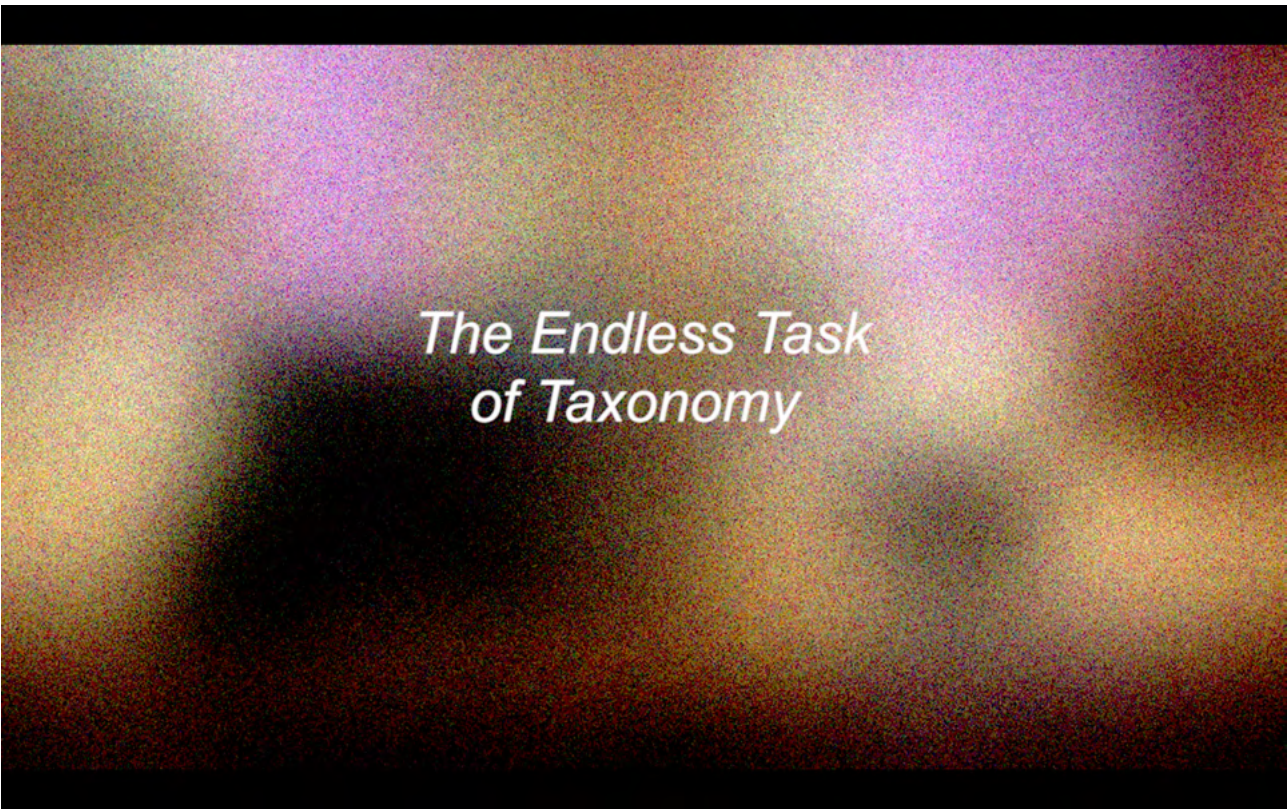
by and large, these algorithms are geared towards promoting materials that generate further engagement. And what better materials could there be to engage with than the materials offered by cultural institutions?

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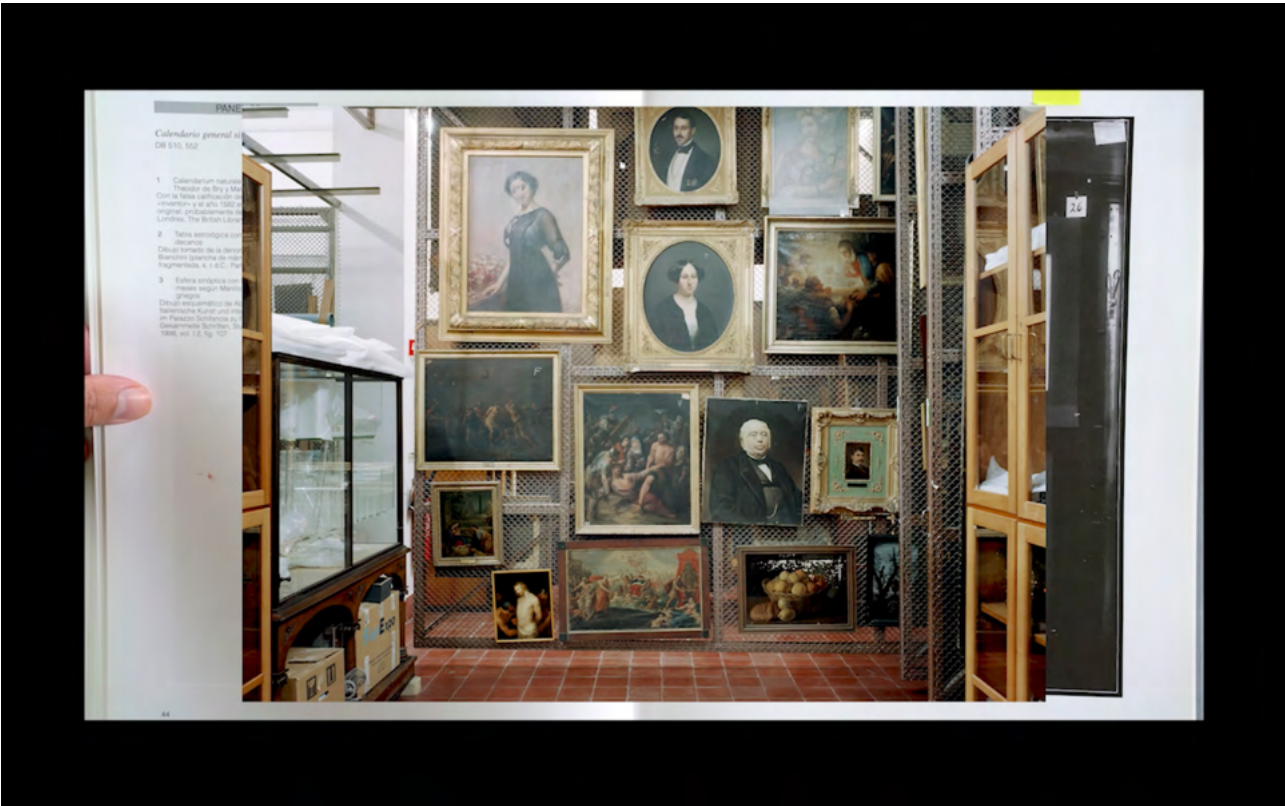
THE ENDLESS TASK OF TAXONOMY

Visual Essay by **João Paulo Serafim**



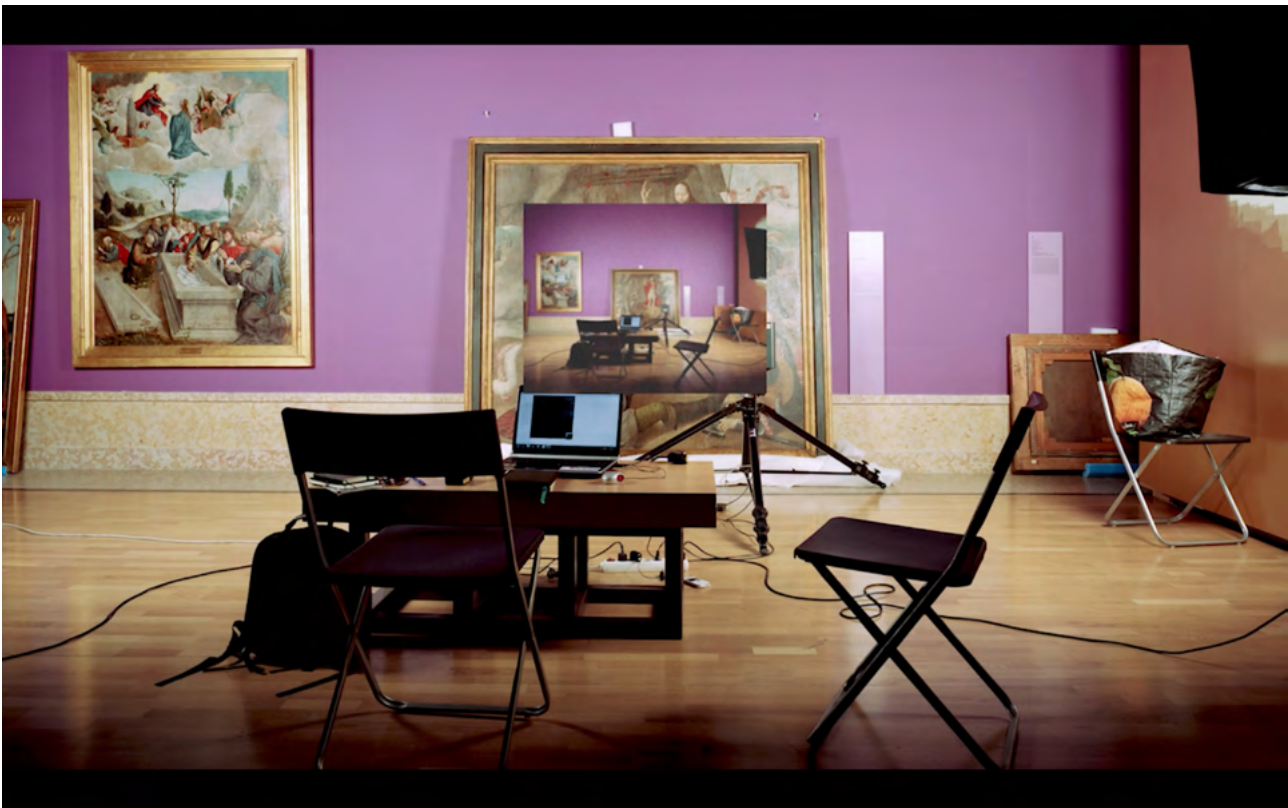
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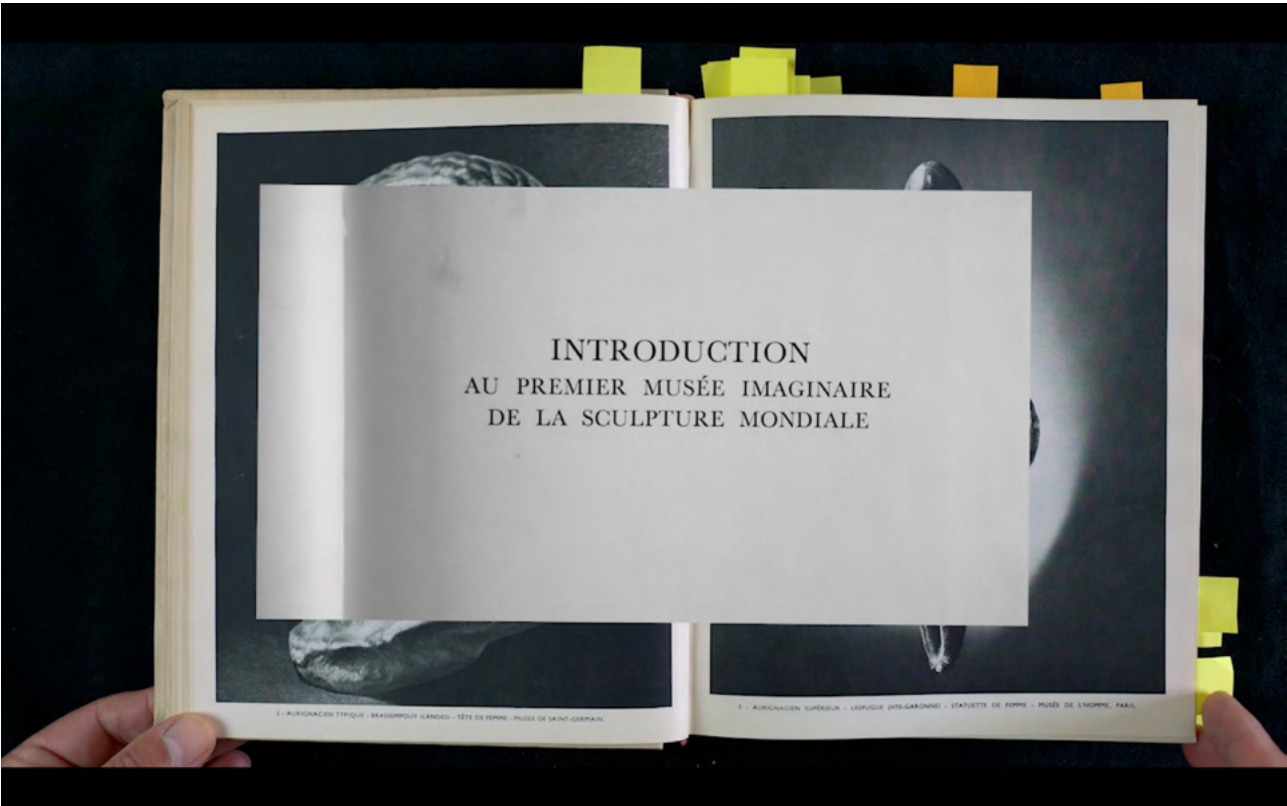




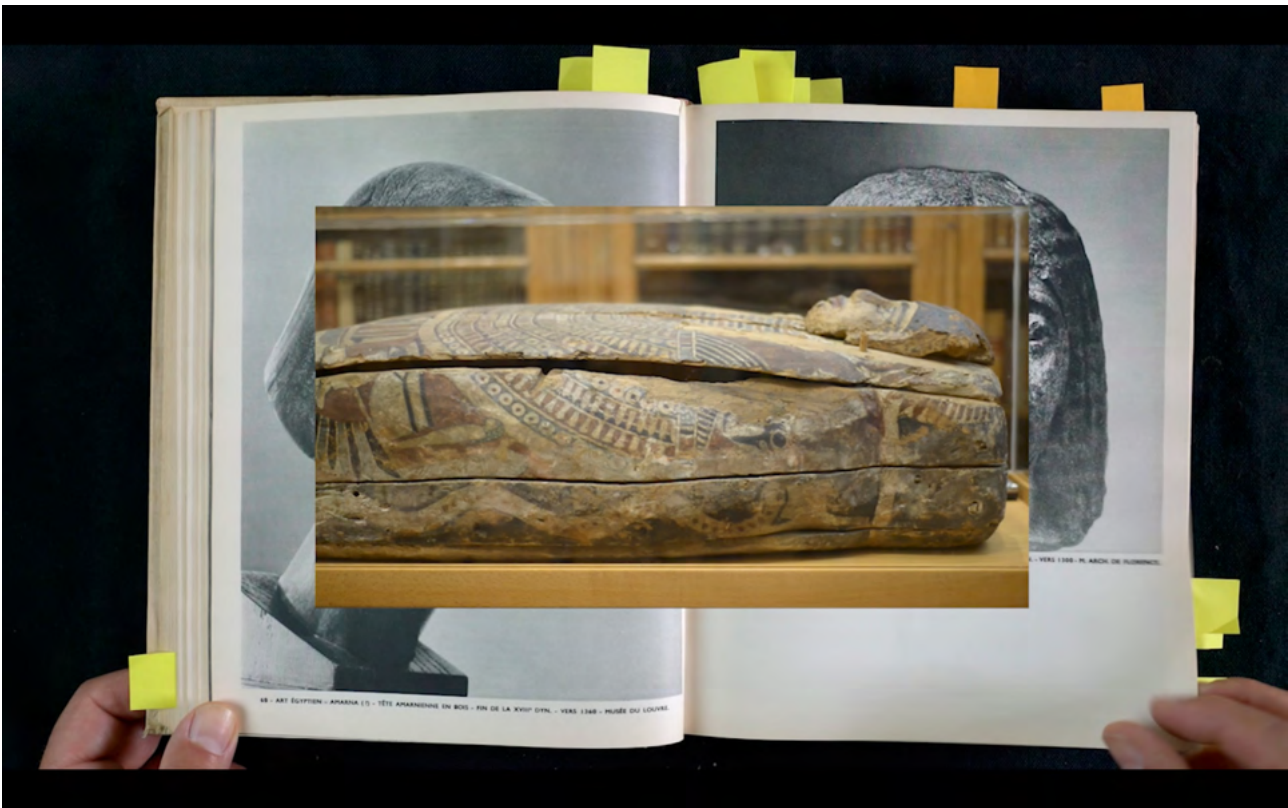


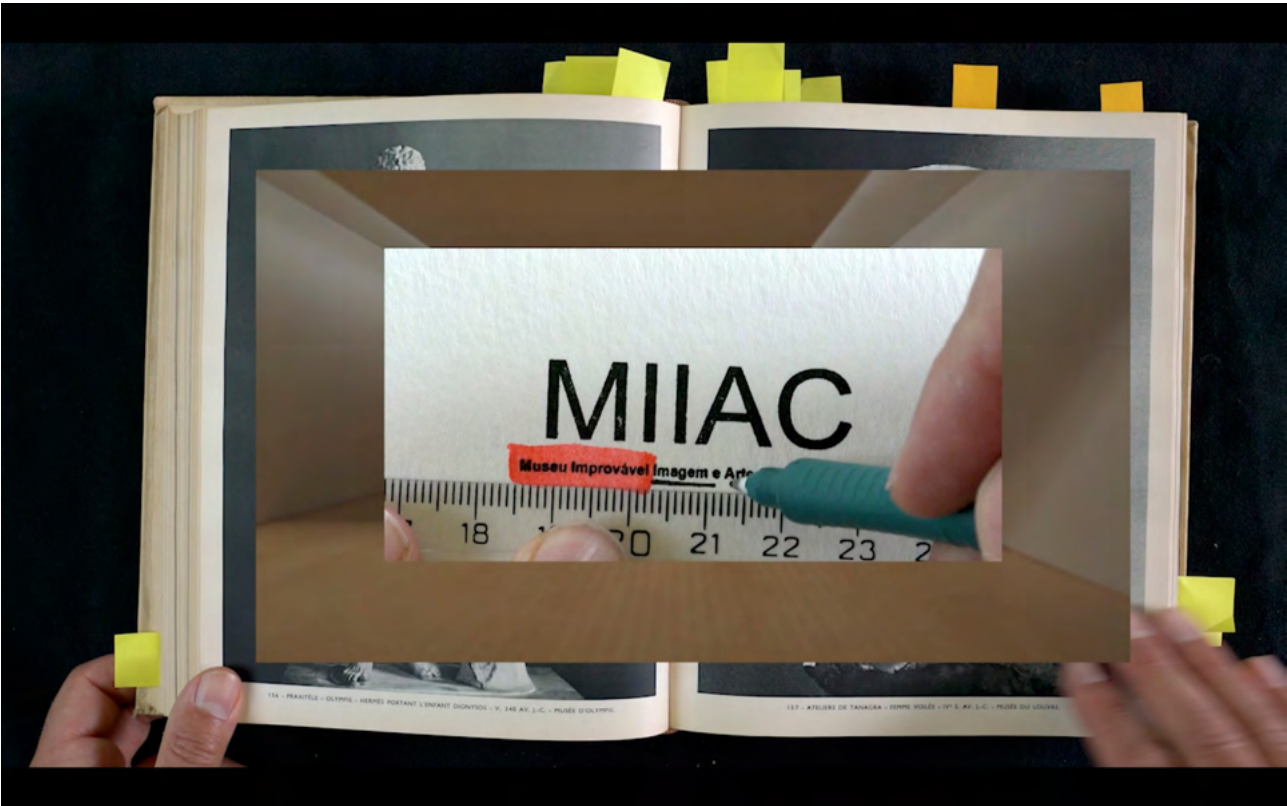






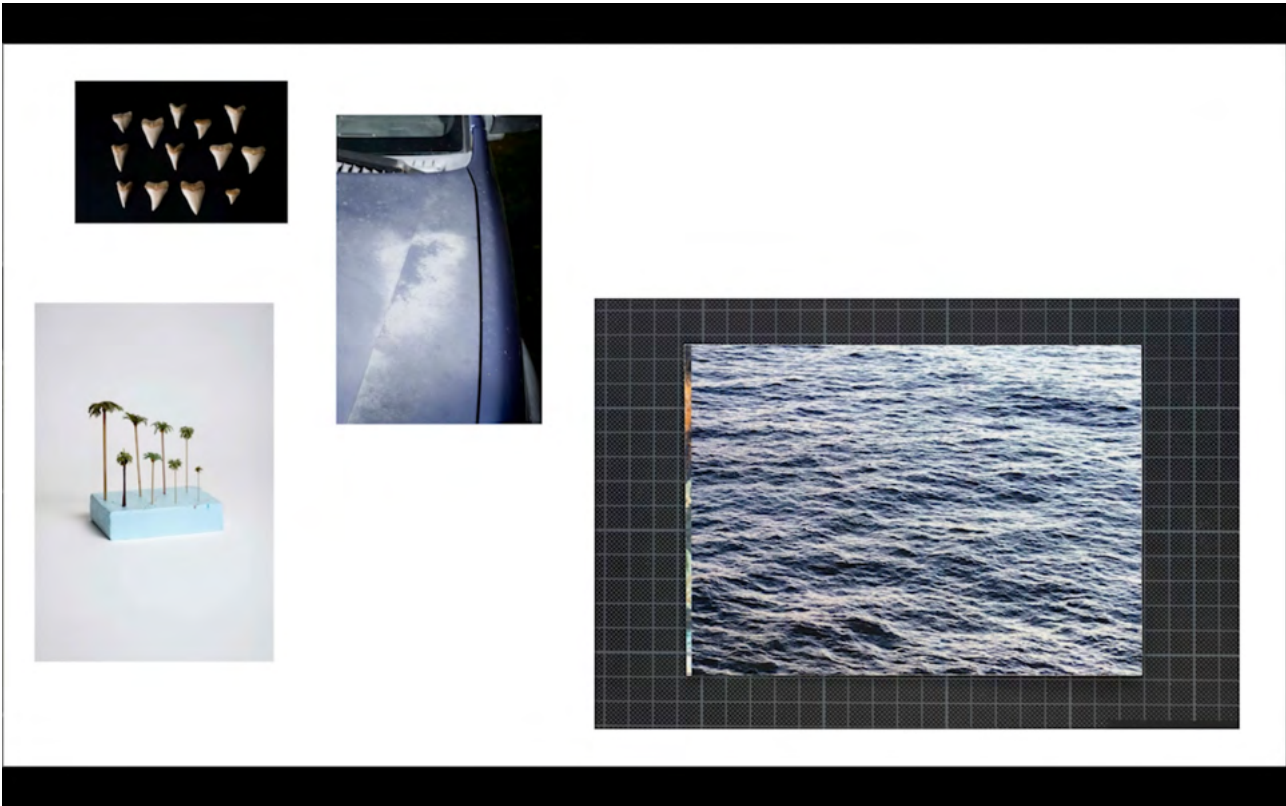




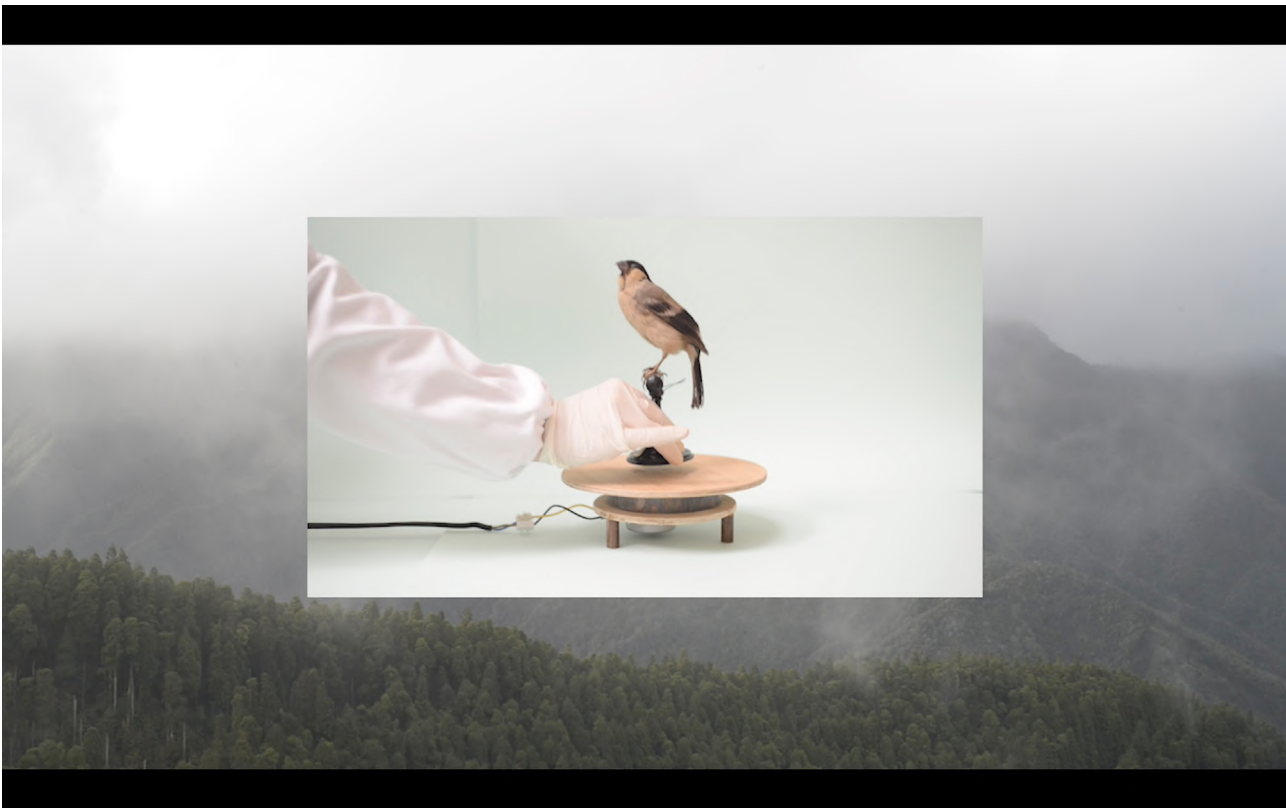












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João Paulo Serafim is a visual artist working with several media and formats, such as photography, video, installation, publishing and performance. His practice reflects on the specificity of the photographic image, the public/private relationship, museology and the exhibition, questioning phenomena such as art collections, their devices and implications, both in artistic discourse and in their critical and social context. Since 2005, he has investigated these themes in relation to his Improbable Museum, a fictional museum based on iconographic research of a personal collection, built along his artistic path, and materialised virtually or through exhibitions in different spaces, combining individual and collective memories. In recent years, João Paulo Serafim has been working on the idea of Natural History in a museological context, questioning its effects on the reinterpretation of collections, the landscape, different species and contemporary cultural discourse. This research combines appropriations from cinema, the Internet and conventional archives, proposing a reading of the new dystopian realities towards which humanity is being pushed.

John P. Bell is a software developer and artist at Dartmouth College. His work there includes acting as Director of the Data Experiences and Visualisations Studio, Associate Director of the Media Ecology Project and Manager of Dartmouth Research Computing's Digital Humanities Programme, and teaching as a Lecturer in Film and Media Studies. His research focuses on collaborative creativity and has produced everything from utilitarian semantic web publishing platforms to aggressively useless installation art. With nine others, he was the co-author of an 85,000-word long book about a 38-character long computer programme. In addition to his work at Dartmouth, he is Assistant Professor of Digital Curation at the University of Maine. He holds one of what is believed to be the first three collaborative doctoral degrees ever conferred in the United States, the other two of which are held by the co-authors of their collective dissertation on collaboration in the arts.

Jon Ippolito is a new media artist, curator and educator, whose work aims to expand the art world beyond its traditional confines. As an artist, Ippolito exhibited work at the Walker Art Center and ZKM/Center for Art and Media Karlsruhe; as a curator, he curated *Virtual Reality: An Emerging Medium* and, with John G. Hanhardt, *The Worlds of Nam June Paik* at the Guggenheim; as a Professor of New Media, he founded the University of Maine's graduate Digital Curation programme. In almost 200 presentations, Ippolito has spoken about copyright maximalism, academic insularity and technological obsolescence. Along with his books *At the Edge of Art* and *Re-collection: Art, New Media, and Social Memory*, he has published chapters in 20 anthologies and articles in periodicals from the *Art Journal* to the *Washington Post*.

José Oliveira has a degree in Electrical Engineering (Instituto Superior Técnico, University of Lisbon) and a PhD in Contemporary Art History (NOVA University of Lisbon). He was awarded scholarships both for his Master's Degree studies, from the Portuguese Centre of Photography (CPF), and for his PhD Degree, from the Portuguese Foundation for Science and Technology (FCT). He was a Lecturer in Photography and Visual Culture at IADE, Lisbon and has been an external collaborator at the Modern Art Centre – Calouste Gulbenkian Foundation. He was a Research Assistant (2016-2019) at ISCTE-IUL, working on an FCT-funded project – *Printed Photography. Image and Propaganda in Portugal, 1934-1974* (PTDC/CPC-HAT/4533/2014) – and awarded a scholarship both for this project and the following one (2019-2020) at BAC – Banco de Arte Contemporânea (IHA/NOVA FCSH, EGEAC and the Carmona and Costa Foundation). He is currently a researcher of the Institute of Art History and a Lecturer in Art and Technology (PhD in Artistic Studies – Art and Mediations) at NOVA FCSH.

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Marina Pignatelli is a Cultural Anthropologist and Associate Professor at the Social and Political Sciences Institute, University of Lisbon. Since 1990, her research has focused on Portuguese Jews and Judaism; currently, she is studying the *Marranos* in Portugal, as well as the Portuguese cobblestone pavement as intangible cultural heritage. She is a member of the Board of Directors of the Portuguese Anthropological Association and a researcher at CRIA – Centre for Research in Anthropology, NOVA FCSH.

Meredith Steinfels joined the Hood Museum of Art in January 2018. Her numerous roles at the museum include: digital strategist, archivist and subject-matter expert in the use of museum digital platforms and digital infrastructure. Meredith was first trained as an archivist and then as a registrar, before stepping into the world of museum technology. Her practice is rooted in empathy and user empowerment, acknowledging the imperfect and sometimes harmful nature of databases and data management. Most recently, she served as the programme co-chair for the Museum Computer Network's (MCN) 2020 virtual conference. She received a BA in Art History from Goucher College, and earned her MLIS with a focus on archives, preservation and records management from the University of Pittsburgh.

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Ross Parry is Professor of Museum Technology at the University of Leicester, United Kingdom, and Deputy Head of its School of Museum Studies. Together with Vince Dziekan, he is the Series Editor of a newly-launched book series with Routledge, entitled, *Critical Perspectives on Museums and Digital Technology*. A former Tate Research Fellow, and the former Chair of the United Kingdom's National Museums Computer Group, Ross is also one of the founding Trustees of the Jodi Mattes Trust for accessible digital culture. He was also a Principal Fellow of the Higher Education Academy (currently Advance HE). A widely-read author, Ross's books include *Recoding the Museum: Digital Heritage and the Technologies of Change* (Routledge, 2007), *Museums in a Digital Age* (editor, Routledge, 2009), *Museum Thresholds: The Design and Media of Arrival* (co-edited with Ruth Page, Routledge, 2018), and, most recently, *The Routledge Handbook of Museums, Media and Communication* (co-edited with Kirsten Drotner, Vince Dziekan and Kim Schroder, Routledge, 2018). Since 2017, he has been leading the *One by One* initiative – a major Arts and Humanities Research Council funded research project, involving national governmental and professional bodies in the UK and US, with a view to developing digitally confident museums.

Sofia Carvalho is a PhD student in Heritage Studies specialising in Museum Studies at the Faculty of Arts and Humanities, University of Porto, where she is also a researcher at CITCEM. She is a graduate in Art History (2014) and has a Master's Degree in Information and Documentation Sciences (2018). She was a research fellow at IHA/NOVA FCSH, on the project *Public Art Interventions: From Cataloguing to the Virtual Museum – Case-Study of Graça Morais* (2020 – 2021) and a voluntary researcher on the project *History of the Calouste Gulbenkian Foundation's Art Exhibitions – Online Catalogue* (2016). She has worked with the Documentation Centre of MUDE – Museu do Design e da Moda (2016), MUHNAC – Museu Nacional de História Natural e da Ciência (2016-2017) and the Historical Archive and Library of Museu das Comunicações, in Lisbon (2018-2020).

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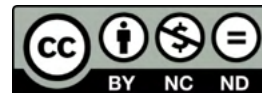
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More information available at:
<https://museumdigitalcultures.weebly.com/>

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