DARIAH (Digital Research Infrastructure for the Arts and Humanities)[1] Connectivity Roundtable

Six Decades of Digital Arts and Museums: A New Infrastructure Transcript

Re:Trace, 7th International Conference for Histories of Media Art, Science and Technology[2]

Hosted by Department of Image Science, Danube University Krems

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DISCUSSION CHAIR

- **Wendy COONES** (Austria), Scientific Staff, Department of Image Science, Danube University Krems

DISCUSSANTS

- **Giselle BEIGUELMAN** (Portugal), Faculty of Architecture and Urbanism, University of São Paulo
- **Howard BESSER** (United States) Professor in the Moving Image Archiving and Preservation, Department of Cinema Studies, Tisch School of the Arts, New York University
- **Patricia FALÇAO** (United Kingdom), Time-based Media Conservator, Tate
- **Oliver GRAU** (Austria), Chair Professor, Department of Image Science, Danube University
- **Sarah KENDERDINE** (Switzerland), Laboratory for Experimental Museology, École polytechnique fédérale de Lausanne
- **Marianne PING HUANG** (Denmark), Development Coordinator, Institute for Communication and Culture at Aarhus University
- **Christoph THUN-HOHENSTEIN** (Austria, AT) Director-General and Scientific Director, MAK Museum of Applied Arts Vienna

INTRODUCTION

Wendy COONES: I would like to welcome you today to the DARIAH Connectivity Roundtable. We are celebrating and discussing six decades of the digital arts and museums, and talking about what new infrastructures might be possible. We will introduce the topic for the session. We will introduce the panel of discussants. Then, each discussant will give a short statement in answer to the main question. Afterwards, we will have about 20

minutes for discussion among the panelists. And then we will open up the roundtable to questions from the audience.

Oliver GRAU: The worldwide museum community is more than 55,000 institutions strong. The US alone has more than 17,000, Japan 5,700, Germany 6,300, and so forth. It may seem that this infrastructure in all its diversity and history is such a mighty monolith that drastic change would be difficult to imagine. But the Digital Age enters with force and alters that status quo. It comes with new tools to present, collect and access cultural artifacts as well as to connect, explore and visualize research data. And it comes with its own digital-born art and cultures, as we all know, which have their own history of now more than five decades. Yet, while digital arts and cultures play a role in 200 biennials around the world, and more than a 100 specialized festivals, they do not so far significantly enter into the walls of the museum world.

Coones: The museum setting in our contemporary world has diversified, not only due to the digital revolution that has come to permeate global culture and interaction, but also due to many non-digital transitions that have come about alongside and due to this digital development. Digital technology has introduced new multifarious ways of expression and also changed the nature of the way that objects are collected, as well as changed the expressive methods available for displaying and archiving collections. These new objects and techniques used to preserve and interpret digital arts and cultures embrace interactivity make use of linear as well as nonlinear structures equally and encourage new methods of ever-deepening participation.

Grau: The massive developments in digital-born media art and popular culture have been growing exponentially for decades. Consequently, this requires that among the thousands of existing museums for traditional art media, a significant percentage of new museums dealing with the arts and cultures at our time must be dedicated to fulfill the fundamental functions to collect, preserve, explore, mediate and taxonomize digital culture. But how could that be done?

Coones: Historically, *wunderkammer* (cabinets of curiosities) and *studiolo* (study rooms) were places of play where the practice of *ars combinatoria* (combinatorial art) created something new through each viewing and its recombination, chance, or instant-linkage and inspiration. Creative process and knowledge production were essentially driven by comparison and interactive combination. Today, the interactive component–which was later restricted by the object-oriented museum–is reentering the digital museum and archive. In the current setting wherein digital media, and the enveloping windowlessness of dark space which functions again now as a precondition and enforcement of digital *ars combinatoria*, digital artworks, object representations, and clusters of digital worlds can now be partly experienced interactively, as well as influenced by the audience and recombined.

Grau: Digitization also offers new possibilities for cultural heritage with computational big data methods. Today, as over 2 billion people create global digital culture by sharing photos, videos and links as well as writing posts, comments and ratings, etc., it is possible to use the same technology to study this universe of contemporary digital culture. Also, the future archive will connect the object or document with other archives, artifacts, information, people, and events. Perhaps the archive will progressively absorb duties and features from other institutions and cultural entities, such as databases, installations, games, networks, knowledge tools, etc. On the other hand, many new instruments such as gaming systems or cell phones already come with their own archival functions and amalgamate seamlessly with other archives. Museums and archives use these technologies as interfaces for engagement and empowerment. Ironically, the United States National Security Agency (NSA) runs the most extensive archive. As we know, they collect all personal data, phone calls, Skype conversations, emails, and even shopping lists of all citizens from–basically–all countries in the world (except for the Five Eyes countries, as became known in 2013, when Edward Snowden leaked NSA information).

Coones: The main question that the discussants are going to address in their statements is:

- **How do museums and archives need to evolve in order to collect, preserve and also show the digital art of our time?**

- **And what kind of strategies and concerted preservation tools might be necessary to move forward?**

First, we will give to quick biographical information for each discussant. Then, we will hear statements from each.

PANELIST INTRODUCTION

Giselle BEIGUELMAN (Portugal) is on the Faculty of Architecture and Urbanism at the University of São Paulo. She is an artist, curator, professor, and researcher. Her work encompasses interventions in public spaces, network projects and mobile apps. Beiguelman's artistic and investigative practice is based on a critical approach towards digital media and information systems. She specializes in digital art conservation, intangible heritage, and interface design. Author of many books about digital culture, she recently co-edited *Possible Futures: Art, Museums and Digital Archives* (Editora Peirópolis, 2014).

Howard BESSER (United States) is Director of the Moving Image Archiving and Preservation (MIAP) masters degree program in the Department of Cinema Studies at the Tisch School of the Arts, New York University. He is a scholar of digital library science and the preservation of film and video. Besser is a prolific writer and speaker, and has consulted for many governments, institutions and arts agencies on digital preservation matters. He was also

closely involved in the development of the Dublin Core Metadata Initiative [3] and Metadata Encoding and Transmission Standard (METS). [4]

Wendy COONES (Austria) directs the Exhibition Design and Digital Collection Management post-graduate certificate and graduate programs in the Department of Image Science at Danube University, where she has since 2005 served on the academic staff. She is responsible for curricular development, graduate teaching, and research initiatives (such as the Media Art History Archive). [5] Coones is also primary coordinating staff for the low-residency program Media Art Histories [6], as well as the EU-funded Erasmus Mundus Joint Master Degree (EMJMD) in Media Arts Cultures. [7]

Patricia FALÇAO (United Kingdom) is Time-based Media Conservator at the Tate in London. For the previous eight years, she has been doing intensive research on the preservation of software-based artwork. Falçao also is an international faculty member in the Media Art Histories and Media Arts Cultures programs at Danube University.

Oliver GRAU (Austria) is Chair Professor in the Department of Image Science at Danube University, the first chair for Image Science in the German-speaking countries. He has given more than 280 lectures and keynotes at conferences worldwide. Grau's book "Virtual Art: From Illusion to Immersion (MIT Press, 2003) is the most quoted art historical monograph of the last decade (H-Index). His scholarship is translated into 15 languages, and most recently edited *Museums and Archives on the Move* (De Gruyter Mouton, 2017). He conceived the first international Archive of Digital Art (ADA, since 1999) as well as other new scientific tools for Image Science. And he is founding director of the international Media Art Histories Conference series.

Sarah KENDERDINE (Switzerland) in 2017 joined the École polytechnique fédérale de Lausanne (EPFL), where she is establishing the new Laboratory for Experimental Museology (eM+). [8] There, she explores the convergence between aesthetic practice, cultural data and visual analytics. Kenderdine also researches at the forefront of interactive and immersive experiences for archives, galleries and museums. And she gave the keynote here at Re:Trace on "Postdigital Pasts". [9]

Marianne PING HUANG (Denmark) is Development Coordinator at the Institute for Communication and Culture at Aarhus University. She recently collaborated on European Capital of Culture (ECOC) Aarhus 2017. And she serves on DARIAH European Union, is co-head for DARIAH Research and Education, and organized DARIAH Innovation Forum 2017. Since 2015, Huang is a member of Europeana Research Advisory Board.

Christoph THUN-HOHENSTEIN (Austria) is since 2011 the Director-General and Scientific Director at the MAK Museum of Applied Arts Vienna. Previously, he was the director of the Austrian Cultural Forum New York

(ACFNY) from 1999 to 2007.[10] Thun-Hohenstein is also head of the Vienna Biennale, founded in 2015.[11] He lectures and publishes on the topics of European integration and contemporary culture in art.

PANELIST STATEMENTS

Patricia FALÇAO: I think back to the diagram I showed during my presentation of time-based media in the Tate collection.[12] And I think that is where the problem starts. I think from within the museum, and there are a limited number of institutions that actually have any kind of responsibility for digital artworks. Actually one of the key problems there is that, at least in my experience, there is significantly less overlap between different areas that are interested in collecting digital-based arts than one would hope for—at least between media art festivals, contemporary art museums, archives, etc. My feeling is that these are all separate worlds. But I think with regards to the digital, the problems will end up being very similar for everyone.

In practical terms, I think that people *within the institutions* need to be confident that they can deal with these kinds of issues. And it has made a huge difference to me as a curator to be able to go in and say "yes, we can do that" as a conservator or a register. "It might take us a little bit longer, but we can do that." For this, you need to have a staff that knows what they are doing.

It could take a little bit longer. They may need a chance to learn. And there is a need to develop that knowledge. This is what has been going on within the very limited area of museums of contemporary art. And it is also going on with digital preservation and for digital archives. Like I said, the strategies are very similar. If you are thinking about software and emulation, there is no reason why there cannot be a series of software libraries that people can access, share, or copy. I don't think there is a lack of solutions, but I do think there is a lack of coordination. That is the key point.

Giselle BEIGUELMAN: With my statement, I will focus more on online art than on digital art in general. Obsolescence in dysfunctional equipment and files-not-found seems to be the perfect image of net culture and the paradigm of online life. Perhaps this eminence of disappearance justifies the apocalyptic tone that is suggested by the most elementary comments of digital editing programs, which continually invite us to save files and not simply to store them. And that is why I revisit here some considerations I have made in my book *Possible Futures*.

My answer to the main question, "how do museums and archives need to evolve in order to collect, preserve and show the digital art of our time", is that the reinvention of memory is now necessary. One of the adages of the contemporary world is "the Internet does not forget". But social networks do not *let us* remember. The information architecture for these floating data spaces does not favor retrospective queries. This does not mean that the data is not there. On the contrary, it is. The data is simply not accessible by search engines. If you go now to the Internet Live Stats website,[13] you will see that in 1 second that there are 800 pictures uploaded to Instagram—which is more or less 48,000 pictures in one day. This amount of data production all day, every day is part of our effective

memory, and this memory is becoming something that we cannot retrieve anymore. And part of this memory is also part of our digital heritage and part of artworks.

So from my point of view, we must learn how to negotiate collection and preservation tools in a moment when memory is also a corporate issue, and everything can disappear in one second from one moment to another. What if Facebook just decided to end, or Google stops today? What would happen to our memories that are stored there? And how many artworks would go with those systems and apparatus? So, there is the question of how these services track us, but also a very important question that our memory is also a corporate issue. Our memory deserves a kind of ethical code that our archives must elaborate and answer.

Oliver GRAU: As we know, compared to traditional art forms like painting or sculpture, digital media art has a multifarious and fairly complex potential due to its ability to use databases, three-dimensionality, interactivity, and all of these complex image forms. And as we know, digital art uses those to deal also with very complex topics of our time, like climate change, to visualize the surveillance problem, the media and image revolution, even the virtualization of financial markets, which as we all know is such a powerful development that affects us. We can also show these topic clusters with the Archive of Digital Art,[14] but also through empirical analysis of the some 150 digital art festivals around the world, as we all know–such as Ars Electronica. But then it is like a wall. And digital art does not enter the museum world so far. There are many reasons for that. The basic reason is that the museum is a bit outdated. Its structure is now 200 years old. It was very qualified for paintings and sculpture, but it was not made for the digital age. And so we have to think of new structures.

First, I want to say that our society is able to do such things as the NSA archive, for example, where data is stored on every human being. I do not want to propose such an archive for art. But I just want to say that if our society wants something, then it can achieve it. But on the other hand, the digital art of our time, which we have all seen at festivals as 10s of 1,000s of people go to these festivals, but only for a few days or weeks. But it is not entering our museum or archive systems.

Maybe federalism, which we have in Germany, Austria and many other European countries, can help. As we know, Germany for example, has 6,500 museums. If only 1% of them, so 65 museums, would be dedicated to digital art–and even that we say that the Free State of Bavaria builds up a technological framework that guarantees the preservation of interactive arts, and then Baden-Württemberg built a competency network for bio art, Brandenburg for net.art, and so on–then we would cover the entire field of digital art. Then even the old and often small structure of the museum, where you have curators, but not many people who can preserve technology, could be integrated with this larger framework more appropriate to the digital revolution. This could allow a democratic society, which has a duty by law to preserve and present the art of our time, the ability to reflect on big issues like climate change or surveillance society, through the very institutions that are supported by us as taxpayers.

Marianne PING HUANG: First of all, I would like to thank Patricia Falçao for her presentation today. She showed that digital art collection and preservation is in fact going on, it is going on meticulously, and it is going on with stamina from inside the museum. Digital art collection, preservation and showing is happening, but ever so slowly. And this is going on, as well, with a big prestigious museum like the Tate. But we museums are a widespread landscape with hierarchical distribution. I think you need to take that into consideration as well in order to evolve the collection and preservation of media art. I also think that we need to address how media art in institutions would need a new field of cross-expertise, which was also something Patricia pointed to. So, I would also like to turn the table, and ask: "What can we learn from media art?"

Media Art has through its history of at least 60 years been involved in impacting society in various ways, and is now through the digital transformation really spreading this impact—through festivals and on. I think the presentations at this conference have shown that media art is also teaching institutions, is altering archival formats, and is altering the way that we consider infrastructures. And I think that is really important to take into account. Museums should evolve. But museums should also learn from all the ways in that media art has pushed archival formats, collection infrastructures, and the ways by which the public is engaged.

That might be the next step, to ask: "How would we preserve and collect the media art that is, well, 'dancing the archive', and also 'playing the infrastructures'?" Using the sensor-rich architectures that are collecting or potentially collecting audience data, how could media art bridge the institution, the society, and the audience? I think that is already going on. It is going on with *Persona Non Data*,[15] exhibited at Somerset House and the Courtauld Gallery in 2015. But this is a learning process.

Christoph THUN-HOHENSTEIN: The MAK is the Vienna Museum of Applied Arts, which also collects contemporary fine art. But we, obviously, do not have the obligation to preserve, collect and show digital art. We can be more eclectic, which is in a way right and true, and in a way wrong. I will tell you why. We were the first museum in the world to acquire a piece of art with Bitcoin: *Event Listeners* (2015), a limited-edition screensaver by Berlin-based Dutch artist Harm van den Dorpel.[16] But what is really interesting for me is trying to promote the dialogue between art, architecture and design, also with science, the academic world, research technology, and civil society.

For achieving this, our main method is to make people and our society aware that for the last ten years we have lived in a new modernity, which started with the first smartphone. This new modernity changed everything. And we have to shape this new modernity. We need all the ideas and input that we can get, and from everywhere, because if we do not shape this modernity actively, then its technologies will shape us. Such a phenomenon is what we are currently experiencing. That is the reason I also founded the Vienna Biennale (which is the world's first biennale on art, architecture, and design) to work for positive change in digital modernity, and to really deal with

robotics, artificial intelligence, the future of human work, and so on. I think that the most important question is: "What is the truly relevant digital art out there?" Of course, you have to curate art. You have to make a selection. "What is the art of our time that is really representative of this new digital modernity that we live in?"

Our approach at the MAK would be that we have to act as a platform that asks the relevant questions, and tries to get the most relevant artists, designers, architects, and others that are associated, as well as commission projects, that answer those questions that we need to ask. We also need avenues on how to address those questions. (The question of preservation I would leave to others. It is a tricky issue.) But I think that the selection of digital artworks is very important. For example, the next big things out there are virtual reality and artificial intelligence. I refer now to a talk between artist Douglas Coupland and curator Daniel Birnbaum, in the November 2017 edition of *Artforum*.[17] And one thought that we should always remember: the art in a new technology becomes really interesting when that technology has been overtaken by yet a newer technology. So now, we have really interesting art that relates to TV. And we have very advanced education and above all entertainment in VR. But I think that the time that VR will be a big topic for relevant art is really when the next technology will overtake VR.

Sarah KENDERDINE: Because I make things, big things that could be collected, maybe it is interesting to reflect on those processes. Often these digital artworks involve clusters of computers, not a single computer. To install one of our works requires a team of specialists and software engineers that we know and that we train—that train us actually. The nuances of keeping such works on tour around the world are quite significant. And I am always in sleep at night wondering: "Oh, God! What if the plane crashes with Damien on it—that single person who is the sole insight into how this whole thing will come together in the end?" That is certainly one issue. What we do is a lot of documentation. We do not document code in the ways that we probably should. But we document experience of the work. And we document the technical infrastructure that is involved in putting it together. I think this is a useful practice for people who make stuff. The people who are making things need to take on that responsibility, so that when people collect it is a lot easier. I think that would be a useful strategy and preservation tool moving forward.

Actually, the Media Art Histories conference session right before this was quite interesting. Richard Reinhart, Director of the Samek Art Museum at Bucknell University in the United States, mentioned this idea: We do not have a language that describes new media accurately to a non-specialist audience is a really big problem; and this idea skirts around the issue of standards. There might be need for a tool like the Getty Research Institute's Art & Architecture Thesaurus[18] for new media art. Does it exist? I'm not sure. [cf. Media Art Research Thesaurus][19] But this could be a really useful approach.

The issue of documentation flows into other aspects of the work, where there is no standard for the work that we're doing. There are no standards for 3D motion capture data of a Kung Fu master.[20] I think that the standards issue is really critical in a preservation sense, for how digital artworks can be accurately described, and ultimately

preserved, collected and shared. And the network of people, between universities that can solve particular hard challenges, and the GLAM sector who need these solutions and develop in-house their own solutions, this needs to be helped along.

Howard BESSER: In 1987, 30 years ago, I wrote an article called "The Changing Museum".[21] To quote from that: "Eventually new areas of research, such as pattern recognition, will be applied to these museum systems, allowing the computer to do some preliminary syntactical analysis of works of art. The computer will be able to give statistics as to quantities of various colors used and their distribution around the canvas. Later it should be able to analyze angles and line of sight flows through paintings and moving images. Finally, the computer should be able to view the composition of the work of art as a system similar to a language, and break it down into its interrelating components to see how they work together, much as computerized language analysis does." Essentially, this is semiotics. Something like that we have seen reflected in the analysis of Wes Anderson's films by Mehul Bhatt in his conference presentation "The Shape of the Moving Image: Perspectives from Spatial Cognition and Artificial Intelligence" at Göttweig Abby yesterday,[22] and I think this feeds into what George Legrady in his presentation on "Projects in Visualizing Data 1992-2017" was talking about earlier today.[23] Certainly, it is a trend among cultural institutions–all types of institutions, actually–to participate in big data. Here, the kind of information you have in your own institution becomes fodder for doing something else—for analysis, even for the creation of new works. Appropriation work is based on things that exist in our cultural institutions already.

I also went back and looked at two chapters (in a very poorly named book) I wrote 20 years ago. It was edited by Katherine Jones-Garmil and published in 1997 by the American Association of Museums, and it is called *The Wired Museum: Emerging Technology and Changing Paradigms.* (That was not thinking very far ahead, apparently…) Spinning off of what Sarah just said about the call for standards in digital art, in those chapters I focused on what standards would allow others to work with the contents of artist, researchers, developers, and visitors to build upon museum collections with new art, new visualisations, new curations—things like that. That feeds into a lengthy paper I wrote 12 years ago with Steve Dietz, Ann Borda, Kati Geber, and Pierre Lévy, called the *Virtual Museum (of Canada): The Next Generation*.[24] One of the key elements of this paper was that, in order to be a museum in the future, you have to really engage with the audience in very new ways.

Taking these ideas and focusing on the heart of the question, from my own perspective as someone who trains people to be conservators in this area, I really think that we need more training and specialization particularly in this area. And that is pretty complex. To be a time-based media conservator requires knowledge about media art history, technology, and documentation standards (metadata—things like that). Museums really have not made it a priority with funding and procedures to handle these. There are not many institutions with time-based media programs, with time-based media conservators, curators—there are more curators than anything else. We made a lot

of progress. One of the things that advanced museum has done, is that the before work is acquired, a whole team from all the departments in the museum, get together to look at the piece.

PANELIST DISCUSSION

Coones: We now have time for discussion to go deeper into these issues, and open it up for questions to the audience as well. First, I would like to take a few moments to mention some points that I noticed as being shared between you. One is that conversation has been continuing for a long time. There is a long-standing body of research and body of work that can be drawn and built upon. But every time there is new technology that takes over the old technology, that has to be learned from, that has to be updated, there has to be people that understand it and bring it up-to-date into the next phase. We are constantly pushing definitions in language and also definitions in how we understand what the parameters of the works are. This means that we need to be able to teach institutions as well as teach the makers as well. This of course then requires curation and documentation. This requires people to make decisions about what is going to be looked at, how it is going to be looked at, what kind of standardization and documentation strategies are going to be there, as well as also looking at collaboration and communication both on an international and institutional level. I think these are some of the commonalities between all of you. I would like to first open up to the panelists to discuss amongst themselves, perhaps if you have questions for one another. And then we will open up to the audience Q&A.

Thun-Hohenstein: I would like to address the issue that we have to show art that is relevant, relevant to the people. For me a huge issue is "remix". We live in an age of remixing. Museums have some huge collections. What have I always found very interesting, is to commission artists to remix existing works using new technologies. I will give an example. At the MAK, we have one of the most important works by Gustav Klimt, with 9 panels, a cartoon for a mosaic that is in Brussels. It is a fabulous piece that you can translate. It would be great in Virtual Reality. And next year we are going to do that. We are working with a filmmaker Frederick Baker, who works in VR. Next year is a big Klimt year. We are going to remix Klimt, create a new work of art, and take that as the point of departure.[25] This is just an example. But I think that museums should also think about existing works of art, non-digital works, and how you can then use digital technologies to get these artworks across to a new audience, in new guises, and also then as a way of newly evaluating the original.

Kenderdine: So then, are you going to collect in the museum the very artwork that you commission?

Thun-Hohenstein: I think that is the idea, yes.

Grau: I also want to add to that. The work that you do at Tate, Patricia Falçao, and what is also done at the Guggenheim, the MoMA, and also the ZKM (Center for Art and Media Karlsruhe, Germany), it is fantastic, it is totally needed, but it is not enough. When I talk to people from the preservation field, they say: "Most of the case studies are made but now we need concerted action." We need all of these individual museums somehow to work together. We need a higher structure. If you talk to cultural politicians, for example, such as the German Minister of State for Culture, and ask her—there was recently a conference at the Jewish Museum in Berlin—"Do you intend to archive the art of our time?" And she said: "Yes, we have the ZKM." She does not know. And you laugh, but this is the truth, this is the political situation. Somehow there is not enough knowledge in this area. We tried to invite some cultural politicians from Austria, but due to all the coalition building at the moment, they said not now.[26] But it is an important question and we need to address it. We could start with a simple questionnaire, sent from the ministry to all the museums in Austria, Germany, etc. "How many digital artworks do you have in your collection, and what are you doing to preserve them?" And the result, well I can tell you, is 0.001. As we all know, we lose all of the art of our time, all digital artworks. Digital artworks more than 10 years old, you cannot show anymore. The systems are not successful. We need to rethink. And we need to push the development, so we don't lose another five decades of digital art.

Ping Huang: I think that maybe a survey would be interesting as a kind of proof about the situation in museums and archives as regards to collecting, preserving and showing digital art. Surveys of digital practices have been done in arts and humanities research, and actually make visible really interesting trans-national results. But I was also thinking: Could we find leverage from outside cultural politics, by looking at something where artistic practices or artistic research is now being highlighted in collaboration with science? There was just a festival in Oslo on Technology & Emotions where the artist was invited to talk about his work with CERN.[27] That might be a way to leverage the action by cultural policy makers so as to move this debate forward.

Besser: In terms of the problem that Oliver Grau just mentioned, I think we are up against two opposite issues. The reasons museums do not collect digital art is either a) they know too little (and think that digital last forever, so why bother collecting it); or b) they know too much (and think that it's going to cost an awful lot, so who has the resources to preserve). Addressing those problems is completely different. If it costs too much, then that is a funding and resource issue. That is why you talk to your minister or governmental representative, or we take actions such as the Liverpool Declaration. But the other problem, the idea that digital last forever, this has to be addressed in a different way by a group broader then ourselves. It is just not true. And most people have experienced their own digital files—their word processing documents—no longer being able to play. But they still don't recognize that digital *does not* last forever.

Beiguelman: I totally agree with you about these two problems. But I think there is a third one: that memories are a kind of commodity and corporate issue. The problem is that many institutions decide to keep the equipment, and to store everything. So, if you keep the VHS player, everything is solved. If you keep your old computer, then everything is solved. Preservation does not work like this. Everything changes. And if you keep all those technologies, then you would need a museum just for those technologies. There is an interesting book by Ricardo Piglia, an Argentinian writer, called *The Absent City*. It is a story of a city, where they move the city inside of a machine. The machine is a museum and everything goes there. At one point, the city is empty, because they store everything in the museum. And everybody dies at the end. This is something that you must think about. If we keep all the technology, what will we do? How much space will we need? How long will it live? Who will keep this equipment running on? Is it possible to keep if we do not have standards? And if you keep everything following the rules of companies, what happens? I think we must have some kind of syndicate, a common decision or cultural policy that is more international and addresses digital culture as it is.

Kenderdine: Just one brief comment, an "ethical framework" may be what you mean…

Coones: I would like to draw back a little bit to the word that we used in the question that is the word "evolve". So if you could perhaps address a little bit about how museums and archives, our notion of them perhaps, or how they work, might need to evolve?

Kenderdine: It is a commonly discussed topic: emulation. Do you preserve the computers and the screens and the software? Or do you document the digital artwork to the degree that you can reproduce it on new frameworks as a similar experience? If so, you have to understand the nature of experience, which is critical to archiving the work. And this is that something that comes up at the Tate, Patricia Falçao, when you discuss it—because I know that you are discussing specific works. If you at the museum were not able to collect the bits and pieces that make up the artwork, would you adopt a different approach? For example, I have this nice machine for one of my digital artworks. The machine has 59 projectors and 26 computers—you are never going to collect it? But you could say "it's a panoramic system that does 'x'", yes?

Falçao: That is the approach. That is what we do in an acquisition process. We understand what we need to keep, or have in our hand to preserve the work, and what can be changed. This applies to media, but also… I was joking about a computer, because it is something that the artist gave us. We call this an "artist-verified proof." This means that the artist themselves installed the artwork. The artist says: "This is what it should look like." But we also make lots of copies. But we are conservationists in a museum, so we also know that this is not the solution. I am not trying to remove the responsibility of the museum. However, I think that all the success of video-based art, for

example, artists and artist cooperatives achieved themselves. Museums have some responsibility, yes. But are there similar artist cooperatives nowadays where they themselves are working to preserve their own artworks?

Besser: Yes. In New York, my students created something called Transfer (XFR) Collective. [28] This is an organization that works directly with artists to preserve their works, to reformat their works, and keep their works alive. Transfer Collective started out as a project in the New Museum where museum staff just made appointments with artists to come in, and the "transfer" was part of the exhibit. So there were two sides to it: on the one side was video transferred to digital, and on the other side was old visual media transferred to newer. But yes, museum staff does go around to artist festivals for recruiting artists to preserve their own works. This is filling a gap that museums aren't filling. And so far it has been very successful. It's been about five years. Now there are other Transfer Collectives.

Grau: I would like to add to what you said, Howard Besser. As we know, there are artworks like *Osmose* by Char Davies. It is a classic work of digital art with some 200 articles published about it. But you cannot see this artwork in any museum anywhere in the world. Davies herself even had to reconfigure it, from a supercomputer to a personal computer level. In the end, as a society, we have to think: Do we want digital memory? The NSA is doing that. And of course we should not follow the NSA. But this is something we can achieve. I would like to ask you, Marianne Ping Huang, what could Europeana do? Is digital art included in your data model?

Ping Huang: Europeana is a transnational institution that is to large extent aggregates from other institutional projects. I looked at if something like the Europeana networks, which is more community-based than libraries, could be an actual possibility for digital art. There is the Archive of Digital Art, ADA, and others. But I think such a network transnationally between museums and archives could in a way develop through the Europeana organization.

Thun-Hohenstein: I think there is also a strong case for "co-ownership" of digital art between several museums across countries. Though, I think that this might be more difficult to carry out than with an expensive oil painting. But digital art really lends itself to co-ownership. That way, museums could show these works more often, etc. Of course maybe this is also about showing less works. You have to curate. But really outstanding works should be owned by several museums. If the digital artwork is in editions, then it is a different thing. But, in general, there is a strong case for co-ownership, because these museums could then look to each other as a kind of peer-review in terms of conservation.

Besser: This was one of the reasons for the creation that Matters in Media Art[29] in the first place: to figure out what would happen if one particular collector was thinking of giving their work to multiple museums, and they wanted to see what would happen, and how that could work.

AUDIENCE QUESTION AND ANSWER

Patricia ENGEL (audience): First of all, I would like to thank you for this great conference. Second, I would like to address the question of conservation. I should say that I am a conservator of traditional cultural heritage. And I especially saw a connection between what I learned here today and my field in terms of the conservation theory. Despite the fact that we have many approaches to conservation theory in our traditional field, I just had attended a huge international conference on conservation where conservation theory led to a wide debate. My suggestion is, or my question to you is, if you would see a benefit in interdisciplinary discussion on conservation theory?

Besser: Two of us are in the conservation field: Patricia and myself. We are heavily involved in the world of conservation. She was trained as a conservator.

Falçao: What do you mean by interdisciplinary? I do not see any other option than interdisciplinarity, actually. The way that I think about conserving the works and how, requires one to adjust traditional conservation theory to this different reality that you have in media works. In what way would you want interdisciplinarity to happen? I think that you are right about finding the right literature. But there is quite a lot published about collecting and displaying media arts. I do not think they are explicitly about the theory of media conservation, but there is a lot there.

Besser: If you look at CoOL (Conservation Online)[30], there's plenty there, and lots of literature there on media conservation. The North American Conservation Association AIC has a group that is focused on media art.[31]

Coones: I think that is one reason why this Media Art Histories conference series is international, and though it might be held in one continent more often than the next, there are representatives from most continents here in the people that are coming. We need to make sure that we are all reading each other's literature as well, across nations and languages.

Sjoukje van de MEULEN (audience): First of all, thank you so much for this panel. I am really happy this is taking place. This is a very import topic. And I heard very different point of views on these issues. I do want to add two points. By the way, besides my university job, I work at two museums in the Netherlands, the State Museum and the Van Gogh Museum. First point is if we want the digital art of our times to somehow come into the museum,

then I think it is also important to think about the different states that involve museum today. Since digital art was introduced in the 1990s, museums have been changing enormously. And here I am just limiting myself to the Netherlands. Museums are pushed into becoming moneymaking machines. And so "the museum is a mass media". We have to take this into account, because if we want to achieve something, we have to think about sources of money. Museums do not see only what it cost them, but also what it brings them. Otherwise they will not do it.

The second point is that I am working as a museum editor and just two weeks ago there was a big, big conference for museum educators in the Rijksmuseum in Amsterdam. Speaking about priorities, all the money flows there, the more commercial museums become by going into public, and away from art, in a sense. So, you have to somehow know all the factors and priorities in museums in order to get digital art into museum collections and recognized. Maybe I can end with one example, the Van Gogh Museum has made a virtual reality of the bedroom of Van Gogh. It works wonderfully well. In China, they know, people want to see this, and go, and enter the virtual space. But of course, that's not Van Gogh digital art. But that makes money.

George LEGRADY (audience): Thank you for the panel, it is great. I would like to throw in a couple of perspectives from the practice end of things. I'm an artist, and I've been doing interactive media art for nearly 30 years. Some of the challenges that I see in terms of negotiating the space of museums and collections are: first of all, much of the new media projects are experimental in nature, and therefore fragile in terms of their actual makeup. So the challenge is actually how we resolve that. And on the other end, there is the challenge of who makes the selections. One of the big things I've learned from Oliver Grau is the focus of the Danube University Krems program to train curators in media art. One of the challenges that I notice is that curators do not have the specialized background to discern things. So, there is a reliance on the commercial gallery situation, and basically the commercial gallery is a shopkeeper, not necessarily an intellectual or someone who is looking at the future of this field. And so I just want to throw that out. So I think that's what we end up seeing. A lot of the works that end up in collections, based on my observations, are the more simple works—let's say a for lack of better terminology. They're simple in terms of maintenance and simple in terms of ideas. Meanwhile the really complex works never enter the discourse. So that's something I think we need to consider in the long-term situation.

Diego Mellado MARTÍNEZ (audience): Hello, I am a student of the Media Art Histories program. My question is for all the discussants: Given into how fast things change in media art, especially with computer-based artworks, what do you think standards should look like? What kind of requirements should a standard fulfill?

Falção: We have started to see this actually, with artist using open-source techniques. So one thing is to make sure that what an artist is doing is open and documented. That is not a standard, but it is a start.

Kenderdine: I think that you need to make a distinction between the artwork and its media. These are different things. We are not talking about artworks being a standard. Hopefully they are not. They're the opposite, yeah, very idiosyncratic. Also this conversation is a bit muddy because it goes out into archival stuff, as opposed to artworks made of archives […]. So media artworks must be set aside from the archive, let us say. When I talked about standards, I meant that as related to certain types of media involved in them. And why you need standards is so that you can share. It is a simple metadata thing. And linked open data means the more datasets can be shared the more enriched we become.

Besser: We have worked a lot with individual artists. They're really surprised when we tell them that their artwork would be more preserve-able if they used underlying standards—open source software, standardized software, things like that. A number of them just change their practice for their future projects to be like that. The artists are just not aware.

Thun-Hohenstein: I think that it is really important that art museums have curators for digital art and digital culture. I mean curators who kind of on-the-job specialize on digital art, but at the same time also eminent specialists in contemporary art in general, and then find a specialist curatorial position to give digital art the appropriate space in the exhibition program as well as the collection schedule. It is very important. We just appointed a digital cultural curator at the MAK in Vienna and it makes a difference.

Morten SØNDERGAARD (audience): I would like to address the question of the institution and institutionalization of media both from inside and outside the museum. Is the museum the right place for media art? I am in doubt. I am not sure. Actually, I do not think so. But that might just be my personal opinion. As I have been discussing with Marianne, we've been speaking about a broad infrastructure that goes across institutional competences. But I think there is a more irritating, and very important decision to make for the museums before we can move ahead: do we really want media art as part of the museum? And if you do, then that actually means that the institution might change. It needs to run on a different paradigm. I would suggest that media art runs on a different paradigm than contemporary art for instance. But this is a different discussion. I tend to say that the most stable things in this situation are the instabilities. We have these key instabilities that we can all think of: the documentation, the situation of these obsolete technologies, the context that evolves, our aesthetic judgments, and all of these things. They are always coming in and these are the challenges. Maybe this can be the starting point of the discussion—and it is of course. What is the best infrastructure for meeting these challenges? I am not sure it's the museum.

KENDERDINE: I don't think that this panel is suggesting that either. I think that everyone is looking for a network solution in that sense. So there will be instances in the museum but equally in other contacts. And the infrastructure

idea that could support the archive-ability of this material is definitely a multi-institutional type of thing. And a European type framework is possible in that kind of network.

José Ramón Alcalá MELLADO (audience): First of all, congratulations for the great conference. I'm very pleased to be here and to hear what I have heard. I am a museum director the Museo Internacional de Electrografía in Cuenca, Spain. We have a lot of interactive artworks in our collections. We have over 120 pieces done with obsolete programs like Director or Flash, that really there no machines today that can run that. So we have a special computer dedicated to that, for example, Max Use System 9.0 that can run these CD-ROMs. I spend a lot of money on programmers that can actualize or update these things. But the question is: "Who is interested in it?" So there are two questions, for me: first, we must create the desire in people to really be affected, to really love these pieces. This is the first thing we must do. To do that, we must create an artistic theatre that specializes in it, a story told that everybody understands, and is in love with the artist, with the work, etc. In that case, maybe, someday using that program, the exhibition of media art will have this huge cue like Picasso. When we get it, I'm sure that managers of museums will be really interested, in having, in getting, in buying, in showing, and in conserving. Then starts the second problem, which is conserving and restoring. The restoration of media art as a scientific practice is very new. That's not true if you go to Prado Museum, where you have a special department only dedicated to preserve works from whatever—the 17th, 18th or 14th centuries. It has a lot of money to spend on it. And this is a science practice. So a research that there are many specialized conferences where these guys go from here to you to discuss. This is the best way of doing that. Can you imagine a department specialized in conserving digital art? If I could get one of those guys into my museum, and pay him every month, then there is no problem. They will always be updating systems, hardware, software, etc., and going all around the world to congresses focusing on what is the best way of doing these things. So it is clear: first create the desire in the people.

Transcript by: Devon SCHILLER, Scientific Assistant, Department of Image Science, Danube University

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[1] DARIAH https://www.dariah.eu/
[2] Re:Trace http://www.mediaarthistory.org/retrace
[3] Dublin Core Metadata Initiative http://dublincore.org/
[4] Metadata Encoding and Transmission Standard http://www.loc.gov/standards/mets/
[5] Media Art History Archive http://pl02.donau-uni.ac.at/jspui/
[6] Media Art Histories graduate program https://www.donau-uni.ac.at/en/studium/medienkunstgeschichte/index.php
[7] EMJMD Media Arts Cultures graduate program http://www.mediaartscultures.eu/mediaac/
[8] Laboratory for Experimental Museology https://emplus.epfl.ch/
[9] Sarah Kenderdine, 2017, "Postdigital Pasts", Re:Trace http://pl02.donau-uni.ac.at/jspui/handle/10002/906
[10] Austrian Cultural Forum New York http://www.acfny.org/
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[12] Tate's "Things Change" http://www.tate.org.uk/about-us/projects/pericles/things-change-conservation-and-display-time-based-media-art
[13] Internet Live Stats http://www.internetlivestats.com/
[14] Archive of Digital Art https://www.digitalartarchive.at/nc/home.html

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[16] MAK, 23 April 2015, "MAK purchases digital art work by harm van den Dorpel with Bitcoin", http://www.mak.at/jart/prj3/mak/data/uploads/downloads/presse/2015/Harm_van_Dorpel_e.pdf

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[21] Howard Besser, 1987, "The Changing Museum", http://besser.tsoa.nyu.edu/howard/Papers/newpapers/asis87changingmus.html

[22] Mehul Bhatt, 2017, "The Shape Of The Moving Image: Perspectives from Spatial Cognition and Artificial Intelligence", Re:Trace, http://pl02.donau-uni.ac.at/jspui/handle/10002/904

[23] George Legrady, 2017, "Projects in Visualising Data 1992-2017", Re:Trace http://pl02.donau-uni.ac.at/jspui/handle/10002/942

[24] Virtual Museum (of Canada): The Next Generation http://besser.tsoa.nyu.edu/howard/Papers/vm_tng.doc

[25] MAK, "Klimt's Magic Garden: A Virtual Reality Experience by Frederick Baker", https://www.mak.at/en/program/exhibitions/exhibitions?event_id=1516070722321&article_id=1514946430999

[26] The conference was held about a month after the 2017 Austrian legislative election and during the time of government coalition building.

[27] Technology & Emotions 2017 https://www.techem.live/

[28] Transfer Collective https://xfrcollective.wordpress.com/

[29] Matters in Media Art http://mattersinmediaart.org/

[30] CoOL Conservation OnLine http://cool.conservation-us.org/

[31] American Institute for Conservation of Historic and Artistic Works, http://www.conservation-wiki.com/wiki/Electronic_Media