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EDITORIAL MANAGER **ÇAĞLAR ÇETIN**

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INTERFERENCE STRATEGIES

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BOOK EDITORS
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Sabancı Üniversitesi

KASA GALERİ

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Operational & Curatorial Research in Contemporary Art, Design, Science & Technology

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Interference Strategies: Is Art in the Middle?

If we look at the etymological structure of the word interference, we would have to go back to a construct that defines it as a sum of the two Latin words *inter* ((in between)) and *ferio* ((to strike)), but with a particular attention to the meaning of the word *ferio* being interpreted principally as *to wound*. Albeit perhaps etymologically incorrect, it may be preferable to think of the word interference as a composite of *inter* ((in between)) and the Latin verb *fero* ((to carry)), which would bring forward the idea of interference as a contribution brought in the middle of two arguments, two ideas, two constructs.

It is important to acknowledge the etymological root of a word not in order to develop a sterile academic exercise, but in order to clarify the ideological underpinnings of arguments that are then summed up and characterized by a word.

This book, titled *Interference Strategies*, does not (and in all honesty could not) provide a resolution to a complex interaction – that of artistic interferences – that has a complex historical tradition. In fact, it is impossible, for me, when analyzing the issue of interference, not to think of the Breeches Maker (also known as Daniele da Volterra) and the coverings that he painted following a 1559 commission from Pope Paul IV to 'render decent' the naked bodies of Michelangelo's Buonarroti's frescoes in the Sistine Chapel. That act, in the eyes of a contemporary viewer, was a wound inflicted in between the relationship created by the artwork and the artist with the viewer ((*intentio operis* and *intentio auctoris* with *intentio lectoris*)), as Umberto Eco would put it. Those famous breeches appear to be both a form of censorship as well as interference with Michelangelo's vision.

Interference is a word that assembles a multitude of meanings interpreted according to one's perspective and ideological constructs as a meddling, a disturbance, and an alteration of modalities of interaction between two parties. In this book, there are a series of representations of these interferences, as well as a series of questions on what are the possible contemporary forms of interference – digital, scientific and aesthetic – and what are the strategies that could be adopted in order to actively interfere.

The complexity of the strategies of interference within contemporary political and aesthetic discourses appears to be summed up by the perception that interference is a necessarily active gesture. This perception appears to exclude the fact that sometimes the very existence of an artwork is based on an interfering nature, or on an aesthetic that has come to be as non-consonant to, and, hence, interfering with a political project.

Interfering artworks, which by their own nature challenge a system, were the artworks chosen for the exhibition *Entartete Kunst* (1937). The cultural and ideological underpinnings of the National Socialist German Workers' Party could solely provide an understanding of aesthetics that would necessarily imply the definition of 'degenerate art' produced by 'degenerate artists.' Art that was not a direct hymn to the grandeur of Germany could not be seen by the Nazi regime as anything else but 'interfering' and hence 'degenerate,' since it questioned and interfered with the ideal purity of Teutonic representations, which were endorsed and promoted as the only aesthetics of the National Socialist party. Wilhelm Heinrich Otto Dix's *War Cripples* (1920) could not be a more critical painting of the Body Politic of the time, and of war in general, and therefore had to be classified as 'degenerate' and condemned to be 'burnt.'

Art in this context cannot be and should not be anything else but interference, either by bringing something in between or by wounding the Body Politic by placing something in between the perfectly constructed rational madness of humanity and the subjugated viewer. An element that interferes, obstructs and disrupts the carefully annotated and carefully choreographed itinerary that the viewer should meekly follow. In this case interference is something that corrupts, degenerates and threatens to collapse the vision of the Body Politic.

In thinking about the validity of interference as a strategy, it was impossible not to revisit and compare the image of Paul Joseph Goebbels viewing the *Entartete Kunst* (*Degenerate Art*) exhibition [11] to the many images of pompously strutting corporate tycoons and billionaires in museums and art fairs around the globe, glancing with pride over the propaganda, or – better – over the breeches that they have commissioned artists to produce.

Today's contemporary art should be interfering more and more with art itself, it should be corrupted and corrupting, degenerate and degenerating. It should be producing what currently it is not and it should create a wound within art itself, able to alter current thinking and modalities of engagement. It should be – to quote Pablo Picasso – an instrument of war able to *interfere*: "No, painting is not done to decorate apartments. It is an instrument of war for attack and defense against the enemy." [12]

If art should either strike or bring something is part of what has been a long aesthetic conversation that preceded the Avant-garde movement or the destructive fury of the early Futurists. In this particular volume the issue of art as interference and the strategies that it should adopt have been reframed within the structures of contemporary technology as well as within the frameworks of interactions between art, science and media.

What sort of interference should be chosen, if one at all, remains a personal choice for each artist, curator, critic and historian.

If I had to choose, personally I find myself increasingly favoring art that does not deliver what is expected, what is obvious, what can be hung on a wall and can be matched to tapestries. Nor can I find myself able to favor art that shrouds propaganda or business under a veil with the name of art repeatedly written in capital letters all over it. That does not leave very much choice in a world where interference is no longer acceptable, or if it is acceptable, it is so only within pre-established contractual operative frameworks, therefore losing its 'interference value.'

This leaves the great conundrum – are interferences still possible? There are still spaces and opportunities for interference, and this volume is one of these remaining areas, but they are interstitial spaces and are shrinking fast, leaving an overwhelming Baudrillardian desert, produced by the conspirators of art and made of a multitude of breeches.

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In this introduction I cannot touch upon all the different aspects of interference analyzed, like in the case of data and waves presented by Adam Nash, who argues that the digital is in itself and *per se* a form of interference: at least a form of interference with behavioral systems and with what can be defined as the illusory realm of everyday's 'real.'

Transversal interference, as in the case of Anna Munster, is a socio-political divide where heterogeneity is the monster, the wound, the interfering and dreaded element that threatens the 'homologation' of scientific thought.

With Brogan Bunt comes obfuscation as a form of blurring that interferes with the ordered lines of neatly defined social taxonomies; within which I can only perceive the role of the thinker as that of the taxidermist operating on living fields of study that are in the process of being rendered dead and obfuscated by the very process and people who should be unveiling and revealing them.

With Darren Tofts and Lisa Gye it is the perusal of the image that can be an act of interference and a disruption if it operates outside rigid interpretative frameworks and interaction parameters firmly set via *intentio operis*, *intentio auctoris* and *intentio lectoris*.

It is the fear of the unexpected remix and mash-up that interferes with and threatens the 'purity' and sanctimonious fascistic interpretations of the aura of the artwork, its buyers, consumers and aesthetic priests. The orthodoxical, fanatic and terroristic aesthetic hierarchies that were disrupted by laughter in the Middle Ages might be disrupted today by viral, amorphological and uncontrollable bodily functions.

My very personal thanks go to Paul Thomas and the authors in this book who have endeavored to comply with our guidelines to deliver a new milestone in the history of LEA.

As always I wish to thank my team at LEA who made it possible to deliver these academic interferences: my gratitude is as always for Özden Şahin, Çaglar Çetin and Deniz Cem Önduygu.

Lanfranco Aceti
Editor in Chief, Leonardo Electronic Almanac
Director, Kasa Gallery

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Interference Strategies

The theme of 'interference strategies for art' reflects a literal merging of sources, an interplay between factors, and acts as a metaphor for the interaction of art and science, the essence of transdisciplinary study. The revealing of metaphors for interference "that equates different and even 'incommensurable' concepts can, therefore, be a very fruitful source of insight." [1]

The role of the publication, as a vehicle to promote and encourage transdisciplinary research, is to question what fine art image-making is contributing to the current discourse on images. The publication brings together researchers, artists and cultural thinkers to speculate, contest and share their thoughts on the strategies for interference, at the intersection between art, science and culture, that form new dialogues.

In October 1927 the Fifth Solvay International Conference marked a point in time that created a unifying seepage between art and science and opened the gateway to uncertainty and therefore the parallels of artistic and scientific research. This famous conference announced the genesis of quantum theory and, with that, Werner Heisenberg's uncertainty principle. These events are linked historically and inform interesting experimental art practices to reveal the subtle shift that can ensue from a moment in time.

The simple yet highly developed double slit experiment identifies the problem of measurement in the quantum world. If you are measuring the position of a particle you cannot measure its momentum. This is one of the main theories that have been constantly tested and still remains persistent. The double slit experiment, first initiated by Thomas Young, exposes a quintessential quantum phenomenon, which, through Heisenberg theory, demonstrates the quantum universe as a series of probabilities that enabled the Newtonian view of the world to be seriously challenged.

> *If the measurement intra-action plays a constitutive role in what is measured, then it matters how something is explored. In fact, this is born out empirically in experiments with matter (and energy): when electrons (or light) are measured using one kind of apparatus, they are waves; if they are measured in a complementary way, they are particles. Notice that what we're talking about here is not simply some object* reacting *differently to different probings but* being *differently.* [2]

In the double slit experiment particles that travel through the slits interfere with themselves enabling each particle to create a wave-like interference pattern.

The underlying concepts upon which this publication is based see the potential for art to interfere, affect and obstruct in order to question what is indefinable.

This can only be demonstrated by a closer look at the double slit experiment and the art that is revealed through phenomena of improbability.

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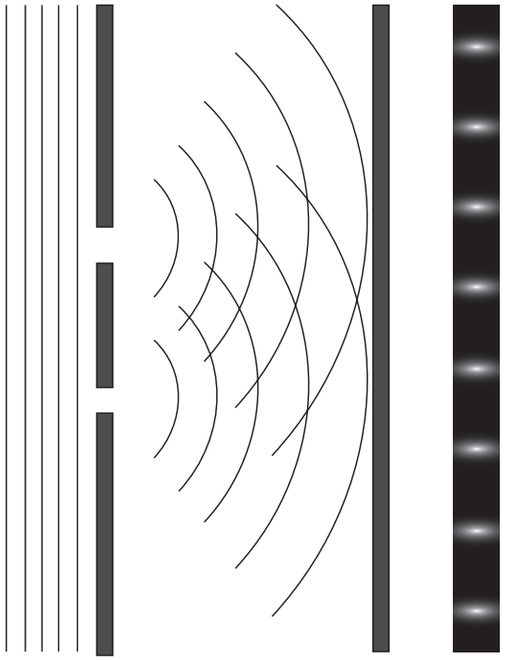

Figure 1. Diagram of the double slit experiment that was first performed by Thomas Young in the early 1800's displays the probabilistic characteristics of quantum mechanical phenomena.

When particles go through the slits they act as waves and create the famous interference pattern. The concept is that one particle going through the slit must behave like a wave and interfere with itself to create the band image on the rear receptor.

Interference Strategies looks at the phenomenon of interference and places art at the very centre of the wave/particle dilemma. Can art still find a way in today's dense world where we are saturated with images from all disciplines, whether it's the creation of 'beautiful visualisations' for science, the torrent of images uploaded to social media services like Instagram and Flickr, or the billions of queries made to vast visual data archives such as Google Images? The contemporary machinic interpretations of the visual and sensorial experience of the world are producing a new spectacle of media pollution, obliging the viewers to ask if machines should be considered the new artists of the 21st century.

The notion of 'Interference' is posed here as an antagonism between production and seduction, as a redirection of affect, or as an untapped potential for repositioning artistic critique. Maybe art doesn't have to work as a wave that displaces or reinforces the standardized protocols of data/messages, but can instead function as a signal that disrupts and challenges perceptions.

'Interference' can stand as a mediating incantation that might create a layer between the constructed image of the 'everyday' given to us by science, technological social networks and the means of its construction. Mediation, as discussed in the first Transdisplinary Imaging conference, is a concept that has become a medium in itself through which we think and act; and in which we swim. Interference, however, confronts the flow, challenges currents and eulogizes the drift.

The questions posed in this volume, include whether art can interfere with the chaotic storms of data visualization and information processing, or is it merely reinforcing the nocuous nature of contemporary media? Can we think of 'interference' as a key tactic for the contemporary image in disrupting and critiquing the continual flood of constructed imagery? Are contemporary forms and strategies of interference the same as historical ones? What kinds of similarities and differences exist?

Application of a process to a medium, or a wave to a particle, for example, the sorting of pixel data, literally interferes with the state of an image, and directly gives new materiality and meaning, allowing interference to be utilised as a conceptual framework for interpretation, and critical reflection.

Interference is not merely combining. Interference is an active process of negotiating between different forces. The artist in this context is a mediator, facilitating the meeting of competitive elements, bringing together and setting up a situation of probabilities.

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In response to the questions posed by the conference theme, presentations traversed varied notions of interference in defining image space, the decoding and interpretation of images, the interference between different streams of digital data, and how this knowledge might redefine art and art practice. Within that scope lies the discourse about interference that arises when normal approaches or processes fail, with unanticipated results, the accidental discovery, and its potential in the development of new strategies of investigation.

In "[t]he case of Biophilia: a collective composition of goals and distributed action", [3] Mark Cypher highlights the interference in negotiations between exhibit organisers, and space requirements, and the requirements for artist/artworks, resulting in an outcome that is a combination generated by the competition of two or more interests. As part of the final appearance of *Biophilia*, the artwork itself contained elements of both interests, an interference of competing interests, comprising a system in which the artist and the artwork are components, and the display a negotiated outcome. Each element interferes with itself as it negotiates the many factors that contribute to the presentation of art. In this sense the creation of the final appearance of *Biophilia* is the result of the distributed action of many "actors" in a "network." [4] (To put this in another form all actors are particles and interact with each other to create all possible solutions but when observed, create a single state.)

In summing up concepts of the second Transdisciplinary Imaging conference, particularly in reference to the topic of interference strategies, Edward Colless spoke of some of the aspirations for the topic, entertaining the possibilities of transdisciplinary art as being a contested field, in that many of the conference papers were trying to unravel, contextualise and theorise simultaneously.

The publication aims to demonstrate a combined eclecticism and to extend the discussion by addressing the current state of the image through a multitude of lenses. Through the theme of interference strategies this publication will embrace error and transdisciplinarity as a new vision of how to think, theorize and critique the image, the real and thought itself.

Paul Thomas

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IMAGES (R)-EVOLUTION

Media Arts Complex Imagery Challenging Humanities and Our Institutions of Cultural Memory

by

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1. LOSING CONTEMPORARY ART

Compared to traditional art forms – such as painting or sculpture – Media Art has a multifarious potential of expression and visualization; although underrepresented on the art market which is driven by economic interests, it therefore became "the art of our time"; thematizing complex challenges for our life and societies, like genetic engineering [1] and the rise of post-human bodies, [2] like ecological crises, [3] like the image and media [4] revolution and with it the explosion of human knowledge, [5] the rapid growing mega-cities, the change towards virtual financial economies [6] and the processes of globalization [7] and surveillance to name just a few. Visually powerful, interactive media art, often supported by databases or the world wide web, is offering more and more degrees of freedom in creative expression and evidently is much better equipped to directly address the challenges of our complex times within the very medium that shapes them. Although it has been around for decades and even quantitatively dominated many art schools, digital media art has not fully arrived in the core collecting institutions of our societies. Due to the lack of institutional support and rapid changes in storage and presentation media, works that originated approximately ten years ago can often not be shown anymore. It is no exaggeration to state that we are facing the 'total loss of an art form' created in the early times of our post-industrial digital societies.

A B S T R A C T

Considering its technological and thematical contexts, digital art conveys different – even more complex – potentials of expression than traditional art forms (such as sculptures, paintings, etc.), what makes digital art a paradigmatic expression of its time? This article emphasizes the variety of (complex) topics that are expressed within digital art, ranging from globalization, ecological and economic crises (virtual economy), media and image revolution to questions of the body and its societal norms. Due to the imminent problems of archiving, the digital arts are threatened by its loss – a problem that is reinforced by the insufficient practices of cultural institutions to display, collect and research digital art. Post-industrial societies require digital arts based on contemporary media dispositive to reflect upon current and future challenges, just like art history was always informed by its contemporary media technologies. By establishing concerted international strategies and new scientific tools it is the aim of this essay to provide a framework to enable media art histories and image science as well as the digital humanities to engage more fully with current digital developments in order to enable the humanities to meet with its (current) responsibilities. By discussing examples from a variety of projects from the natural sciences and the humanities, this article tries to demonstrate the strategic importance of these collective projects, especially in their growing importance for the humanities.

Over the last fifty years digital media art has evolved into a vivid contemporary factor. Although there are well attended festivals worldwide, [8] funded collaborative projects, discussion forums, publications [9] and

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database documentation projects, [10] digital media art is still rarely collected by museums, barely supported within the mainframe of art history and with relatively low accessibility for public and scholars.

It is ironic that this loss takes place in a time, when the world of images around us changes faster than ever before. Images are advancing into new domains: new private platforms like YouTube, Flickr with its billion uploads or Facebook that has now over 1 billion members and is now the largest image archive in the world. Television became a zappy field of thousands of channels, now also in 3D, and 3D experiences a renaissance in cinema as well. Large projection screens are invading our cities, buildings' surfaces meld ever more often with moving images, so that the old dream of talking architecture gets a new arsenal of options. [11] Cell phones transmit movies in real time, VJing represents an entirely new amalgamation of music and moving images [12] and *Google StreetView* and *Google Earth* step up the concepts of panoramic image spaces including satellite views, for example of our Center for Image Science in Göttweig.

The historical development of the image between innovation, reflection and iconoclasm reaches a new level of global complexity in the 21st century. Digital images have become ubiquitous and key tools within the global reorganization of work, but these transformations have hit a society that is to a large extent unprepared. [13] All of these visualizations and virtualizations require an unknown and undisclosed amount of material. Google, for example, runs more than one million Servers in a dozen countries, even on the ocean, and processes twenty-four PetaBytes of user generated data per day while the four to six million people, who died in the race for so called "conflict minerals," [14] did not even receive a monument for the unknown victim.

2. MEDIA ARTS MULTIFARIOUS POTENTIAL OF EXPRESSION

Gerhard Dirmoser has created a diagram to give an overview of the tremendous development that media art went through during thirty years of Ars Electronica. Hundreds of names of artists, of artworks, art trends, theories of media art in keywords, are presented in an enormous circle. Thirty-two slices are offered as a subdivision into themes, like representation, emotion and synesthesia, atmosphere, games, art as spatial experience; here we find glimpses of a history of media art. [15]

Thousands of artworks make use of and express the multifarious potential of media art. In the installations *Osmose* (1995) and Éphémère (1998) Charlotte Davies transports us into a visually powerful 3D-simulation of a lush mineral-vegetable sphere, which we can explored via a bodily interface consisting of a vest that monitors breathing; both works are classics of digital media art that generated more than one hundred scientific and art-historical articles but were ignored by museum collections. [16]

Open-ended questions about the complicated ethical issues involved in the manipulation of DNA are raised by Eduardo KAc's installation *Genesis*. [17]

With *UNMAKEABLELOVE* Jeffrey Shaw and Sarah Kenderdine created in their cybernetic theatre *Re-Actor* a real time augmented world of thirty humans inspired by Samuel Beckett's *The Lost Ones*. In a dark space or even a prison camp formed by a hexagon of six rear-projected silver screens, the artwork functions in the most powerful reappearance and aesthetic interpretation of the phantasmagoria.[18] For years also William Kentridge, one of the most well-known artists of our time, has been working on the subject of a history of vision. Even historic image media, like the mirror anamorphosis, made its way into his contemporary media art. In 2007 he created a hybrid that had not existed before in the media history of seeing. He used

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his eight min. short *What Will Come (Has Already Come)* and linked a hand-drawn animation film with the anamorphosis, which appears connected now for the first time with moving images. He is one of the artists helping us to put the latest image revolution into a historical perspective.

Victoria Vesna's *Bodies@ Incorporated* allows visitors to construct their own avatars. Using a variety of Web tools, the users can make a 3D representation of their body. References are made throughout the site to identity politics and other concepts used to separate and identify bodies. [19] Also largely ignored by museums was golden Nica awarded *Murmuring Fields* by Fleischmann & Strauss. The interacting users maneuver through a virtual space of media philosophy, where they can hear statements by Flusser, Virilio, Minsky, and Weizenbaum. *Murmuring Fields* is a new type of a Denkraum – a sphere of thought, [20] – and an early prefiguration of web-based knowledge exchange.

Today we know that the virtualization and increasing complexity of financial products is partly responsible for the global financial crisis that cost us trillions of Euros and Dollars. But already more than a decade ago, the studio Asymptote proposed a 3D info-scape for the NYSE to manage financial data within a real-time virtual environment, providing a better, more transparent image and thereby a better idea of transactions – before we get driven into the next mega-crash. [21] The NYSE, however, did not want further development of a visualization of their "financial products" – and since the Lehman Brothers' bankruptcy in 2008 we know why.

Ingo Günthers' obsessive cartographic work *World-processor* – an artwork that implicitly conveys the explosion, ubiquity as well as the availability of data by the introduction and consolidation of digital media On illuminated globes – appears as a clairvoyant prefiguration of the attempts of the growing visualization industries to make our complex time understood. Since the late 1980s until now, Günthers destroyed in his making process more than ten thousand globes, following the attempt to create a more realistic image of economy, power, and all kinds of meaningful parameters. [22]

Since Edward Snowden's release of documents we know that Facebook also is systematically used for NSA Surveillance, but many artists, like Seiko Mikami in her robotic installation *Desire of Codes,* 2011**,** dealt with this big issue of our time already before the worldwide espionage became known. Paolo Cirio's and Alessandro Ludivico's *Face to Facebook* was a media hack performance through a social experiment: stealing one million Facebook profiles, filtering them with face-recognition software and then posting them on a custom-made dating website, sorted by their facial expression characteristics. Cirio's and Ludovicos' mission was to give all these virtual identities a new shared place to expose themselves freely, breaking Facebook's constraints and social rules. [23] During the performance the artists counted one thousand media coverage around the world, eleven lawsuit threats, five death threats and three letters from the lawyer of Facebook. In Johanna and Florian Dombois' work *Fidelio, 21st Century*, named after Beethoven's *Fidelio*, for the first time a classical opera was directed as an interactive virtual 3D experience. Protagonists embody music, follow the dramaturgic direction and react to the interventions of the visitors. [24]

All these examples demonstrate that media art can deal with the questions and challenges of our time in ways that traditional art media simply can't. In the best humanistic traditions, digital media art takes on the big contemporary questions, dangers and proposed transformations but is not adequately collected, documented and preserved by our public museums. A

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techno-cultural society that does not understand its challenges, which is not equally open for the art of its time, is in trouble.

We know that media artists today are shaping highly disparate areas, such as time based installation art, telepresence art, genetic and bio art, robotics, Net Art, and space art; experimenting with nanotechnology, artificial or A-life art; creating virtual agents and avatars, mixed realities, and database-supported art. As we know, the relation / guarantee 'artist-original,' which was still apparent in the age of craftsmanship, became in the post-industrial era fairly complicated through mechanization and multiplication. Today, software of digital artwork often exists in a multiplied state by definition. What intensifies this process of multiplication are the complicated iterations developed through the interactive interventions of the users in the framework of a piece enabled by the varied degrees of freedom offered by the author/artist; the artwork becomes a multiplication of the multiplied expressions of the artwork itself.

The more open the construction of the artwork's system, the more the creative dimension of the work moves towards the normally passive beholder, who is transformed into a player and can select from a multitude of information and aesthetic expressions. He/she can recombine, reinforce or weaken, can interpret, and in part can even create. On the other side, the previously perhaps critically distanced relationship towards the object – the precondition of the aesthetic experience and scientific insight in general, as described by Cassirer, [25] Adorno [26] or Serres [27] – changes now towards a field of participative aesthetic experience.

3. INTEGRATING MEDIA ART INTO ITS MEDIA & IMAGE HISTORIES

It is essential to create an understanding of the fact that the present image revolution, which uses new technologies and has also developed a large number of so far unknown visual expressions, cannot be conceptualized without our image history. [28] Art history and media studies help understand the function of today's image worlds in their importance for building and forming societies. By telling the history of illusion and immersion, the history of artificial life or the tradition of telepresence, art history offers sub-histories of the present image revolution. Art history might be considered a reservoir in which contemporary processes are embedded, an anthropologic narration, on the one hand, and the political battleground where the clash of images is analyzed, on the other. [29] Furthermore, art-historical methods may strengthen our political-aesthetic analysis of the present through image analyses. Last but not least, the development and significance of new media should be illuminated, since the first utopian expressions of a new medium often take place in artworks.

Older definitions, by Gottfried Böhm, Klaus Sachs-Hombach, or W. J. T. Mitchell, of what an image is became problematical in the context of the digital age. I shall therefore begin by quoting a carefully crafted definition by Thomas Hensel:

> *IMAGES are not reducible to a particular technology (like graphic prints or neutron autoradiography), not to certain devices or tools (paint brushes or telescope), not to symbolic forms (perspective), not to genres in the broadest sense (still life or summation image), not to an institution (museum or lab), not to a social function (construction or diagnostics), not to practices/media (painting or Morse Code), materials (canvas or photographic paper) or certain symbolism (Christian iconography or alphanumeric code) – but they are virulent in all of them.* [30]

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In the current social media based image world it has become even more difficult to provide a definition. Images today, along with the cultures from whence they originated, are on the move; myriads of images flow with extreme mobility in fractions of a second around the globe as messages of transnational and transcultural communication. Images from formerly separate contexts are occupied, interpreted, amalgamated, and given new meanings. What we are seeing at the moment is a shift in our image cultures, which are connected to international media, in the direction of a single image culture that increasingly operates transculturally. Formerly passive recipients – who reflected on discrete works of art in a distanced yet intellectually active manner – have now become interactive users with considerable degrees of freedom. What is more, they have become active mediators and facilitators of image worlds as well as producers of the same in that they increasingly collect, modify, distribute and position images selectively and strategically. New visual information arises not least through dialogue in which one or more networks are involved.

The *mise en scène* of the images, singly or in clusters, their metamorphoses and their dissemination, are significantly determined by the users of social networks. Vibrant sub-cultures develop with a speed of image turnover that was hitherto unimaginable. Often something completely new arises – from the contradictions, tensions, and differences – which is manifested visually. This process is nothing new for theories of interculturalism: the fruitful fusion of Roman and Greek culture, for example, or of Christian and Islamic culture in medieval Spain, demonstrated this process over long periods of time.

In addition to global icons, seemingly banal but actually highly complex, there are also myriads of image-clouds arranged in clusters, which overlay the globe like a second visual sphere. This is where different ways of seeing the world encounter each other and are negotiated actively; this is where the rudiments of a new culture form. Nevertheless, if one wants to understand an image then the image, at least in part, has to be considered in context. Contexts are becoming more and more complicated due to the many different visual media: also there is now apparently no limit to the acceleration of visual exchange processes, which, because of their multifaceted branching and connections, cannot be captured or analyzed by the instruments employed by the humanities in the nineteenth and twentieth centuries.

If ever the theory of a homogeneous or pure culture, elevated ideologically and repeatedly misused, had any validity, this idea is now virtually obsolete. On the other hand, a theory of culture that is playful and favors egalitarian exchange may be desirable, but it is rather naïve when one considers the power of commercial international players to create global icons, the inroads of political control over the networks, language barriers, inadequate knowledge about digital cultural techniques, and the power of certain media concerns that are coming together to form economic cartels.

Building bridges for media art means also to further the establishment of new curricula, and we developed the first international Master of Arts in MediaArtHistories for working professionals (with faculty members like Erkki Huhtamo, Lev Manovich, Christiane Paul and Sean Cubitt) which deals also with the practice and expertise in curation, collecting, preserving and archiving of media arts. Students come from five continents and there is a Facebook forum with more than four thousand members. [31]

Already in the 1990s it became clear, that media art research was spread over many disciplines and the need became urgent to give it some common ground.

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Subsequently we organized the Media Art Histories Conference over the last ten years coordinating more than two thousand papers and applications on MediaArtHistory.org. [32] Held at Banff's New Media Centre in cooperation with *Leonardo*, *Refresh* represented a wide array of nineteen disciplines involved in the rapidly emerging field of media art histories [33] and through the success of *re:place* 2007 in Berlin's House of World Cultures, Melbourne 2009 and Liverpool 2011, the conference series was established. Riga 2013 was the last step. [34] The field of media art histories examines the subhistories and implications of present day image revolution in media art: paradigms like artificial life/automata [35] or telepresence, [36] the history of panoramic perception and its knowledge with the related history of immersion [37] or the history of phantasmagoric imagery, [38] an historical continuum of the image machines developed after the French revolution, which are reflected in the aesthetic approaches of contemporary artists like Zoe Beloff, Jeffrey Shaw, Rosângela Rennó, Gary Hill or Tony Oursler.

Our Archive of Digital Art counts many media artworks, which are, for example, part of the history of immersion, a recently recognized phenomenon that can be traced through almost the entire history of art. History has shown that there is cross-fertilization between large-scale spaces of illusion which fully integrate the human body (360°frescoes, the panorama, Stereopticon, Cinerama, IMAX cinemas, and CAVEs) and small-scale images positioned immediately in front of the eyes (peepshows of the seventeenth century, stereoscopes, stereoscopic television, Sensorama, or HMDs). [39] The media art landscape of recent years is even increasingly being seized by a phenomenon, which has yet to receive significant research, the use of historic media configurations. Renowned artists like Douglas Gordon, William Kentridge, Olafur Eliasson, Mischa Kuball, Maurice Benayoun, Rafael Lozano-Hammer and others create optical experiments, panoramas, phantasmagoria, perspective theaters, dioramas, camerae obscurae, anamorphoses, magic lanterns, etc. And this sounds like redefining images in their historical dimension, as we know approaches of comparison are based on the insight that images act diachronic, within a historical evolution and not function simply without any reference. [40] Reinterpreting old optical media these artists contextualize and help to reflect on our digital image revolution. [41]

4. NEW SCIENTIFIC TOOLS FOR OUR FIELD

Thinking about new tools for media art history in the twenty-first century we remember Warburg's Mnemosyne Atlas tracking image citations of individual poses and forms across media. We might even say that he redefined art history, as medial bridge-building, arguing that art history could fulfill its responsibility only by including most forms of images. Let us remember too, that film studies was started by art historians: the enormous Film Library at New York's MoMA was founded on an initiative by Barr and Panofsky, nicknamed the "Vatican of Film." [42] The same spirit for new infrastructures and networks for media art of the last decades is needed today. Although taking a different approach, the history of image databases should also mention André Malreaux with his *museé imaginare*. [43] And now we are witnessing the birth of the virtual museum, a key project for the digital humanities.

Looking for a moment beyond the humanities, in the natural sciences during the last decade, large collective projects have addressed new research goals. In astronomy, the *Virtual Observatory* compiles several centuries of celestial observations; [44] global warming is understood through projects like the *Millenium Ecosystem Assessment*, [45] at a detail never before calculable, and the *Human Genome Project* [46] has become legendary.

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Comparable to natural sciences, digital media and networked research catapult the humanities within reach of new and essential research in the documentation and preservation of media art, or as a realistic utopia where an entire history of visual media and their human reception might be amalgamated as collections of sources.

In 1999 at Humboldt University the first online media art documentation was originated, known as the Database of Virtual Art (Archive of Digital Art, ADA). [47] This pioneering database documents renowned media artists, researchers and institutions over the last decades of digital installation art, as a collective open source project. Since today's digital artworks are processual, ephemeral, interactive, multimedial, and fundamentally context dependent they require modification, which we call an "expanded concept of documentation." [48] As probably the most complex media art resource available online with several thousand documents and related technical data, the database is a platform for information and communication. The ADA, which is the only university-based archive, represents a selection of five hundred of approximately five thousand evaluated artists. The policy determining whether an artist is qualified to become a member includes two criteria: "the number of exhibitions, publications – at least five; high importance we ascribe also to artistic inventions like innovative interfaces, displays or software." Artists can be nominated by the members of the board. [49]

Media art documentation becomes a resource that facilitates research on the artists and their work for students and academics, who, it is hoped – now in a new Facebook-like communication structure – will contribute to expanding and updating the information. [50] In this way, documentation changes from a one-way archiving of key data, to a proactive process of knowledge transfer.

Together with an important graphic print collection, the Göttweig Monastery Collection – representing thirty thousand prints emphasizing Renaissance and Baroque works and a library of one hundred and fifty thousand volumes going back to the ninth century, such as the Sankt Gallen Codex – ADA strives to achieve the goal of a deeper media art historical cross pollination. Reaching to the present day, the print collection has grown to be the largest private collection of historical graphic art in Austria. [51] Just as the Media Art Histories conference series bridges a gap, the combination of the two and other databases hopes to enable further historic references and impulses. The collection also contains proofs of the history of optical image media, intercultural concepts, caricatures, landscapes in panoramic illustrations. [52] For the future this may provide resources for a broader analysis of media art.

The Göttweig collection is being made public through three strategies: [53]

The "Scientific Facsimile"; high resolution allows researchers the chance to find details in digital prints, which are difficult to discover in the "original" prints.

The concept of Virtual Exhibitions (now adopted by main museums) offers the public online exhibitions since 2006 like "Venetian Views," or "Theory of Architecture." Virtual exhibitions are divided into sub themes and enriched with different picture formats, literature and meta data.

Fortunately, we have the unique situation to have the media art archive next to a historic art collection. The Collection will be further networked with archives of contemporary media art via keywording.

Keywording can be a bridge building tool. The hierarchical thesaurus of ADA constitutes an approach to

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systemize the field of digital art. In *Out of the Getty Arts & Architecture Thesaurus* and the subject catalogue of the Warburg Library in London, keywords were selected which have relevance also in media art. On the other side, out of the most commonly used terms from media festivals like *Ars Electronica* or *Transmediale*, new keywords were empirically selected. Important innovations such as "interface" or "genetic art" have been considered as well as keywords, that play a role in traditional arts such as "body", "landscape" or "Illusion" and thus have a bridge-building function. It was important to limit the number to approximately three hundred and fifty words so that members of the database could keyword their works without an overly complex index. The categories led to natural overlapping, so that the hybrid artworks could be captured through clustering.

5. FOR INTERNATIONAL AND SUSTAINABLE MEDIA ART RESEARCH

Let me finish with remarks on the challenging and serious situation of media art research today. With ADA involved in the field of tool development, from its inception, we have witnessed the crisis of documentation during the last years. Since the foundation of the Database of Virtual Art (1999 – ongoing) a number of online archives have arisen. Langlois Foundation in Montreal (1999-2008), Netzspannung at the Fraunhofer Institute (2001-2004), MedienKunstNetz at ZKM (2004-2006) and the Boltzmann Institute for Media Art Research in Linz (2005-2009) were all major projects of the field that were terminated. Their funding expired or they lost key researchers like V2 in Rotterdam (2001-present). In this way the original scientific archives lose their significance for research and preservation and in the meantime partly disappear from the web. So we face the ironic situation that we lose not only the media art itself, but also its scientific documentation, so that future generations will not be able to get an idea of this art of our time. Even the *Europeana*, a large but underfunded project for Europe-wide networks of digital collection documentation is rendered meaningless if the foundation – the archives themselves – are not continued. To put it another way, until now, no sustainable strategy exits.

If we examine media art research over the last fifteen years, it becomes clear that we need a concentration of high-quality scholarly documentation as well as a huge expansion of strength and initiative. Recommendations area as follows:

1) In the field of documentation – systematic preservation campaigns do not exist so far [54] – it is essential to unite the most important lessons learned and strategies developed by initiatives either existing or abandoned under the single roof of an international institution, that can guarantee persistent existence, such as the Library of Congress or an equivalent international institution. It would need to be supported with adequate expertise from the network of important archives and initiatives, organized in a corona around the long-lasting institution.

2) The establishment of an appropriate research institution bringing together the best heads of the field would be necessary. In Germany interdisciplinary questions incorporating research on digital cultures from computer games to avantgarde art are too extensive for a single university. Thus, the Max Planck Institute structure was created.

3) For current digital humanities, the funding structures must be internationalized in ways similar to those enabling modern astronomy, genomics or climatology. In order to create enough momentum and the necessary sustainability, sponsors like NSF, DFG, Getty, EU etc. need to ensure international long-term sustainable structures. Only when we develop systematic and concerted strategies of collecting, preservation and research will we be able to fulfill the task that digital culture demands in the twenty-first century. In astronomy, funding agencies developed and modernized their systems towards sustainability. The virtual observatory infrastructure is funded on an ongoing basis and there is international coordination between more than a dozen countries that produce astronomical data.

A significant commitment has to be made for media art research. Let's recall the enormous and sustaining infrastructure that was developed for traditional artistic media, painting, sculpture, architecture, even film, photography and their corresponding archives over the course of the 20th century. What is needed is an appropriate structure to preserve at least the usual one to six per cent of present media art production, and the best works. If we compare the worldwide available budget to preserve and explore traditional art forms with the one for digital culture then we understand how inadequate the support for our present digital culture is; it is almost statistically immeasurable. The faster this essential modification to our cultural heritage record can be carried out, the smaller the gap in the cultural memory; shedding light on the dark years, which started about 1960 and continue now. As recently expressed in our international declaration, signed so far by more than four hundred colleagues and leading artists from forty-five countries, there is urgent need to internationalize research and establish an international, sustainable platform of interoperable archives. [55]

Hearing that there are experts of contemporary art (old media art, sculpture, painting etc) that try to exclude the art of our time with the widest need is sad – and ironically, as we learned from Shanken, Cubitt and Thomas, the exponents of an exclusion of media art justify this by its connection with technology. This confession truly is a disaster, not so much for the interests of those people but for the tax-paying public, who deserve the right to be enabled to think about our time through media art. This ignorance is not something we should just tolerate. It means that although our societies' political, financial, and cultural infrastructures are increasingly driven by modern technologies, the art market and a number of biennales and state-financed contemporary art museums deny the public, which pays their bills, the needed aesthetic and intellectual confrontation with current art. The attempt to separate art from its time is not new, it is also comparable with earlier movements of world escapism, like the forms of nineteenth-century historicism. Our modern societies need to be enabled to reflect on their time and future and media art plays a seminal role in that process.

Media Art, as we understand, needs as many bridges as possible: conferences, new scientific tools like databases and text repositories, new strategies for documentation and visual analysis of complex data, new curricula for the next generation of teachers and collectors. Maybe in a near future we can create collective tools, as represented in Christa Sommerer and Laurent Mignonneau's work *The Living Web*, which generates a spatial sphere from search engines for web images in a CAVE. Their work represents a new instrument for visual analysis, with the option of comparing up to one thousand images in a scientific discussion. Captivating new visualization tools could provide access to the BREATH of digital cultural production: Coupled with the DEPTH of historical optical media, new unpredictable understandings of today's image revolution can be enabled. ■

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31. Donau-Universität Krems' website, www.donau-uni.ac.at/cis/mah (accessed September 28, 2012).
32. See the website of Media Art History, www.mediaarthistory.org (accessed September 28, 2012).
33. The content development of Re:fresh! was a highly collective process. It involved three producing partners, a large advisory board, 2 chairs for each session, call and review for papers, a planning meeting in 2004, keynotes, poster session and the development of application content over the time of two and a half years. Before Banff could host the conference, this was organised by the team of the Database of Virtual Art / Archive of Digital Art (ADA). The international planning meeting at Vigoni/Italy in 2004 (hosted by ADA) agreed that it is of importance to bring media art history closer to the mainstream of art history cultivating a proximity to film- cultural and media studies, computer science, but also philosophy and other sciences. After nomination and acceptance of the chairs, coordinated call for papers, review by the program committee and selection of speakers by the chairs organized and funded by the Database of Virtual Art – the conference brought together colleagues from the following fields: invited speakers (based on self description from bios) HISTORIES: Art History = 20; Media Science = 17; History of Science = 7, History of Ideas = 1; History of Technology = 1; ARTISTS/CURATORS: Artists/Research = 25; Curators = 10; SOCIAL

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SCIENCES: Communication/Semiotics = 6; Aesthetics/Philosophy = 5, Social History = 2; Political Science = 2; Woman Studies = 2, Theological Studies = 1; OTHER CULTURAL STUDIES: Film Studies = 3; Literature Studies = 3; Sound Studies = 3, Theatre Studies = 2; Performance Studies = 1; Architecture Studies = 1, Computer Science = 2; Astronomy 1.

34. Some of the conference results can be found in the anthology *MediaArtHistories* by Oliver Grau, ed. (Cambridge, MA: The MIT Press, 2007); recently: Andreas Broeckmann and Gunalan Nadarajan, eds., *Place Studies in Art, Media, Science and Technology: Historical Investigations on the Sites and the Migration of Knowledge* (Weimar: Verlag und Datenbank für Geisteswissenschaften, 2009).
35. See Oliver Grau, "New Images from Life," *Art Inquiry: Recherches sur les Arts* 2, no. 9 (2000): 7-25; Mitchell Whitelaw, *Metacreation: Art and Artificial Life* (Cambridge, MA: MIT Press, 2004).
36. See Oliver Grau, "Telepräsenz: Zu Genealogie und Epistemologie von Interaktion und Simulation," in *Formen interaktiver Medienkunst*, ed. Peter Gendolla et al. (Frankfurt am Main: Suhrkamp, 2001), 39-63.
37. Oliver Grau, *Virtual Art: From Illusion to Immersion* (Cambridge, MA: MIT Press, 2003); Jeffrey Shaw and Peter Weibel, eds., *Future Cinema: The Cinematic Imaginary After the Film (Electronic Culture: History, Theory, and Practice)* (Cambridge, MA: MIT Press, 2003); Sarah Kenderdine, "Speaking in Rama: Panoramic Vision in Cultural Heritage Visualization," in *Theorizing Digital Cultural Heritage: A Critical Discourse*, ed. Fiona Cameron and Sarah Kenderdine (Cambridge, MA: MIT Press, 2007), 301-332.
38. Oliver Grau, ed., "Remember the Phantasmagoria!: Illusion Politics of the Eighteenth Century and Its Multimedial Afterlife," in *Media Art Histories* (Cambridge, MA: MIT Press/Leonardo Books, 2007), 136-161.
39. Oliver Grau, *Virtual Art: From Illusion to Immersion*.
40. Uwe Fleckner, BREDEKAMP, Horst Bredekamp and Martin Warnke, eds., *Der Bilderatlas Mnemosyne*, vol.1 (Berlin: Akademie Verlag, 2000); Hans Belting, ed., *Bilderfragen: Die Bildwissenschaft im Aufbruch* (München: Wilhelm Fink Verlag, 2007); Hans Belting, "Images in History and Images of History," in *Ernst Kantorowicz: Erträge der Doppeltagung*, ed. R. L. Benson and J. Fred (Frankfurt: Steiner, 1997), 94-103. And see also three recent works: L. Bader, M. Gaier and F. Wolf, eds. *Vergleichendes Sehen* (München: Wilhelm Fink Verlag, 2010); Hubertus Kohle, *Digitale Bildwissenschaft* (Glücksstadt: Verlag Werner Hülsbuch, 2013); and Lev Manovich, *Software Takes Command* (New York: Bloomsbury, 2013).
41. While approaches of Media Archaeology by Zielinski or Huhtamo tend to focus on the media and instruments only, the MediaArtHistories approach investigates the arts and images as well and explores among other things the driving force the arts played historically for the development of the media. See Siegfried Zielinski, *Deep Time of the Media* (Cambridge, MA: MIT Press, 2006); Erkki Huhtamo and Jussi Parikka, eds., *Media Archaeology: Approaches, Applications, and Implications* (Berkeley: California University Press, 2011); and Oliver Grau, ed., *MediaArtHistories*.
42. Film Library, MoMA's website, http://www.moma.org/explore/collection/film (accessed December 16, 2013).
43. A prophet of the virtual museum Andrè Malraux describes as "imaginary museum" or "museum without walls" collections of photographic reproductions comparing a large variety of ages and cultures in a virtual space that could never exist physically. André Malraux, *Psychologie de l'art: Le Musée Imaginaire – La création artistique – La monnaie de l'absolu* (Geneva: Albert Skira, 1947).
44. The International Virtual Observatory Alliance (IVOA) was formed in June 2002 with a mission to "facilitate the international coordination and collaboration necessary for the development and deployment of the tools, systems and organisational structures necessary to enable the international utilisation of astronomical archives as an integrated and interoperating virtual observatory." The IVOA now comprises 17 international VO projects. IVOA's website, www.ivao.net (accessed September 28, 2012).
45. The Millennium Ecosystem Assessment assessed the consequences of ecosystem change for human well-being. From 2001 to 2005, the MA involved the work of more than 1,360 experts worldwide. Their findings provide a state-of-the-art scientific appraisal of the condition and trends in the world's ecosystems and the services they provide, as well as the scientific basis for action to conserve and use them sustainably.
46. The Human Genome Project was an international scientific research project with a primary goal to determine the sequence of chemical base pairs which make up DNA and to identify and map the approximately 20,000-25,000 genes of the human genome from both a physical and functional standpoint. The mega project started 1990 with the collective work of more than 1000 researchers in 40 countries, the plan was to acchive the goal in 2010. A working draft of the genome was released in 2000 and a complete one in 2003. See International Human Genome Sequencing Consortium, "Finishing the Euchromatic Sequence of the Human Genome," *Nature* 431, no. 7011 (2004): 931-945.
47. Database of Virtual Art / Archive of Digital Art (ADA), www.virtualart.at (accessed September 28, 2012).
48. Oliver Grau, "For an Expanded Concept of Documentation: The Database of Virtual Art," in *Proceedings of ICHIM 03*, Paris, France (September 2003), 2-15. It was a long development since the classic text by Suzanne Briet, *Qu'est-ce que la documentation?* (Paris: Editions Documentaires Industrielle et Techniques, 1951).
49. Roy Ascott, Christiane Paul, Gunalan Nadarajan, Erkki Huhtamo, Jorge LaFerla, Martin Roth, u.a.
50. Oliver Grau, "Das Pionierarchiv der Medienkunst: Virtualart.at," *Kunstgeschichte aktuell* 1/09 (2009): 8.
51. See the website of Graphic Art Collection Göttweig Abbey, www.gssg.at (accessed September 28, 2012).
52. The digitization of the collection is a project developed by the Department of Image Science at Danube University and conducted in cooperation with the Göttweig Monastery. The collection of prints at Göttweig Monastery, which itself was founded in 1083, is based on acquisitions made by various monks since the 15th century. The first report of graphic art kept in the monastery dates back to 1621, with an archive record that mentions a number of "tablets of copper engraving" ("Täfelein von Kupferstich"). The actual act of founding the collection is attributed to Abbot Gottfried Bessel whose systematic purchases in Austria and from abroad added remarkably a total of 20,000 pieces to the collection in a very short span of time! Reaching to the present day, the print collection at Göttweig Monastery has grown to be the largest private collection of historical graphic art in Austria with more than 30,000 prints. The Department of Image Science's digitization center at the Göttweig Monastery uses technology to scan paintings and prints from the collection (up to 72 million pixels).
53. Oliver Grau, "Die Graphische Sammlung Stift Göttweig – Perspektiven der Erforschung und Vermittlung digitalisierter Druckgraphik" (paper presented at Kupferstichkabinett online Konferenz: Entwicklungen, Ergebnisse, Perspektiven / Internationale Tagung der Herzog August Bibliothek und des Herzog Anton Ulrich-Museums zu Graphik-Datenbanken im Internet), Wolfenbüttel und Braunschweig, March 14-16, 2011.
54. Although there are a number of promising case studies such as Caitlin Jones' "Seeing Double: Emulation in Theory and Practice, The Erl King Case Study," (paper presented at the Electronic Media Group Annual Meeting of the American Institute for Conservation of Historic and Artistic Works, Portland, Oregon, June 14, 2004), http://cool.conservation-us.org/coolaic/sg/emg/library/pdf/jones/Jones-EMG2004.pdf (accessed December 16, 2013). See also the websites of Inside Installations: Preservation and Presentation of Installation Art, www.inside-installations.org; Independent Media Arts Preservation, www.imap-preserve.org; CIAO – Conceptual Media Arts Online, www.bampfa.berkeley.edu/ciao/, Digital Art Conservation, www.digitalartconservation.org; and PACKED, http://www.packed.be/en/, (accessed September 28, 2013). All of those initiatives are fairly small.
55. See "Media Art Needs Global Networked Organisation & Support – International Declaration," the website of Media Art History, www.mediaarthistory.org/declaration (accessed December 16, 2013).

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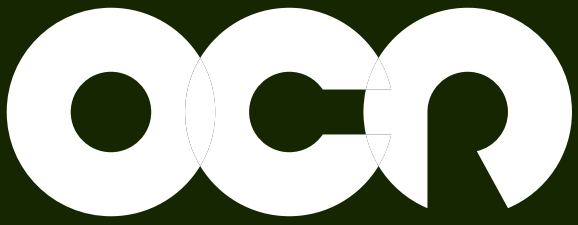

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