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media art TOWARDS A NEW DEFINITION OF ARTS IN THE AGE OF TECHNOLOGY

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edited by
Valentino Catricalà

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**TOWARDS A NEW DEFINITION OF ARTS
IN THE AGE OF TECHNOLOGY**

Media Art Festival

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Tessa Marzotto, Laurence Steinman

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Valentino Catricalà



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Foreword

Stephen Partridge

Dean of Research, Chair of Media Art at Duncan of Jordanstone College of Art and Design, University of Dundee

This publication and the festival with which it is associated – takes an anthological approach to Media Art, with a focus upon the host nation but in a wider European context. This is apposite, as the term Media Art is quintessentially European rather than Anglo-Saxon, where it has not thus far been comfortably adopted as a collective label for the wide variety of artistic activity that has been produced and developed since the early 1980s. There is presently a diverse range of practice: Media Art can encompass many media and art-forms (film, video, sound – sound art, time based art, performance art, installation art, computer art, sci-art, interactive art etc.), but today is most often associated by the use of digital technologies. As an artist that has lived and produced work through two technological breakthroughs: the emergence of video as a carrier and recorder of sound and image; secondly the advent of the personal computer; I hold an ambivalent position to claims for ‘the digital’.

Media art is contemporary and temporary and certainly not all the same: there are many differences of background, training and motivation between the protagonists – the artists. They may identify themselves as a media artist, sic artist, technologist, media activist, video artist or none of the above. If this is true of the artists it is even more so for the theorists and writers on media art.

In 2001 Lev Manovich said the digital was a *language*, which is another way of describing media, something between – that communicates. The digital domain should not be viewed as a medium; rather it is a *state* (of information), latent until released through specific apparatus. That we live in a digital age seems obvious (our year is the 58th of the Digital Era, as the term *byte* was coined by Werner Buchholz in July 1956) but it is not necessarily a permanent future, merely a temporary convenience for our tools and technologies that nevertheless exist in an infinite and analogue universe.

Writers and artists have much to share with, and tell us, as this festival and publication will reflect.

Dundee, Scotland. January 2015

Foreword

Media Art? Elements for Reflection

Sandra Lischi
Professor at Università degli Studi di Pisa

It's an age of difficult definitions; terms that neither fully define their concepts, nor fully satisfy their users; names that shift and overlap to form new ones, as Gianni Toti postulated with his *Poetronica*, *sinesteatronica* and *architettonica*. Media and arts intertwine, but also elide one another, as they are standardized by the democratic nature of binary code. Post-media, inter-media, post-cinema... even post video art: the electronic arts seem to be everywhere and nowhere. They are revered and yet nebulous and barely beheld, to use a term loved by Robert Cahen and which even characterises a substantial part of video creation.

On the one hand, there are media shifts and overwrites, concepts devoured by the meta-medium represented by computers (Youngblood); while, on the other, we retrieve and inject new life into debates on specifics details, as if to proclaim the irreducible identity of different media. In France, cinema is at the centre of a theoretic debate that places its ontology in dark halls, in projection, in its unchangeable and uninterrupted temporal nature (Raymond Bellour, Jacques Aumont), but this clashes with any theoretical approach (and artistic practice) that identifies, in cinema, contaminations with contemporary art (exposed cinema), inevitable "expansions," hybrids and mutations in the condition of the spectator. Similarly, videos – were we to follow this approach – are characterised by simultaneity, live feeds (even closed circuit transmissions and the effects created by their immediate control). These are specific characteristics that are beyond the reach of cinema.

And yet, if we exclude the classical phase of cinema (that we now know is a clearly defined phase), even before being born, it was an amalgam of photography and magical lanterns, an improvisation of projection loci, an admired documentation of movements, forms, faces, objects and signs. Historically, avant-garde movements, experimental and underground cinema, have broken screens, modified and multiplied projection surfaces, invented new ways of viewing movies, or spectator experiences - to use a term that is frequently used by critics today studying the mutations of cinema.

And yet, since the 1963 Paik Exhibition at the Wuppertal Parnass Gallery, video immediately revealed its full potential: from embryonic interactivity to versatility with other objects, from unusual visitor experiences to real-time alterations of the audio and video signals.

Media Art. Does this term indicate an art that uses media? Does it indicate one that intersects all of them? Or is it related to technology? Technology, however, was also used by Michelangelo in his choice of paintbrushes and pigments. Indeed, artists must always reckon with any new technology that appears during their lifetime. As Philippe Dubois rightly points out, we should speak of “latest” technology to remove the emphasis of the term “new.” Or do we use the term “media” to refer to the panorama of tools (photography-radio-cinema-television) that have been englobed by computers and that are rooted, as Peppino Ortoleva reminds us, in the nineteenth century? In this case, does the exhibition of Italian Media Artists featured by the Festival - artists who use media in an artistic manner, creating sounds, images, theatrical shows and iconographies - showcase artists who are involved with playback technology, net art, web art (or a web of art or networked art ... The synthesis provided by the English language does not always help us out.)

Years ago, Fabrizio Plessi refused to be labelled a “video-artist.” (Was Michelangelo, he said, a “marble artist”?). Similarly, for many years now, Robert Cahen and other French artists have been using the term “film” for their electronic works. At the opening of the great Parisian exhibition at the *Grand Palais*, in the spring of 2014, Bill Viola never mentioned the word “video.” After all, ever since film – the material - has disappeared from movie theatres, we no longer see *films*. We do, however, still use the term and we do so correctly considering the tradition of narrative feature films viewed in movie theatres.

There was a moment when it was important to distinguish - even from a technological point of view - and specify that “this is on film” or “this is a video.” It may have been a necessary to demand the dignity and artistic nature of electronic forms that were once snubbed by critics, academies and festivals. However, that moment now lies behind us. Today, video-art is both widespread and far-reaching (as well as the object of important accolades, like that of Joan Jonas at the 2015 *Biennale Internazionale d'Arte di Venezia* and the 2014 *Hangar Bicocca di Milano*). It now occupies – both secretly and overtly – a wide range of exhibitions, media experiences and films that are inspired by its narrative infractions and visual effects; music videos and animations contaminated by its characteristics and unconcealed nuances of urban video-mapping; museum installations and public spaces, as well as the many spaces that are dedicated to audio-visual experimentation at cinema festivals and art shows.

Thus, our problem is not to investigate Media Art as such, but to inform our vision of this new panorama of images in movement that are no longer either cinema or video, that rediscover pre-cinematographic art, photography and painting and simultaneously look ahead to forms of creative 3D that blend installations and narrations and cinematographic narrations with temporal stations that recall peregrinations through installations. They investigate the use of forms other than

screens and the like (such as Xavier Dolan’s *Mommy*, 2014). The issue (and the reason behind the significance of the Rome Media Art Festival¹) is to understand what youth or newcomers see; create short circuits between these images, their vision and ours; redefine our point of view, identifying in this alarming and fascinating amalgam of signals and stimuli a concept that can be grasped, help us to understand them both logically and sensually (body and mind, science explains, are not at all separate) and find our way through this forest by identifying lights in the distance that may slowly help us, with our undivided attention, to distinguish and fully appreciate them.

1. The Media Art Festival, which is the event for which this essay has been published, will be held on Feb. 25 – March 1, 2015 at the Centrale Montemartini, Università Roma Tre and Città Educativa Roma Capitale (www.mediaartfestival.org).

Introduction

Valentino Catricalà

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Alfonso Molina

Professor of Technology Strategy at the University of Edinburgh (UK) and Scientific Director of the Fondazione Mondo Digitale

This book has its origin and justification in the event connected to it, the Media Art Festival of Rome. Such an event is one of the first attempts in Italy – and more notably in Rome – at establishing a proper space devoted to the relations between art and technology, in order to grasp the complex phenomenon of Media Art from several perspectives. The Festival presents indeed not only art exhibitions and events, but also masterclasses and lectures held by experts as well as, on the active involvement side, educational activities and dynamic workshops. Promoted by the Fondazione Mondo Digitale, the Festival took place in Rome from the 25th February to the 1st March, 2015, at the Centrale Montemartini, the State University Roma Tre, and at the Città Educativa di Roma Capitale (Educational Town of the Capital of Rome) – where the Fondazione Mondo Digitale is also hosted. The exhibition titled “From Body to Mind. New Generations of Italian Media Artists”, here presented in the second part of the book, is meant to group together for the first time several Italian artists working in the Media Art field.

Such an event is hardly apt to be framed within a unitary form, and could not be associated with a traditionally designed catalogue. A book embracing these phenomena from several viewpoints and combining the traditional “catalogue” form with a research-oriented and essay approach, then, appeared as more appropriate to the context. In our opinion, the very complexity of the Media Art subject requested this solution.

In the first part, several essays have been collected and, in order to encompass all aspects of the concerned phenomenon, three main sections have been devised: *Theories*, *Histories*, and *Perspectives*. As is clear from the headings, the first section would like to provide a theoretical-critical framework to the phenomenon, the second investigates instead its historical – hence, archeological – roots, and the third is a survey on the current relation between the latest art operations and technologies, including the consequent perspectives engendered by such a relation.

The book opens with two forewords by two eminent scholars, **Steve Partridge**

and **Sandra Lischi**. Both forewords briefly outline the innovative and troublesome features of this new discipline.

The *Theories* section of the book opens with an important essay by **Sean Cubitt** and **Paul Thomas**. The essay was previously published in *Relive. Media Art Histories*¹ and it was included in this collection because of its early attempt at systematizing the Media Art phenomenon. The two authors' argument preliminarily provides a full review of all standing theories. Such a review is all the more important today, given the need for a proper context, history and philosophy in such a self-establishing realm as Media Art. Such a discipline, as the two authors argue, questions the concepts of medium specificity and requires a new materialism, combining the humanist culture – history, philosophy, aesthetics, – with scientific subjects, such as engineering, mathematics, and physics.

A different systematic approach may be found in **Oliver Grau's** essay, which notably emphasizes the social relevance of the phenomenon. According to Grau, indeed, «Media art is the art form that uses the technologies that fundamentally change our societies». However, such a relevance on the social level is not coupled with an equal importance on the institutional level, with the resulting indifference and misunderstanding of institutions and research centres. Misunderstandings are provoked by the peculiar nature of Media arts, which are very far from the traditional logic of the institutions devoted to the preservation of cultural properties.

The Festival and this book aim – within the general philosophy of Fondazione Mondo Digitale – at providing new theoretical foundations in order to cope with the transformations experienced by the world of education in the current digital era. **Alfonso Molina's** essay argues that the challenge entailed by such a complex world requires a new educational approach to life, within which Media Arts may well play a significant role for the acquisition of crucial skills, such as self-awareness, creativity, and digitalization.

The theoretical overview is completed by an essay by **Catricalà**. Starting from the '50s notion of technique in Heidegger and McLuhan's notion of Medium in the '60s, the essay looks into the conceptual and terminological foundations of the rising phenomenon of Media Arts in the '50s until today. The retrieval of interpretative categories suitably grasping and organizing these phenomena is also attempted.

Media Art *Histories* have been lately abundantly investigated, thanks to a series of homonymous conferences in 2005². Precisely such conferences have brought the importance of the Media Art histories on the foreground. Along this line, the

second section of this book is devoted to *Histories*. **Marco Maria Gazzano**, notably, investigates the historical-theoretical basis of the relation between art and science, and detects in cinema, first, and in media art, afterwards, some great examples of intersection.

Such intersections between art and science pertain also to the relation between sound and image, concerning which Media Arts have greatly contributed to assess implicit issues. Every technology differently receives and reproduces information, as it also affects our understanding of it. Precisely image and sound are the object of concern in **Giulio Latini's** essay, which presents Robert Cahen's work and the group of Edison Studio's artists as innovative examples in this field. Following these more general essays, some case studies are presented in order to better provide a historical framework to Media Arts. **Laura Leuzzi, Elein Shemilt and Stephen Partridge** thoroughly investigate two all-female case studies concerning Elaine Shemilt's work *Doppelganger*, Federica Marangoni's *The Box of Life*, and Sanja Iveković's *Instructions N°1* and *Make up - Make down*.

In parallel, **Valentina Ravaglia** studies the renown Cybernetic Serendipity exhibition, a milestone in these fields. And **Maurizio Marco Tozzi** detects an original front in the history of remote interactive artworks.

While Tozzi's works are delimited by the rising of net art, the section titled *Perspectives* is instead open to the post-internet art by **Domenico Quaranta**. What perspectives mark out this realm of Media Art? What new artistic trends may be found today? These are the questions tackled by this last section. An emerging trend is still interactivity, as **Alessandro Amaducci** argues while investigating one domain half-way between art and commerce, that is interactive music videos. Art is today also affected by transitions and constant influences concerning more commercial spheres, and in this regard interactive music videos are precisely a realm of peculiar interest.

Also in this section, some case studies follow more general essays. **Roc Parés's** text, for instance, focuses on the Master degree in digital art of the Universidad de Pompeu Fabra, while a bite of the latest trends in sound art is provided by **Elisa Cuciniello**.

At the end of the book, a young Media Art Curator, **Veronica D'Auria**, recapitulates the main lines of this artistic landscape still very hard to contextualize or fully grasp in its complexity.

1. Sean Cubitt, Paul Thomas, *Relieve. Media Art Histories*, Mit Press, Cambridge 2014.

2. www.mediaarthistory.org. The next conference shall be held in Montreal in October 2015.

theories

The New Materialism in Media Art History

Sean Cubitt

Co-Head of Department of Media and Communications at Goldsmiths, University of London;

Paul Thomas

Associate Professor in the College of Fine Art at the University of New South Wales and Associate Professor at Curtin University of Technology

In the early years of the twenty-first century's second decade, we face the now familiar dilemma: how can we speak of "new media" and at the same time write their histories? Already, fifty years separate us from the early experiments in digital arts, whereas other art-science and art-technology tendencies can trace histories back to the early twentieth century and in some instances even earlier. We do not just hang on to the term: chairs and departments of new media continue to open across the English-speaking world and beyond. As Augustine said of time, as long as no one asks me to describe it, I know perfectly well what it is. In the following pages, we will come across some of the diversity that characterizes the new media field – from performance to commune, film to philosophy – in ways that make sense to practitioners of media art history but that are hard to put into words. As the field matures, the bones of the practice are slowly becoming clear: a passion for archives, documentation, and oral history, for the look and feel of past events and works, some of which are irreparably lost, and a care for the specificity not just of works and practices but also scenes. The scene is a characteristic quality, a style, a buzz, that defines the groups, cities, performances, magazines, and writings that together make up a way of doing art for a particular set of people at a particular time and place.

The new media art history that has evolved rapidly in the first decade of the twenty first century feels at times like a scene itself: a group of writers and researchers who are often also curators and artists and who come together around a series of international events, swapping stories, sharing insights, debating the shape and trajectory of the field. Many of the chapters included here respond to movements common to media art history and to other studies of art and culture, notably a serious commitment to de-Westernizing. Others open new challenges. Crucial among them is the ongoing process of defining what we mean by *media* when we say *media art history*. In the first part of this introduction, we respond to these challenges by critiquing three particular connotations: that media arts are distinct from the majority of contemporary arts; that media art history is properly about digital media,

not about film, video, or other media; and finally the accusation that using the word *media* implies a return to medium-specific aesthetics of classical modernism.

Answering that final problem, we come to the key innovation in media art history: the new materialism. In the second part of the introduction, we develop the idea of the new materialist media art history as a counter to concepts of the immaterial, weightless, and friction-free as they have taken root in a number of the disciplines that lie along the borders of media art history: media and communications, art history, cultural studies, and contemporary theory. We argue that the practice of media art histories requires a combination of skills, knowledge, and critical perspectives that needs to be assembled from diverse sources. That diversity is what leads the practitioners to work as a network, rather than as individuals, to place each treasured case study in a constellation of scenes. The media art history scene is no more a coherent, peaceful, and collegial utopia than any other avant-garde practice. It is riven by dispute, to which we aim to contribute. But what singles it out as something more than a subdiscipline is that the dispute goes on, that participants continue to come together, not only to be amazed at new archaeologies but also to participate in a dynamic and proselytizing scene at a moment of ferment.

Taxonomies 1: New Media Art, Contemporary Art, Media Arts

Terry Smith¹ is one of the few critics of contemporary art to note the dramatic absence of digital media from the biennial art world. His work with Dennis del Favero and Jeffrey Shaw at the iCinema project has made him more than commonly alert to the exclusion, a status he shares with the British critic Julian Stallabrass. These rare figures aside, the divorce between the new media art scene and the biennials and major institutions (Tate, MOMA, Dia, and so on) is well captured in a post from noted media art historian Edward Shanken:

At Art Basel in June 201[0], I organized and chaired a panel discussion with Nicolas Bourriaud, Peter Weibel, and Michael Grey [...]. That occasion demonstrated some challenges to bridging the gap between MCA [mainstream contemporary art] and NMA [new media art]. One simple but clear indication of this disconnect was the fact that Weibel, arguably the most powerful individual in the world of NMA, and Bourriaud, arguably the most influential curator and theorist in the world of MCA, had never met before².

1. Terry Smith, *What Is Contemporary Art?*, University of Chicago Press, Chicago 2009.

2. Edward Shanken, "Edward Shanken on 'The Postmedium Condition'" (January 17, 2011), <http://medianewmediapostmedia.wordpress.com/2011/01/26/edward-shanken>.

In the discussion, Shanken reports, Bourriaud adopted the terminology of the *postmedium condition*, a phrase we will return to in the following, as a way of defending his preference for indirect evocations of technology rather than technological arts per se. Thus in the widely read *Relational Aesthetics*, Bourriaud champions art that engages participation and interaction while eschewing popular and artistic appropriations of game and immersive technologies and anything to do with the Internet³. The curiosity of this position – that the very technologies that are reshaping the world's financial, political, social, and cultural forms are excluded from the art world's conception of the contemporary – would be amusing if it weren't alarming. The situation requires some explanation.

Smith describes three movements in contemporary art: the retro-sensationalism and remodernizing tendency, dominant in the big museums; the art of counter- and alter-globalization; and a modest, small-scale art composed equally of remixed elements of the other two and of new forms of connectivity and community. In their different ways, Smith argues, these movements try to occupy, celebrate, critique, or unpick the conditions of being here now, the temporality of the word *contemporary* in all its rich ambiguities⁴. All three tendencies can be found among new media artists: Maurice Benayoun's *Cosmopolis* (2005) is an example of the first, in scale at least; Muntadas's *The File Room* of the second; and almost any of Mongrel's projects since about 2000 of the third. The gap between art and life that so challenged the historical avant-gardes of the early twentieth century⁵, and that they fought to overcome, seems to be capable of dissolving in the new media art scene. We could cite such practices as Adam Hyde's *FLOSS Manuals*, which not only support but emulate the work of the open source community; at the opposite end of the spectrum, in works of pure abstraction at monumental scales, in her 2000 installation *Aria* for the Fremont Street Experience in Las Vegas, Jennifer Steinkamp projected abstract forms swirling overhead on the arched ceiling of a mile-long mall, ninety feet high and four blocks long. New media art is as capable of creating the flashy, crowd-pleasing variety of Jeff Koons or Takashi Murakami as it is of the complex, slow, carefully developed networks and subtly suggested cultural politics of The Long March. In Smith's account, contemporary art, as a movement, can be seen emerging in the 1960s, gaining momentum during the "postmodern" 1980s and 1990s, and becoming autonomous, even dominant, since 2000: exactly the same historical period as covered in most of our work on media art history. So, if the actual practice of contemporary art doesn't furnish us with a reason, what else might?

3. Nicolas Bourriaud, *Relational Aesthetics*, trans. S. Pleasance and F. Woods, Les Presses du Réel, Paris 2002.

4. Smith, *What Is Contemporary Art?* cit.

5. Peter Bürger, *Theory of the Avant-Garde*, trans. Michael Shaw, Manchester University Press, Manchester 1984.

In one of his late vitriolic attacks on the art scene, Virilio argues that

at the end of the millennium, what abstraction once tried to pull off is in fact being accomplished before our very eyes: the end of REPRESENTATIVE art and the substitution of a counter-culture, of a PRESENTATIVE art. A situation that reinforces the dreadful decline of *representative democracy* in favour of [...] a *presentative* multimedia democracy based on automatic polling⁶.

The accusation seems at first glance to be an extension of Michael Fried's strictures on theatricality in *Art and Objecthood*⁷: art that presses the spectator to engage with it loses the claim to be art because it takes on the style of theater. Virilio's attack, however, seems not to be in hock to the same medium-specific concept of art and the arts. Instead, he sees the spectacular but dumb artwork so typical of blockbuster biennial art as a symptom of art's internal history, from abstraction to vacuity, and as symptomatic of a society in which representation as dialog has been replaced by representation through the medium of the opinion poll, where we do not argue but assert.

In his book *What Do Pictures Want*, W. J. T. Mitchell describes our "biocybernetic" period as one in which informatic, computer, and digital "models of calculation and control" are "interlocked in a struggle with new forms of incalculability and uncontrollability, from computer viruses to terrorism"⁸. There is strong reason to believe that every historical epoch experiences the struggle over the instinctive drive toward order in a different way. Our inherited love of tidiness all too easily becomes fascist; similar to any other instinct, it must be socialized and managed. In our times, the media through which we manage and socialize the ordering drive are the instruments of power: surveillance systems, databases, spreadsheets, and geographical information systems. Counter to these forms of order are the chaotic and entropic tides that, similar to love and hate or hunger and disgust, form the verso to order's recto. For Mitchell, the particular form taken in the ancient Apollonian-Dionysian war is what shapes and brings its own mode of order to the cultural expression of our age.

In one of the most sophisticated accounts of contemporary arts, Giorgio Agamben (citing Kafka's diaries) sees a very similar phenomenon in a more optimistic light:

In this "attack on the last earthly frontier", art transcends the aesthetic dimension and thus, with the construction of a totally abstract moral system, eludes the fate that destined it to kitsch. [...]

Art succeeds once again in transforming man's inability to exit his historical status [...] into the very space in which he can take the original measure of his dwelling in the present⁹.

Not only the *new* of new media but the *contemporary* in contemporary art, inextricably related to one another, suggest a more or less abrupt break with the immediate past and a kind of prophetic position in the discourse around art and culture. Agamben's argument in particular articulates two major themes in the discourses of the new and contemporary, hinging on the ambiguity of the word *aesthetic*. Obviously, he is talking about art, so by *aesthetic* we understand art that no longer needs to be attractive. In fact, in transcending the aesthetic, art has even gone beyond the aesthetic pleasures of destroying old conventions or making work beyond conventions of pleasure and beauty. This is the burden of Thierry de Duve's argument that art today is no longer made from paint and stone but from *n'importe quoi*, anything whatever¹⁰. Equally, however, Agamben is a philosopher for whom aesthetics also means the philosophy of the senses. Art has reached a point in which it transcends the sensible, either by being entirely conceptual in the first instance or by merely inhabiting a material form that, however, is insignificant compared with the idea that it transmits.

These three authors leave us with three problems posed as characteristic of the new and the contemporary: presentation as the fulfillment of abstraction in the age of sampling, the dialectic of control and chaos, and art's transcendence of the aesthetic. Perhaps this might explain Bourriaud's dislike of the technologies that, more than any other, are the vehicles of abstraction and repression and that, in their material specificity, drag art back into the world that it seeks to transcend. There is undoubtedly a history to be written of the institutional and discursive structures involved here. The new media art world's key activities – SIGGRAPH, Ars Electronica, ISEA, among them – and the contemporary art world's curators, critics, and journals have little time for them. After fifty years, and given the density of the technical developments that have inspired and in many instances have been driven by creative artists in the digital media, there is a lot to catch up on, a lot of work to see and hear, a lot of reading in unfamiliar jargons. There is undoubtedly a desire to avoid having to learn another new area. Then there is the widely reported announce-

6. Paul Virilio, *Art and Fear*, trans. Julie Rose, Continuum, London 2003, p. 35.

7. Michael Fried, "Art and Objecthood," in *Art in Theory 1900 – 1990*, ed. Charles Harrison and Paul Wood, Blackwell, Oxford 1992, pp. 822 – 834; first published in *Artforum* (Spring 1967).

8. W. J. T. Mitchell, *What Do Pictures Want? The Lives and Loves of Images*, University of Chicago Press, Chicago 2005, p. 313.

9. Giorgio Agamben, *The Man without Content*, trans. Georgia Albert, Stanford University Press, Stanford 1999, p. 114.

10. Thierry de Duve, *Au nom de l'art: Pour une archéologie de la modernité*, Editions de Minuit, Paris 1989.

ment in 2008 by Ekow Eshun, then-director of London's Institute of Contemporary Art: "New media-based arts practice continues to have its place within the arts sector. However it's my consideration that, in the main, the art form lacks the depth and cultural urgency to justify the ICA's continued and significant investment in a Live & Media Arts department. "The fury that this abrupt insult brought was even stranger because the gallery was just then hosting an intriguing exhibition of drawing machines, mechanical and digital, made by Jürg Lehni and Alex Rich. This showed perhaps not just an exclusion but a kind of blindness. However, it is equally certain that the histories of new media arts and their relations with the contemporary art scene are highly specific, city by city, institution by institution. The appointment of a new curator, a donation, a change of local government: anything can trip a change of climate. ICA cinemas continued showing digitally produced film and video, ICA concerts continued to feature synthesizers and other digital kit. New media art histories include the narratives of things that have not happened and the reasons why. The easy inclusion of digital film and music while other visual forms are spurned suggests a kind of hierarchy, reversed in the new media arts scene. Literature (after the brief flowering of Eastgate Systems in the early 1990s), printmaking, and to a degree music and sound arts get relatively short shrift, whereas installations get the lion's share of attention. The crossover lies in works made for screen but the attention of the contemporary arts world is characteristically careless about craft, an area that is basic to media arts, where there is a presumption that things will be well made (lit, framed, recorded), unlike the messy aesthetic of contemporary art that "transcends" its own materials. The oddity, pointed out by Shanken in his post about Bourriaud and Weibel¹¹, is that there is an active exclusion of a specific technology on the basis that it would be technologically determinist to show it, even though the decision to exclude is determined by the technology. The historical separation of new media arts from contemporary art is mirrored by a second rift, between media art history and the histories of artists' film and video. The presence of such scholars as Douglas Kahn and Frances Dyson in the media arts history scene ensures that the sound arts are not forgotten¹². But the line dividing film and video from digital media has been drawn firmly. There are a number of reasons why this is absurd. Interdisciplinary studies of areas such as animation, immersion, and gaming (as popular and as artistic media) constantly move between the two sectors. Key creatives in both sectors move between art and commerce and between features or broadcasting and the art world in the same way that old-

school artists got jobs in art schools to pay the rent; and many move between film and video and computing in their own art. The institutional histories bear strong similarities: avant-garde film found support in some places (at MOMA in New York, for example) but none in others (video art was uncollected by the national bodies responsible for film and for art in Britain throughout the first two decades of its existence). Important individual figures in each tradition, such as Hollis Frampton, appear in the annals of the other, and the shared institutional histories are often backed up by common discursive formations, including cybernetics, systems theory, and the concepts of signal and code. From early on in the twentieth century, the most important critics, from Walter Benjamin to Roland Barthes, Victor Shklovsky to Vilém Flusser, have been blind to the barriers between media, though by no means closed minded about the significance of media technologies.

The central problem is that media art history, in aligning itself fairly explicitly with new media – meaning digital and to a lesser extent other areas of art-science collaboration – has effected a kind of disciplinary divide between itself and the history of the other media arts. One area in which this has become especially pressing is in printmaking. In the early years of personal computing, digital photography attracted a considerable amount of serious scholarship¹³: today there is a surprising lack of booklength studies of the field and very little indeed on the work of printmakers more generally (though see Martin Jürgens's important and useful handbook¹⁴). The result has been damaging on both sides: media art historians are too often ignorant of work in neighboring disciplines, art historical and theoretical, whereas major scholars in film and video commit elementary technical errors when trying to defend the privileged technical relation between cinema and the real, which digital cameras have apparently lost. Just as articulations with the histories of music and sound arts have enriched the media art history tradition, the essays in this book begin the long business of squaring – and debating differences between – the two traditions. Their interdisciplinarity goes with the territory but it can only be understood once we make some inroads into the problem of medium specificity in new media arts and media art history. Are the disputed borders with contemporary art and the other media arts symptoms of a residual modernism? Or is there a more serious project underpinning the specification of digital media?

11. Shanken, "Edward Shanken on 'The Postmedium Condition'", cit.

12. See Douglas Kahn, *Noise Water Meat: A History of Sound in the Arts*, MIT Press, Cambridge 1999; and Frances Dyson, *Sounding New Media: Immersion and Embodiment in the Arts and Culture*, University of California Press, Berkeley 2009.

13. Notably Fred Ritchin, *In Our Own Image: The Coming Revolution in Photography*, Aperture Foundation, New York 1990; Paul Wombell, ed., *Photovideo: Photography in the Age of the Computer*, Rivers Oram Press, London 1991; Sarah Kember, *Virtual Anxiety: Photography, New Technologies and Subjectivity*, Manchester University Press, Manchester 1998; and William J. Mitchell, *The Reconfigured Eye: Visual Truth in the Post-photographic Era*, MIT Press, Cambridge 1992.

14. Martin C. Jürgens, *The Digital Print: The Complete Guide to Processes, Identification and Preservation*, Thames & Hudson, New York/ Getty Publications, Los Angeles 2009.

Taxonomies 2: The New Materialism versus Kantian Medium Specificity

Mostly when we say *medium* we mean something of a pretty high order of complexity such as television. These media are not just feats of engineering but also imaginary engines, imaginary in that we ascribe to them a coherence they do not actually possess. *Television* is an industry, a cultural habit, furniture, a mixed bag of program genres often derived from other, older media such as sport and news and an assemblage of technologies not all of which are exclusive to TV. Convergence is the obverse of hybridity: so many elements that comprise television are shared with other media. Take lens technologies, for example. There are no analog or digital lenses. The skills and technologies of focus and aperture, color temperature and framing are the same in photography, cinematography, and analog and digital electronic imaging. Each medium is already a dozen technologies arranged in a system. To label one assemblage *television* is almost silly: we have to look at the elements composing it, its articulations with other technologies (satellite, web, mobile, cable, telecoms, magazines, etc.), what it shares with other media, what specific elements are unique to it, and what unique ways of combining its elements mark it out as discrete. Although in everyday usage we know what *television* means, in technical use the term *medium* would be better reserved for, say, a type of screen. If we did concentrate on such features as lenses we would find intriguing new histories of media, in that instance a history of disciplining light from telescopes to fiber optics.

Much of the argument about the specificity of the digital rests on imaging and the difference between chemical and electrochemical reactions to light. Serious commentators such as D. N. Rodowick and Laura Mulvey make the error of believing that there is a physically privileged relation to the real world proper to the old “wet” photography. This is not the case: storage and retrieval of data occurs chemically in the moment of latency in analog photography, in a process that has almost exactly the same shape as the transition between incoming photon, charge, and voltage on a CMOS (complementary metal-oxide semiconductor) or CCD (charge-coupled device) chip. The really significant difference between analog and digital photography, still and moving, lies in the clock function that chips must have in order to drain charge from the chip in an orderly manner¹⁵.

Nor is it necessarily the case, as Peter Osborne suggests, that “most digitally produced images are, as a matter of empirical fact, photographically based”¹⁶.

Certainly, if we include X-rays and other scientific instruments, there are vast numbers of captured images being produced daily. At the same time, however, the architecture, design, engineering, manufacturing, and graphics industries produce equally vast numbers of files using non photographic computer-generated imagery. The bitmap image – whose history links it to halftone reproduction of photography – is no longer the exclusive form of digital imaging. Vector graphics are ubiquitous in print, broadcast, web, and mobile applications. But all vectors have to be displayed on bitmap screens; many bitmap programs, notably Adobe Photoshop, have vector tools embedded in them; and in the form of codecs, vector technologies are deeply embedded in moving bitmap images, suggesting that there is no clear distinction to be made between the two orders of imaging. Osborne’s case is more subtle, however, suggesting that data serve as the origin in digital imaging in place of the object photographed in analog photography. This invisible data (which we contend is analogous with the latent image in chemical photography) characterize, moreover, “the ontological peculiarity, or self-sufficiency, of digitalized data”¹⁷. Osborne’s argument is that because digitization frees data from any specific medium, it allows the resulting “de-realized” images to become infinitely exchangeable. As we will see, there is good reason to agree with the final analysis but the problem lies in the false empiricism that claims dominance for photography and a specifically digital mode of abstraction from the referent.

Oddly, the revived realism of film studies and the postmedium condition made popular in the art-critical writings of Rosalind Krauss share a debt to photography. Krauss argues for a “triumphant postwar convergence of art and photography that began in the 1960s [sic]”¹⁸, concluding with “the need for the idea of the medium as such to reclaim the specific from the deadening embrace of the general.”¹⁹ The material specificity of objects is an integral part of this claim, offering a different sense of the ontological from Osborne’s. Commenting on Krauss’s idiosyncratic definition of the word *medium*, Mary-Anne Doane remarks that it is “a restricted specificity that takes the individual work and its activations of particular conventions as its point of departure, and not the medium itself”²⁰.

This brings us a great deal closer to the dialectic of media art history. On the one hand, we pursue the absolute specificity of each work, and, in the instances of interactives, artificial intelligences, and random-number – generated works, the specificity of each experience of the work. In this instance, we deal with a history

15. Sean Cubitt, “The Latent Image”, *International Journal on the Image* (2011), <http://seancubitt.cgpublisher.com/product/pub.202/prod.34/index.html>.

16. Peter Osborne, “Infinite Exchange: The Social Ontology of the Photographic Image”, *Philosophy of Photography* 1, no. 1 (2010): p. 65.

17. Ibid.

18. Rosalind E. Krauss, “Reinventing the Medium”, *Critical Inquiry* 25, no. 2 (1999): p. 289.

19. Ibid., p. 305.

20. Mary Anne Doane, “The Indexical and the Concept of Medium Specificity”, *differences: A Journal of Feminist Cultural Studies* 18, no. 1 (2007): p. 131.

of unique events: unrepeatable performances that it is our task to describe in loving detail, with an eye to all the circumstances that converge on its realization. On the other, we seek a history of continuities, influences, connections, flows, movements and trends, and styles: in short, an abstract history focused on institutions, discourses, careers, and communities. In many respects these genres of historiography overlap, but uncomfortably because they operate at different levels of detail. This is where the challenge of photographic realism meets the challenge of historical empiricism: what level of detail constitutes the true object of imaging or enquiry? Is it at the level of photons and electrons? Of individuals? Of groups? Of environments and conjunctures?²¹

The answer is not so simple as to work at all of these levels. The modes of truth of physical sciences (what occurred), phenomenological aesthetics (what it felt like), and ecopolitical analysis (what forces were in play) are not necessarily compatible, and their grounds of explanation are jarring at best and at worst mutually contradictory. In all the time-based media, there is some form of clock function. This should point us toward the resolution of the issue: a medium is highly specific, even idiosyncratic. Digital media are as multiple, probably more so, as any predecessor, and a brief browse through old photographic manuals or old television trade press magazines will persuade you that they were in perpetual states of change, too. A medium is composed not of a permanent essence but a series of connected evolutions, each of which assembles its elements from what is available, inventing, adapting, retro-engineering, refitting, and sabotaging. The digital is far too vast to be assimilable to a single aesthetic: the aesthetic of a dot-matrix printer has little to do with *Avatar*; Excel has little in common with Blender.

However, Franco Berardi ("Bifo") reading the *I Love You* virus source code aloud (2001) is a digital artwork, as convincingly attached to the specificity of contemporary computing as say John Cayley's *Indra's Net* from 1996. The problem is that the ubiquity of digital technique and the speed of its development (Cayley's original notes to the *Oisle á nd* section from *Indra* specify that he was not then able to use Java to make a web version of the piece²²; Bifo's performance is captured in a now superseded version of QuickTime). It is also that the specifics of source code and hypertext are utterly different. Even when, as in these instances, the works refer us explicitly to the underlying code, the genres and languages of the code are utterly different. Therefore, when we speak of medium specificity we must be sure we understand the uniqueness of the work and the continuities it has with other works. In the case of Cayley's poem, which builds acrostic par-

allels between Nuala Ni Dhomhnaill's Irish poem and John Montague's English translation of it, the fact that it is a poem is as important as that it has been coded digitally. The provocation, the procedures, the assembling of parts may include disparate elements from across the digital universe, from soldering irons to software and from anywhere beyond: seedlings, sunlight, parrots. Doing history means building from the minutiae upward and straining to make sense of them; it is making the broad strokes, then questioning them with the aid of the hoarded detail. And it is history: it is about change, change that, moreover, is the element proper to the media as a whole and the media arts especially.

The New Materialism: Interdisciplinarity and Distributed Aesthetics

Exhibited at the Venice Biennale in 2003, Peter Robinson's work *Divine Comedy* exhibits the mixed *tukutuku* (lattice patterns) and kowhaiwhai colors proper to traditional decoration of Maori meeting houses, where red and black speak to the fullness of being and the void of becoming in *kaupapa Maori* (traditional wisdom). Written into the horizontal strokes are digits in ASCII code that read "Nothingness li%o #oiled in the heart of being like a wwrm." As Douglas Bagnell points out, whereas one nondigital critic

references "the infinity of digital information consisting of zeros and ones, where meaning can be altered by the slightest shift of a digit", this work nicely pokes a hole through this: you can see past the typos and read the message²³.

This survival of meaning past the apparent lockdown of information management systems is part of what fascinates us. Robinson's *Comedy* also, among other themes, establishes a relation between *whakapapa* (wisdom of the ancestors) and technology, the embodied form of Western historical memory, Marx's dead labor. This rich play of presence, absence, and becoming suggests too that materiality has a part still to play not only in the traditional societies that the meeting with modernity created but also in the very heart of the supposedly immaterial world of binary digits.

Media art history sits alongside a major trend in recent media studies, known in some US circles as "revisionist history" but to European ears (for whom *revisionism* is tainted by association with Holocaust denial) it is better known as *media archeology*. Among its leading exponents are regular contributors to media art

21. Graham Harman, *Guerrilla Metaphysics: Phenomenology and the Carpentry of Things*, Open Court Press, Chicago 2005.

22. John Cayley, *Oisle á nd*, <http://programmatology.shadoof.net/works/oi/oisleand.html>

23. Douglas Bagnell, posted to *ada_list* (July 21, 2004).

history and the new media art culture in general. Leading figures Lisa Gitelman²⁴, Oliver Grau²⁵, Erkki Huhtamo²⁶, Jussi Parikka²⁷, Jonathan Sterne²⁸, Siegfried Zielinski²⁹, and perhaps the best-known exponent Friedrich Kittler³⁰ differ in many respects but they all share a passion for meticulous scholarship, a readiness to understand technical detail, an openness to long durations, and a sense of the contingency of media evolution that learns from but cuts across the orientation to progress that characterized McLuhan's work. The arrival of new media brought about a serious reconsideration of the mathematical as well as engineering bases of computing and a fascination with ostensibly marginal media that have, however, had important reverberations in contemporary media: technologies as varied as spirographs³¹ and filing systems³². These histories, in their ambitious reach (Zielinski goes back centuries) and their careful scholarship, as well as their philosophical and intellectual daring, provide us with a clear model for interdisciplinary study.

To begin with, we can no longer be afraid of mathematics. Similar to the artists

whose work we describe, media art historians have to have some knowledge of engineering, simply to see what the works are made of. We need an art historical but also media historical and cultural historical backgrounds to follow any references that might be made: by Grahame Weinbren to the works of Goethe and Freud, for example. We need to open our minds to other cultures and hasten translations from other languages, and we need to understand the place of our media arts in relation to the greater world in which they sit. Today more than ever, as Internet protocol and HTML are being rewritten, the politicization of fundamental digital techniques can no longer be hidden any more than growing ecological awareness will allow us to build installations without at least considering the cost to the environment. Because digital media are the lifeblood of globalization, in the words of the ancient dramatist, *nil a me alienum puto*: "I consider nothing alien to me". Of course, Terence referred to "nothing human" : today we must extend beyond the human and, from our position, insist not on a postmedium but on a posthuman condition.

The processes that began with the Industrial Revolution of the late eighteenth century are still working their way through, evolving as they go. Foucault's periodization of the shape of power over that period is familiar, from sovereign power of life and death, through the disciplinary regimes of internalized strictures and self-surveillance, to the biopolitical management of populations as masses of probable behaviors. Less familiar in some respects is the historical development of the other side of the political-economy coin: the commodity form. Early periods of manufacture in the various industries always seem to start by imitating the old, handmade variety. Among the first mechanized trades, printing began by imitating the orthography of the monasteries; early factory-made furniture imitated the work of carpenters and joiners. But by the time genuinely new products became feasible, ones that had never existed before manufacture, such as the automobile, the whole mode of manufacture changed. The Ford factories of the 1910s and 1920s were the apogee of modernity, severing the umbilical link to handcraft. From the 1940s, the post-Fordist, consumer-side economy gradually emerges, and with it not just the just-in-time principle (and variants including the "long tail") but the notion of sign-value, so assiduously pursued by Baudrillard³³. The commodity migrates from use-value to exchange-value, then comes to include sign-value in the transaction and beyond it as a marker of the sutures that stitch consumer desire into the fabric of a manufactured world.

The second aspect of this history is the expansion of capital into increasing areas

24. Lisa Gitelman, *Scripts, Grooves, and Writing Machines: Representing Technology in the Edison Era* (Stanford, CA: Stanford University Press, 1999); and Lisa Gitelman, *Always Already New: Media, History, and the Data of Culture*, MIT Press, Cambridge 2006.

25. Oliver Grau, *Virtual Art: From Illusion to Immersion*, trans. Gloria Custance MIT Press, Cambridge 2003.

26. Erkki Huhtamo, "Slots of Fun, Slots of Trouble: Toward an Archaeology of Electronic Gaming", in *Handbook of Computer Games Studies*, ed. Joost Raessens and Jeffrey Goldstein, MIT Press, Cambridge 2005, pp. 1 – 21; and Erkki Huhtamo, "Twin-Touch-Test-Redux: Media Archaeological Approach to Art, Interactivity, and Tactility," in *MediaArtHistories*, ed. Oliver Grau MIT Press, Cambridge 2006, pp. 71 – 101.

27. Jussi Parikka, *Digital Contagions: A Media Archaeology of Computer Viruses* (New York: Peter Lang, 2007); and Jussi Parikka, *Insect Media: An Archeology of Animals and Technology*, University of Minnesota Press, Minneapolis 2010.

28. Jonathan Sterne, *The Audible Past: Cultural Origins of Sound Reproduction*, Duke University Press, Durham 2003; and Jonathan Sterne, *MP3: The Meaning of a Format*, Duke University Press, Durham 2003.

29. Siegfried Zielinski, *Audiovisions: Cinema and Television as Entr' actes in History*, Amsterdam University Press, Amsterdam 1999; and Siegfried Zielinski, *Deep Time of the Media: Toward an Archaeology of Hearing and Seeing by Technical Means*, trans. Gloria Custance, foreword Timothy Druckrey, MIT Press, Cambridge 2006.

30. Friedrich A. Kittler, *Literature, Media, Information Systems: Essays*, ed. and introduction John Johnston, G+B Arts International, Amsterdam 1997; Friedrich A. Kittler, *Gramophone, Film, Typewriter*, trans. and introduction Geoffrey Winthrop-Young and Michael Wutz, Stanford University Press, Stanford 1999; and Friedrich A. Kittler, *Optical Media: Berlin Lectures 1999*, trans. Anthony Enns, Polity Press, Cambridge (UK) 2010.

31. Erkki Huhtamo, "The Urban Spirograph, or an Archaeology of a Loser", paper presented at the FIAF Congress 2007, National Film Center, Tokyo 2007.

32. Cornelia Vismann, *Files: Law and Media Technology*, trans. Geoffrey Winthrop-Young, Stanford University Press, Stanford 2008.

33. For example, in Baudrillard's early work *For a Critique of the Political Economy of the Sign*, trans. Charles Levin, Telos Press, St Louis 1980; and in extended form in *Symbolic Exchange and Death*, trans. Ian Hamilton Grant, Sage, London 1993.

of human life. Compelled by the falling rate of profit to find ever-new terrains for exploitation, capital rode the technological revolutions it had precipitated into the realm of information. Since 1984, when the personal computer revolution hit the electronics retail market, and especially since the introduction of the web as a mass medium in 1993, we have been in an era in which information has become a critical category of manufacture and exchange. There is, of course, a limit to the amount of data that can be circulated, especially in societies where, in the guise of education, knowledge and skills have been handed out for free. The capitalization and marketization of knowledge as data have a series of effects: the commercialization of schools and universities, the restructuring of knowledge in the form of facts, the restructuring of skill as intellectual property, and the manufacture of worlds – the worlds of celebrity, of sport, and of art. Information thus gathers its own sign-value as well as the curious effect of exchange on the shape of information: any item of data, in order to be exchangeable, has to be worth the same as another; information has to be exchangeable and therefore the boiling point of mercury is “worth” the address of a pedophile priest; chapter 1 of *The Origin of Species* is “worth” the BP logo. But, in that case, information begins to lose the quality that makes it information: “the difference that makes a difference *in some later event*”³⁴. 34 If all information is equal, it makes no difference and therefore is no longer information or, more analytically, it has gained sign and exchange value at the expense of use.

This began to bring about a crisis, which was in some respects played out in the 2001 dot-com crash, when investment in vaporware and the heated rhetoric of the “information revolution” reached bubble proportions when investors realized there was no information at all, merely the sign to mark the place where it had once been. The response subsequently has been extremely important because it has brought to the fore a whole new form of value creation. Amid the crashing behemoths of 2001, which included titanic combines such as AOL – Time Warner, a few still young figures still stood upright among the ruins, among them Google, Amazon, and eBay. These, and the few other start-ups that survived, had a few things in common: they were typically companies that had been born with the net and grown up with it, they had attracted really significant brand loyalty, and they had created niche cultures for their users. As the months rolled by and their business models were emulated by others, especially in the social network area, it became clear that the great success of these and similar corporations came out of their position not just as shops or services but as portals, places to hang out, places to build a reputation, places to help out.

34. Gregory Bateson, *Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution, and Epistemology*, Paladin, London 1973, p. 351; emphasis in original.

In some respects, we must read this as the dawning of a new era. Since the dot-com crash, although social networks get the headlines, the greatest achievements have been in mass collaborative projects such as Wikipedia and the biggest of them all, Linux. The peer-to-peer economics of Michel Bauwens expresses the utopian potential of this new mode of cashless exchange. But there is a second history to tell concerning the emergence of advertising markets, especially since the advent of television. As Dallas Smythe puts it,

The material reality under monopoly capitalism is that all non-sleeping time of most of the population is work time. This work time is devoted to the production of commodities-in-general (both where people get paid for their work and as members of audiences) and in the production and reproduction of labour power (the pay for which is subsumed in their income). Of the off the-job work time, the largest single block is time of the audiences which is sold to advertisers. It is not sold by workers but by the mass media of communications. [...] In “their” time which is sold to advertisers workers a) perform essential marketing functions for the producers of consumers’ goods and b) work at the production and reproduction of labour power³⁵.

Serious scholars of the economics of the Internet³⁶ agree that Smythe’s early analysis points the way to a new mode of expropriation: user-generated content. To some extent merely a reversioning of the old TV economies, the novelty lies in the expansion of capital into yet another area: human creativity. In the United States especially, where manufacturing industries are collapsing or moving offshore, only three sectors of the economy still earn substantial export dollars: arms, software, and entertainment, all three of them heavily dependent on intellectual property law because all three are dependent on constant innovation. The genius of the post-dot-com crash social network is that it crowd-sources the creativity. From merely providing the attention that could be sold on to advertisers, now we create the media we pay attention to. These concerns of political economy are intrinsic to any understanding of new media arts. They are integral to the discourse, even when artists, curators, and reviewers shun the political. To make abstractions such as Steinkamp’s is a very deliberate and clear statement

35. Dallas Smythe, “Communications: Blindspot of Western Marxism”, in *Counterclockwise: Perspectives on Communication*, ed. Thomas Guback, Westview Press, Boulder 1994, pp. 266 – 291; originally published in *Canadian Journal of Political and Social Theory* 1, no. 3 (Fall 1977): pp. 1 – 27.

36. Among them Phil Graham, *Hypercapitalism: New Media, Language, and Social Perceptions of Value*, Peter Lang, New York 2006; Christian Fuchs, *Internet and Society: Social Theory in the Information Age*, Routledge, London 2008; and Johan Söderberg, *Hacking Capitalism: The Free and Open Source Software (FOSS) Movement*, Routledge, London 2007.

of relation to the infrastructures on which her projections are built. This is not the case with contemporary art or with cinema and broadcast arts. But it is the case that because digital tools are the infrastructure of power and wealth in the twenty-first century, it is impossible to ignore that here too the new materialism must grapple with the affordances not just of technologies but also of their structural implementation in planet-spanning networks. In a late essay suggesting that the instruments of power would become databases, Deleuze made the refreshingly straightforward point:

It is true that capitalism has retained as a constant the extreme poverty of three-quarters of humanity, too poor for debt, too numerous for confinement: control will not only have to deal with erosions of frontiers but with the explosions in the shanty towns³⁷.

This is indeed the point: capitalism's race for innovation and to colonize every last cranny of human activity is reaching a point at which a general art strike begins to look like a genuine political option – a revenge of the silent majority online that Baudrillard would have approved. But it is also clear that the new conditions demand that we rethink how art can place itself in relation to the commodification of all human creativity, if indeed it can succeed before the shantytowns explode. Social theorist Claus Offe phrases the problem neatly:

A dynamic theory of social change must seek to explain why the sphere of work and production, in consequence of the "implosion" of its power to determine social life, forfeits its structuring and organizing capacity, thereby releasing new fields of action, marked by new actors and a new form of rationality³⁸.

Herein lies the rub. The response that new media artists propose has been developing for thirty years but it has a typically clear expression in Hardt and Negri's *Multitude*:

Material production – the production for example of cars, televisions, clothing, and food – creates the means of social life. [...] Immaterial production, by contrast, including the production of ideas, images, knowledges,

communication, cooperation and affective relations, tends to create not the means of social life but social life itself³⁹.

The principle here is good but there is a critical flaw in the detail. With their (slightly confusing) positive spin on the term *biopolitics*, Hardt and Negri argue that we are all involved today in the direct production of social life, not just the means of living it. They miss the important point, emphasized throughout this section, that making things through electronic networks is far from immaterial. The environmental footprint of digital equipment is enormous in terms of materials, energy use, and pollution in manufacture and recycling. It implicates every user in sweatshops, illegal trade in toxic waste, warlordism in areas controlling strategic minerals, and the decimation of indigenous land. All this before we account for the oppressive and exploitative use of the equipment in the more familiar sense: the proletarianization of office trades, grunt programming, and so on.

The materiality of networks and equipment is part and parcel of the media art history movement. We know not only that globalization is unthinkable without computers but also that, reciprocally, computing is unthinkable without globalization; and, moreover, that the same intellectual frame we use to understand complex machines and large-scale assemblages is the same as that behind the newest and fastest growing political movement of the last fifty years: environmentalism. Add to this the engagement of many artists in the practicalities of software development and hardware innovation, processes that necessarily place them not only in the company of engineers but also in the front line of intellectual property rights disputes and beyond them the global political arena of Internet governance. A topic for a study in itself⁴⁰, Internet governance touches on relations between international standards bodies tasked with establishing the norms underpinning all electronic communications, the UN system's intergovernmental bodies, civil society membership organizations, the World Trade Organization (WTO), and a huge corporate lobby system. Itself highly distributed, Internet governance was, in its utopian phase from the 1970s to 2001, integral to the imagination of net.art and digital arts more generally. The comparable technical role of, say, the Academy of Motion Picture Arts and Sciences has relatively little impact on the culture of film and broadcast, which may set new media arts apart but only to the degree

37. Gilles Deleuze, "Postscript on the Societies of Control", in *October: The Second Decade, 1986 – 1996*, ed. Rosalind E. Krauss, Annette Michelson, Yve-Alain Bois, Benjamin H. D. Buchloh, Hal Foster, Denis Hollier, and Sylvia Kolbowksi, MIT Press, Cambridge 1997, p. 446.

38. Claus Offe, *Disorganized Capitalism: Contemporary Transformations of Work and Politics*, ed. John Keane, Polity Press, Cambridge (UK) 1985), p. 150.

39. Michael Hardt and Antonio Negri, *Multitude: War and Democracy in the Age of Empire*, The Penguin Press, New York 2004, p. 146.

40. See, for example, Jack Goldsmith and Tim Wu, *Who Controls the Internet: Illusions of a Borderless World*, Oxford University Press, Oxford 2008; Laura deNardis, *Protocol Politics: The Globalization of Internet Governance* MIT Press, Cambridge 2009; and Richard Collins, *Three Myths of Internet Governance*, Intellect Books, Bristol 2010.

that artists have abandoned a fight that previously – when René Clair protested sound cinema technology or Eisenstein fought for square rather than rectangular screens – were thoroughly engaged in the governance issues of the day. This is the scale and these are the stakes of interdisciplinary media art history.

Notes toward a Preliminary Conclusion

The problem might perhaps be redrawn in light of a comment by Theodor Adorno, who argued that art is compelled “to undergo subjective mediation in its objective constitution.”⁴¹ In contemporary art, similar to the modernism that was Adorno’s touchstone, the artist is the critical subjectivity through whom the light of today is brought to a fine focus. In new media arts, that subjectivity is far more distributed among collaborators on already large, sometimes vast networks. What is more, the subjectivity is by no means exclusively human: the machines and networks, the code and protocols, the screens and projectors, plotters and amplifiers, and the track pads and sensors all form agency in the network and with it the subjectivity that – for example, in Knowbotic Research’s 1995 *Dialogue with the Knowbotic South*⁴² and in more recent works such as *Pigeon Blog* or *MILK* – expands to include nonhuman, nontechnological agency in the wider environment: fauna, flora, climate, wind speed, ocean currents, atmospheric pollution. The new materialist turn in media art history draws us into weirder connections and wider anchorages than the gallery arts. The meeting place, however, is also implicit in Adorno’s insistence on subjective mediation. There is no objective scale, no scientific or philosophical position from which perception of the artwork can take place. Adorno wanted to assert the autonomy of art from the practice of philosophy, which possesses tools that allow logical statements to be tested for their truth. This is not the case with art, which is how it escapes the commodity form. But the problem now is that the subjective moment has moved from the artist to the viewer. Charged with the task of completing the work by participating in it, the audience is drawn into becoming a subject for the work. And because we become the acting subjects, artists no longer need to be revealed and vulnerable in the work. They can be – to use the ultimate accolade and the one that most reveals the affectless nature of contemporary art – cool⁴³. This is the stake of the “presentative” that so exercises Virilio: not a the-

ater but an event. The media art historians gathered in these pages set about the mediation that occurs in the hinterland between the medium assemblage and the human audience, in the knowledge that any definition of medium must include the interlocutors who are connected by it and that it mediates between, and therefore that the relationship in formation here is one not only between humans but also at last between humans and their machines and networks. This places media arts where they need to be: at the heart of the emergence of a new politics scarcely dreamed of in the modesty of relational aesthetics: the remaking of the political to incorporate our technical and natural environments.

This collection bears witness to the rapid upsurge in interest in life, life sciences, and the environment, which has fired new media arts in the last decade⁴⁴. It extends the embrace of the political aesthetics to a distributed agency that is at once the terrain on which we now must find ourselves and the prize for which we fight. The language of systems, networks, rhizomes, and flows is now everyone’s, not just the property of a vitalist avant-garde. The greatest challenges for the media arts history movement are to maintain the utopian spirit of the pioneers into an era of increasing governmental and commercial control and to dig out from the past those wonderful artifacts that have the capacity to keep us going, to open up the future, and to give us back tools foolishly thrown away in the rush to standardize. Here the rediscovery of beauty is as important as any explicit political leaning. The difficulty of beauty is only half the story: it reminds us forever that there is something better than the tawdry consumerism and brutal exclusions of the contemporary.

Though the problem of indexicality is a red herring for media art history, it is one that lures us into an interesting ocean. Doane cites a passage from Metz:

A close-up of a revolver does not mean “revolver” (a purely virtual lexical unit) but at the very least, and without speaking of the connotations, it signifies “Here is a revolver!”⁴⁵

The problem is that a photograph, according to the indexical theory, seizes on the reality of the revolver and records it, remaining true to its existence even as the thing itself rusts and disintegrates. The elegiac quality of Barthes’s meditation on the photograph of his mother is more obviously Heideggerian in its tone: what the

41. Theodor W. Adorno, *Aesthetic Theory*, ed. Gretel Adorno and Rolf Tiedemann, trans. Robert Hullot-Kentor, Athlone Press, London 1997, p. 41.

42. Andreas Broeckmann, “Next 5 Minutes”, *Some Points of Departure* (December 1995), <http://www.n5m.org/n5m2/media/texts/abroeck.html>.

43. Alan Liu, *The Laws of Cool: Knowledge Work and the Culture of Information*, University of Chicago Press, Chicago 2004.

44. See Eduardo Kac, ed., *Signs of Life: Bio Art and Beyond*, MIT Press, Cambridge 2007); and Beatriz da Costa and Kavita Philip, eds., *Tactical Biopolitics: Art, Activism and Technoscience*, MIT Press, Cambridge 2008.

45. Christian Metz, *Film Language: A Semiotics of the Cinema*, trans. Michael Taylor, Oxford University Press, New York 1974, p. 67; quoted in Doane, “The Indexical and the Concept of Medium Specificity.”

photograph says is, "There was a revolver and this is all that remains of it." Longing to point to an existence, it actually points toward a lack. The photograph in this reckoning is the very image of Heidegger's being-toward-death. Truth to objects is its fatal flaw. This is an option for digital photography, even though it cannot currently match the deep blacks or the color gamut available in the old darkrooms. But it is not the only option. Just as vector graphics were born in the gestural meanderings of pioneer animators such as Emile Cohl, so digital media seize not the object or even necessarily the implicitly human subject of Adorno's aesthetic but something else again. The temporal dimension of digital media and indeed of all moving images in the audiovisual media points them toward the future: not objects but projects. The digital arts, similar to the electronic and chemical arts of the moving image before them, and indeed the art of printmaking concern themselves with many specifics inherent in the media themselves: grain, signal, code; projection, transmission, networking; frames, fields, raster. Across the career of an artist such as Jeffrey Shaw we can observe these concerns melded with concerns with other mediated scenes: histories, cities, ruins, and with other layers or, in Harman's terminology, levels, of randomness, probability, translation, semantics, communities, and temporary autonomous zones. At further levels we find works trading in globalization, prisons, migration, and transport. What marks them out is their commitment to the unfolding of futures other than the present and pasts that offer gods as well as measurements and dates.

The role of media arts is to enter into mediation. They may in passing reveal the mediated nature of the message or speak to the specificity of the media employed (in the same way Beuys speaks to the specificity of felt and fat). They do speak to the material specificity of mediation, not to some generic and universal ether or to the primacy of objects over mediation. Our age recognizes the primacy of the connection over the node, the flows that concatenate into nets, the needs and desires that aggregate into individuals and social groups. They assert that the mediation *matters*: an active verb, the becoming-material of connectivity. They render material the natural desire of the sunflower for the sun through photophilic biochemistry. Media arts insist that all art is made with media, that everything mediates and every process mediates. This is the only universal for the media arts. An example: lithography ties Fox Talbot's experiments with halftone printing to the technology employed in fabricating chips. Mediation is the very medium of history. Thus, the media history of art and media art history as its avant-garde is a history of mediations within and among human, technological, and natural processes, bodies in light and sympathetic vibrations. The power of media art history is its project: the truth of the future not of the past.

Our Digital Culture threatened by Loss

Oliver Grau

Professor for Image Science and Dean of the Department for Cultural Studies at Danube University

An interactive map, which can be navigated by touch screen – that sounds like Google Street View, but it is actually media artwork from the 1970s. Long before the internet was used and Google was founded, Michael Naimark, who was then studying at the Massachusetts Institute of Technology (MIT), filmed the streets of Aspen, Colorado with a camera attached to a car, and processed the picture material into the first interactive map in history.

For more than 50 years, Media Art has combined the latest technologies with the big questions of our time: artists critically addressed the visions of life sciences and projections on artificial life, utopias of neuroscience, robotics and cyborgs. Media Art reflects and researches the media and image revolution and takes up the subject of the processes of globalization and growing worldwide surveillance. In the 1990s, the artistic group 'Asymptote' created visual representations of the processes at the New York Stock Exchange (NYSE). Complex financial products stood on the threshold of visualization – but maybe the transparency that would have made the toxic assets understandable for laymen was not in the bankers' best interest. They rejected its further development anyway. We know how the story ended ... Through its visually expressive potential, which is technically superior to traditional art media of earlier centuries – e. g. painting and sculpture – Media Art attains a key role in the reflection of our information societies. Visually powerful, interactive Media Art, often supported by databases or the www, 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.

Inaction is the same as iconoclastic riot

If the global amount of annually produced new analogue information fell slightly in the last 20 years, the amount of digital information exploded from 1993 to 2007 by a factor of 2,500. Since then, its growth has accelerated even more. Some institutions in our society continue to act as if the proportion is the reverse, as if the

revolutionary development of our information society and its culture had not taken place. Consequently until now, digital data has hardly been recorded or archived for the long term in a systematic way. The consequences are particularly drastic in the cultural sector: multiple decades of contemporary culture are threatened by total loss. Media Art is the art form that uses the technologies that fundamentally change our societies. Globalisation, the information society, social networks, and Web 2.0 – the list could be far longer – are enabled by digital technologies. Although not all digital Media Art comments on social, cultural and political conditions, it is nevertheless the art form with the most comprehensive potential for cultural urgency. We know that digital art today is taking highly disparate forms, like time-based installation art, telepresence art, genetic and bio art, robotics, net art, and space art; this “art of our times” is experimenting with nanotechnology, artificial or A-life art; and creating virtual agents and avatars, mixed realities, and database-supported art. Over the last fifty years digital Media Art has evolved into a vivid contemporary factor. Although there are well attended festivals worldwide, funded collaborative projects, discussion forums, publications and database documentation projects, digital Media Art is still rarely collected by museums, barely supported within the mainframe of art history and has relatively low accessibility for the public and scholars.

Publicly financed archives, museums and educational institutions may be obligated to collect and pass on the art of our time, but the archive systems in our society were caught off guard by the shorter lifespan of digital storage media. Methods for long term storage, such as emulation and recreation, remain in their infancy and a concentrated networked collection policy that our federal museum system implemented for classical modernity or post-war art is not even being discussed for electronic art. Furthermore, the funds are lacking: although the need for action is clearly more urgent, the funds for preserving electronic art forms still constitute only a fraction of what is available for monument maintenance. It is not even sufficient for preserving three to six percent of the artwork that usually would have survived from the art of earlier centuries, i.e. not even the most important works of globally exhibited artists. If we don't do anything now, we will lose the entire digital art and culture of contemporary society – a tabula rasa that is comparable to the iconoclastic riots and war losses in the past.

Image science as a key to contemporary analysis

The significant cultural movements of the last decades were recognised and discussed early on by humanities scholars – see, for instance, artificial life and AI, cybernetics, the image and media revolution and its historicisation, the so called end of utopias or free will. In light of the image revolution, as expressed at the

Seoul G20 Summit and the international art history congress CIHA, “today it is important to understand and analyse new virtual worlds that have become a part of the lives of many people.” The humanities, particularly the art and image sciences with their expertise in historical and comparative analysis have set themselves this core task. In order to fulfil their social responsibility, they must be placed in a technically and politically viable position to do so.

Picture and video documentation that also record the hardware and software configurations, as well as countless interface innovations and display creations by artists, play a central role in the research of digital culture. In the 1990s, thanks to short term project funding, Central Europe attained a leading international position in this area and in the development of image and video platforms necessary for this. Due to a lack of sustainability and the largely lacking development of international funding structures in the humanities to this date, this position has now been gambled away. If things do not change, the academic online research on the digital culture of our time will be lost.

And yet the study of art and image through thorough image analyses and their methods of comparison could strengthen our political-aesthetic analysis of the present. Last but not least, the emergence of new media could also be illuminated, which is frequently first developed in artworks. For this reason, much begins, as in some natural sciences, with sequences and comparison. The possibility of studying pictorial developments over longer periods of time is a prerequisite for pursuing image science, which requires not only the object definition, but also the description, which necessitates the use of large image archives.

Images for the future: what needs to be done now

Inspired by Darwin's *The Expression of the Emotions*, Aby Warburg began his famous *Mnemosyne Atlas*, the picture cluster composed independently from the established art canon of its time (!) and including a number of different media. Art and pictorial history developed into an overarching media search for bridges of comparison wherein Warburg recognised his academic responsibility under the influence of the First World War. Museums, too, have been collecting photography since the beginning of the last century, and a large film collection emerged in the 30s in the New York Museum of Modern Art; today we should actually be witnessing the emergence of virtual museums. This key development for the digital humanities has still not occurred yet.

In recent decades in the life and natural sciences, previously unachievable questions could be researched through networking and visualisation: the virtual observatory of astronomers provides access to the cosmos via a worldwide network of dozens of planetariums. All the connected observatories can access the

same pictorial material, the creation of which the involved countries have jointly financed. In climate research, the Millennium Ecosystem Assessment calculates the warming of the earth and ecological changes on a global scale, and the success of the human genome project is legendary – we were actually surprised at how quickly the collective work structures had an impact on the decoding of the genome.

In the humanities, previously unexecutable projects could be made feasible through digital media and networked research. These include the documentation and preservation of Media Art or – maybe slightly utopian – a collective history of visual media and their human perception on the basis of thousands of image sources, videos and 3D simulations. In light of the image revolution and its increasingly quick development of suggestive effects such as 3D, animation and virtuality, this is a key question of our time. In order to facilitate sustainable progress for the humanities, it is necessary to use the new technologies comprehensively. The motto is: don't give up the tradition of individual research, but support it through collective, networkbased forms of work. Only in this way can critical analysis be placed and strengthened on a contemporary, broad basis. If we take a step back and observe the past 15 years of Media Art research from a distance, one thing becomes clear: despite everything that has been achieved – we need a concentration of forces. In the field of documentation, it is essential to bring the most important concluded and ongoing projects under the umbrella of an international institution such as the Library of Congress, the Bibliotheque National or the Europeana, which could ensure the long term existence of the artefacts. But the Europeana – the large, but underfinanced idea of a European network of digital collection documentation – also remains useless if its basis of individual archives is not continued. Besides securing collections, the establishment of a high-performing international research organisation with the top minds in the field would also be sensible.

In Germany for example, large interdisciplinary issues that prove to be too expensive and complex for one university – and nothing else meets this criterion like the research of digital cultures from the computer game to avantgarde art – require the format of a Max Planck Institute. With its new international orientation, it would be well-suited for making an exemplary international contribution. Appropriate institutionalization could lead to a much better development of the field.

We need a proper and sustainable international collection and research funding policy, similar to the ones that facilitated the success of the natural sciences. A declaration recently initiated by the author for this purpose has since been signed by hundreds of high-ranking academics, artists and museum directors from 40 countries (www.mediaarthistory.org). In order to create enough momentum and the required sustainability, the research foundations such as the National Science Foundation, Swiss National Science Foundation, German Research Society, Volk-

swagen Foundation and the EU must sustainably ensure international structures that were built partly through five global conferences on Media Art history. Only if we systematically develop collection, maintenance and research strategies in a concentrated way, can we handle the tasks that the humanities face in the age of digital culture.

For sustainable Media Art research

Maybe we will reach the point of having collective image-science work with instruments such as the globally exhibited artist and researcher Jeffrey Shaw has developed. In his 'TVisionarium', pictures in all formats, videos and, in the future, 3D models can be arranged in a panorama. This installation – one is immediately reminded of the picture atlas by Warburg – could be developed into a novel research instrument for the discussion and visual analysis of up to 1,000 images.

Database as research instrument

The most important instrument of Media Art research consists and their technical details on the hardware and software. Such databases are also very important for museums in order to maintain an overview of inventory. The first international database for digital art (www.DigitalArtArchive.at) was initiated in 1999. In order to work out categorical differences on historical, analogue art forms in a differentiated way, this will now be connected with databases of historical artworks. For the first time, all picture formats will be combined in an interactive instrument for the analysis of images and made comparable - from the print graphics of the 17th century on the photo and video to the latest movable 3D image space.

Media Arts and Education for Life

The Vision of the FMD's Phyrtual InnovationGym

Alfonso Molina

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1. Introduction

An unprecedented combination of scientific, technological, organizational, economic, social, and cultural changes added to a crisis of structural nature is posing both serious challenges and major opportunities to 21st century Italy. We are facing a complex, dynamic, and interconnected world that gets more and more globalized every day.

The best way to prepare for the future is to take part in its creation with an attitude and mindset open to curiosity, research, and experimentation. We have to be alert, foster relationships, cooperate, and seek to create opportunities for happenstance, in other words, fortuitous positive encounters that can provide opportunities and have significant influence in our lives. Old habits and closed thinking are serious obstacles to the need to provide effective answers to the challenges the country is facing in this century. As Einstein wisely said: "We cannot solve our problems with the same thinking we used when we created them."

At the root of a proper answer to this challenge lies education - schools, universities, and the entire educational and cultural system that must innovate itself to prepare the young and, indeed, everybody to meet the challenges of work and life in the 21st century. The need is for an *education for life*, something that has long been acknowledged in the educational policies advocated by the European Union, international organizations such as UNESCO, and other countries like the USA. In fact, Europe has been promoting, on the one hand, the learning and development of *key competences* as essential elements for the success of people and nations and, on the other, the innovation of educational systems (schools, universities) to make such skills widely distributed throughout society, starting from the young. This requires a farsighted concept of both: (i) the challenges and necessary answers, and (ii) the innovation processes that must be implemented to realize the desired changes.

The objective of this paper is to explore the concept of education for life with particular reference to the role of media arts in facilitating the integration of key

21st century competences in the educational activities of the school system.

The argument first reviews some of the main factors determining the need for a much richer form of education than today's predominant form with its emphasis on standardized knowledge. This richer form we have called *education for life*. It then dwells on the main ingredients of education for life, proposing the concept of Phyrtual InnovationGym as a mechanism or environment for start realizing this type of education in the school system (and other educational places, for that matter). This flow takes us to identify and discuss the role of media arts in the educational practice of key competences in the school system.

2. Why an Education for Life? – Challenges and Opportunities in the 21st Century

Figure 1 illustrates how scientific, technological, organizational, economic, and social changes are interlinked with Italy's and other countries' structural crisis and create a situation of serious challenges but also opportunities. At the centre of the strategic response to this complex environment is education for life in the 21st century, with an emphasis on key or essential competences and the need for innovation in the school system.

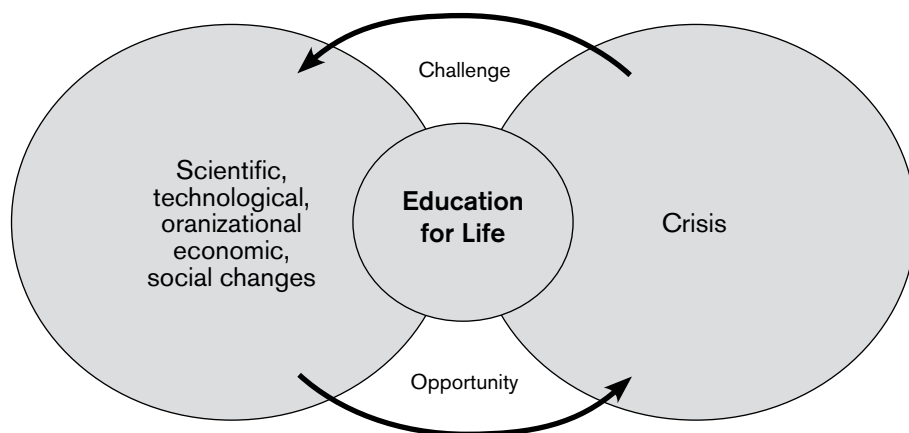


Figure 1. Challenges and Opportunities in the 21st Century

2.1 Scientific, Technological, Organizational and Industrial Change

The challenges societies face today are large-scale and wide-ranging. Considering only the impact of scientific, technological, organizational, and industrial change, people must prepare themselves to learn and innovate in order to be able to use the latest developments in the ICT world. 3D printers, laser cutters, and the other numerical control machines now available at affordable costs. Personal and service robotics is growing fast with impact, among others, on the medical, security, environmental, education sectors. Nanotechnology, big data, cloud computing, cyber security, the internet of things and the internet of everything, digital art, augmented and immersive reality, the new developments in biotechnology, genomics, sustainable energy, space technology, and biofeedback technology fed by neuroscience, are all unfolding realities today. New forms of work organization and new markets are accompanying these developments in which open innovation and cooperation play important roles. We now find ourselves immersed in new terms that reflect new realities, such as crowdsourcing, crowdfunding, coworking, coliving, FabLabs, app economy, sharing economy, and most recently, Jeremy Rifkin's zero cost economy. Education itself is generating new terms and new procedures, such as flipped class and MOOCs (Massive Open Online Courses) that offer materials and courses with open content and open courseware. Nor must we forget the non-profit world currently in strong expansion. A recent study by Istat (Institute of Statistics of Italy) reported that non-profit organizations grew by 28% in the last ten years, providing jobs to 650,000 employees, whereas traditional companies grew only by 8.4%. New forms of organization are being created in this sector, such as the social enterprise, the social firm, social business, and we also see traditional for-profit companies implementing new forms of corporate responsibility. New forms of corporate financing are also arising, including crowdfunding and social investment bonds.

All these developments are radically changing the form and content of jobs, industry, finance, healthcare, education, and leisure. Only a few years ago, it was hard to foresee the enormous growth of the app economy – a world where the entry cost is minimal and even adolescents can create jobs for themselves as app developers, potentially becoming digital entrepreneurs. Many jobs are also threatened in the coming decades, in particular, all those whose procedures can be codified and for such reason easily automated. Figure 2 shows the evolution of routine-oriented work and creativity-oriented work in the USA in the period 1901–2006; it can be easily seen that the creativity-oriented jobs are the only ones showing growth, and even an acceleration in the final two decades (now employing as much as 30% of the workforce). All routine-oriented jobs are in

decline, including in services, which had been growing until the last decades of the last century.

In this context, digital skills play an essential role because the vast majority of jobs and social activities require the use of ICT in at least some form. In 1999, the Future Work Report released by the US Department of Labor (1999) contained the following warning: “The use of computers and the Internet in workplaces will become more pervasive and the functions performed using computers will dramatically increase. The influence of technology will go beyond new equipment and faster communications, as work and skills will be redefined and reorganized” (p. vi).

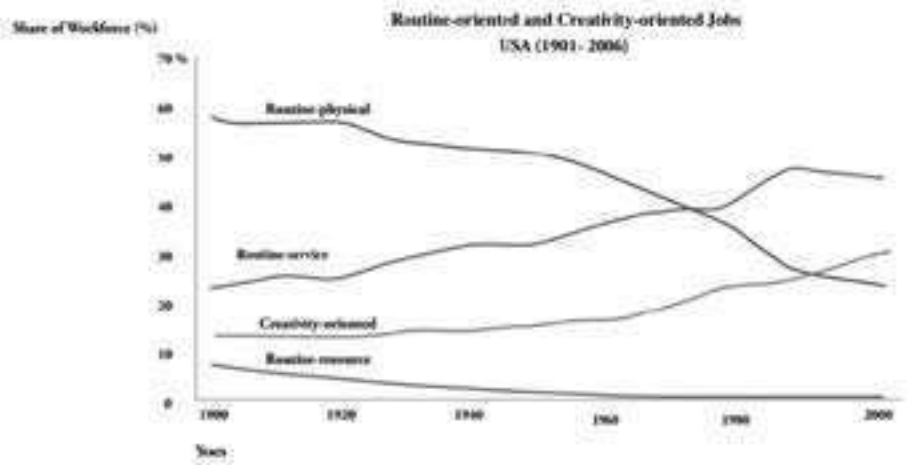


Figure 2. Evolution of routine-oriented work and creativity-oriented work in the USA (1901-2006)

Source: Roger Martin, <http://blogs.hbr.org/2012/02/the-us-needs-to-make-more-jobs/>
Note. Classification of work: creativity-oriented and routine-oriented: (a) physical routine (e.g. automotive parts assembly); (b) routine services (e.g. file clerk, accountant, payroll officer); and (c) routine resources (e.g. coal miner)

2.2 The Structural Crisis

Together with the challenges and opportunities created by the rapid changes in science, technology, organizations, economies, and societies, the profound structural crisis affecting societies, particularly in the South of Europe, must also be taken into account. In the case of Italy, it has become something of a cliché

to say that the country is at the bottom of the European league as far as most economic, educational, and social wellbeing indicators. Table 1 provides a few of the figures most commonly cited with reference to education and employment, taking into account that the country’s growth has been stagnant for many years and with the current financial crisis it has regressed substantially reaching -5.5% in 2009 and struggling to recover since then, for instance, in 2012 (-2.4%), in 2013 (-1.0%) (IMF World Economic Outlook, April 2014) and an estimated -0.4% in 2014.

Table 1. Few Figures on Italy’s structural crisis

Education	
Drop-outs	Even if the phenomenon is progressively declining, Italy is still far from meeting European objectives: in 2012, the percentage of young people affected by early school abandonment amounted to 17.6%, with 20.5% males, and 14.5% females (the EU27 average value was 12,8%). (NoiItalia, Istat. http://goo.gl/zW3k1d).
NEET	In the second quarter of 2014, as many as 2.3 million young people aged 15 to 29 years were included in the category of NEET (not in employment, education or training). When considering young people aged 15 to 34, the figure rises to approx. 3.5 million. (Istat, http://dati.istat.it/Index.aspx?DataSetCode=DCCV_NEET&Lang=).
S&T University Graduates	There are 12.9 university graduates in scientific-technical disciplines for every 1,000 residents aged 20-29 in Italy. The EU27 average is 16.8% (Istat, 2014, http://goo.gl/rTCX18)
Employment	
Youth Unemployment	At September 2014, the unemployed young people between the ages of 15-24 amounted to 698,000. The unemployment rate of 15-24 year olds, that is, the percentage of young people unemployed over the total of people employed or looking for work amounted to 42.9% (Istat, http://www.istat.it/it/archivio/137142).
Temporary Jobs	The rate of people under 35 with unstable employment has doubled in eight years, rising from 20% in 2004 to 39% in 2011, and in the first quarter of 2012, it would have risen to over 40% (http://www.datagiovani.it/newsite/il-precarato-in-italia-una-crescita-costante/). As many as 51% of female young people aged 15 to 24 are working under short-term contracts.
Digital Skills for Work	In Italy, 60% of the population does not possess sufficient digital skills for the workplace compared to an EU average of 47%.
Women and ICT	Compared to men, women tend to abandon the sector in mid-career and are under-represented in the managerial and leadership positions (even more than in other sectors). Only 19.2% of employees in the ICT sector answer to a female superior compared to 45.2% in other sectors. Women account for 31.3% of Italy’s self-employed workers and only 19.2% of entrepreneurs in the digital sector. The digital sector absorbs 20% of 30-year-old professionals with ICT degrees; this percentage falls to 9% for women over 45.

The resulting combination of factors just described translates into a societal environment of dramatic complexity and dynamism for work and life in the coming decades. As said already, this requires new ways of thinking and behaving, and consequently, educational approaches different to what has predominated so far. We call this different type of education: *education for life*.

3. Education for Life

Education for life happens at the crossroad of the six elements shown in Figure 3. There are three types of content shown on the left-hand half of the Figure: (i) *standardized knowledge*, highly and systematically developed and used in the prevailing educational system; (ii) *life skills or competences*, lacking systematic integration in the educational system, although a many examples exist through the work of innovative teachers, and (iii) *positive character traits (values)*, receiving little attention in today's prevailing school dynamics.

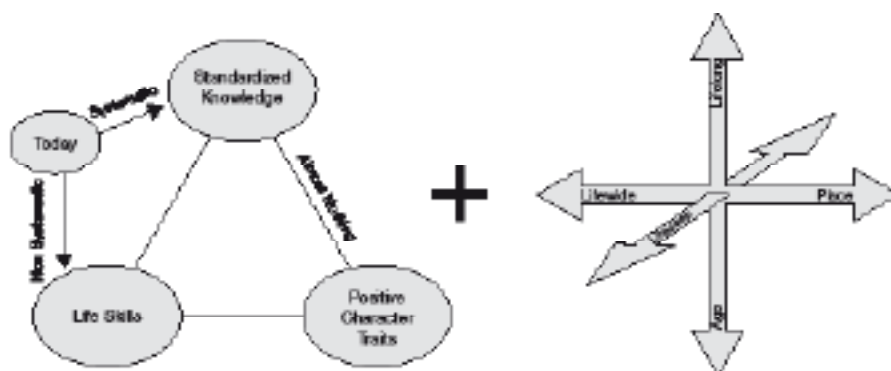


Figure 3. Ingredients of Education for Life

Note. The right-hand half of Figure 3 comes from Kjisik (2011), p.8.

Three types of learning join the three types of content in education for life. These are lifelong learning, life-wide learning and life-deep learning and are shown on the left-hand side of Figure 3 through a diagram taken from Kjisik (2011), p.8. Life-long learning implies a continuing process of learning throughout our lifespan; for Banks et al (2007) "Learning that extends from our childhood into old age includes all the ways we manage interpersonal sociability, reflect our

belief systems, and orient to new experiences." (p.12) In turn, life-wide learning implies the existence of multiple but simultaneous learning spaces, it "involves a breadth of experiences, guides, and locations and includes core issues such as adversity, comfort, and support in our lives." (Ibid.) And last, life-deep learning is concerned with the essence of human development, including spiritual and religious experiences; it "embraces religious, moral, ethical, and social values that guide what people believe, how they act, and how they judge themselves and others." (Ibid.)

Education for life find precedents in important schools of thought and contributions about education, for instance, the 1996 Delors Report, Gardner (2008)'s five minds approach, the work on life-long, life-wide and life-deep learning (Banks et al., 2007, Dragovic, 2011, Skolverket, 2000), and the IPTS Report "The Future of Learning" by Redecker et al., (2011). These contributions have proposed a variety of concepts that converge on the importance of an education that goes well beyond what the educational system imparts today. The emphasis is on the empowerment of the person's full capacities as an individual and responsible citizen, for the entire life and in all circumstances. Gardner's concept of five minds follows a similar track. The five minds are those that "people will need if they –if we- are to thrive in the world in the eras to come." (p.1). The 5 minds are shown in Figure 4 and are: (1) the discipline mind (expertise in at least one area, be it a specific scholarly discipline, craft, or profession; (2) the synthesizing mind (ability to gather information from disparate sources, understanding and evaluating it objectively, and synthesizing it to communicate to others; (3) the creative mind (capacity to propose new ideas, new ways of thinking, and to produce unexpected answers, new products and solutions; (4) the respectful mind (capacity to distinguish and welcome the differences between individuals and human groups and of working together; and (5) the ethical mind (capacity to reflect on the nature of one's own work and on the needs of the society within which one lives).

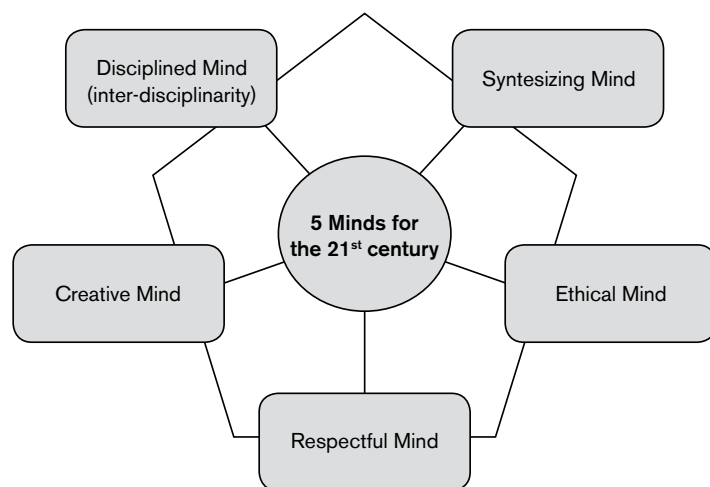


Figure 4. Gardner's 5 Minds for the 21st Century

Source. Gardner (2005)

An important policy manifestation of education for life is found in the European Union's eight key competences for 21st century life. Besides the first three key competences - (1) communication in mother tongue, (2) communication in foreign languages, and (3) mathematical competence and basic competences in science and technology – the other five competences are shown in Table 2 where it can be seen how relevant they are to education for life and the particular purpose of this paper: the role of media arts in facilitating the integration of key 21st century competences in the educational activities of the school system.

These concepts discussed represent very much the frontier of education and a fundamental challenge to today's predominant forms of education. The issue is how to transform them into practical processes of educational innovation. This is the intention of the Phyrtual InnovationGym, a pioneering physical/virtual environment created by the Fondazione Mondo Digitale in the City of Rome.

Table 2. A Selection of Key Competences for 21st Century Life According to the European Union

Digital competence	Digital competence involves the confident and critical use of Information Society Technologies (IST) for work, leisure and communication. It is underpinned by basic skills in ICT: the use of computer to retrieve, assess, store, produce, present, and exchange information, and to communicate and participate in collaborative networking via the Internet. Individuals should also be able to use IST to support critical thinking, creativity, and innovation.
Learning to learn	This is the ability to persist in learning, to organize one's own learning, including through effective management of time and information, both individually and in groups, and means gaining, processing and assimilating new knowledge and skills as well as seeking and making use of guidance.
Social and civic competences	These include personal, interpersonal and intercultural competence and cover all forms of behaviour that equip individuals to participate in an effective and constructive way in social and working life, and particularly in increasingly diverse societies, and to resolve conflict where necessary.
Sense of initiative and entrepreneurship	These refer to an individual's ability to turn ideas into action, and include creativity, innovation and risk-taking, as well as the ability to plan and manage projects in order to achieve objectives. These competences support individuals in their everyday lives at home and in society, but also in the workplace in being aware of the context of their work and being able to seize opportunities, and is a foundation for more specific skills and knowledge needed by those establishing or contributing to social or commercial activity. This should include awareness of ethical values and promote good governance.
Cultural awareness and expression	This means being aware of the importance of the creative expression of ideas, experiences and emotions in a range of media, including music, performing arts, literature, and the visual arts. It implies an awareness of local, national and European cultural heritage and their place in the world. Skills relate to both appreciation and expression: the appreciation and enjoyment of works of art and performances as well as self-expression through a variety of media using one's innate capacities. Skills include also the ability to relate one's own creative and expressive points of view to the opinions of others and to identify and realise social and economic opportunities in cultural activity. Cultural expression is essential to the development of creative skills, which can be transferred to a variety of professional contexts. A solid understanding of one's own culture and a sense of identity can be the basis for an open attitude towards and respect for diversity of cultural expression. A positive attitude also covers creativity, and the willingness to cultivate aesthetic capacity through artistic self-expression and participation in cultural life.

Source: CEC (2006).

4. Phyrtual InnovationGym

The Fondazione Mondo Digitale (FMD) developed the concept of Phyrtual InnovationGym in the second half of 2013 and inaugurated it in March 2014, at the premises of Rome's Educating Cities managed by the Foundation. The objective was to start a process leading to the creation and continuous improvement of a physical-virtual (phyrtual) environment for education for life. The following slightly-modified words introduced the vision for the future of the InnovationGym.¹

The Phyrtual InnovationGym (physical + virtual) is an original Italian site dedicated to self-awareness, creativity, entrepreneurship and innovation across the board: technological, social, civic, and personal innovation. The InnovationGym intends to provide the setting for education for life in which the young and old alike can acquire the tools they need for the journey of life and work. The Gym is a place where inventing and constructing means inventing and constructing oneself, discovering means discovering oneself, creating and innovating means creating and innovating oneself and, ultimately, becoming an entrepreneur of oneself. The Gym is a space where teamwork, creative collaboration and solidarity are nourished in the spirit of serving the community and the local territory for the promotion of the common good and widespread culture of innovation.

The InnovationGym makes use of all the most advanced forms of learning, starting with experiential learning, in which the innovation project, rapid prototyping through the FabLab, and other digital activities play key roles. The Gym is also values and uses the knowledge accumulated over decades by universities and industry, particularly today, when the development of open content, cloud computing, and big data is starting to make it available through innovative forms of visualization and analytics. In this way, the Gym always looks to the future, to the opportunities and challenges that emerge from the rapid evolution of technology and society as the whole.

We have a dream: a dream of many InnovationGyms of different size and configurations arising in one city after another, particularly in the world of schools. Just as laboratories of physics, chemistry, information technology, and physical education exist, we imagine the creation of "phyrtual" InnovationGyms in all Italian schools. (see Molina, 2014)

Less than a year has passed since the InnovationGym's inauguration and many activities have seen the participation of communities of teachers, students at every level, makers, digital artists, artisans, managers, and the young and the old. Work has focused on self-awareness and self-esteem, ideation and inspiration,

1. Alfonso Molina, Scientific Director of the FMD and a Professor of Technology Strategies at the University of Edinburgh.

design, planning, coding, and problem-solving for the identification of solutions in the form of physical and virtual products, services, processes for personal, community, and territorial development. We have practiced education for life through the experiential learning of its three forms of content: standardized knowledge, key competences for life, and personal character's values and attitudes for responsible citizenship.

The FMD InnovationGym is in continuous evolution, and today vaunts various operating spaces, and others under development, for the practice of education for life. These spaces are listed in Table 1 and they are enabling the construction and implementation of an educational path that begins with self-awareness and self-esteem, advancing towards ideation and implementation activities and, moving on further towards innovation and entrepreneurship. The rich variety of themes and functionality offered by the various spaces allow first for the provision of a more effective response to one of the fundamental challenges facing education today, i.e., the need for personalization of learning processes to the specific style, motivation, and multi-dimensionality of each and every one of us. It also allows for the integration of media arts as a critical dimension of education for life.

Table 2. FMD's Phyrtual InnovationGym Functional Spaces

Ideation Room	A space for the learning and exercise of self-awareness, problem solving, decision-making, design, innovation strategies, and business modelling.
FabLab	This space is dedicated to design, coding, and both traditional and digital fabrication, animated by new artisans (the makers) and open to the territory and the school world. The first FabLab in Rome built to the instructions provided by the MIT's Center for Bits and Atoms.
Robotic Centre	Space for the development and implementation of new didactic and coding methodologies for the stimulus and training of young people in scientific-technological disciplines and professions. The activities proposed include robotic labs and competitions for schools of every order and level.
Activity Space	This edutainment area is dedicated to leadership, team building, and motivation. Physical and mental exercises, games, and many more ways to learn and apply 21st century competences.
Game Lab (under development)	Space dedicated to the demonstration, learning and development of game design e interactive storytelling to stimulate creativity, innovation, and entrepreneurship through an area of significant growth and digital innovation.
Video Lab (under development)	Space dedicated to the demonstration, learning and development of 3D Animation and Visual Effects to stimulate creativity, innovation, and entrepreneurship through an area of significant growth and digital innovation.

VR (Immersive) Lab (under development)	Space dedicated to the demonstration, learning and development of virtual (immersive) and augmented reality to stimulate creativity, innovation, and entrepreneurship through an area at the frontier of digital technologies.
Phyrtual.org (Online Environment)	The first virtual social innovation environment based on knowledge, learning, community building, and crowdfunding that allows the InnovationGym and all related projects to connect with the rest of the world and potentially stimulate networked financing.

The rapid evolution of the Phyrtual InnovationGym has not just been in terms of spaces and functionality. The Fondazione Mondo Digitale has also started pursuing the realization of the dream announced during the InnovationGym's inauguration: *We have a dream: a dream of many InnovationGyms of different size and configurations arising in one city after another, particularly in the world of schools. Just as laboratories of physics, chemistry, information technology, and physical education exist, we imagine the creation of "phyrtual" InnovationGyms in all Italian schools.* The Foundation has promoted the creation of a national network of innovation gyms in schools across Italy and, today, 90 schools have signed agreements with the Foundation to work on the formation of these gyms inside each of the schools. These gyms will have different configurations, following the principle that innovation must start with what is available, above all, from the interest and passions of the local innovators. The end result might eventually be a rich mosaic of innovation gyms with different declinations, but sharing the core themes of problem-solving, creativity, innovation and education for life. Let us now see the strategic part media arts will play in this process.

5. Exploring the Strategic Role of Media Arts in Education for Life

The sections above have established three convergent aspects: (a) the complexity of life and work in the 21st century, (b) the need for a new type of richer *education for life* to prepare for the challenges and opportunities of this century, (c) the emergence of the Phyrtual InnovationGym, a physical-virtual environment for the development and practice of education for life. We have seen that the spaces/functions of the InnovationGym have already been used for multiple activities including self-awareness, creativity and innovation. In this context, media art acquires much importance given its direct impact on crucial aspects of the key competences for life: digital competence, creativity, emotional expression, inter-personal relations, cultural relations and understanding and so on. On this understanding, the Foundation is already working with digital artists

to take media arts to schools. The artists have prepared a number of didactic activities for kids from elementary and secondary schools. The Foundation is also running an international Media Arts Festival in 2015 as a way of raising the profile and promoting the strategic importance of media arts for the development of key 21st century competences. Let us see some of the reasons for this view, starting from the realization that every individual is a specific combination of *multiple intelligences* and that, ideally, education should be able to respond to the implications of this simple fact via a process that has been identified with the concepts of *personalization* and *individuation*.

Gardner (1983, 1987) has used the concept of *multiple intelligences* to refer to individual's different learning capacities, abilities, sensitivities and propensities. His work has identified the existence of nine intelligences, shown in Table 3. The first seven Gardner identified in his 1983 book *Frames of Mind* and the last two in his 1999 book *Intelligence Reframed*.

Table 3. Multiple Intelligences

Verbal-Linguistic	Well-developed verbal skills and sensitivity to the sounds, meanings and rhythms of words
Mathematical-Logical	Ability to think conceptually and abstractly, and capacity to discern logical or numerical patterns
Musical	Ability to produce and appreciate rhythm, pitch and timber
Visual-Spatial	Capacity to think in images and pictures, to visualize accurately and abstractly
Bodily-Kinesthetic	Ability to control one's body movements and to handle objects skill fully
Interpersonal	Capacity to detect and respond appropriately to the moods, motivations and desires of others.
Intrapersonal	Capacity to be self-aware and in tune with inner feelings, values, beliefs and thinking processes
Naturalist	Ability to recognize and categorize plants, animals and other objects in nature
Existential	Sensitivity and capacity to tackle deep questions about human existence, such as the meaning of life, why do we die, and how did we get here.

Source. Gardner (1983, 1999)

Other authors have proposed other concepts of intelligences such as Stenberg (1997)'s three primary types of intelligence:

- *creative intelligence*, ability to see how to do things or think about something in multiple ways; creative people question assumptions and search for new ways to approach a problem or a situation.
- *analytical intelligence*, ability to consciously formulate and solve structured problems, such as mathematical puzzles, as well as to apply strategies and evaluate results accurately.
- *practical intelligence*, capacity to learn readily in action-oriented situations where knowledge is used to solve a problem or is applied to everyday life.

Other intelligences proposed by other authors include:

- *emotional intelligence*, associated with feelings, motivation and the management of emotions in ourselves and in our relationships (Coleman 1995, 1999 and Côté and Miners 2006).
- *cultural intelligence*, made up of cognitive, physical and emotional/motivational aspects (Early and Mosakowski 2004)
- *moral intelligence*, associated with the capacity to distinguish right from wrong and universal human principles (Lennick and Kiel 2005 and Coles 2007)
- *spiritual intelligence*, associated with wisdom and capacity for meaning, vision and values such as courage, integrity, intuition and compassion (Zohar and Marshall 2001, McMullen 2003 and Levin 2000).

It is easy to see that several of these concepts of intelligences have overlapping meanings as in the case of Gardner's interpersonal and intrapersonal intelligences and Coleman's emotional intelligence. The key point for education for life and the role of media arts, however, is that individuals have unique characteristics, capacities, styles and needs that educational approaches and systems should be able to recognize and satisfy. Ideally, therefore, educational systems should be able to match these individuals' specific combination of multiple intelligences with specific combinations of knowledge, life-skills and ICT-based skills flows.

Consider now what has been said regarding the key competences for the 21st century and the content of such intelligences such as visual-spatial, musical, interpersonal, intrapersonal, creative, emotional, cultural, and spiritual, and it is possible to begin to see the strategic educational role of media arts in education for life, if not for all, at least for all those people whose preferred learning, job and life styles are more strongly associated with these types of intelligences or capacities. Media arts open multiple didactic paths for the learning and practice of digital competences, creativity, intuition and insight, emotional expression,

cultural understanding, personal and intra-personal communication and, in so doing, media arts helps stimulates a whole-brain approach to education for life in contrast to the more "left-brain-oriented" approach that has predominated in traditional education. Williams (1986) explained through a simple metaphor the type of information processing that goes on in a whole brain approach, "We can compare the left hemisphere of the brain to a digital computer and the right to a kaleidoscope. The digital computer is linear and sequential, moving from one step to the next by rules of logic and a language of its own. The kaleidoscope simultaneously combines its parts to create a rich variety of patterns. It moves by leaps as the parts are reshuffled and reassembled in different relationships to each other." (p.4) In short, the left brain works on the processing of "parts," while the right brain works on the processing of "wholes." In media arts, one can plausibly suggest a direct association between the digital dimension and the left brain, and between the arts and the right brain. This produces a whole-brain result most appropriate for education for life.

In the briefest of conclusions, by introducing media arts in the Phyrtual InnovationGym, the FMD is creating a path for the systematic integration of a whole-brain approach in the realization of 21st century key competences and, more generally, education for life.

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On the Notion of Media Art. Theories, Patterns, Terminologies

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Beyond “the Question Concerning Technology”

On November 18th, 1953 at the Auditorium Maximum of the Technische Hochschule in Munich, Martin Heidegger delivered a lecture titled *The Question concerning Technology*. On that occasion, along the line of the critical tradition animating the debate on technology at the end of the 19th century and that was preeminently represented by authors such as Simmel, Sombart, Rathenau¹, Martin Heidegger clearly set out some of the main questions that affected the subsequent philosophical studies.

Heidegger's dissertation is well-known. Technology is no longer considered as a mere means directed to an end, no longer as the totality of means available to men: «Technology is no mere means. Technology is a way of revealing. If we give heed to this, another whole realm for the essence of technology will open itself up to us. It is the realm of revealing, i.e., of truth (*Wahr-heit*)»².

In these sentences the critical focus shifts from an understanding of technology as instrument, as means, to the horizons of the potential phenomena 'revealed' by it. Technology is no more something merely functional, directed at solving a goal, but it becomes the instrument par excellence of producing/bringing-forth: something that brings into presence what was not present.

This formulation has greatly influenced the following philosophy of technology, for example the interesting theories advocated by Blumenberg, who stated: «If the spirit realized in the phenomena of technology has always been a matter of the history of technology, then, for a history of the spirit of technology, what seems to remain is only the spirit before and after the technical phenomenon, the spirit of *motivation* and the spirit of *justification*, the realm of impulses and that of evaluations, that of anticipations and that of influences »³.

Although such a shift is crucial to the elaboration of a different approach to technology

1. Cf., Thomas Maldonado (ed.), *Tecnica e cultura*, Feltrinelli, Milano 1979.

2. Heidegger, Martin. *The Question Concerning Technology and Other Essays*. 1954. Harper, New York 1986, p. 318.

3. Hans Blumenberg, *Geistesgeschichte der Technik*, Suhrkamp Verlag, Frankfurt am Main 2009, It. tr., *Storia dello spirito della tecnica*, Mimesis, 2014, p. 36 (my translation).

and its development, it should be nonetheless emphasized that Heidegger's judgment becomes increasingly negative and peremptory, as he comes to deal with contemporary technology. According to Heidegger, who employs the term *Gestell* in order to highlight the 'enframing' character of contemporary technology,

it remains true nonetheless that man in the technological age is, in a particularly striking way, challenged forth into revealing. Such revealing concerns nature, above all, as the chief storehouse of the standing energy reserve. Accordingly, men's ordering attitude and behavior display themselves first in the rise of modern physics as an exact science. Modern science's way of representing pursues and entraps nature as a calculable coherence of forces⁴.

Between calculability of nature and concealed truth, in the renowned conclusion of his essay, Heidegger manages to find a salvation. He claims that salvation lies in the etymological root of the word *Techné*, since this term conceals in itself art, that is what produces truth and beauty par excellence. In his extremely attractive conclusion, Heidegger identifies the hidden salvation precisely in art, in the etymological root of the word *Techné*.

I have here briefly summarized, although imprecisely, Heidegger's essay, as my goal is to draw attention to the following question: to which art does Heidegger refer? Despite the essential intuitions of the German philosopher, the art to which he seems to aspire, as to a possibility of salvation, is that of Romantic poetry and especially Hölderlin's: «it is clearly evident that Heidegger's operations consists in displaying history anew within a mythical-cosmological sphere – we could also say *symbolical* in a strong sense»⁵.

Is it then possible that one could only find salvation in such a mythical-cosmological sphere? This notwithstanding, a closer examination shows that, when Heidegger conceived and wrote the lecture on the question concerning technology, there was a great development of artistic experiences due to later change the relation to technology, by highlighting a new way of approaching technological change. These experiences had already characterized the history of photography as well as that of cinema in Heidegger's time.

Based on Heidegger's claims, one could say that, if not exactly a path of salvation, still a

different attitude to the question concerning technology had arisen, besides Hölderlin's poems, at the very time of Heidegger's drafting of his lecture. These extremely important artistic experiences may now be re-interpreted in the light of current changes.

Beyond “the Question Concerning Technology”: the Medium

In 1958 a young researcher at the Applied Physics Laboratory of the John Hopkins University, A. P. Rich, programmed a computer in order to automatically generate geometric shapes⁶. This event produced the very first images composed entirely through a computer, which later allowed new artistic phenomena such as computer art and the current digital art. A few years later, in 1963, Nam June Paik, a young Korean artist, exhibited 13 distorted TV sets in Wuppertal, Germany, giving birth to video art⁷. Another important date could be identified in 1952, when Fontana and his fellows undersigned the Television Manifesto of the Spatial Movement, a first attempt at approaching Television Electronic Technology artistically⁸. These are only few of the dates – with all the impreciseness implicit in any date – that may be mentioned as starting points of the artistic phenomena on which this essay intends to focus.

How could these phenomena be explained? Are we really sure that Heidegger's categories, which are extremely useful to a general comprehension of technology, can be usefully applied to these new artistic experiences as well? It is not accidental that, at that time, a new word was introduced, which later became the preeminent keyword of artistic and social horizons of that period as well as of today. In this sense, 'medium' became the keyword for the explanation of the complex technological sphere: a quite wide, complex and ambiguous word that allowed these phenomena to be approached from a new perspective.

Marshall McLuhan was undoubtedly the first author responsible for the success of the word 'medium'. He provided a broad and ambiguous definition of 'medium' as «any extension of ourselves», or even «any new technology»⁹.

4. Martin Heidegger, *The Question Concerning Technology and Other Essays*. 1954. Harper, New York 1986, p. 326.

5. Massimo Cacciari, *Salvezza che cade. Saggio sulla questione della tecnica in Heidegger* (1982), in Massimo Cacciari, Massimo Donà, *Arte, tragedia e tecnica*, Raffaello Cortina, Milano 2000. Theodor W. Adorno expressed his own criticism on Heidegger's thought, especially on the notion of 'Da-Sein', in T. W. Adorno, *Il gergo dell'autenticità. Sull'ideologia tedesca* (1964), Bollati Boringhieri, Torino 1988. See also the essay by Pietro Montani, *Arte e tecnica. Tre matrimoni (riparatori) e un funerale (annunciati)*, in Marco Maria Gazzano (ed.), *Cinema, arti elettroniche e intermediali*, rivista Bianco e Nero n°554/555, Centro Sperimentale di Cinematografia/Marsilio editore, Roma, settembre 2006.

6. Cf., Hannah Higgins, Douglas Kahn (ed.), *Mainframe Experimentalism. Early Computing and the Foundations of the Digital Arts*, University of California, Oakland 2012.

7. On the history of videoart cf., Sandra Lischi, *Visioni elettroniche. L'oltre del cinema e l'arte del video*, Marsilio, Biblioteca Bianco & Nero, Venezia 2001; Marco Maria Gazzano, *Kinema*, cit.; Silvia Bordini, *Videoarte & Arte*, cit.; Simonetta Fadda, *Definizione zero. Origini della video arte fra politica e comunicazione*, Costa & Nolan, Genova 2005; Chris Meigh-Andrews, *A History of Videoart*, Berg, Oxford/New York 2006.

8. The Manifesto was signed by Ambrosiani, Burri, Crippa, Deluigi, De Toffoli, Dova, Donati, Fontana, Giancarozzi, Guidi, Joppolo, La Regina, Milena, Dilani, Morucchio, Peverelli, Tancredi, Vinello. Cfr., Silvia Bordini, *Videoarte & Arte. Tracce per una storia*, Lithos, Roma 1995. Cf., also, Valentino Catricalà, Laura Leuzzi, *Cronologia della video arte italiana*, in Marco Maria Gazzano, *Kinema. Il cinema sulle tracce del cinema*, Exorma, Roma 2013.

9. Marshall McLuhan, *Understanding Media*, McGraw-Hill, 1964, p. 7.

McLuhan's perspective was quite critical, especially about the too deterministic relationship between media and society, ruled by unidirectional mechanisms of action/reaction¹⁰, as well as about the excessively large notion of medium. Today this notion is still quite ambiguous, in spite of the abundant debate and discussion about it.

Despite the great number of studies after McLuhan, such as those by Cavell¹¹, Carroll¹², De Kerckhove¹³, Levy¹⁴, Rodowick¹⁵, Krauss¹⁶, the definition of medium is still vague and general. Similarly, the difference between medium and technology is still unclear: two almost parallel terms in McLuhan's theory. The notion of medium is often employed as synonym of technology – especially concerning electronics and communication – or as something extremely general and related to whatever mediates between the world and us, the result being a vastly general field that covers the totality of communication and art phenomena.

In my opinion, the problem ensues precisely from these contradictions. As Sean Cubitt and Paul Thomas state:

Mostly when we say medium we mean something of a pretty high order of complexity such as television. These media are not just feats of engineering but also imaginary engines, imaginary in that we ascribe to them a coherence they do not actually possess. Television is an industry, a cultural habit, furniture, a mixed bag of program genres often derived from other, older media such as sport and news and an assemblage of technologies not all of which are exclusive to TV. Convergence is the obverse of hybridity: so many elements that comprise television are shared with other media. Take lens technologies, for example. There are no analog or digital lenses. The skills and technologies of focus and aperture, color temperature and framing are the same in photography, cinematography, and analog and digital electronic imaging. Each medium is already a dozen technologies arranged in a system¹⁷.

10. Concerning McLuhan's critical views, cf. Pierre Lévy, *Cybercultura. Gli usi sociali delle nuove tecnologie*, Feltrinelli, Milano 2001; Alberto Abruzzese, Andrea Miconi, *Zapping: sociologia dell'esperienza televisiva*, Liguri, Napoli 2001. Especially on the studies concerning the acronyms: Science and technology studies (STS), Social Construction of Technology (SocT), Actor-Network Theory (ANT).

11. Stanley Cavell, *The World Viewed*, Harvard University Press, Cambridge 1979.

12. Noël Carroll, *Theorizing The Moving Image*, Cambridge University Press, Cambridge, UK 1996.

13. Derrick De Kerckhove, *Brainframes: Technology, Mind and Business*, Bosch & Keuning, 1991.

14. Pierre Levy, *Qu'est-ce que le virtuel?*, La Découverte, Paris 1995.

15. D. N. Rodowick, *The Virtual Life of Film*, Harvard University Press, Cambridge 2007.

16. Rosalind Krauss, *A Voyage on the North Sea: Art in the Age of the Post-Medium Condition*, Thames & Hudson, London/New York 2000.

17. Sean Cubitt, Paul Thomas, *Introduction. The New Materialism in Media Art Histories*, in Id., *Relive. Media Art Histories*, MIT Press, Cambridge 2014. Republished in this volume.

Every medium is thus composed of several technologies: it is not a unitary notion, but a multiple vision, something non-unitary but 'assembled'¹⁸. Especially in the Media Arts field, medium and technology are two terms that converge and separate continually, at the same time they are overlapped, intertwined and interrelated, but also distant and separated: this ambiguousness is where the problem lies.

In this regard, the main difficulty ensues from taking the medium as something unitary. If one really wants to understand medium's inner nature, it should be taken as something ever changing and never fixed. It is not accidental that Deleuze created the word 'objectile' in order to explain the new nature of contemporary objects: «the new status of the object no longer refers its condition to a spatial mould, in other words, to a relation of form-matter, but to a temporal modulation that implies as much the beginnings of a continuous variation of matter as a continuous development of form. [...] His is not only a temporal but also a qualitative conception of the object, to the extent that sounds and colors are flexible and taken in modulation. The object here is manneristic, not essentializing: it becomes an event»¹⁹.

On the other hand, in 1972 René Berger, according to a more sociological perspective, introduced the notions «of units, enclosed by ramparts and pierced by rare roads', message producing and receiving 'cells' (photo-electric, photo-psychic, electro-social, electro-economic ?...), included in 'complex circulation nets' and concerned by 'uninterrupted exchange»²⁰.

The Terminological Question. Media Art between Cinema and Contemporary Art

The phenomenon, recently baptized as Media Art, belongs to the above-mentioned crossed and idiosyncratic approach. A relationship that arises from the intertwining and connections that have affected the world of audiovisual, cinema, media and contemporary arts. A new way that entails a new image for filmmakers and artists, who are more and more involved in audiovisual and technological changes.

If present times are taken into account, one should keep in mind the transitions from art to cinema in the work of directors such as Chantal Akerman, Harun Farocki or, vice ver-

18. This word is employed by W. Brian Arthur in *The Nature of Technology: What it is and How it Evolves* (The Free Press and Penguin Books): «new technologies inherit parts from the technologies that preceded them, so putting such parts together - combining them – must have a great deal to do with how technologies come into being», p. 12.

19. Gilles Deleuze, *The fold. Leibniz and the Baroque* (1988), Eng. tr. by Tom Conley, University of Minnesota Press, Minneapolis 1993, p. 19.

20. René Berger, *La mutation des signes*, Denoël, Paris 1972, p. 92 : «aux unités fermées sur elles-mêmes par des remparts et que perçaient de rares routes, se substitue un réseau complexe de circulation dans lequel chaque cellule (photoélectrique, photopsychique, électro-sociale, électro-économique?...) produit et reçoit des messages par un jeu d'échanges ininterrompus».

sa, in the work of Godfrey Reggio or Ron Fricke; or, differently, the work of artists such as Douglas Gordon or Eija-Liisa Ahtila – the latter influenced as well by her participation in the jury of the Venice Film Festival 2011; or also David Lynch's recent use of the web. According, for instance, to Daniel Birnbaum,

artists such as Ahtila, Douglas and Aitken did not invent *another* cinema, supposedly searching for its specificity through some form purification. On the contrary, they would be simply able to make visible what has been there for a longtime, their main focus being impurity and heterogeneity of cinema as cinema. [...] Furthermore, he suggests, in order to explore and to visualize the parasitism and contradiction that characterized the 'plus one' art since its origins, it is worth showing the most specific character of cinema, that is its relative and interactive dependence on other arts²¹.

As I said, this phenomenon of multiplication is not new. The origin can be dated back to the end of the 19th century, which is the century that marked the very beginning of a complex media system. A system that consists not only in the appearance of images recorded in motion – photography combined with cinema – but also of an idea of *liveness* that developed from telephone to radio up to television²², as well as the idea of mathematical sectioning of information that is now fully established through the binary system²³. These universes were consciously applied to some experiences of historical avant-garde, especially by Raoul Hausmann's Optophone and in El Lissitzky's electro-mechanical vision²⁴.

This perspective, however, became an independent and distinguishable field only from the 1960s and 1970s, an epoch rich in technological innovations. The commercial diffusion of television, portable video and the early development of the personal computer provided the artist with unprecedented means of creation.

New phenomena, and therefore new words, came to light. This is what happened to cinema. The word 'audiovisual' has been created in this very artistic sphere. At that time the word 'cinema' became uncertain and apparently unable to account for all the

media changes affecting the audience's experience of the images in motion. According to Edgar Morin's work published in 1962, *L'esprit du temps*, the basic idea looming up in this epoch is that, «the average man is some sort of universal *anthropos*. The most suitable language for this type of man is the audiovisual language, that is a four-register language, made of image, music sound, speech, writing»²⁵.

Thanks to its capacity of generalization, embracing all the technological sphere of possible images accompanied by sound or audio-vision, the audiovisual has become a matter of interest also for academic studies, since it can be employed to explain all those forms of images in motion and sounds that were not included by the traditional notion of cinema.²⁶ Beside the rather wide use of the word in the sociological field, in cinema studies, as Bettetini writes,

several texts and products fall under the umbrella of the notion of 'audiovisual', their composition combines images (fixed or in motion) with words, sounds and noises: from sound cinema to television, from educational film strips to some commercials, from videotapes to compact discs, from multimedia items to many Computer Graphics items and hypertexts, up to the recent examples of Virtual Reality, which increases the number of human senses involved in such experiences, including also the touch and the sense of the body²⁷.

In addition to the outlined terminological context, many other terms have been created in the same period, in order to organize somehow an increasingly more articulated universe. An imprecise language indicates also an imprecise map, as it is the case for the innumerable words rising today to portray the current complex situation.

In this regard, the first place should be awarded to the word 'video art', not for chronological reasons but rather for its success. This is the first word that spread throughout the world, referring to a new phenomenon related to the possibility of employing electronically produced images in motion for creative purposes. An easily successful word, as Marco Maria Gazzano writes, especially because of its character which is

21. Daniel Birnbaum, *Chronology*, Lukas & Sternberg, New York 2005.

22. Among the others, see William Uricchio's essay, *Television's first seventy-five years: the interpretive flexibility of a medium in transition*, in *The Oxford Handbook of Film and Media Studies*, by Robert Kolker, Oxford University Press, Oxford 2008, p. 288.

23. Martin Davis, *Il calcolatore universale*, Adelphi, Milano 2012, p. 55. For an interesting history of computing, see Stefano Mosticoni, *Storie sul binario*, Exorma, Roma 2011. See also Vittorio Marchis, *Storia delle macchine*, Laterza, Bari 2010 e Daniele Casalegno, *Uomini e computer: Storia delle macchine che hanno cambiato il mondo*, Hoepli, Milano 2014.

24. See also, Valentino Catricalà, *Come l'avanguardia inventò il futuro. L'Optofono di Raoul Hausmann, la "visione elettromeccanica" di El Lissitzky e le forme dell'energia*, in "Imago. Rivista di studi sul cinema e i media", by M. M. Gazzano (ed.), E. Carocci, n. 7-8, Bulzoni, Roma 2013.

25. Edgar Morin, *L'esprit du temps, Essay sur la culture de masse*, Grasset, Paris 1962, ch. III "L'homme moyen". Apart from the matter of the present essay, it is interesting to notice that Morin has been one of the first authors to mention the consumer's power of action. Although he states that the dialogue between mass culture and the consumer is a dialogue between a 'verbose' part and a 'mute' part, still in a footnote at the end of the third chapter Morin points out that the consumer hardly assimilates what contrasts with his mechanisms of projection, identification and understanding. This does not mean that he has free will. Rather, there is no unilateral action of mass-media on the audience. Such an intuition greatly anticipates the following theories on consumer's action.

26. Cf. the important essay by Michel Chion, *L'audiovisione. Suono e immagine nel cinema* (1994), Lindau, Torino 1997.

27. Gianfranco Bettetini, *L'audiovisivo. Dal cinema ai nuovi media*, Bompiani, Milano 1996, p. 7 (my translation).

mainly communicative. It has been introduced as a 'new word', a neologism able to fuse together two concepts (although it recalls their distinctions, in an imprecise and therefore clever way), that were apparently distant from each other and actually incompatible within the disciplinary and dichotomical culture of the Seventies: art and technology (the latter represented by the 'video')²⁸.

The emphasis goes, in this case, on art and technology, rather than on image and sound. Two words that combined in one single term. This is the very challenge emerged in that epoch, which can still be found today in the word 'media art'.

The term "Videoart"²⁹ was accompanied by several disparate – and often more precise – terms, in order to account for the rise of a new key-word in the contemporary arts of that time: the word 'electronics'. Hence, in between 'video' and 'electronics' other terms appear, such as:

Electronic Television (Paik 1963), *Video tape* and *Video cassette*, mostly diffused from 1968 to 1973 (promoted by the first magazine of the activists of new technologies, the New York-based "Radical Software", issued from 1970 to 1975 and directed by Dudley Evenson, Michael Shamberg, Beryl Korot, Tom Klein, Ira Schneider; then followed from 1973 to 1976 by the equally symbolically significant magazine "GuerrillaTelevision" directed by Michael Shamberg alone); *Education Automation Software* (BuckminsterFuller, 1970); *Art and Tv e Video Newsletter* (Aldo Tambellini, 1971); *Electronic Art* (Paik, 1965-'68); *Creative Television* (entitled *Tv as a Creative Medium* according to the 1969 exhibition at the Howard Wise Gallery in New York, curated by Ira Schneider and Frank Gillette); one may also mention the more philosophical *Electronic Opera* and *Videology* (also suggested by Paik as well as by the critic David Ross for the exhibition *Videa'n Videology*, Syracuse, New York 1973, about the early twelve years of the Korean artist's work in electronics) and *Electronic image* (The Vasulkas, 1971-'73)³⁰.

This list should also include the Computer Art created at the end of the '60s.

Cinema is also concerned by this terminological whirl. Cinema is the technological art par excellence and, insofar as it has been accompanied by new technologies allowing new visual and imaginative forms to develop, it can be defined as 'expanded' cinema. *Expanded cinema* is the definition provided by Gene Youngblood³¹ in 1969. This notion

28. Marco Maria Gazzano, "Videoarte": etimologia e genesi di un concetto controverso, in Marco Maria Gazzano, *Kinema*, cit., p. 24 (my translation).

29. According to Marco Maria Gazzano the term 'video art' did not appear before 1975, with only two anticipations in 1971 and 1972.

30. Ibid. p. 25.

31. Gene Youngblood, *Expanded Cinema*, Dutton, New York 1969. In 1966 a debate on 'expanded cinema' between Ken Dewey, Henry Geldzahler, John Gruen, Stan Vanderbeek and Robert Whitman

introduces us to that *expanded* imaginative sphere of arts that Maciunas later described quite exhaustively in his *Expanded Arts Diagram*³² (1966). In the same context and at the same time another important term was created by Dick Higgins, *Intermedia* (1966). These three terms are the linguistic basis for the understanding of arts' relational character, that becomes all the more prevalent in that period, and that has been increased by digital systems only few decades later.

Nevertheless, the tradition behind these several neologisms is the first mentioned here: the terminological combination of art or cinema and the employed medium. This first combination eased the way to the creation of a new word for every application, program or medium.

Media Art, Digital Art, Interactive Art, Electronic Art, Software Art, Computer Art, Intermedia Art, Time-Based Media Art, but also, with respect to cinema, Database Cinema, Digital Cinema, Quantum Cinema, Software Cinema, Web Cinema and so on, all these words, often complementary or equivalent to each other, entail the attempt to comprehend an increasingly complex universe of difficult definition. It is a structure of circular sets – according to the noblest Cantorian tradition – which is impenetrable and difficult to unravel.

As a first step, it should be pointed out that the peculiar character of all these terms amounts to their attempt to explicate the technological nature of the concerned artistic operations, by stressing one or the other of the employed 'tools'. What changes here is not the employed technology, which is complementary for many aspects, but rather its declination mode: the specification of one use or another of the technology at stake, in consideration of a closer and closer relationship between art and technology.

Obviously, the issue concerns then the borders differentiating one terminologically defined set from the another. How different can Electronic Art be from Digital Art or from Software Art? Undoubtedly, "digital" refers generally to digital systems, whereas "software" refers to something more specific within the IT systems, and yet the English word "electronic" includes both phenomena, since it is the same technological basis that make them possible.

The same remark can be applied to Digital Cinema, Software Cinema or Database Cinema. The notion of Digital is undoubtedly the most inclusive, however the operative

was published. In this debate they tackled many questions, not only about cinema and its potential, but also «about a new aesthetics of communication, a new aesthetic perception and consciousness, about the possibility of new sensors of communication»: «a positive, progressive, experimental perspective about the possible use of media, which will be later better articulated in McLuhan's theories, in that epoch of experimentations and connections between research and social commitment», Dario Evola, *Il teatro come cinema espanso*, in Andrea Balzola, *La scena tecnologica*, Audino, Roma 2001, p. 191 (my translation).

32. George Maciunas, *Expanded Arts Diagram*, published for the first time in 1966 flyer Fluxfest Sale and later, in the same year, in the magazine "Film Culture", directed by the Mekas brothers.

histories

processes activating a database are software processed data. There are also even more complex terms such as 'quantum cinema'³³.

On the same line of video art – beyond video, the medium – one finds Media Art. This is what it may be considered one of the most useful term to explain the artistic phenomena at issue. This term arose in the early 2000's³⁴ as 'new media art' and has become successful thanks to its quality of generalization: in other words, it is able to signify the conceptual and historical width of the complex relationship between art and media; a term that allows us to encompass a longer time frame than that defined by another very successful term, often incorrectly employed as its synonym, Digital Art. Media Art, deprived of the world 'new', allows to overcome the technological nature of the single medium. This is where an actual difference between media and technology may be discovered. The terms 'medium' can cover all that technology cannot comprehend, not only the device, the object, but all the concerned imaginative aspect; it includes all the – non-linear – dynamics activated within the mutual influence and relationship between man and technology.

In this sense, the term Media Art can help us understand our present, but also to re-read our past, to revise many data and histories supposedly taken for granted, regardless of the mere technological support. Through the term Media Art, it is possible, for instance, to outline «a tradition dating from Man Ray to Nam June Paik up to the current use of the net and computer, whereas the furthest Digital Art can go is to refer to a history dating back to the end of the Sixties, the time of the first experiments of the artistic use of computers»³⁵.

In spite of its impreciseness, the encompassing nature of the term is probably its strength: it can convey the reference to a whole history, it can attract the potential of a tradition. It is a notion that allows us to create not only our present, but also our past and its archeology³⁶.

This history requires to be thoroughly investigated: only this way it would be possible to better understand the links and connections that we experience today, and to grasp all the complexity of the peculiar metamorphoses of cinema and of the audiovisual sphere, as well as of media and contemporary art.

33. Term coined by Peter Weibel in his essay *L'immagine intelligente: neurocinema o cinema quantico?* in "Bianco e Nero", op. cit.. Republished in unabridged version in the magazine "Imago. Studi di cinema e media", op. cit.

34. This term has been definitively established by the work by Reena Jana, Mark Tribe, *New Media Art*, Taschen, Cologne 2006.

35. Domenico Quaranta, *Media, New Media, Postmedia*, Postmedia, Milano 2010, p. 11.

36. Along this same line, please confer the important lectures on Media Art Histories: cf., Oliver Grau (ed.), *Media Art Histories*, Mit Press, Cambridge (Ma) 2007 and Sean Cubitt, Paul Thomas, *Relieve: Media Art Histories*, MIT Press, Cambridge 2013. Cfr. also Chris Salter, *Entangled*, MIT Press, Cambridge 2010.

Cinema as Dream Demonstrated in Geometrical Order: Art and Science at the Crossroad of Media Arts

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Cinema is one of the fields where art and science have more often confronted each other and interlaced, although most of the times unwares and preserving all respective 'ideological' diffidence. This applies not only to today's cinema (or to the vast universe of 'media arts'), the digital, possibly 3D and high-definition cinema, digitally shot and edited, spread through mobile phone, tablets, TV, and cinema halls. It has always applied to cinema since its film based origins. It already applied to that cinema, which – in the era of photography – had not yet discovered mechanized movement (least of all sound or colour), but already was a new technologically determined language of images (hence of meanings). These languages, as one of the most clever interpreter of the avant-guard of the early '30s has suggested, experienced the time of their 'technical reproducibility'. Walter Benjamin, indeed, in his famous essay of 1936, established that «the main significance» (my emphasis) of cinema entails *precisely* «the tendency to promote the reciprocal interpenetration of art and science»¹.

The German philosopher and art critic masterly clarifies the previous claim as follows:

It is difficult to say which is more captivating: its artistic value or its scientific utility. One of the revolutionary functions of film will be to make the artistic and the scientific utilizations of photography, which for the most part previously diverged, recognizable as identical. By close-ups of the daily inventory, by emphasizing the hidden details of familiar props, by researching banal milieus under the brilliant leadership of the lens, film on the one hand expands the insight into the inevitabilities which govern our existence [Dasein]; on the other hand, it assures us of an enormous and undreamt-of field of play!².

It is true that, in order to understand the intimate nature of technologically advanced

1. Walter Benjamin, *The Work of Art in the Epoch of its Technical Reproducibility* (1936), Eng. tr. by Dennis Redmond (2006), Preface, XII; anticipated by the equally masterful and innovative *Little History of Photography* (1931).

2. Ibid., p. XIII.

images, i.e. produced or mediated by the employment of some 'technology' – hence cinema and photography in the first place –, it is necessary to take into account a fundamental issue. Such an issue is so fundamental and relevant to the general awareness of the perceived world, – not only through senses, but also through senses mediated by new technologies (of which photography, radio, and film are only the first of a long series including digital products, the web, neo-TV, etc.) – that it has been defined, just after the end of WWII, by the renown and influential French film critic, André Bazin, as an 'ontological' matter, that is to say, not only relevant according to the scientific perspective, but also in the realm of spirituality and metaphysics.

The issue is that *each* image assembled through photography-based or film-based techniques is *simultaneously* both a 'document' or representation of the captured object / subject and an 'interpretation' of that object / subject. Because of this double nature, photography and film – and afterwards the video and the electronic image-sound – have greatly attracted both artists and scientists, as well as, obviously, philosophers and critics. Every technologically determined image, as *document* or *representation*, concerns the realm of science, possibly also the realm of psychoanalysis and physics, inasmuch as it entails the 'memory' of a previously occurred act or fact (fixedly established – let's say eternally – on a support called film, or magnetic tape, or digital memory). The *same* image, – which, incidentally, the history of cinema theory, within the evolution from film to video to electronics, does not consider exclusively as 'visual', but rather as 'audio-visual' –, as the interpretation of the occurred act or fact, concerns the realm of art.

Furthermore, provided that it is taken into account that a film or video or TV program, or whatever audio-visual product, as trivial as it may be, is *always* the result, not only of image elaboration (each image being both a document and an interpretation of a fact or detail), but also of image 'editing', that is of image 'mis-en-relation', entailing images and sounds, images and colours, images and words, it is easy to understand why Benjamin concerning the nature captured by cinema says that «its illusionary nature is a nature of *second degree*; it is a result of the *cut*»³.

In a crucial passage, already anticipated by the essays on photography in 1931, of his 1936 oeuvre, *The Work of Art in the Epoch of its Technical Reproducibility*, Walter Benjamin further clarifies the innovative potential of a technical-scientific procedure for the capturing of nature, such as cinema, from the interpretative, and hence artistic, perspective:

With close-ups, space expands; with slow-motion, movement does so. Just as the enlargement does not merely explicate what one "anyway" sees indistinctly, but on the contrary permits completely new structural formations of the material to come to view, so too does slow-motion reveal more than just familiar types of movement, but discovers in these entirely unfamiliar ones, [...].

What becomes palpable is that a different nature speaks to the camera than to the eye. It is different above all because in the place of a space consciously navigated by human beings, an unconsciously navigated one appears. (my emphasis)

Even though we are more or less accustomed to seeing the walking gait of people, we certainly know nothing of our posture in the second-by-second progression of our stride. Even though we are more or less used to reaching for a lighter or a soup spoon, nonetheless we scarcely know what really plays out between hand and metal, let alone how this varies in accordance with the various moods we find ourselves in.

Here the camera intervenes with its means of assistance, its falling and rising, its interrupting and isolating, its extension and time-lapse photography, its enlargement and diminution. We first experience the optic-unconscious through it, as we experience the drive-unconscious through psychoanalysis⁴.

In the '40s, by means of the monumental and savant *The Social History of Art* (Munich 1954-55, 2 vols., tr. in collaboration with the author by Stanley Godman, 1951; 2nd. ed. published in four volumes, 1962; 3rd. ed., with a general introduction by Jonathan Harris, 1999), the sociologist and art historian Arnold Hauser referred to the whole 20th Century as to the 'Film Age', and he claimed that, concerning 'this very recent art', contemporary to Bergson's (philosophical) theory and Einstein's (scientific) theory of space and time – whose most significant feature is simultaneity and whose essence is time spatialization; in which, he claims, all the threads of modern art are combined – one may well be persuaded that the time modes of modern art were born from the spirit of the cinematographic form, and that films are the typical art form of that historical time⁵. Cinema, Tv, media art: these techniques and arts were born in the 20th century in order to interpret the 20th century (Modernity and Post-modernity), as many authoritative historians have reminded their pupils.

Almost every critic approaching cinema – since the early 1910s and even before, until today in the digital era – has formulated the same issue: the issue of the inevitable, very close, charming, but also cumbersome 'interpenetration',

3. *Ibid.*, p. XI.

4. *Ibid.*, p. XIV.

5. Arnold Hauser, *The Social History of Art* (1954-55), vol. IV, The Film Age.

as suggested by Benjamin, between technical-scientific *means* (of production / elaboration / communication) and *results* (in terms of expression, from show and entertainment, to art and interpretation) in cinema⁶.

At any rate, already in the '70s scholars and critics have guessed with clear farsightedness that the concept and technological nature of cinema could be extended to other technical – and also expressive – realms unimaginable before then.

In the book *Expanded Cinema*, published in New York in 1969, the North-American scholar Gene Youngblood – twenty years before the theories on the 'technological convergence' of all language and analog media towards the digital (from *digit*, number) image and technology – presented an idea of cinema as in expansion (quantitatively, on several devices), enlarging, extending (qualitatively, to artistic limits) beyond the film and the cinema hall. Such a cinema would open out on several supports and distributions modes to a plurality of expressive languages.

During a conference in 1986 at the University "La Sapienza" in Rome, the American scholar further clarifies his claim with far-sighted lucidity:

Cinema is the art of organizing a stream of audiovisual events in time; it is a events-stream, like music.

There are at least three media through which we can practice cinema – film, video, computer – just as there are many instruments through which we can practice music.

Of course, each media has distinctive properties and contributes differently to the theory of cinema, each expands our knowledge of what cinema can be and do.

Each new medium modifies and extends the linguistic possibilities of the moving image, subsuming the syntaxes of previous media without negating them (my emphasis)»⁷.

According to Youngblood, as far as video was concerned, the issues pertaining to the dimension and quality of images were only secondary aspects that were due to be solved in the next ten years.

6. On this matter, see Giorgio De Vincenti, *Il concetto di modernità nel cinema*, Pratiche, Parma 1993; Paolo Bertetto, *La macchina del cinema*, Laterza, Bari 2010; for those interested in approaching this historical-critical process through the history of cinema theories, I refer the reader to, Alberto Boschi, *Teorie del cinema 1915-1945*, Carocci, Roma 1998, as well as to, Francesco Casetti, *Teorie del cinema 1945-1990*, Bompiani, Milano 1993, and Thomas Elsaesser, Malte Hagener, *Film Theory: an introduction through the senses*, Routledge, New York 2003.

7. Gene Youngblood, *Digital Simulacrum and Space virtuality*; second edition in Marco Maria Gazzano (ed.), *Il "cinema" dalla fotografia al computer*, Quattroventi, Urbino 1999.

However, he strongly believed that it was instead essential to recognize that cinema was going to make further use of that new medium, which eventually would have been absorbed by the computer, as the universal machine, (a definition of computer which is an authentic tribute to Alan Turing's theoretical intuition).

Provided that cinema today can no longer (if ever could) be defined as *one* technique, or *one* unitary form of distribution, or one *unique* device of perception and construction of images, as it is rather a 'family' of techniques, production modes, perceptual forms and storytelling approaches, related to each other but also reciprocally very different (film vs digital, for instance), it should be stated that such an awareness was gradually developed as cinema started to switch from chemistry to electronics.

Notably, it was the experience – still of very little renown but crucial – of electronic arts and media arts, as well as of 'video art' in particular, that registered the transformations both in the technical field and in the arts field, together with their reciprocal intertwining, as occurring even ten years later⁸.

The *audio-visual electronic arts*, especially 'video art' – i.e. the creative relation established by artists while exploring the (first analog then digital) electronic device – may well be several things together.

First of all, a series of works *production modes*. These production modes are more conceptual than material, and keener on craftsmanship than on industrial production. Nevertheless they contributed to change and develop the language itself of cinema.

They envisage the production of works entering both *art* and *communication* traditional places – usually dis-placing and re-defining them – as well as the realm of individual communication (from self-knowledge to interactivity), among individuals and between individuals and machines, as well as between machines and machines (computers, TVs, mobile phones, web, etc.).

They have equally entered – as they still do, also in this case 'misplacing the insignia', as Sklovskij wrote about Marcel Duchamp – those fields pertaining to the so-called 'mass communication' (advertising, fashion, TV, radio, performance staging and/or filming, multimedia, etc.).

These works, moreover, – as the actual *results* of a research, although still individual and highly subjective, at least until the web radically changed the rules – are *simultaneously* part (of course, not all for the same reasons) of the definition stories of many different approaches in the artistic experience. Notably of:

plastic art (painting, sculpture, installations);

performances (media-related, social, body-centred, individual or collective);

8. Cf., Giorgio De Vincenti, Enrico Carocci, *Cinema e media: scenario del nuovo secolo* in Enciclopedia Treccani XXI *Secolo*/"Gli spazi e le Arti", Istituto della Enciclopedia Italiana, Roma 2009.

cinematography (according to the extended notion of «moving images and sounds writing composition»; and therefore as relevant part of cinema and TV stories, besides more specifically those 'video'-related);

acoustic arts, as the specific field of the contemporary expressive research on sound, on music in relation to media and space, on words and *phoné* itself.

Audio-visual electronic arts may be taken as the *boundary line*, as the place of intertwining and reciprocal tension (and extension) between *all* these fields; notably, with peculiar as much as acknowledged efficaciousness, between the field of expression, writing and perception of the *visual*, the *corporeal* (according to the rather fascinating dialectics material / immaterial), the *sound* and even the *musical*.

Furthermore, they may be taken as part of a process of new-definition of the *logos* (discourse, narration, writing, vocal expression) as well as of the *word*, may this latter be poetic or descriptive, storytelling or conceptual.

The charm of electronic arts is often clearer to the non-experts, who are provided with intuition and are free from prejudices, than to professional critics. On the other hand, their index of importance in the histories and theories of art, and ultimately their substantial *elusiveness* in regard to established categories and genres, is due to the fact that several identities coexist within single works, in spite, of course, of the *differences* in *accents*, *styles*, and *expressive directions* of each work and of each author.

The history of electronic arts, and of 'video art' in particular, despite being very dense, is chronologically rather short, even shorter of the very 'short century', the 20th century, that has engendered it. It is short and intense because of the transition between entire technological, ideological, economical, and customs-related universes. Starting in the midst of Cold war and of the manichaeistic opposition between East and West, it goes till the early rise of globalization, also pointing – utopically – to some of its main lines: transculturality, Journey and relocation as paradigms, the centrality of the peripheral, the Web as model of knowledge and the Intertwining as interpretative key, the negation of the hierarchies of meaning between objects, symbols, signs, cultures. It is positioned (and, unheeded, draws attention) on the most relevant technological threshold of the Millennium, that is the transition from the manual and mechanic – brought to its furthest results since the electric age of film and radio – to the electronic, first the analog, then the absolute abstractness from reality and the integral algorithmic virtuality called 'digital'.

On the expressive and storytelling level, from their earliest stage, electronic arts collect the most radical heritage of literature, plastic arts, early avant-guard theatre, and start their journey from where these disciplines have arrived: from the concept of open work and the negation of the character figure, from the non-linear storytelling and internal, surreal, at times subliminal stream. They also

collect from the most advanced experiences connected to film, radio, and theatre (abstract cinema, constructivist cinema, conceptual cinema, *hörspiel*, acoustic art, performance, happening, theatre of the word, theatre of the image), the meaning of *editing* as intersection, superposition, mosaic, fading-out of signs along time. Within this stream, colours, words, and music – finally reunited by the electronic technology in visual/sound/time synthetic images generated by electronic frequencies or more specifically by digital algorithms – are more conspiratorial than protagonist. Next to media art, electronic arts act as proper 'ferryman' of the 'audience' (at this point a necessarily 'interactive' audience) towards further conditions of consciousness.

Thus, at the expositional level, electronics arts, in agreement with the avant-guard of the '60s, and through the ultimate critical discussion of both the economical and perceptual function of the 'spectator', as it was perpetrated from antiquity to the '50s, acted as main motor and influence in the transition of the public (and of works) from the show-related and perception-related machines of the 19th century to the devices of the 21st.

All this has entailed a radical process of mis-placement/re-location from the photo album, the cinema hall, the radio and TV domestic fireplace, from the art gallery, the concert hall, the stage... to the square, the electromagnetic waves, the living sculptures, the environmental installations, to the open spaces, broadcasted TV, personal computers, I-pods, mobile phones: all in one word, from the Parterre to the Web.

Since they interact also inductively with the key-concepts of the contemporary world⁹, electronic arts determines the transition – often a dramatic one, consciously reverberating in their engendered works – from the Modern poetics and systems to their crisis, to their contemporary fragmentation and transformation. Within art, they stand for that very moment – charming and terrible, full of vortexes, currents, icebergs, and islands – in which the whole universe dissolves (without neither revolution nor revelation) and another one tries to recreate itself through new forms. Within this process, artists are like rafts in the catastrophe¹⁰, ultimate custodians of strong thoughts and sense of social responsibility, who are able to orientate (us as much as themselves) in the babel of current languages, heritages, and forms, may this even be through echoes and resonances only.

9. Cf. Peter Bürger, *Theory of the Avant-Garde*, (1974), Bollati Boringhieri, Torino 1990; Massimo Cacciari, Massimo Donà, *Arte, tragedia, tecnica*, Raffaello Cortina, Milano 2000; Pietro Montani (ed.), *L'estetica contemporanea*, Carocci, Roma 2004.

10. On the very incisive metaphor of the "Babel's draft" formulated in the early '80s by great artists, such as Carlo Quartucci, Carla Tatò, and Jannis Kounellis ("Progetto Genazzano 1983"), see, Marco Maria Gazzano, *Una zattera nella catastrofe*, in "Cinema Nuovo", a.33, n. 290/291, Dedalo, Bari, agosto-ottobre 1984.

At any rate, audio-visual works of electronic art are one of the most effective representation of the complexity of the contemporary time, although not many of them are fully conscious of such a complexity, in spite of the great amount of amateur productions attracted by the flexibility of the medium as well as by its supposed expressive and productive 'lightness'.

Next to the few works that, from the first photographers of archeo-cinema to the avant-guards of the '20s and of the '60s, go across the technological Modern era with critical awareness, the best results of audio-visual electronic arts belong to the history of those who have worked to raise the bar of awareness in the research for sense and meaning.

This is mainly due to the fact that, since the early intuitions of this experience – drafted on paper in the '50s and '60s well before switching to the monitor – a clear consciousness concerning the existent as complexity has been shared among artists; such a consciousness is often dramatic, never reassuring or pacifying, also when the audio-visual composition came out as joyful or recreational, as in Nam June Paik.

Probably because the analog image and sound are expressively and technologically a transitional form, ephemeral – and aware of this since the '50s – at the crossroads between photography, film, radio, and computer, the 'universal machine'.

Probably because more than other artists – captured by the production-consumption gears fine tuned in the last two centuries by the cultural and audio-visual mass industry – those artists preferring 'video' as their field of research have taken upon themselves all the *risks* of working on the technologically *ephemeral* as well as on the *border lines* between arts.

Actually, because Television (today reabsorbed in the web) – since the '30s variously defined as *vector* for the distance transportation of images, *show-machine*, *omnipresent eye* for social control, probably all this together and much more – is first of all, thanks to what video-artists have revealed about it, a complex *device* for the *transformation of energy into image-sound*.

And while the manichaeistic separation between audio and video progressively loses its meaning in the electronic era – as the great masters of avant-guard cinema, from the soviet-russians to the video-artists, had widely foreseen – TV established itself as a form of *cinema*, which claims for itself the act of 'writing' (i.e. interpreting, expressing), of 'communicating' (i.e. establishing relations), and of course of 'seeing from a distance', not only by means of light (as in the 'projection' of images, that is of previously impressed light reflexes on a chemical or electro-magnetic support), but also *within* light, in the emission of electrons on the monitor, that is inside and through the structure itself of the primordial energy of the Universe.

«The principle of cinema is [to go] towards light and shine it on our night», as

reminded to us by Jean-Luc Godard (opening caption of *Nôtre musique*, Swiss/France 2004): maybe slightly mystical, but certainly embraceable.

No expressive form, more than cinema, has discovered and applied the expressive necessity of mathematics, both Euclidean and non Euclidean, and of physics, relativistic or not. Cinema and its techniques have embodied the greatest of sciences and have creatively benefited from them since the 19th century until the digital era, through angles, framing; focal distances, time intervals; space measurements, colour temperatures; intensity and voice timbre sensing; the perspective calculation and the principle of indeterminacy as figurative and narrative models; moving points and lines, 'picture elements', photons and light quanta; algorithms, codes, procedures, transitions; probability waves, particles; linear models, reticular models, intermodal models of image and sound, as well as of communication; knowledge as progressive approximation; from 'multi-' to 'intra-'; the dismissal of the power of the centre; quantum mechanics and neurosciences as new horizons...

For all these reasons, perhaps, cinema may be taken (in tribute to Baruch Spinoza and William Shakespeare) as a *dream demonstrated in geometrical order*.

A dream that, at the end of the twentieth century, has found, in the media arts, an hub, a landing: an important point – "digital" – of departure.

Electronic Resonances in Cinema and Video Art. Notes for a History Still to Be Written

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Prelude

It is well established that the fundamental relation between images and sounds has significantly marked the experience of electronic arts since their germinal phase in the early '60s. It shall suffice to briefly tune the memory on the figure of Nam June Paik (pupil of Stockhausen, Nono, and Cage), at the time of his performance in March 1963, when he presented at the Parnass Gallery of Wuppertal *13 distorted TV sets*¹.

Such a fundamental relation is due to productively last until today, letting the public acknowledge with remarkable amplitude and sensible articulation the electronic device's creative eye *together with* its ear. The reconfiguring power of its gaze *together with* that of its listening. Optical imagery *together with* acoustics. Visual emotions *together with* auditive emotions². The same cadence may be peacefully formulated about cinema going back to the '30s. At that time the first encounters between film and electroacoustic sounds took place, as I shall soon recall.

This overly explicative incipit re-establishes that cinema images, before videographic images (and more extensively well before inter-media products), have engendered during their long itinerary a conspicuous as well as heterogeneous series of interrelations with electroacoustic and electronic sounds, in many

1. In this radical installation and performance, one may recall, some upside-down prepared pianos, several sound objects, such as pots, keys, a disarticulated woman mannequin, and the freshly severed and blood dripping head of a bull interact plastically. To these materials 13 TV sets are added, displaying as many different images in black and white, distorted, deformed and pulsing with light. On this matter, see Nam June Paik, *Afterlude to the Exposition of Experimental Television*, the catalogue of the exhibition, Parnass Gallery, Wuppertal 1963, in *Fluxus of Five Three*, Fluxus, New York 1964.

2. Concerning the relation between cognitive and emotional response to visual stimuli, Torben Grodal effectively argues that: «cognitive and perceptual processes are intimately linked with emotional processes within a functionally unified psychosomatic whole [...] systemic relation between the embodied mental processes and configurations activated in a given type of visual fiction and the emotional 'tone' and 'modal qualities' of the experienced, affects, emotions and feelings in the viewer». Cf. Torben Grodal, *Moving Pictures: A New Theory of Film Genres, Feelings, and Cognition*, Clarendon Press, Oxford 1997, pp. 1-3. Grodal's claim may well be extended with no stretching to the audio aspects and implications, given the sense organicity of human perceptual modes.

occasions with remarkable outcomes of no little expressive value. However, when first turning to the realm of film-making formal elements, such results arguably correspond to a comparatively scant critic literature. Some accounts of more or less subtle quality on the occasion of single movies as well as general remarks are clearly not missing. However, they are certainly inadequate to the overall estimate of a realm of wide qualitative proportions, which includes first-class film composers in Europe as well as in America or Asia since the '30s³. This was, then, well before Louis' and Bebe Barron's 'electronic tonalities' for *Forbidden Planet* (1956)⁴ by Fred M. Wilcox could reformulate, so to speak, the whole issue, by establishing a divide for future possible scenarios concerning the connection between electronic sound statements and images within the realm of movie dramaturgy and narrative⁵. It shall suffice to mention the functional use of *ondes Martenot*, within the overall architecture of instrumental and orchestral options, by Arthur Honegger in his compositions for movies such as *L'Idée* (1932) by Berthold Bartosch, *Rapt* (1934) by Dimitri Kirsanoff, *Crime et châtiment* (1935) by Pierre Chenal, *Marthe Richard au service de la France* (1937) by Raymond

3. Among the contributions in this direction, one may mention, besides James Wierzbicki, *Louis and Bebe Barron's Forbidden Planet: A Film Score Guide*, Scarecrow Press, Lanham 2005; *Shrieks, Flutters, and Vocal Curtains: Electronic Sound/ Electronic Music in Hitchcock's The Birds*, «Music and the Moving Image», 1(2), pp. 10-36 and *Film Music: A History*, Routledge, New York 2009, also Philip Hayward (ed.), *Off the Planet: Music, Sound and Science Fiction Cinema*, John Libbey Publishing, Eastleigh 2004, and Kevin J. Donnelly, Philip Hayward (eds.), *Music in Science Fiction Television: Tuned to the Future*, Routledge, New York 2013. As to the Italian scholarship, see Roberto Calabretto, *Antonioni e la musica*, Marsilio, Venezia 2012, and Maurizio Corbella's works, from his very PhD dissertation, *Musica elettroacustica e cinema in Italia degli anni Sessanta*, Università degli studi di Milano, Facoltà di Lettere e Filosofia, Tutor: Cesare Fertontani, anno accademico 2009-2010, then "Suono elettroacustico e generi cinematografici: da cliché a elemento strutturale", in Ilario Meandri and Andrea Valle (eds.), *Suono/Immagine/Genere*, Kaplan, Torino 2011, pp. 29-48. In the same volume, see also Franco Fabbri, *Un pianeta proibito. Il cinema di fantascienza e la musica elettronica*, pp. 94-103.

4. Few years after, it is worth remarking, the composition with electronic sounds and real voices, *Gesänge der Jünglinge* (1955-56) by Stockhausen, following his *Studie I* and *II* (1953-54).

5. As correctly described by Corbella, the mentioned science-fiction film: «attracts the greatest wonder of public and genre enthusiasts, and simultaneously the harshest disapproval by critics and experimental composers. The convergency point between great enthusiasm and strong criticism engendered by Fred M. Wilcox' film lies clearly in the fact that it has produced a cultural short-circuit between traditionally opposed approaches: mass entertainment and avant-guard. Louis and Bebe Barron, the authors of the music for the film, were alien from the Hollywood's production system, as they came from New York experimentations. The short-circuit is generated by the fact that they introduced into a Hollywood's production the core of their research on the project *Music for Magnetic Tape*, to which contributed also John Cage, Earle Brown, David Tudor, Morton Feldman and Christian Wolff, and which has produced four compositions, among these *William Mix* (1952) and *For an Electronic Nervous System* (1953-54), by the Barron's themselves». Maurizio Corbella, "Suono elettroacustico e generi cinematografici: da cliché a elemento strutturale", cit., p. 42 (my translation).

Bernard, *Un seul amour* (1943) by Pierre Blanchard. One could also refer to the use of *theremin* brightly requested by Franz Waxman for *Liliom* (1934) by Fritz Lang, and for *Bride of Frankenstein* (1935) by James Whale, then by Miklós Rózsa in *The Lost Weekend* (1945) by Billy Wilder, and in *Spellbound* (1945) by Alfred Hitchcock, as well as by Roy Webb in *The Spiral Staircase* (1946) by Robert Siodmak, by Ferde Grofé in *Rocketship X-M* (1950) by Kurt Neumann, and by Bernard Hermann for *The Day the Earth Stood Still* (1951) by Robert Wise. Also the *clavioline* should be mentioned in reference to Toshiro Mayuzumi's music for *Uwasa no onna* (1954) and *Akasen chitai* (1956) by Kenji Mizoguchi, along with the use of *Ondioline* by Alex North in Stanley Kubrick's *Spartacus* (1960), and especially Remi Gassmann's and Oskar Sala's use of *Mixtur Trautonium* in *Birds* (1963) by Hitchcock. This may be enough, provided that one should stop at the same year in which Paik contributed to the *Exposition of Music-Electronic Television*. Furthermore that very year, as Marco Maria Gazzano has remarked, another crucial experience developed in Europe concerning the study of audio-visual electronic arts – directly in connection with sound, music and acoustic researches – that is the Studio Akustische Kunst under the direction of the music historian and composer Klaus Schöning at the WDR of Cologne⁶.

By turning to the video art realm, the register shall not change much⁷. In this

6. In this regard, Marco Maria Gazzano writes: «the concepts of 'acoustic art' 'sound installation', 'radio composition for magnetic tape' were born in the creative laboratory of Schöning's critical thinking, that is also that of dozens of European authors, American authors, and authors from other continents, and which he has tirelessly and passionately produced in almost forty years». Cf. Marco Maria Gazzano, *Kinema. Il cinema sulle tracce del cinema. Dal film alle arti elettroniche, andata e ritorno*, Exorma, Roma 2012, p. 194 (my translation).

7. It is worth referring the reader, for different reasons to Chris Meigh-Andrews, *A History of Video Art: The Development of Form and Function*, Berg Publishers, Oxford and New York, 2006; *Blair Davis, Old Films, New Sounds: Screening Silent Cinema With Electronic Music*, «Canadian Journal of Film Studies», Vol. 17, n. 2, Autumn 2008; Edward Shanken, *Art and Electronic Media*, Phaidon Press, London 2009. As to the Italian scholarship, the reader may find interesting hints in, Sandra Lischi, *Il respiro del tempo. Cinema e video di Robert Cahen*, Edizioni ETS, Pisa 1998, and *Visioni elettroniche. L'oltre del cinema e l'arte del video*, Biblioteca di Bianco & Nero, Roma 2001, as well as in, Marco Maria Gazzano, *Kinema. Il cinema sulle tracce del cinema. Dal film alle arti elettroniche, andata e ritorno*, cit. (notably the essay, "Comporre audio-visioni. Suono e immagine sulle due sponde dell'Atlantico, alle origini delle arti elettroniche", pp. 181-197, first published in *Le arti multimediali digitali*, Andrea Balzola, Anna Monteverdi (eds.), Garzanti, Milano, 2004) and, edited by the same author, *Edison Studio. Il silent film e l'elettronica in relazione intermediale*, Exorma, Roma 2013; in addition, the reader may also benefit from Bruno Di Marino, *Interferenze dello sguardo. La sperimentazione audiovisiva tra analogico e digitale*, Bulzoni, Roma 2000; Giulio Latini (ed.), *Musica e immagine nel paesaggio audiovisivo*, «Close up. Storie della visione», 18, Kaplan, Torino, marzo-giugno 2006 and *Lo spazio e il corpo dell'altro nell'immagine sonora di Robert Cahen*, in id., *Forme digitali*, Meltemi, Roma 2007, pp. 139-156; Roberto Calabretto, *La dimensione musicale della videoarte*, in *Arte in videotape*, Cosetta G. Saba (ed.), Silvana Editoriale, Milano 2007, pp. 144-177;

field, incidentally, the sound-music features are literally inscribed in the cultural background, as shown besides Paik, for instance, by Steina Vasulka, Robert Cahen, Michel Chion, Bill Viola, Stephen Jones, Francisco Ruiz de Infante, Warren Burt, Carsten Nicolai (Alva Noto). One should immediately add that, if the intent was to even briefly summarise to what extent electroacoustic and electronic forms have creatively qualified (and still qualify) the space-time and the opening towards meaning of the best international video art productions (as well as the highest inter-media products), a list of much greater proportions should be drafted.

This is clearly not the right place to present an adequate account on the nature of the already mentioned 'interpretative underestimation'⁸. Critic literature also lacks attention, it may be worth adding, for the enlargement of audiovisual performative values made available by digital techniques, starting from the increasingly experimented dynamic modelling of visuals and sounds within the space of the viewer's reception⁹, also according to a sensibly interactive perspective¹⁰.

Alessandro Amaducci, *Segnali video. I nuovi immaginari della videoarte*, GS editrice, Santhia 2000, *Computer grafica. Mondi sintetici e realtà disegnate*, Kaplan, Torino, 2010 and *Videoarte. Storia, autori, linguaggi*, Kaplan, Torino 2014.

8. The enquiry on this matter should necessarily call upon the notion, formulated by Chion, of 'audio-visual combination', as well as the corresponding perceptual influences and transformations, that each of the elements at stake – the visual and the sound – projects on the other during the video-graphic flow. Such a notion claims for itself, in respect to cinema theory (in its most 'extended meaning'), a deeper and wider hermeneutical listening. Exception made for a few examples, cinema theory has firmly focused mainly on its ontologically visual status, hence the privileged attention for the iconic-photographic features. On this matter, see Michel Chion, *Audio-Vision, Sound on Screen* (1990), Eng. tr. By Claudia Gorbman, Columbia University Press, New York 1993, and *Film, A Sound Art* (2003), Eng. tr. By Claudia Gorbman, Columbia University Press, New York 2009; Rick Altman, *Technologie et représentation: l'espace sonore*, in J. Aumont, A. Gaudreault, M. Marie, (ed.), *Histoire du cinéma. Nouvelles approches*, Publications de la Sorbonne, Paris 1989, *Sound Theory / Sound Practice*, American Film Institute-Routledge, New York-London, 1992, and *Il rumore, la musica, il silenzio*, in *Storia del cinema mondiale. Gli Stati Uniti*, tomo I, Gian Piero Brunetta (ed.), Einaudi, Torino 1999, pp. 371-392; Giulio Latini, *L'immagine sonora. Caratteri essenziali del suono cinematografico*, Artemide, Roma 2006.

9. Let's think for instance about Hong Kong artist Kinglesy Ng and some of his installations, such as *Musical Loom* (2005), *Musical Wheel* (2008), *Record: Light from +22° 16' 14" +114° 08' 48* (2008) and *Galaxy Express* (2013), or about the South Korean artist Heewon Lee and her recent video-installations, *108* (2010), *Infinity II* (2011-2012) and *Infinity III* (2012-2013).

10. The reference here is, on the one hand, to relevant episodes of experimentation during the last ten years, such as, for instance, Studio Azzurro's installations (*Musei di narrazione*, *Sensible Map*, *La quarta scala*, *Sensitive City*), and, on the other hand, on a theoretical direction, to the political notion of *interactive imagination*, as clearly elaborated by Pietro Montani in his latest work (which, not by accident, takes into account also Studio Azzurro's installations). Montani defines the interactive imagination as something that "has nothing of merely procedural or simply recreational [...], as it has nothing to do with the undetermined aura of a 'relationality' accomplished in itself. It is rather an interactivity selected by principles and rules that can be made explicit, and as such it is responsible

Nevertheless, in order to indisputably prove the great impact of formal combinations and sense attributions engendered by *constitutively audio-visual thinking*, it shall be useful to briefly provide a circumscribed number of examples. The chosen examples belong to two unique but very persuasive experiences, which make reference to very different scenarios and elaborated actions. These experiences have been developed, all in the last fifteen years, by Robert Cahen in video art, and by four Italian composers, founders of the Edison Studio (Mauro Cardi, Luigi Ceccarelli, Fabio Cifariello Ciardi and Alessandro Cipriani)¹¹, in the field of *live computer soundtracks* for important *silent cinema* movies. Both instances move, by quoting Pietro Montani, «from the most elementary condition of inter-media editing – the relation sound-image and the playground between the two»¹².

First Movement

Through a peculiar *audio-visual modus* and with fertile originality, Robert Cahen has notoriously led previous experiences (music, photography, cinema) and their corresponding technical and aesthetic experimentations through a functionally expressive close hand-to-hand with what was finally allowed by technological innovations one after the other (starting from the first oscilloscopes and synths during his apprenticeship at O.R.T.F.¹³ and I.N.A., to the recent digital option). Such experimentations both technical and aesthetic have certainly found in the constant as much as perspicuous sound investment a rather excellent distinctive mark. This is so from his very first work in electronics, *L'invitation au voyage* (1973), and even more in *Juste le temps* (1983), the latter being a crucial audio-visual creation in the overall history of electronic arts and of video art in particular. However, while accommodating this essay's perspective angle, one may linger on a more recent work: *Plus loin que la nuit* (2003). This 13' work is an excellent example of how a specific 'sound concept' (elaborated by Francisco Ruiz de Infante), through mainly asymmetric relations with the image, may be able to shift

of the evolution (of the 'world of existence') of the life forms of technical images, as well as of their faculties allowing authentic processes of elaboration, through the reorganization of the public space». Cfr. Pietro Montani, *Tecnologie della sensibilità. Estetica e immaginazione interattiva*, Raffaello Cortina Editore, Milano 2014, p. 96 (my translation).

11. For a general overview of the several artistic activities carried out, individually or collectively, by the Edison Studio's composers, see www.edisonstudio.it.

12. Pietro Montani, *L'immaginazione intermediale. Perlustrare, rifigurare, testimoniare il mondo visibile*, Laterza, Bari 2010, p. 24 (my translation).

13. Cahen enters the O.R.T.F. In 1969, at the «Service de la Recherche», in order to study electronic composition with Pierre Schaeffer, in the same class with Jean-Michel Jarre and Michel Chion. He graduated in «musique fondamentale et appliquée à l'audiovisuel» in 1971.

the representation scope towards high ambiguities, thus very cleverly stimulating the viewers' attention.

Plus loin que la nuit has been created by Cahen in Vietnam with the help of one digital videocamera and a Vietnamese assistant. This work's visual range mainly captures the limited space of an open air market in Hanoi within the fading lights of a day like any other. The space immediately reveals the features of an archaic portrayal of the intensity of life in its status of essential basicness. There are women and men carrying on their shoulder, or on short and long wooden boards, the heavy weight of necessity, leading their way through motorcycles, bicycles, lorries, ... very far from reaching a higher place of promotion for the powers and qualities of their existence. Such a chaotic space also defines a body of sound, progressively inhabited by noises and voices articulating a very significative tone. Such a tone is concrete, rich in matter, to the point of being mainly subsumed as basic 'sound macro-object'; it is then the specific task of post-production modelling to make it a vector of focused aesthetic relevance together with what pertains to the image, this latter also duly reshaped a posteriori. The marketplace space finds a congruous expansion on the axis of constantly moving anonymous bodies, through the faces of women and men along the houses leaning against the railroads, where people play, cook, wash their hair. Then a delayed train arrives. Trains are a common presence in the author's works, however, in this case also a possible intertextual hint to Pierre Schaeffer's *Etude aux chemin de fer* may be detected. Then, curvy mountains soar on the limpid horizontal line of the sea, or reveal the quiet solitary beauty of their peaks against the background of a rose-coloured sky. In conclusion, again within the market's perimeter, there is a young girl leaning against a column-wall, who is the only one untouched by the ongoing flow. Her anonymous presence is deeply tangible, and at irregular intervals through scale variations of camera angles the viewer has had a glimpse of it more than once. She stands still absently looking somewhere else or, more precisely lost in herself. Is she waiting for someone? For something? Did someone forget her there? This last appearance coincides with the last medium shot. It is an ultimate image accommodating the young girl within the 'power-quality' of her visage, neutralizing the environmental prosody¹⁴. It happens, then, that *Plus loin que la nuit* condenses its deepest perceptive testimony in the inexplicable tension of the girl's gaze towards the absolute enigma of the off-screen, as well as in her lips briefly opened, as to utter something that is forever precluded to us, just before closing them again permanently in the time frame

14. Other visages play an important role in previous works by Cahen, as for instance that of a young Asian woman in *Le deuxième jour*, or in *Hong Kong Song*, or, differently, the wrinkled face of an old woman in *L'île mystérieuse*.

of a photogram flash which makes her mysterious feeling unforgettable. This perceptive testimony, it is worth emphasizing, is as such insofar as the whole visual composition meticulously measured and rearranged by Cahen finds an exact correspondence with the highly incisive work on the sound track made by Francisco Ruiz de Infante. This complementary work performs an anti-mimetic resemantization of the acoustically concrete material of the landscape, benefitting from the best possible audio-visual research concerning the 'metropolitan imagery'. This latter, as Sandra Lischi remarks, goes through «also, and perhaps mainly, a non-mimetic representation of the urban sound»¹⁵, thus allowing a «critical reassessment of the descriptive, realistic image»¹⁶, as well as reaching an integral remodelling of the visual score. This is precisely the outcome of Ruiz de Infante's 'sound concept', which progressively establishes a primary syntax articulated by the subtle and lyrical electronic version of the regular percussive sound of the train (authentic and organic rhythmic unity), in close relation/reaction of proximity and distance with the sound elaboration of the wind, until the very end the constant seal of the highest expressivity. The overall expressivity is based upon the syntactic avoidance of any rhythmic-dynamic parallelism with the visual figurality. Furthermore, it also relies on intense vertical stratifications within which the original matter-related range of sound units, referring to the vehicles in and out the market, to the rare voices (notably, the ones that through the mediation of the megaphone are attuned on plastic values of vocalic drifting even before entering the semantic register), to the mentioned pulsing of wind, to the rhythmic clatter of the train, to sudden clanks, is exactly and durably redetermined as to be mostly asynchronous with the images. All this generates, within close and distant shots, some dynamic crescendos at times affected by unforeseen and vertiginous interruptions. However, it also generates delicate intermittences, sudden clusters and equally sudden structural emptying. From all this, in extreme sum, a sound form results that, because of the always open relational playground including visual syntagmatic sequences, delivers to the viewer's eye and ear an experience of creation that is, one should stress, *authentically audio-visual*. With all the consequent deep modulations on the horizons of meaning, especially on the clear ethical tone, which is, in *Plus loin que la nuit*, more and more clearly the actual unavoidable record.

15. Lischi, *Visioni elettroniche. L'oltre del cinema e l'arte del video*, cit., p. 132 (my translation).

16. Ivi, p. 133 (my translation).

Second Movement

As anticipated, a remarkably different scenario qualifies the second experience this essay would like to account for, that is the experience of the Edison Studio's composers, who since 2001 have produced outstanding samples of *live computer soundtracks*, in interaction with *Gli Ultimi Giorni di Pompei* (*The Last Days of Pompeii*, 1913) by Eleuterio Rodolfi¹⁷, *Das Cabinet des Dr. Caligari* (*The Cabinet of Dr. Caligari*, 1920) by Robert Wiene¹⁸, *L'Inferno* (1911) by Francesco Bertolini, Adolfo Padovan and Giuseppe De Liguoro¹⁹, *Blackmail* (1929) by Alfred Hitchcock²⁰, and with the documentary film *En Dirigeable sur les Champs de Bataille* (1918)²¹.

Such a scenario amounts to the 'reinterpretation in contemporary terms' (often employing electronic music but not exclusively) of a conspicuous number of silent movies, achieved for a long time now by many composers as well as by single performers or groups of performers²². Such a mode of action may recombine and reformulate, syntactically and expressively, also the whole visual dimension (through manipulative actions much more radical than cuts and suitable colouring, as applied for instance by Giorgio Moroder in 1984 to *Metropolis* by Fritz Lang, quoting a well too famous example, as well as through often very influent critic-cultural keys). This

17. Commissioned by the MM&T of Milan for the Festival «Senza Parole», and screened at the International Computer Music Conference 2002 (Göteborg, Sweden), with several reruns in Europe and United States.

18. Commissioned by the International Computer Music Conference 2003, and screened at the conference in Singapore (reruns at Los Angeles: Redcat Festival, Walt Disney Hall, in Italy, Sweden, Germany, Hungary, etc.).

19. Commissioned by the Ravenna Festival 2008, and screened for the first time in July 2008. In 2001 a DVD of the film with the Edison Studio's soundtrack was published by the Cineteca of Bologna.

20 Commissioned by the Società dei Concerti "B. Barattelli" – L'Aquila 2013, and screened at the Ridotto del Teatro Comunale, Season of Società Aquilana dei Concerti "Barattelli" (L'Aquila, 7th April 2013), then at The Belmont Picture House – Arts cinema, Scotland's Festival of New Music (Aberdeen, 3rd November 2013).

21. Commissioned by the Cineteca of Bologna, and first screened in Bologna on the 29th June 2014. The 78' documentary under examination (of which an extract of 20' has been remastered) was recently discovered in the archives of the French Army in Paris. It was filmed in August and September 1918 by the cameraman Lucien Lesaint, who, with the pilot Jacques Trolley de Prévaux, flew over the remains of the West front at the end of WWI, from Nieuwpoort, on the North Sea in Belgium, to the Swiss Alps.

22. See, Sergio Miceli, *Musica e cinema nella cultura del Novecento*, Sansoni, Firenze 2000, pp. 266-267; Ennio Simeon, *Manuale di storia della musica nel cinema. Storia, teoria, estetica della musica per il cinema, la televisione e il video*, Rugginenti, Milano, 1995, pp. 157-159; Roberto Calabretto, *La musica nel cinema muto fra rigore filologico, atteggiamenti à la manière de... e postsincronizzazioni*, in *Il film e i suoi multipli*, Anna Antonini (ed.), Forum, Udine 2003, pp. 337-358.

happen, for instance, in the three-parallel-screens audiovisual re-creation²³ by Paul D. Miller, alias Dj Spooky, of *The Birth of a Nation* by Griffith, starting in 2002²⁴, engendering an experience of great resonance within the folds not only of the DJ culture, but also of that conceptual art working on movies as 'found objects'.

Concerning more specifically the Edison Studio's modes of elaboration, their peculiar feature is that, although they never undermine the movie's figurative-diegetic structure, the area of creative intervention is extended to the whole already inscribed sound range, bringing the verbal component (clearly, not only the one provided by captions) into full action (and accordingly into greater interpretation clarity), together with the extra-musical sounds implicit in the dramaturgical-narrative articulation²⁵. It should be emphasized that the considered notions of composition and implementation and their corresponding practice dismiss from the very start the traditional distinction between strictly speaking music, extra-musical sound, and verbal component, while elaborating strategies whose aim is making the traditionally assigned roles and functions fully interchangeable both in emotional terms and as to their conceptual evocation power. This happens through close negotiation with the visual constellation, and it produces, among other things, some expressively significant processes concerning temporal coincidence or lack of coincidence, relations of parallelism or of rhythmic opposition, the formulation of vanishing points in time in reference to the possible convergency or divergency of their predictability on the axis of time, pauses, etc. The previous claim may be readily tested through a quick exemplification provided by the defining sound architecture of the first part of *The Last Days of Pompeii*. This movie, one may recall, is full of intrigues, vileness, and witchcraft. Glaucus and Ione's love story, the secret and miserable love for Glaucus of the blind flower girl Nydia, the unreciprocated passion for Ione of the high priest of Isis, Arbaces (as well as the murder of his disciple, Apocides, for which he tries to

23. D. J. Spooky's work, entitled *Rebirth of A Nation*, has been shown as a work-in-progress at the San Francisco's "Other Minds Music Festival" in 2002, at the Massachusetts Museum of Contemporary Art, and at the Museum of the Moving Image of New York in the spring of 2003. The live performance, in its complete form, has been commissioned by the Lincoln Center Festival, the Spoleto Festival USA, and by the Festival D'Automne of Parigi, for an international tour during the 2004-2005 season, including a performance at the Sala Santa Cecilia of the Auditorium Parco della Musica in Rome, on the 20th October 2004.

24. A re-creation with a reticulated structure, achieved through *mixing* and *scratching* techniques applied to the video – slow motion and fast motion, stratified abstract textures, stop frames and loops – of which a downloadable version has been produced with its corresponding software, as to allow the integration of the personal remix of the film by each user. See, <http://www.djspooky.com/art/birth.html>.

25. Such an implicit nature of sounds inspired Chion to speak of 'deaf cinema', since, precisely, «there were words and noises, but they could not be heard». Chion, *Film, A Sound Art*, cit., p. 3.

frame Glaucus), are displayed before the catastrophic action of Mount Vesuvius radically conquers the whole diegetic and emotional realm.

In slightly more than five minutes, the viewer may visually and narratively contemplate outdoor the display of the swarming life in Pompeii, in the Main Street and the open space of the Forum, and indoor Arbaces' studio as he introduces his pupil to the 'mysteries of Isis', together with the sea surface cut through by the boat hosting Glaucus and lone, and the terrace of the temple of Isis from which Arbaces spies the loving couple. There are then outdoor spaces and indoor spaces which are inhabited by minimal constructs with the pragmatic function of introducing the main characters of the story. In this context, the first vocal elements are immediately given as to phonically populate the previously described settings, clearly translating the implicit logic of a refined musical composition. These identifying elements are radically alien from whatever verbalizing assumption of a mimetic-naturalistic kind. The one concerning Glaucus, on the background of a collective vocal trace aiming, so to speak, at 'colouring' the varied flow of passers-by along the street, is from the very start synchronically characterized by a 'verbal' figuration sampled from an acoustic instrument (a viola). The sound samples are electronically re-elaborated in order to lend a specific pathos, a clear status, to his presence, his posture, and to the elegant articulation of his gestures and inner impulses, which progressively identify him in the diegetic development of the film. Something similar happens few moments after with Arbaces, accompanied by Apoecides inside the temple's atrium, and even more when he stands with his pupil in the studio. However, in this case the 'talking' is done by some instrumental sounds originally produced by a double-bass, which are summoned in order to sensibly mime the sound movements of utterances. These sounds have been integrated, as the composers themselves have declared, «with an elaborated voice exploiting timbre and dynamic evolutions similar to those of voice itself»²⁶. This efficient sound mode (which is not rigidly or exclusively applied, but also admits the attraction of extra-musical sound and silence on the identifying figurative corpus of each character),

26. Mauro Cardi, Luigi Ceccarelli, Fabio Cifariello Ciardi, Alessandro Cipriani (Edison Studio), "Nuove tecnologie e composizione collettiva per il cinema muto", in Giulio Latini (ed.), *Musica e immagine nel paesaggio audiovisivo*, cit., p. 94. On the previous page of their precious contribution, the composers further clarify how they achieved live the elaboration of their own voice synchronized with the speech of the main characters of the film («the voices [...] recorded by microphones are already incomprehensible from the start. They are then heavily transformed real time, to the point of becoming gabble, free phonemes, colour strings; finally: pure sound taken as such; Nevertheless, these voices preserve the semblance of human speech»). They finally achieve the materialization of a «totally invented language emphasizing the emotional status of the character, or its kinetic qualities, exclusively through the tone profile, the intensity, pitch, timbre, and rhythm of the speech, regardless of the strictly speaking verbal content». Ivi, p. 93 (my translation).

which is extended also to lone, entails a true power-up of the presence of several succeeding characters. Such power up allows a clear intensification of vision and, accordingly, of the distinct perception of the different features acting in the inner space of each character, precisely thanks to the sound-action designating them. Such sound-acting is alien from verbal clothing, as it is well aware that, quoting Jean-Luc Nancy with very little stretching, «to speak is not only to signify, but it is also, always, to dictate, *dictare*, that is, at once to give saying its *tone*, or its *style* (its tonality, its color, its allure)»²⁷.

'Intensification of vision', *tone* and *style*, with their precise value and their not marginal pursued outcome of ironical emphasizing, widely contribute to rally the whole nature and development of the first part of the film to today enjoyment. More precisely, when the syntactical articulation starts alternating the bottom line of sea waves and the vertex of the temple terrace from which Arbaces leans out to catch a glimpse of the lovers' idyllic journey on the boat, it happens that a subtle dialogic connection is established between the 'sounds like voices' of the mentioned characters and some elements of background sound pertinence, which do not exclusively acoustically correspond to the predictable realistic restitution of the objects or visual events on screen. May these be obvious (sea waters) or only suggested (the wind). This connection translates the main lines of the creative-interpretative approach, which is clearly attested from its very primitive appearance by the sound configuration of water cut through by the boat, at once with Arbaces' leaning out from the terrace, as a sound anticipation of an unrealistic intensity feature. The acoustic intensity is clearly unrealistic because of the distance of the observation point, which is made even clearer by the following cut depicting Arbaces standing almost on the same spot.

Even by simply browsing the main characters of the just described first part, it is clear that Edison Studio's *modus* adopts among other implemented options a notion of cinematographic space moving across the 'inner space'. And this is so not only for the time and space or development of this story. Such a *modus* is valid also for all the subsequent films they have worked on. The same *modus* is powerfully employed, as to make a second extended example, in the whole journey of *Das Cabinet des Dr. Caligari*. In this specific case, elements of deformation, of distortion, of 'poly-false-note' are repeatedly employed in order to expressively channel a great part of the music universe created by the dramaturgy together with the film's storyline towards an enharmonic direction. This starts already when Francis makes his first appearance, which is articulated by piano sounds (sampled sounds) with a distorted tune in close correlation with the painful estrangement of his 'inner space', and also

27. Jean-Luc Nancy, *Listening*, Eng. tr. by Charlotte Mandell, Fordham University Press, New York 2007, p. 35.

in more extended thematic equivalence with the static distortions of the scenery progressively including the movements of his acting/suffering. This also applies to the representational units of proximity and to the relations between Caligari and Cesare, which are translated by the sound features of a Lithuanian string musical instrument – hit live with wooden sticks instead of being plucked – which has been intentionally mistuned as to modify its natural tuning (the same procedure is applied to an African Kalimba, which punctuates, for instance, the two scenes of the merry-go-round interspersed by the first crime, the murder of the town clerk, within a stratified mélange of sounds including voice elements, background buzz and noises). Furthermore, in connection with indoor settings and stylised outdoors, often the sounds of opening doors and curtains are electronically intensified, as it happens, for instance, during the opening of Cesare's resting coffin-like cabinet, or when the tilted street lights are lit, with hypertrophic acoustic modes.

Within the overall elaboration of the electro-acoustic space in relation to the visual-kinetic space²⁸, the indoor and outdoor sceneries are bi-dimensional, and the object-elements (not only those already mentioned) are newly articulated (as also the characters' 'voices') according to an intentionally pseudo-naturalistic design, at times endowed with strong metaphorical value. Hence, a semantic redefinition of the elements is conveyed in agreement with the constitutive ambiguity of the film's dramaturgy and narrative. Moreover, the film structure opens up to further opportunities to significantly extend such constitutive ambiguity. In other words, an imaginative process is disclosed which activates more than one perceptual registers, and which is able to reverberate on the audio-visual framework with surprising effects until the very end's extreme outcome. The ending is literally played on the vocal articulation Caligari vs the psychiatric asylum's director, or better, on one of the several articulations phonically included along the film development. As it is, sometimes Caligari is visually speaking, but acoustically mute. Some other times he owns a perfectly hearable voice which is, however, progressively de-constructed (through a complex work of electronic re-elaboration), as if it was materially disaggregating, crumbling apart, nullifying whatever parameter of sensible intelligibility of that emission. This has several knock-on implications as to his ambiguous identifying colouring, due precisely to the radical deprivation of words' authority, collapsing within a form of discourse that is impossible to define. Concerning Caligari's verbal articulation towards the end, one may remark that it is introduced by a 'natural' tone and timbre. It can be heard in the indoor space of the

psychiatric asylum after that Francis has been sedated by the nurses. The director approaches Francis and puts his glasses on. After close examination, he turns around and declares: «At last I understand his mania, he thinks I am that mystic, Caligari! I now know how to cure him...». His voice, as already anticipated, has a 'natural' tone and timbre, however, before hearing the above quoted words, one clearly hears a creaking sound, the same popping up several times in the diegetic trajectory. Similarly, one clearly hears for the last time a phonic sign produced by manipulating paper when the iris diaphragm closes on the doctor's enigmatic face and ultimate gaze (once more opening up the possibilities of interpretation of the film). The metaphorical value of that creaking sound, here as before, is immediately grasped, also when it is superimposed to the paper manipulation sound (as the last metaphorizing event of 'the mechanics of power'). That sound accompanies Caligari's voice articulations, especially towards the end, however the same sound is heard for the first time in connection with the names of Lil Dagover (Jane), Hans Heinz V. Twardowski (Alan), and Rudolf Lettinger (Dr. Olfen), in the film credits. It is then heard again at some intentional moments of the diegetic structure, not necessarily directly connected to Caligari. The sound is therefore activated as to mark the rhythm of both Caligari's ambiguous and enigmatic inner figuration – that, for space reasons, we avoid analytically examining here, – and the more complex estrangement universe of the film, which phonically circumscribes it all, from the opening to the ending. This very sound exceedingly and disturbingly marks out the most all-embracing sign production chain concerning the depicted institutional system. Hence, it may be claimed that Edison Studio has assigned to it an unavoidable specific weight on the metaphorical axis. Such a sound ultimately allows to retroactively qualify many elements of internal logic, as well as the rich and subtle features, strongly eidetic, of the interpretation process resulting from Edison Studio's electro-acoustic score in the film. Thanks to the appropriateness of the overall formal solutions adopted, and through the perfect synthesis of audio and idea, such eidetic features convey a farsighted, persuasive mode of expression of the crucial notion of unstable truth, as presented by *Das Cabinet des Dr. Caligari*. What is actually at stake, in clear proximity with power, is precisely truth, as the true object of dispute between Francis and Caligari. By quoting Paolo Bertetto, «one's truth not only excludes the truth of the other, but also implies the imprisonment of the other. And truth here means [...] one logic of organization of reality, a system of framing and signification of what is».²⁹

While approaching the conclusion, there would be much more to argue concerning other types of sound-musical solutions established by the Edison Studio's composers within the synchronic and diachronic axis of *Das Cabinet des Dr.*

28. The electro-acoustic space created by the Edison Studio's composers is always carefully reformulated for every new occasion, as it is articulated in performances hosted by physical spaces, such as cinema halls or concert halls, each with their specific and influential architectural and acoustic features.

29. Paolo Bertetto, Cristina Monti, *Robert Wiene. Il Gabinetto del Dottor Caligari*, Lindau, Torino 1999, p. 42.

Caligari, both on the score and during the live performance. Similarly, much more could be said of their remarkable later experiences with *The Inferno*³⁰, *Blackmail*, and *En Dirigeable sur les Champs de Bataille*³¹.

However, the interpretative proposal of this essay does not pretend to fully investigate all the reasons behind their sophisticated electronic configurations, but would rather like to underscore their specific approach to elaboration³² within the contemporary landscape of technological transformations triggered by the digital revolution. The same intention has been applied to Robert Cahen's experience, although approaching just one single work.

In both cases, despite the clear differences, their specific approach to elaboration productively exhibits the distinctive features of a *constructively audio-visual thinking* within the relation between sound and image as well as within their specially opened playground. Such a theoretical approach entails further artistic outcomes in several directions, which could be easily listed, both in the realm of films and in the realm of video art, in fruitful dialogue with the electronic sound world, this latter clearly in need of more sensible and articulated *listening*. All this in order to fill the pages of a history mostly still waiting to be written.

30. Concerning their creative and interpretational efforts, within the discussed register of the 'inner space', very precious indications have been expressed by the composers themselves: «In our soundtrack, the hell creatures and the damned express themselves through sounds, noises, but also at times through silence, as it is the case for Dante and Virgil. The texts of the interposed captions in the film have not been recited. However, some lines from the poetic text have been included. The voices captured by the microphones have been transformed by complex computer processes, to the point of becoming gabble, free phonemes, colour strings; finally: pure sound taken as such. Nevertheless, these voices preserve the semblance of human speech, which, despite being deprived of whatever meaning and *denatured*, is still fully expressive and hence possibly able to follow and somehow 'interpret the emotions of the main characters' (as for Vanni Fucci, Capaneo, and partially for Ugolino and Farinata degli Uberti), and it does not fully cancel the meaning of the words. In other cases (Cavalcanti and Anselmo, Ugolino's son), the voice is only lightly elaborated and the text is fully intelligible, still preserving though some connection with the characters' feelings. In one extreme case (the flashback of Pier della Vigna's blinding and death), a proper actor reading of the poetic text is chosen, in connection with the almost distant emotion of the story, and in close relation with Dante's expressivity. Precisely thanks to the exclusion of verbal content, it was possible to work on the border line between speech and music, where the tone profile, the intensity, pitch, timbre, and rhythm provide a deeper meaning (as it is the case for the Pope Nicholas III). Our goal was to create 'audio actors' through the vocal realm, that is acoustic elements with their own 'figurative' value, which could interact with the composition of frames and with the rhythmic sequence of images». Mauro Cardi, Fabio Cifariello Ciardi, Alessandro Cipriani, *La voce di Inferno*, in Michele Canosa (ed.), *Cento anni fa. Inferno*, Edizioni Cineteca di Bologna, Bologna 2011, pp. 47-48 (my translation).

31. Here, human voices are added, literally and painfully, to a sequence of tragically deserted images, which in themselves would be mute, since at the end of WWI there is no clearly visible trace of human presence in the West front territories over which the airship flies.

32. For a wider analytical overview of their work on the mentioned films, see the collection of essays edited by Gazzano, *Edison Studio. Il silent film e l'elettronica in relazione intermediale*, cit.

Body, Sign and Double: a Parallel Analysis of Elaine Shemilt's *Doppelganger*, Federica Marangoni's *The Box of Life* and Sanja Iveković's *Instructions N°1* and *Make up - Make down*

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Body, identity, self-representation, sexuality, stereotypical images of women portrayed by the society and the media, and the condition of female professional artists: these themes were expressed and developed in several early video works in the 70s and early 80s by women artists that didn't have direct knowledge or contact between each other. This simultaneity of thematic is an unusual phenomenon that reveals common, contemporary sensibilities within both Europe and the USA.

To remark this significant trend, video artist and historian Catherine Elwes wrote: "women on this side of the Atlantic looked for ways of problematizing the appearance of the female body whilst negotiating new forms of visibility".¹ In her analyses Elwes identifies several strategies used by performance and video women artist to avoid the "pitfalls of sexual representation", exploiting the possibilities of the medium².

The early experimentations with video by many women artists in Europe and the USA have been marginalized for years and most of the artworks have been lost or fallen into oblivion. Only recently few of them have been showed and re-evaluated in exhibitions and publications but the contribution of women artists to video has not yet been fully recovered and reassessed. Several themes and topics shared by early women artists' video pieces have not yet been analyzed and contextualized in the wider European scene.

1. C. Elwes, *Video Art: A Guided Tour*, I.B.Tauris, London 2004, p. 48.

2. Ibidem.

Starting from these premises, the upcoming Arts and Humanities Research Council funded research project EWVA (European Women's Video Art in the 70s and 80s), led by Prof. Elaine Shemilt, and based at DJCAD, University of Dundee (Scotland), aims to re-assess the contribution of European women artists to the video practice and retrace the many histories of the use of this then new medium by women artists in Europe. It follows the successful AHRC funded research projects Rewind,³ which recovered more than 450 British video works from the 70s and 80s and REWIND/Italia,⁴ which aimed to retrace the histories of early Italian video art. Both projects were led by Prof. Steve Partridge, a pioneer of British video art, and based at DJCAD, University of Dundee.⁵

This paper will analyse four works from early video art, Elaine Shemilt's *Doppelgänger* (1979-78), Federica Marangoni's *The Box of Life* (1979) and Sanja Iveković's *Instructions N.1* (1976) and *Make up - Make down* (1976-78), constituting an initial compared study on the topic to be developed in following contributions and articles.

Doppelgänger by Elaine Shemilt⁶ has been recovered by REWIND, after more than thirty years of oblivion (it was showed only once, at the exhibition concluding the residency, in which it was produced).⁷

Starting our analyses from the title, the word 'doppelgänger' has its origin in the middle of 19th century from German (literally "double-goer") and means "an apparition or a double of a living person".⁸

It is interesting to notice that the theme of the "double" was quite popular in early video artworks. It was developed with different sensibilities and motifs and is probably to refer to the instant feedback that the medium provided as the artist could "reflect" him or herself in the mirror of the video monitor while

videotaping. This effect was enhanced by the fact that the artist could re-watch the recorded piece immediately after it was videotaped. In her seminal piece *Video: The Aesthetics of Narcissism* from 1976, Krauss rightly points out that "unlike the visual arts, video is capable of recording and transmitting at the same time – producing instant feedback. The body [the human body] is therefore, as it were, centered between two machines that are the opening and closing of a parenthesis. The first of these is the camera; the second is the monitor, which re-projects the performer's image with the immediacy of a mirror".⁹

This phenomenon created an instant double of the artist, influencing his or her behavior¹⁰ and could be used by the performer to control the framing during the shooting while in front of the camera. The possibility of re-recording on the same tape gave also the possibility to create "doubles" in the video. Example of the use of the theme of the double and the mirror include in Europe *Oiccheps* (1976) and *VTR & I* by Michele Sambin, *Triologue* (1977) by David Critchley, *Senza titolo (Mirror)* (1976) by Goran Trbuljak, *The Box of Life* (1979) by Marangoni, and *Video As No Video* (1978) by Luigi Viola.

The theme of the double and the doppelgänger in literature and visual arts is widely treated by critics from many different angles and would be impossible and not fruitful to condense it in this brief study. In any case, a concept that we can't avoid to mention in our analysis is what Sigmund Freud defined in 1919 as the "Uncanny" (in the original German version *Unheimlich*). Analyzing Hoffmann renowned novel *The Devil's Elixir* (1815), Freud says: "These themes [of uncanniness] are all concerned with the idea of a "double" in every shape and degree, with persons, therefore, who are to be considered identical by reason of looking alike".¹¹ Starting from the premise of Otto Rank's *Der Doppelgänger* (1914), Freud attempts to retrace the psychoanalytical origins of the "Uncanny", also to explain this phenomenon with the double. Many passages from his essay still provide fruitful elements to our present analysis and more in general to the analysis of artworks that focus on the "double" and have inspired several artists.¹²

3. See S. Cubitt, S. Partridge (eds.), *REWIND| British Artists' Video in the 1970s & 1980s*, John Libbey Publishing, New Barnet 2012.

4. In collaboration with Prof. Sean Cubitt, Dr. Laura Leuzzi, Deirdre Mackenna, Dr. Cinzia Cremona and Adam Lockhart.

5. Adam Lockhart is the archivist on the projects. To learn more on the projects see <http://www.rewind.ac.uk/>.

6. An initial analysis of *Doppelgänger* was published in L. Leuzzi, *Notes on Doppelgänger*, October 2012, available at <http://www.rewind.ac.uk/documents/Elaine%20Shemilt/ES001.pdf> (retrieved Feb 2, 2015). The present analysis develops from that.

7. The re-mastered version was presented at the REWIND book launch at TATE Modern in London (25th Sept. 2012).

8. See entry *Doppelgänger* in the Oxford Dictionary <http://www.oxforddictionaries.com/it/definizione/inglese/doppelg%C3%A4nger> (retrieved Jan 14, 2015).

9. R. Krauss, 'Video: The Aesthetics of Narcissism', *October*, vol. 1, Spring 1976, p. 52.

10. See Tom Sherman, 2005 (ed. 2008) *The Nine Lives of Video Art: Technological evolution, the repeated near-death of video art, and the life force of vernacular video...*

http://www.gama-gateway.eu/uploads/media/Nine_lives_of_video_art.pdf (retrieved Jan 14, 2015).

11. S. Freud, *The "Uncanny"*, 1919, Translated by Alix Strachey. <http://web.mit.edu/allanmc/www/freud1.pdf>, pp. 8-9 (retrieved Jan 14, 2015).

12. Among the most renown and interesting examples we can recall Mike Kelley's exhibit *The Uncanny* at Tate Liverpool (20 Feb – 3 May 2004) and MUMOK, Wien (16 July- 31 October 2004). See catalogue Mike Kelley, *The Uncanny*, Verlag Der Buchhandlung Walther König, Cologne 2004.

Doppelgänger begins with a close up of the face of Shemilt in front of the camera, with her piercing eyes facing it directly and later we see her approaching a mirror and take a sit in front of it, with her back to the camera, simply dressed in a denim overall and T-shirt.

The mirror reflects her putting some make-up on her face with very dry, precise gestures. During these actions different voices can be heard: they are records of some psychological analysis on schizophrenia, evoking a double personality. And the use of multiple sound traces in itself creates an effect of multiple layers of the personality represented.

At some point, twice, the performance is suddenly interrupted by another image: showing the face of the artist, elegantly dressed, with her hair combed and her make-up on. This frozen more formal and conventional portrait begins slightly to move creating many doubles of her face.

Then the action goes back to what we could call the “mirror set”: and it’s evident now how the make up that the artist has put on her skin has become too much. We can distinguish the borders of it on her forehead: her face has become a mask with an effect that it’s similar to theatrical make-up. At that point she drops the concealer and takes a dark drawing pen: and like on canvas, evoking the traditional image and position of the painter, and the use of mirror in self-portraits, she begins to draw on the mirror in front of her. From the eyebrow to the shadow of the nose, and later the lips and the oval of the face, the hair, the neck and shoulders, the artist shapes a sort of double of herself following the traces/borders of her reflected image. Another mask in black and red (for the lips, this can be distinguished even in the black and white) is thus created and gets mingled with the reflected image of the artist.

This tableaux evokes inevitably, the myth of Narcissus: but the reflected image of the artist is twisted by her own hand, creating a phantasma double – the doppelgänger –that sits in front of her. Even the mirror in this case is double: the material one in the scene and the electronic one given by the eye of the camera (as the artist looks into it at beginning of the video but also as the monitor, as mentioned evokes and sometimes constitutes in some sense a mirror).

Furthermore this doppelgänger seems to be part of herself: she continues to work on the image, moving her face and mimicking the gestures of applying lipstick to her lips, continuing to look at herself in the mirror, checking the result.

At the end of the performance other images of the body and the face of the artist with the overlapping layers of other body/face images appear, which evoke once more a multifaceted personality.

Finally we get back to the mirror tableaux and the artist has gone: the doppelgänger has taken her place. In this aspect we can evoke Freud’s “uncanny”: the continuous mixing and confusing of the doubles.

It’s clear from this brief analysis that *Doppelgänger* is not the mere record of a

performance but is a video art work in itself with its own autonomy that exploits the specificity and the nature of the medium in a very distinguished way: video becomes a tool for introspection and expression/representation of the inner self, to build an intense image of the personal and public portrait. In fact, video as a time-based medium allows the artist to show the genesis of that image, the process of its making and the gesture of the artist as part of it.

Furthermore, the continuous mix between the action of the drawing (“mirror tableaux”) and the images of the artist (her face, naked body) creates a stratification of layers that open window in her inner life, in what lies under the image, under the surface.

The *Box of Life* by Federica Marangoni was shot on 16 mm and then transferred to video (in fact, only a little bit later the artist began to use video).¹³ The film was directed by Gianluigi Poli and produced by Centro Video Arte of Palazzo dei Diamanti, Ferrara.

The sequence opens with Marangoni taking out of a drawer some wax female body parts casts, separately displayed on shelves, and placing them accurately on a electrically warmed table. In this way she rebuilds the shape of a human body, creating a sort of fragmented sculptural double of herself¹⁴. When the work is finished she stops and observes it from distance.

Then she wears darks glasses, takes a blowtorch and melts the pieces. The body parts slowly start to melt down. The Marangoni stops and the camera shows the deformed wax body pieces on the table surrounded by what looks like blood (in reality the melted wax), then zooms on the deformed wax mask and goes out of focus. And then after another close up to the title of the work and to the wax mask, the camera moves to Marangoni who puts on her face a transparent plastic mask. Her breath little by little makes the mask opaque. In the next take at Marangoni’s side appear other people that wear as well plastic masks that have become opaque. The camera zooms on each of them and we can recognize Lola Bonora and other people who worked at Centro Video Arte. Then the camera again shows them all together from one side, zooming in on some details: the masks shine at the light making the faces not recognizable.

Marangoni then wears the deformed wax: the camera constantly blurry the image. The film is closed by Marcel Duchamp’s epitaph: *D’ailleurs, c’est toujours les autres qui meurent* (Anyway, it’s always the other guy who dies; in Italian “*D’altronde sono sempre gli altri che muoiono*”).

13. The *Box of Life* is available on Marangoni’s website, <http://www.federicamarangoni.com/portfolio/1979-the-box-of-life/> (retrieved January 11th, 2015).

14. This element was already pointed out in L. Leuzzi, *Notes on Doppelgänger*, p. 3.

As Marangoni has explained the video focuses on the precarious condition of human life: "Through some emblematic symbols I try to give...an image of the violence and the inevitable condition in which Man lies, that is at the same time a message of Life"¹⁵.

The double plays a fundamental role in this artwork and we can trace many similarities between Marangoni and Shemilt pieces including: in both cases the artists create a double with their own hands; the mask; the multiplication of these doubles; the different camera effect to create multiple layers or blurry images.

Evoking again Freud's essay, he mentions also as a source of "uncanny" the "wax work figures"¹⁶ and dismantled body parts¹⁷ and links the uncanny feeling of the "double" to the repressed (and then re-emerged) infantile narcissism for which the double can insure immortality. This is interesting as we saw that the precarious status of the Humankind is the focus of the video. Without going to much in detail in our parallel and not trying to give a psychoanalytical reading to the video, anyway Freud's readings still provide food for thought and suggestions for our analysis.

Croatian photographer, performance, video, film and installation artist Sanja Iveković produced a small number of videos during the *Incontri di Motovun* [Motovun Encounters], organized by Galleria del Cavallino and Ladislav Barišić's Galerija Likovna in Motovun, a small village in Croatia. Including *Instructions N.1*, a video performance that seems to be particularly close for its structure and some elements to the artworks by Shemilt and Marangoni.

This video was produced during the Motovun Encounter dedicated to the theme of identity in 1976.

In the opening of the sequence, the artist faces the camera as it was a mirror with a little brush in her hand and trace some black arrows on her face. As explained by the artist these signs are a guideline for massages.¹⁸ Regardless of that, they also evoke visually the drawings made to guide plastic surgery but also the gesture of putting the make up on, a daily action familiar to most women. It also recalls all those advertisements in which women are given visual instructions on how to use beauty products.

Iveković continues until her face and neck are covered with signs. When she is done, she stares briefly at the camera and then starts massaging accurately the

signs on her face and spreading the black on her face. A common theme with Shemilt's video - and many other video pieces from that period as we mentioned above - is the mirror: the lens of the camera plays a mirror in which the artist reflects herself, imitating a daily gesture that women do to apply make up. This proximity to the camera also creates an effect of the intimacy with the audience. At the 1976 Motovun Encounter dedicated to identity, Iveković also made *Make up -Make down* (the piece was re-made in color in 1978). In this case, the camera focuses on some beauty products that are opened and sensually touched by the hands of the artist. As the artist has explained: "the daily act of applying make up (normally hidden) becomes an erotic game with the objects with all the characteristics of a variety act".¹⁹

As Shemilt's *Doppelganger*, Iveković's video works question the stereotyped image of the woman given by traditional society and media (and the marketing system in particular) and the role of the woman artist.

The make up and plastic surgery, not only refers to the social status of the woman, who is required by society to be beautiful (a concept that is also evoked in a slightly different way also in Marina Abramović's video *Art Must Be Beautiful, Artist Must Be Beautiful* from 1975), but it also evoke the possibility of self changing and self-shaping our own image. The same gesture of applying make up is significantly included in *Representational Painting* (1971) by American feminist video artist Eleanor Antin.

Examining more generally Shemilt, Marangoni and Iveković's practice at the time, all three artists were conveying feminist concepts and themes in their artworks and the video provided an excellent medium for that.

From this brief analysis we can see a *fil rouge* that links in some way these seminal video works by women artists from the late Seventies/early Eighties. Common themes, approaches and sensibilities emerge and recur and can be put in relationship with many other video works by women artists from the same period.

Future studies and researches with EWVA will hopefully help contextualizing the early video works by women artists the wider context of European Video Art.

15. F. Marangoni, *The Box of Life*, in V. Fagone, *Camere incantate, espansione dell'immagine*, exhibition catalogue (Milan, Palazzo Reale, 15 May-15 June 1980), Milan 1980, p. 146. The quote was translated by the authors.

16. S. Freud, *The "Uncanny"*, p. 5.

17. Ibidem, p. 14.

18. D. Marangoni, *I videotapes del Cavallino*, Edizioni del Cavallino, Venice 2004, pp. 135-136.

19. Ibidem.

On *Cybernetic Serendipity*, *Nove Tendenze* and the Myth of “Computer Art”

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After a three-year gestation, the exhibition *Cybernetic Serendipity* finally opened in London at the Institute of Contemporary Arts on the 2nd of August 1968. This seminal event was organised (as the title of “curator” was not yet used to refer to those who worked on temporary exhibitions) by Jasia Reichardt, then Assistant Director of the ICA, and is widely regarded as the first large-scale exhibition dedicated to the computer as a medium or a source of inspiration in the arts, including visual art as well as music, choreography and poetry, alongside experimental projects by people working primarily as engineers and scientists.¹

Despite a practically non-existent budget, Reichardt managed to assemble an impressive array of international practitioners, with some big names (John Cage, Jean Tinguely, Iannis Xenakis) alongside professors and researchers usually hidden away in cybernetics labs. One of them was psychologist and cybernetician Gordon Pask, who contributed to the exhibition as a scientific consultant and exhibited an interactive “learning environment” titled *Colloquy of Mobiles*, based on ideas he will then develop into his Conversation Theory in the 1970s and designed by Yolanda Sonnabend. There were other responsive sculptures by Wen Yin-Tsai and Nicholas Schöffer, a *Sound Activated Mobile* by Edward Ihnatowicz, robots by Bruce Lacey and Nam June Paik, computer-generated drawings (Gianni Colombo, Charles Csuri), texts (Nanni Balestrini, Alison Knowles, Edwin Morgan) and music scores (Peter Zinovieff). Media and public at the time reacted with amused enthusiasm, and an estimated 60.000 people flocked to marvel at what was seen as a technologically-enhanced family playground of sorts.² How-

1. In the 1950s and '60s, the ICA had become a pioneering institution in the practice of exhibition-making as an experimental type of editorial / creative activity, particularly in the years when the Independent Group met there and were closely involved in its programming. This approach is beautifully summarised in the invite to the 1957 proto-installation *an Exhibit* at the ICA's former home in Dover Street, described as “a game, an artwork, an environment / pre-planned, individualised, verbalised by / Richard Hamilton, Victor Pasmore, Lawrence Alloway / to be played, viewed, populated at the ICA Gallery [...]”. The idea of curating as collaborative or coral endeavour returns in *Cybernetic Serendipity*, with Franciszka Themerson credited as “exhibition designer” and Mark Dowson and Peter Schmidt as advisers, respectively on technology and music. Jasia Reichardt (ed.), *Cybernetic Serendipity: the computer and the arts*, *Studio International* special edition, London, July / September 1968, p.5.

2. “*Cybernetic Serendipity*, Fox Reading Room, 14 October – 30 November 2014”, ICA press release,

ever, this was in many ways an understated and measured cultural exercise, an experiment intended to test the premise of computer's potential in art, rather than present the thesis of a computer-driven aesthetic revolution as a *fait accompli*. In her introduction to the special edition of the *Studio International* journal that served as a catalogue / reader for the exhibition, Reichardt cautiously admits that «*Cybernetic Serendipity* deals with possibilities rather than achievements, and in this sense it is prematurely optimistic. There are no heroic claims to be made because computers have so far neither revolutionized music, nor art, nor poetry, in the same way that they have revolutionized science.»³ Depending on one's interpretation of the term "revolution" (and, by that measure, "computer", too), this sentence can sound either myopic for 1968 or still worth considering today. If one were to retain the customary distinctions between the three listed "types" of art, there can be little doubt nowadays that electronic tools for music composing, making, recording and playback have expanded the very definition of what music itself is and can be; however, the basic premises of these technological shifts can still be summarised using words Moholy-Nagy wrote in the 1920s, particularly in his prophetic texts *Production – Reproduction* (1922) and *New Form in Music: Potentialities of the Phonograph* (1923). There he suggested, for example, «that the phonograph be transformed from an instrument of reproduction into one of production; this will cause the sound phenomenon itself to be created on the record, which carried no prior acoustic message [...]».⁴ In music, the idea of using computers as instruments is a natural extension of using or channelling combinations of physical phenomena to produce aural stimuli. Anthropologically speaking, music was borne out of imitation of natural sounds: animal calls, wind, the rhythms of falling water droplets or of a heart beating. In other words, it always had an inherently non-human element of interaction at its very core. The impact of computing on poetry was quite different: if the essential medium of poetry is language, then it had always existed as an exclusively human art form independent of any specific physical medium. Even including pseudo- or pre-verbal forms of communication, one could only expect poetry to be produced by a sentient being, based as it is on modulated exchanges of information. It is possible to think of, say, dogs "singing" their feelings to close friends: it is the intentionality of such expressive messages that makes us perceive a string of sounds

as somewhat lyrical. Conversely, computers are inanimate objects with which we communicate using a complex language; by definition, they are machines responding to information. Before the advent of computing, no language exchange with inanimate objects was possible; now we have networks of computers learning over time, communicating with each other without the need for human intermediaries and producing original output complex enough that humans have to interpret it back – that is, to paraphrase. Computer programming has added a layer to language that is fundamentally new, not in meaning but in *function*. What Reichardt had access to in 1968 was code poetry in its infancy, as the level of machine interaction was still rather minimal, effectively limited to sets of aleatory or pre-determined combinatory formulae: computers as glorified Tzara hats for the random extraction and sequencing of cut-up words and letters.

And here's the crux of this matter: whenever a computer is used merely as a machine to automate a programme or simulate randomness, then it is no different to art-making than a pantograph or John Cage using the I Ching in his experimental compositions. Jean Tinguely delegated the act of mark-making to his series of *Metamatic* sculptures, whose programming was limited to a sequence of mechanised cogs and belts. Similarly, viewer interaction with a machine is not specific to computer-based artworks: again, think of the analog mechanical devices operating Kinetic artworks. If a hinge or even a mirror suffice to make a sculpture interactive, it should be obvious that the truly revolutionary aspect of the application of computers in art was never in the hardware. Reichardt must have realised this herself when her choices appeared somewhat at odds with *Cybernetic Serendipity*'s unofficial subtitle, "computer in the arts", which she used in the title of the special issue of *Studio International* dedicated to the exhibition (published in July 1968) but – perhaps intentionally? – not in the exhibition poster. If the inclusion of two of Tinguely's *Metamatics* in the publication can still be justified as a rudimentary example of analog computer, in a preliminary note to Karlheinz Stockhausen's text *Extract from notes on 'Mikrophonie I'* Reichardt admits that

[w]hile he is very interested in indeterminate and aleatory methods of composition, Stockhausen does not use computers. Nevertheless, his recent compositions show analogies to computer methods, in the way that different systems react to each other, enhance each other, and cancel each other out.⁵

The "computer art" label itself should be seen as something of a misnomer, as what truly was to distinguish the use of computers from other so-called "new media" was rather the practice of digital *computing*, the programming methods

7 May 2014. Online document: https://www.ica.org.uk/sites/default/files/Cybernetic_PR_Final.pdf, accessed 30 January 2015.

3. Reichardt (ed.), *Cybernetic Serendipity*, p.5.

4. László Moholy-Nagy, "New Form in Music: Potentialities of the Phonograph", 1923, as reproduced in Krisztina Passuth, *Moholy-Nagy*, Thames and Hudson, New York 1985. Orig. published as "Neue Gestaltung in der Musik. Möglichkeiten des Grammophons", *Der Sturm*, Berlin, July 1923, no. 14.

5. Reichardt (ed.), *Cybernetic Serendipity*, p.19.

allowing information exchanges with machines, product of a primarily epistemological shift made possible by Turing machines and Shannon's information theory at a far deeper level than the wheels and discs of analog computers.

It is meaningful in this sense that Reichardt's previous large-scale project at the ICA was *Between Poetry and Painting*, a 1965 exhibition dedicated to concrete poetry. It was through this exhibition that Reichardt met prof. Max Bense, philosopher and concrete poetry theoretician, who suggested she looked at computing for her next research venture.⁶ Max Bense was an extremely interesting and complex intellectual figure who formulated a theory of information aesthetics in the 1950s-60s, in parallel with yet independently from French theoretician Abraham A. Moles. He himself had been curating exhibitions in Stuttgart since 1957, including one of the first exhibitions of computer graphics, with works by Georg Nees, in 1965 at the Studien-Galerie, and from 1960 until 1970 published the pamphlets series *rot* with Elisabeth Walther, featuring historical texts on concrete poetry, kinetic art and information aesthetics.⁷ His vast bibliography, spanning philosophy of science, logic and art criticism, is sadly little known outside Germany; however he was a hugely influential figure in early computer art, with connections in South America (he exhibited and wrote about Brazilian *concretista* Waldemar Cordeiro) as well as with the Signals gallery in London and the New Tendencies / Nove Tendencije group in Zagreb. Effectively he is one of the bridge figures between early ideas around programming language and the mathematical patterns of *arte programmata*.

The Zagreb connection is key to understanding this aspect of the early history of software-based art, and in fact deserves to be given just as much attention, if not more, than better known contemporary developments in Western Europe. In 1961, a group of Yugoslavian artists and critics, interested in continuing the debates started in the 1950s by the EXAT 51 group of abstract artists and radical architects, organised the first *Nove Tendencije* exhibition in Zagreb as an international showcase of neo-constructivist art, which in the years to follow will come to be known as op and kinetic art.⁸ The exhibition will provide a name for a global

artistic movement (Nuova Tendenza, Nouvelle Tendences, New Tendencies) reacting to the gesturing and pathos of tachisme and abstract expressionism by systematically removing any trace of subjectivity and emotion from the surface of the artwork; collective identities, such as GRAV, Gruppo T and Gruppo N, further emphasised the rejection of the artist's ego, demystified via the jargon and methods of scientific research. Turned into a biennial event, *Nove Tendencije* had a second edition in 1963; the third, switching its title to the singular with *Nova Tendencija* 3, in 1965. By this time, though, op and kinetic art had received mainstream public attention, particularly with the extraordinary success of William C. Seitz's exhibition *The Responsive Eye* at MoMA (New York, 1965), which included many of the New Tendencies artists. Suddenly, this aesthetic of rational detachment had become shallow decoration or visual entertainment, as marketable as pop art. In fact, François Morellet had predicted this danger as early as 1963, in the catalogue for *Nove Tendencije* 2, where he wrote: «Are we deluxe artisans? Are we going to inspire the façades of social housing, music hall shows, and tablemats?»⁹

Meanwhile, the term "programming", referring to the use of mathematical principles in abstract art, had started spreading after the 1962 exhibition *Arte programmata. Arte Cinetica, Opere Moltiplicate, Opera Aperta*, which toured Olivetti showrooms in Milan, Venice, Rome and Düsseldorf and generated groundbreaking texts by Umberto Eco.¹⁰ However, the term "programming" had been in use since the previous decade to refer to computer algorithms and cybernetics, for example in the texts of theoreticians such as Bense and Moles. Moles himself took part in a colloquy on the subject of "art as research", organised at Brezovica Castle as part of *Nova Tendencija* 3 in 1965, where participants debated ways to steer the New Tendencies approach back onto a radical direction. One possibility was to get even further away from the fine arts paradigm which required the production of objects for passive contemplation (and easy market exchange), emphasising the programming and research over the finished sculpture, drawing

6. Arthur I. Miller, *Colliding Worlds. How Cutting-Edge Science is Redefining Contemporary Art*, W. Norton, New York – London 2014, p.57. Cfr. Jasia Reichardt in "Exhibition Histories Talks: Jasia Reichardt", conversation with David Morris held at Central Saint Martins on Thursday 23 January 2014. Online video: http://www.afterall.org/online/exhibition-histories-talks_jasia-reichardt-video-online#.VMVF8WSsU4Q, accessed 30 January 2015.

7. See for example Max Bense and Elisabeth Walther (ed.), *edition rot*, text 19, Stuttgart, February 1965. The publication included "Georg Nees: Programme und Stochastische Grafik" and Bense's seminal text "Projekte Generativer Ästhetik". Also cfr. *red 40+1*, virtual exhibition at Heike Werner Gallery for Computer Art and New Photography, website: http://www.heikewerner.com/rot_en.html, accessed 30 January 2015.

8. The founders of Nove Tendencije included critics Dimitrije Bašičević (Mangelos), Božo Bek, Boris

Kelemen, Radoslav Putar, Matko Meštrović and the artists Ivan Picelj, Vjenceslav Richter, Julije Knifer and Aleksandar Srnec.

9. François Morellet, in *Nove Tendencije* 2, exh. cat., Galerija Suvremene Umjetnosti, Zagreb 1963; quoted in Margit Rosen, "The Art of Programming. The New Tendencies and the Arrival of the Computer as a Means of Artistic Research", in Margit Rosen (ed.), *A Little-Known Story about a Movement, a Magazine, and the Computer's Arrival in Art. New Tendencies and Bit International, 1961–1973*, exh. cat., Neue Galerie Graz am Landesmuseum Joanneum, Graz, and ZKM, Center for Art and Media Karlsruhe, ZKM and The MIT Press, Karlsruhe / Cambridge (MA) / London 2011, p.28.

10. See Umberto Eco, "Arte Programmata", in *Arte Programmata*, exh. cat., Olivetti at Galleria Vittorio Emanuele, Milan, May 1962. 1962 will also see the publication of Eco's *Opera Aperta. Forma e Indeterminazione nelle Poetiche Contemporanee* [*The Open Work. Form and Indetermination in Contemporary Poetics*], Bompiani, Milano 1962.

or environment; however, Gruppo T artist Davide Boriani remarked that artists could realistically only survive

by adapting [...] to the public taste for certain aesthetic objects, while at the same time there are no opportunities for the development of pure experimentation, since [...] the public has no interest in that. As far as pure scientific experimentation is concerned, we don't measure up to the level attained by specialists.¹¹

This conundrum is evident when looking at the catalogues for early “computer art” exhibitions, including *Cybernetic Serendipity* and *Tendencije 4*, which also took place in 1968: objects abound, such as print-outs of computer-generated artworks. As Jasia Reichardt pointed out in a 2014 interview, not only was it true that very few artists had regular access to computers in the late 1960s – the ICA itself had no such technology at hand and no budget for *Cybernetic Serendipity*; pro-bono sponsorships had to be sought in order to obtain equipment and other materials to populate the exhibition, and none of the artists could be paid a participation fee.¹² Even the exhibition poster was designed by Franciszka Themerson using an old-fashioned collage technique and a borrowed electronic typewriter. By a strange coincidence, on the 3rd of August 1968 – the day after *Cybernetic Serendipity* opened in London – an international colloquium on “Computers and Visual Research” began in Zagreb as part of *Tendencije 4*. Over two days a focus group of artists and thinkers, chaired by Abraham Moles, discussed the potential of computing in art, and the role of this new brand of technologically-infused art within society at large. Moles, among others, pointed out that an undeniable “cultural lag” was still at play, and this is true even of the very organisation of *Nove Tendencije*. For example, mathematician and artist Frieder Nake wrote to Boris Kelemen, one of the selectors for a competition launched as part of *Tendencije 4*, lamenting that “[Leslie] Mezei and also Peter Milojević could not understand why the competition of t-4 is for ‘objects’ and not for ‘programs,’ and why nevertheless flow diagrams are requested. For this reason they decline participation.”¹³ (They eventually gave in and took part all the same.) In the end, it was yet another art movement that allowed for that further shift away

from material objects: conceptual art, with its Duchampian foundation in the creative act as decision-making process and its statements that “The piece need not be built” (again, Lawrence Weiner published his *Statements* in that momentous year, 1968). And yet, whilst stepping away from art's obsession with objects, in a sense algorithmic art is based on a truly materialistic ontological view: that even knowledge is predictable, or at the very least calculable, however undecidable the result may be, as Alan Turing demonstrated. That human knowledge, language, aesthetic judgements can be simulated and demystified if they can be decoded, rewritten, and recoded again.

Over the past few decades, interest in algorithmic art has risen a fallen a good few times, as socio-cultural developments have made the ubiquity of digital technologies an entirely commonplace experience for practically any human being currently alive. On the other hand, art no longer has any boundaries between disciplines or practices left to cross, and it is safe to say, I believe, that the role of computers/computing in artistic practices is exactly the same as that of anything else that is available to experience – certainly of any other available medium or technique. Today, so-called “post-internet art” (I certainly cannot get into this particular semantic debate on this occasion) has as much to do with the software – or concept, or practice – as it does with the hardware – or material, or finished product –, and indeed its interpretation seems to hinge on the dialectics between the two elements.

In many ways, all art that happened after 1968 can be said to be, among other things, *post-computer art*, and yet computer art as such had not happened yet. Did computer art, then, ever even happen?

11. Davide Boriani, in Matko Meštrović and Radoslav Putar, “La réunion de travail des participants de la NT3, le 18. 8. 1965 a Brezovica. (Les exposes en extraits)”, in *Nova Tendencija 3*, exh. cat., Galerija Suvremene Umjetnosti, Zagreb 1965, pp.165-170. Trans. in M. Rosen (ed.), 2011, p.233.

12. Jasia Reichardt in “Exhibition Histories Talks: Jasia Reichardt”, online video: http://www.afterall.org/online/exhibition-histories-talks_jasia-reichardt-video-online#.VMVF8WSsU4Q, accessed 30 January 2015.

13. Frieder Nake, letter to Boris Kelemen, March 12, 1969, Archive MSU Zagreb; trans. in M. Rosen (ed.), 2011, p.36.

Seamless Interaction with Works of Art

Maurizio Marco Tozzi

Media Art Curator

Since time immemorial, works of art have lent greater meaning to life. When confronted with a work of art, our perception seems to unleash an infinite series of sensations. Over the course of time, we have learned that this is not just a visual relation: when we face a painting, a sculpture or any other form of artistic expression, our emotions come alive and multiply. Moreover, while with traditional art, our enjoyment was limited by passive interaction, technological art allows the beholder to become a part of the work, to become one with it, contribute to its development and often enjoy it without having to be in the same physical space where it is hosted. The relation between art and technology has modified the temporal dimension of works of art. In fact, any artist fully represents the age in which he lives and its social turmoil, and experiments with the age's means and audience. As Frank Popper pointed out: «the emphasis is no longer on the object, but in the dramatic perceptive condition in which the spectator finds himself.»¹ Media allows the artist to decontextualize the work from any given place, such as a museum or gallery, and intervene in new spaces, exploiting telepresence and exploring virtual worlds.

The first experiments were conducted in the sixties by artists like Naim June Paik and Douglas Davis, who understood the importance of satellites as a new means of communication. Paik's first and uncompleted project in 1962 called for two pianists to play a composition together. One would use his left hand in San Francisco, while the other would play with his right hand in Shanghai; the two sound streams would be joined via satellite transmission. It would take fourteen more years to attend a Satellite Art performance. In 1976, Douglas Davis launched his *Seven Thoughts* around the world over the course of ten memorable minutes. Other experiments followed. In 1980, Kit Galloway and Sherrie Rabinowitz's *Hole in Space* connected two screens – mounted at New York's Lincoln Center and the Broadway Store in Los Angeles – via satellite for three consecutive evenings. This great interactive happening displayed images from the two coasts on the screens in real-time. The event was discovered per chance on the first day, but, by the last day, it had turned into full chaos. Mass media had promoted the event

1. Frank Popper, *Art, Action and Participation*, Studio Vista, London 1975.

and an uncontrollable crowd met in the two locations to participate, if not perform, in this experience. *Hole in Space* is an emblematic work that brought people together in a public area and sparked – at first unconsciously and then increasingly more voluntarily and intuitively – the audience's desire to express itself and become actors in the work created in the minds of two artists, but which was dependent on the public and satellite technology. The artist sets the audience into motion through a new form of sociality, one that is constantly recreated through every new device created by technology.

After satellite, at the end of the seventies, artists like Bill Bartlett, Roy Ascott and Robert Adrian developed their first works using technology that is now obsolete – such as the telefax – but that has contributed enormously to changing the way in which we perceive works of art. Ascott and Adrian's *La Plissure du Text* for the 1983 Paris Electra Exhibition invited participants to improvise an on-line text that united eleven different cities. Physical presence is no longer required. Technological art employs a seamless language in which artists and spectators become a network. Indeed, a network born before the Internet Era with the Bulletin Board System. This was a system for the exchange of information and communications much like that of university noticeboards. When faster modems were introduced in 1985, the use of this technology flourished amongst young people. In 1990, Tommaso Tozzi created *Hacker Art BBS* that showcased the next year at the *Anni 90* Exhibition organised by Renato Barilli at the Modern Art Gallery in Bologna.

Hacker Art is a constructive, rather than destructive, form of information and communication democracy. Hacker Art defines a threshold within which a virtual and a real physical operation can freely exchange roles without altering the management and aim of the transgressive act. Hacker Art is a fight for social liberties. Hacker Art or Subliminal Art is a crusade against the definitions, roles and labels produced by the official and true culture of things through language. Hacker Art or Subliminal Art is against the advertising practice of appearance, against manipulation as an anonymous practice, against nomination when it is used as a tool for the economic interests of multi-national corporations. It is against the very definitions of Hacker Art or Subliminal Art manipulated by official culture. Its only true interest resides in its clandestine practice. Everything else is just a bargaining chip or noise that promotes everything that clashes with the system of cultural power.²

In 1992, at Documenta IX, the use of fax machines, modems, telephones, videophones, cameras and televisions, gave rise to *Piazza Virtuale*, an interactive television project by Ponton/Van Gogh TV in collaboration with Giacomo Verde.

People visiting the exhibition were able to transmit their image live via video-phones and cameras installed permanently in Kassel and other European cities. Live broadcasts were also organised with the United States, Canada and Japan. Moreover, telephones, fax machines and modems allowed transmission from home, too. *Piazza Virtuale* received up to 25,000 calls an hour. The Italian Piazza was at the Milan *Centro sociale Conchetta* and managed by the Decoder Group. The arrival of the Internet certainly amplified and simplified the possibility of interacting with a work of art, giving rise to artistic phenomena in continuous development and opportunities for further research on interactivity. As Lev Manovich explains,

telepresence is not used to create a new object, but to access it, develop new relations, observe that which happens at a distance, communicate in real-time with other members via a chat-line or a banal phone call. ... Telepresence allows a subject to control not only a simulation, but also reality. It provides the opportunity to manipulate, from a distance, the physical reality that is portrayed via images that are both a representation of the remote reality and tools to modify it. The body of the remote operator is transmitted, in real-time, to another place where he can repair a space station, conduct submarine digs or bombard a military base. Thanks to telepresence, it is not necessary for an individual to be physically present in a given place to affect its reality."³

In Paul Sermon's *Telematic Dreaming* (1992), visitors were invited to lie down on two king-size beds placed in different areas and communicate via telepresence with gestures and movements, just as if they were in the same bed. Interaction with imagery provided the user with a tactile sensation.

Maurice Benayoun's *The Tunnel Under the Atlantic* (1995) allowed hundreds of individuals to dig a virtual tunnel connecting the *Centre Georges Pompidou* in Paris with the *Musée d'Art Contemporain* in Montreal. For five days, visitors – equipped with a joystick – explored a dynamic 3D visual environment that was not geological, but represented French and Canadian culture and history. Users communicated via audio to find the right direction in which to dig and reach and see users connected on the other side of the ocean.

The combination of different technologies, ranging from remote robotics to network technology and genetic engineering, is the dominant characteristic of the experiments conducted by Brazilian artist Eduardo Kac. In his works, Kac shares his tools with his audience, who can compose and alter works, thereby becoming responsible for their own experience.

2. T. Tozzi, A. Di Corinto, *Hackivism. La libertà nelle maglie delle rete*, Manifesto Libri, Roma 2002

3. Lev Manovich, *The Language of New Media*, MIT Press, Cambridge 2001.

For his first transgenic work entitled *Genesis* (1999), Kac had a synthetic gene produced by converting a Biblical passage into Morse Code and then into a DNA sequence: "Let mankind [in our image, in our likeness, so that they may] rule over the fish in the sea and the birds in the sky, [over the livestock and all the wild animals,] and over all the creatures that move along the ground." The gene was then inserted into bacteria that were exhibited at an art gallery. An Internet connection allowed visitors to stimulate genetic mutations via the activation of ultraviolet light. The bacteria also interacted giving rise to further mutations that were visible thanks to the UV rays activated by visitors at the art gallery and on-line users, which, in turn, accelerated even further mutations. Interaction was fundamental for this work: visitors and on-line users changed the state of the bacteria and therefore the content of the biblical passage, as if man ruled over nature and biblical history.

Over the last twenty years, art on the web has experienced various experimental phases: from Net.Art to virtual platforms like Second Life and the development of on-line museums where 3D technology allows users to visit exhibitions and admire works in an increasingly immersive manner. Many believe that this is misleading and could lead to the impoverishment of the relation between art and society. I believe, instead, that technology has allowed art to regain the aesthetic sense that is often lost in traditional art, which is more interested in promotional marketing activities for million-dollar auctions rather than true culture.

As Pier Luigi Capucci points out:

Technology reconciles art with the world, with the social sphere, overcoming a scission that arose with the romantic ideal, which was inherited by twentieth century avant-garde movements, upheld by critics, by aesthetics and based on *exclusivity*. Technological art maintains this exclusive nature, but places it behind a familiar and intuitive interface, behind an alluring and mysterious threshold that can hide hell. This reconciliation of art with the social sphere should not be interpreted as an impoverishment, but rather, on the contrary, as a new acquisition. Also, because this aperture, this extended sensitiveness, this wide-range usage, this communication potential can easily be integrated with reflections on the fundamental reasons and general conditions of existence, even beyond an anthropological dimension.⁴

Toywar was a formidable example of art, technology and sociality. In 1999, the American multi-national E-Toys Corporation picked up on the existence of Swiss radical cyber-artist domain *etoy*. After having repeatedly attempted to purchase

the domain, the company decided to undertake a legal battle against *etoy*, claiming that the site could disturb children that happened to stumble upon it per chance (by forgetting to type the "s") as it contained texts that were not suitable for minors. The Los Angeles courts ordered *etoy* to immediately close down their site, notwithstanding the fact that the Swiss group had purchased the domain three years before EToys. In response, the *etoy* activists circulated an e-mail denouncing the situation and rapidly rallied the web. *Toywar* was a true on-line war in which over 2000 *etoy* agents carried out sabotage actions and caused disorders. On January 27, 2000, the multi-national surrendered and agreed to pay *etoy* 40,000 dollars in legal expenses. The Swiss group also reacquired the *etoy.com* domain. Thus, artists use technology to create, denounce and fight subjects that wish to control new media.

Paolo Cirio's works also fight against all forms of monopoly. *Street Ghosts* (2012) featured life-size prints of individuals found on Google Street View that were placed - without any authorisation - in the same locations where they had been filmed by Google. *Street Ghosts* focuses on aesthetics, bio-politics, privacy and legal web-related issues in which users are often the "victims of battles amongst companies, governments, individuals and algorithms."⁵

4. Pier Luigi Capucci, *Arte & Tecnologie, Comunicazione estetica e tecnoscienze*, Edizioni dell'Ortica, 1996, p. 97

5. <http://www.paolocirio.net/work/street-ghosts/>

perspectives

Situating Post Internet

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I

Writing about post internet art from an art history perspective looks pretty much like an impossible task at present. Either we are still trapped in the storm of comments, opinions and debates that blew up when this proposed art label turned into a successful art meme, or we are hot on its heels. On October 30, 2014, art critic Brian Droitcour published a text¹ in *Art in America* that could be described, tongue in cheek, as the post internet version of an earlier, widely debated blog post²: more elegant, less personal, and written for a respected art magazine for the sake of quotes, just as post internet art is made for the white cube for the sake of pics.



Artie Vierkant, *Image Objects*, 2011 - ongoing.
UV prints on dibond, altered documentation images

According to Droitcour, «a sheaf of essays grappling with the meaning of “Post-Internet” by tracing a genealogy from Olson onward would not suffice to describe what Post-Internet has become: a term to market art.» For him, post internet is an embarrassing yet useful new entry in artspeak, describing an «art made for its own installation shots»; an art that «does to art what porn does to sex – renders it lurid», «a self-styled avant-garde that’s all about putting art back in the rarefied space of the gallery»,³ incapable of criticism and that only uses the internet as a promotional tool. From this perspective, post internet art is nothing but an opportunistic, reactionary trend in the context of a formerly radical art practice – net art – now embraced by

1. Brian Droitcour, “The Perils of Post-Internet Art”, in *Art in America*, October 30, 2014. Online at www.artinamericamagazine.com/news-features/magazine/the-perils-of-post-internet-art/.

2. Brian Droitcour, “Why I Hate Post-Internet Art”, in *Culturetwo*, March 31, 2014. Online at <https://culturetwo.wordpress.com/2014/03/31/why-i-hate-post-internet-art/>.

3. Brian Droitcour, “The Perils of Post-Internet Art”, cit.

the contemporary art world as a way to make any artwork that claims to be aware of the current means of creation and distribution irresistibly fashionable and cool. In other words: for Droitcour, post internet art might be a good subject for art criticism, but it is not a useful label in art history, lacking historical depth and any relationship with former uses of the term; and since it refers to bad art, it will be short-lived anyway.

I agree with Droitcour on one thing: that post-internet-art-as-an-art-market-trend won't last long, and that as an art trend, it has its drawbacks. The two are strictly related. The peril of post internet art is that it can be easily disguised as a style: a layer of visual references to the desktop and online environment that can be applied to almost anything; a way of approaching image-making that considers its online dispersion; and a limited set of topics and solutions, from corporate imaging to voice-over videos. It's a kind of "internet layer" that's very easy to adopt now it's in fashion, and will be equally easy to dismiss when it becomes uncool, and that almost everyone can catch onto. In this form, the post internet spread like a virus in 2013, after Frieze art fair director Matthew Slotover, when asked in an interview if he saw some kind of trend coming out of the applications for the fair, mentioned post internet as a «very interesting direction.»⁴ Yet it did not grow in subsequent art fairs, and although a few artists who can be loosely associated with post internet art are now a stable presence in the art market, their individual success stories do not represent a stable trend.

Similarly, during the Paddles On! Auction at Phillips London in July 2013, the post internet craze enabled Australian artist Michael Staniak to sell a work for £25,000, from an initial estimate of £3,500.⁵ Paddles On! is a digital art auction format conceived with the ambition of creating a market for digital art, which is now supported by a number of galleries but rarely entered the world of auctions. Staniak is an artist with little or no background in media art, who makes beautiful abstract paintings using acrylic and casting resin in a way that recalls digital painterly effects. His sudden success obscured the longer, respectable careers of some of the artists included in the auction, whose works went for much less, or remained unsold.

Taking part in a panel at Art Dubai's Global Art Forum in March 2012, artist Constant Dullaart famously said: «Don't use the internet as a fucking condiment»⁶ This is post

internet's main peril: using digital culture as a layer of make-up for artworks so long as it looks fashionable and cool. And yet post internet is not just that. Going against Droitcour, in this text I argue that post internet art cannot really be understood without tracing its roots back to the group surfing practices that emerged in the first decade of the twenty first century, and without considering the ways it has been shaped and discussed since then. Moreover, I situate the post internet within the longer history of art in networked spaces, showing that its relationship with this history cannot be presented in the over-simplified way that is implicit in Droitcour's essay – namely a transition from a radically immaterial practice that rejected the art world to one that prostitutes itself to get a corner in the white cube; the process is much more collaborative and layered. Finally, I will show how this contextualization invites us to re-consider post internet art as one of the strategies and modes of expression of a wider and more vibrant contemporary "internet art" scene, rather than a movement comprising a defined set of artists, or the way net art rebranded itself to be accepted by the art world: a manifestation that maybe, at this point, doesn't even need a name. In other words: we can be critical of the post internet label, and some of the outcomes of so-called post internet art; but we can't dismiss entirely, because it is an integral part of what internet art has become in the last ten years.

II

As is now well known, the term "postinternet" was first used by artist and (at the time) Rhizome editor Marisa Olson in 2006, in reference to her own practice and that of her peers. While she was mainly speaking for herself, as she recently clarified, her post at Rhizome and her role as a co-founder of Nasty Nets, the first surfing club, put her in a position to speak, more broadly, about a new generation of artists who, while spending a lot of time online, were developing most of their work offline: work that was nonetheless «infused with the digital visual language, network aesthetics, and the social politics of online transmission and reception.»⁷



Kevin Bewersdorf, Google image search results for "Titanic" printed on pillowcase by Walgreens.com, 2007. 17 x 25 x 7 inches. Courtesy And / Or Gallery, Dallas

4. Andrew M. Goldstein "Frieze London Co-Director Matthew Slotover on the Rise of the Art Fair", in *Artspace*, October 15, 2013. Online at www.artspace.com/magazine/interviews/features/frieze_art_fair_matthew_slotover_interview.

5. For results and more information, visit www.phillips.com/auctions/auction/PD010114.

6. Cf. Alana Chloe Esposito, "Don't use the internet as a fucking condiment": Net Art at Art Dubai, in *Art Fag City*, March 30, 2012. Online at <http://artcity.com/2012/03/30/dont-use-the-internet-as-a-fucking-condiment-net-art-at-art-dubai/>.

7. Cf. Marisa Olson in Karen Archey, Robin Peckham (Eds.), *Art Post-Internet: INFORMATION DATA*, exhibition catalogue, Ullens Center for Contemporary Art Beijing 2014, p. 95. Available online at

The term survived, together with a few alternatives such as internet-engaged art and internet-aware art (the latter first used by artist Guthrie Lonergan) until it was popularized by art critic Gene McHugh, who – thanks to a grant from the Creative Capital | Andy Warhol Foundation Arts Writers Grant Program – ran a blog of the same name from December 2009 to September 2010.⁸ While Olson, in her use of the term, stressed the “practical” shift from making art online to making art that took advantage of the act of navigation, McHugh focused instead on the historical and conceptual reasons for this shift. He attributed them to the general transformation of the relationship between reality and the internet, which provided different terrain for the relationship between art and the internet. According to McHugh:

No matter what your deal was/is as an artist, you had/have to deal with the Internet – not necessarily as a medium in the sense of formal aesthetics (glitch art, .gifs, etc), but as a distribution platform, a machine for altering and re-channeling work [...] Even if the artist doesn't put the work on the Internet, the work will be cast into the Internet world; and at this point, contemporary art, as a category, was/is forced, against its will, to deal with this new distribution context or at least acknowledge it.⁹

McHugh's year long ruminations led to the term entering critical discourse, and being adopted in other successful essays and publications, from Artie Vierkant's “The Image Object Post-Internet”¹⁰ to Louis Doulas' “Within Post-Internet, Part One”¹¹ to Katja Novitskova's *Post Internet Survival Guide*¹² and the recent book *You Are Here. Art After the Internet*, edited by Omar Kholeif.¹³ The success of the label, of course, went hand-in-hand with the institutional and commercial success of the artists associated with it, and – for the first time in the history of internet-engaged art – thanks to the concerted dedication and support of a group of commercial and semi-commercial galleries, mostly based in New York, Berlin and

<http://post-inter.net>.

8. The blog, located at 122909a.com, is now offline. A selection of the posts have been published in Gene McHugh, *Post Internet*, Link Editions, Brescia 2011.

9. From the 2011 introduction to the book archive of the website: Gene McHugh, *Post Internet*, cit. p. 6.

10. Artie Vierkant, “The Image Object Post-Internet”, in *jstchillin*, 2010. Online at HYPERLINK “http://jstchillin.org/artie/pdf/The_Image_Object_Post-Internet_a4.pdf”http://jstchillin.org/artie/pdf/The_Image_Object_Post-Internet_a4.pdf.

11. Louis Doulas, “Within Post-Internet, Part One”, in *poool.info*, June 2011. Revised edition (2014) available here: HYPERLINK “<http://louisdoulas.info/wp-content/uploads/2014/11/Within-Post-Internet-Part-One.pdf>”<http://louisdoulas.info/wp-content/uploads/2014/11/Within-Post-Internet-Part-One.pdf>.

12. Katja Novitskova, *Post Internet Survival Guide*, Revolver Publishing, 2010.

13. Omar Kholeif (Ed.), *You Are Here. Art After the Internet*, Cornerhouse and SPACE, London 2014

London but also further afield, and with a strong online presence.¹⁴

McHugh's definition is also important because it links up with the most recent definition of the term, which can be summed up in the words of Karen Archey and Robin Peckham:

This understanding of the post-internet refers not to a time “after” the internet, but rather to an internet state of mind – to think in the fashion of the network. In the context of artistic practice, the category of the post-internet describes an art object created with a consciousness of the networks within which it exists, from conception and production to dissemination and reception.¹⁵

But before moving on, it is worth spending some time on the three competing labels that emerged around 2006 – 2008 in the debate around net art. Though very different from one another, post internet, internet-aware and internet-engaged all resulted from an aversion to medium-based labels such as net art or internet art; they all pointed to the internet as a cultural reference, and an environment, rather than a medium. This is related, on the one hand, to a general change in the perception of the relationship between reality and the internet, as McHugh pointed out; and, on the other hand, to a dissatisfaction with medium specificity and the niche status of new media art.

After the dotcom bubble and with the arrival of the Web 2.0, the internet started to be perceived less as a medium and more as a key part of our daily lives; less as a utopia to construct together, and more as a dystopia we are all part of, but that still provides interesting opportunities for networking and community making, and an unprecedented tool for “surfing” reality and getting a better understanding of it. This goes beyond the scope of this essay, but it is worth noting that the idea that the information society has entered a new phase has now been universally accepted, and different people have attempted to describe this shift in different terms, but in very similar ways. More specifically, the debate around post internet art has arisen more or less in parallel to the debates around postmedia,¹⁶ a term first used by Felix Guattari in 1996, post-digital and the New Aesthetic. First used by Kim Cascone in an essay on digital music published in 2000,¹⁷ the notion of

14. Cf. Brad Troemel, “The Emergence of Dual Sites”, in Brad Troemel, Peer Pressure, Link Editions, Brescia 2011, pp. 67 – 70.

15. Karen Archey, Robin Peckham (Eds.), *Art Post-Internet: INFORMATION DATA*, cit., p. 8.

16. Cf. the chapter “The Postmedia Perspective” in Domenico Quaranta, *Beyond New Media Art*, Link Editions, Brescia 2013, pp. 177 - 224.

17. Kim Cascone, “The Aesthetics of Failure: “Post-digital” Tendencies in Contemporary Computer Music”, *Computer Music Journal*, Volume 24 Issue 4, Cambridge: MIT Press, December 2000, pp. 12-18.

post-digital attracted much debate between 2008 and 2014. In 2014, Aarhus University and transmediale, Berlin set up “Post-digital Research”, an initiative that produced a peer-reviewed journal and came up with the following working definition:

Post-digital, once understood as a critical reflection of “digital” aesthetic immaterialism, now describes the messy and paradoxical condition of art and media after digital technology revolutions. “Post-digital” neither recognizes the distinction between “old” and “new” media, nor ideological affirmation of the one or the other. It merges “old” and “new”, often applying network cultural experimentation to analog technologies which it re-investigates and re-uses. It tends to focus on the experiential rather than the conceptual. It looks for DIY agency outside totalitarian innovation ideology, and for networking off big data capitalism. At the same time, it already has become commercialized.¹⁸

The New Aesthetic started as a visual study run on a Tumblr blog by British artist and designer James Bridle in 2011, and gathered momentum around 2012, when author Bruce Sterling made it the subject of an enthusiastic essay in *Wired*.¹⁹ The New Aesthetic blog collects images from art, design, online interfaces and daily life, with a focus on how the digital manifests itself in the physical domain. As Bridle explains in an essay tellingly re-published at the beginning of the book *You Are Here: Art After the Internet*:

It is impossible for me [...] not to look at these images and immediately start to think about not what they look like, but how they came to be and what they become: the processes of capture, storage, and distribution; the actions of filters, codecs, algorithms, processes, databases, and transfer protocols; the weight of datacenters, servers, satellites, cables, routers, switches, modems, infrastructures physical and virtual; and the biases and articulations of disposition and intent encoded in all of these things, and our comprehension of them.²⁰

Post internet emerged along, and with a deep awareness of, these lines of thought. But the urge to reframe the art formerly known as net art was also related to another process, within the field of new media art: the need to go “beyond

new media art”, both as a medium-based practice and as a cultural niche, in order to develop a better dialogue with the contemporary art world after the nonstarters at the turn of the millennium, when new media art missed the chance (offered by a number of museum exhibitions) to be viewed as one of the most interesting artistic developments of the last few years. Around 2005, many “new media artists” – led by representatives of the first net art generation – had already started working with commercial galleries and contemporary art institutions, and investigating ways to present their works in the white cube. Most of them, Jodi included, had all but stopped making net-based projects, and were working mostly on software and hardware manipulation. Two seminal exhibitions, “The Art Formerly Known as New Media” and “Postmedia Condition”, took place that year,²¹ the latter introducing the concept of postmedia in the media art debate;²² a media art festival catalog hosted an equally seminal essay, titled “‘It’s contemporary art, stupid’. Curating computer-based art out of the ghetto”, by curators Inke Arns and Jakob Lillmose.²³ Later in 2007, media theorist Geert Lovink lectured and wrote about “the cool obscure” of new media art,²⁴ and the panel discussion “Media Art Undone” took place at Transmediale in Berlin.²⁵ [25] On that occasion, artist Olia Lialina said:

For a long time it did not make sense to show net art in real space: museums or galleries. For good reasons you had to experience works of net artists on your own connected computer. Yesterday for me as an artist it made sense only to talk to people in front of their computers, today I can easily imagine to apply to visitors in the gallery because in their majority they will just have gotten up from their computers. They have the necessary experience and understanding of the medium to get the ideas, jokes, enjoy the works and buy them.²⁶

21. “The Art Formerly Known as New Media” was curated by Sarah Cook and Steve Dietz for the Banff Centre, Canada (from September 17 to October 23, 2005), and put on display works from the Centre new media collection; the touring exhibition “Postmedia Condition” (curated by Peter Weibel) was first presented at the Neue Galerie Graz am Landesmuseum Joanneum (November 15, 2005 – January 16, 2006).

22. For more on this subject, cf. Domenico Quaranta, *Beyond New Media Art*, cit.

23. Inke Arns, Jakob Lillmose, “‘It’s contemporary art, stupid’. Curating computer based art out of the ghetto”, in Anke Buxmann, Frie Depraetere (Eds), *Argos Festival*, argoseditions, Brussels 2005. Online at <http://language.cont3xt.net/wp-content/uploads/2011/04/arnslillemose-contemporarystupid.pdf>.

24. Geert Lovink, “New Media Arts at the Crossroads”, in *Diagonal Thoughts*, May 2007, online at <http://www.diagonalthoughts.com/?p=204>.

25. Transcripts of the panel are available at <http://www.mikro.in-berlin.de/wiki/tiki-index.php?page=MAU>.

26. Olia Lialina, “Flat against the wall”, 2007. Online at <http://art.teleportacia.org/observation/flat-against-the-wall/>.

18. Christian Ulrik Andersen, Geoff Cox, Georgios Papadopoulos, “Post-digital Research – Introduction”, in *Post-Digital Research*, February 2014, online at http://www.aprja.net/?page_id=1327.

19. Bruce Sterling, “An Essay on the New Aesthetic”, in *Wired*, April 2012, online at <http://www.wired.com/2012/04/an-essay-on-the-new-aesthetic/>.

20. James Bridle, “The New Aesthetic and its Politics”, in Booktwo, June 12, 2013, online at <http://booktwo.org/notebook/new-aesthetic-politics/>

Surfing clubs emerged in this transitional period, and mostly attracting young artists with an art education who, albeit critical of the art market and the process of commodification of digital artifacts, felt closer to the broader contemporary art discourse than to media art culture. Explaining his approach to surfing and blogging in his essay “Spirit Surfing”, artist Kevin Bewersdorf naturally uses the work of Joseph Cornell as a reference point to show what happens when found online content is rearranged in a blog post.²⁷ In October 2007, Bewersdorf had a show at And/Or Gallery in Dallas together with Guthrie Lonergan, another influential pro-surfer. The exhibition featured videos, small prints, and a series of works that Bewersdorf produced by printing found online images onto ordinary objects like cushions, mouse pads and mugs using wallgreens.com, a web store with a print-on-demand service. Headed by artist and musician Paul Slocum, And/Or was a small artist-run space that, for a few years (from 2006 to 2009), gave the surfing club generation fertile terrain to present their work, test modes of presentation in the white cube without the constraints of a commercial gallery and the performance anxiety induced by a more central location, and build relationships with collectors.²⁸ It anticipated many of the topics and tropes of post internet art, including the form of the “dual site”: a small, outlying, brick-and-mortar meeting point for an online community that emitted a signal amplified by the documentation on its web site, as Bewersdorf and Lonergan did in their work, before they stopped producing visual art completely. For both, “retirement” started around 2009 – 2010, at the peak of their careers, and for very similar concerns about the objectification and commodification of their art. As Lonergan said to Ed Halter in a recent interview:

Net art’s relationship to contemporary art as a whole and to the art market gets more confusing every day. It’s pretty fascinating to watch, though. I tried for years to figure out how to ‘print it out,’ to make something super-salable, but I could never quite figure it out, and I don’t think I ever will.²⁹

This short tour of the origins of post internet art should make it clear that it cannot be reduced to an art fair trend, to the small Bushwick scene described by Droit-cour, or to the one liner ‘put a work on show, take a picture of it, and circulate the photo online’. On the contrary, the phenomenon seems to be the result of the confluence of a plurality of issues, approaches and processes, and the development of a new art community, less insular and more integrated than the one that

developed around the first net art, and involved in an expanded conversation. At the risk of indulging in list-making, we must at least mention artists like Hito Steyerl, Mark Leckey, Seth Price, and Metahaven, art magazines like *Artforum*, *Mousse* and *Frieze*, art critics and theorists like Boris Groys, David Joselit and Jennifer Allen, as part of or inspiration for this expanded conversation; of course alongside the good old crew, which was never dismissed or forgotten:

When I started trying to be an artist in the early aughts, I most identified with the net art movement. I had discovered the work of jodi.org, Olia Lialina, Vuk Cosic, and Alexei Shulgin in college (outside of my studies) and I kinda had a “Ramones” moment, ... “I can do this!” It was terribly exciting and will seem obvious now, but the idea that one could just make something and people could see it without any intermediary was mind blowing. Also, for whatever reason – though one wonders if it was due to the lack of bandwidth (?) – the work of the above artists was surgically precise and conceptually clear headed. These traits undoubtedly added further fuel to my interest, and are things I still try to this day to emulate. At the time, if one was interested in browser art, by default they were linked to media art and its histories as the media scene was kinda the only game in town open for a dialog about the browser. This has all changed now as computers are mainstream therefore so is art which deals with them.³⁰

III

As we have seen, post internet art emerged at a time when net art was rehashing its relationship with the art world. Net art, which was always aware that its radical autonomy could only be temporary, and that always played the tongue in cheek role of “the last avant-garde”, was nonetheless initially ‘mind blown’ (in the words of Arcangel) by the opportunity to play different roles (including those of the institution and gallery) and reach an audience “without any intermediary”.

Yet, it soon understood that in order to make the game more interesting, the art



Joshua Citarella, *Compression Artifacts*, 2013. With works by: Wyatt Niehaus, Kate Steciw, Brad Troemel, Artie Vierkant and Joshua Citarella. Courtesy the artist

27. Kevin Bewersdorf, “Spirit Surfing”, 2008. In Kevin Bewersdorf, *Spirit Surfing*, Link Editions, Brescia 2012, pp. 21 – 28.

28. Documentation about the shows at And/Or Gallery is still available at www.andorgallery.com

29. Ed Halter, “In Search Of. The Art of Guthrie Lonergan”, in *Artforum*, November 2014

30. Cf. Cory Arcangel in Karen Archey, Robin Peckham (Eds.), *Art Post-Internet: INFORMATION DATA*, cit., p. 116.

world was not to be rejected, but used and abused. This is what Natalie Bookchin and Alexei Shulgin, in their seminal piece *Introduction to net.art (1994-1999)*, call “the cultural loop”:

2. Interface with Institutions: The Cultural Loop
 - a. Work outside the institution
 - b. Claim that the institution is evil
 - c. Challenge the institution
 - d. Subvert the institution
 - e. Make yourself into an institution
 - f. Attract the attention of the institution
 - g. Rethink the institution
 - h. Work inside the institution³¹

What should be understood about this process is that it's a loop, not a straight line. Thus, “work inside the institution” is not the end of a process that goes from autonomy to integration, but part of a continuous loop in which net celebrity serves to get into the gallery, and art world recognition serves to generate more interest online. The gallery and the museum are not the end point. And integration is not the end point, but a means to get more autonomy.

This does not mean, of course, that net art has to have a co-dependent relationship with the system. There is a long list of artists who developed substantial bodies of work and were extremely influential among their peers, but who refused to join the cultural loop: Bowersdorf and Lonergan are good examples. But anyone interested in a career in art can't avoid joining this level of the game. A good example of this comes from the artists involved in the Free Art & Technology Lab (F.A.T. Lab), a group co-founded by Evan Roth and James Powderly in 2007 during an Eyebeam residency, and now numbering 20+ artists, designers and hackers from three continents.³² F.A.T. Lab not only includes “professional artists”, but also professionals from various different disciplines, interested in having an arena for experimentation where they can work on projects that elude easy categorization, and can interest different audiences. Artists associated with F.A.T. Lab include Evan Roth, Aram Bartholl, Addie Wagenknecht, Golan Levin, among others. They all have a respected institutional presence, and they all have gallery representation. Some of their works could easily fit into one of the definitions of

post internet art; but they keep working with technology, making online projects, participating in group projects, cultivating relationships with communities outside of the realm of art: hackers, graffiti artists, the open software and open hardware movements. The art world is just one mode of transmission, and maybe not even the most important one. Their artworks contribute to developing an identity that is much richer than those of the art world artists we are used to (perhaps closer to what an artist should be, and the best artists have been).

In the context of this cultural loop, the posited opposition between the radical independence of net art and post internet art's “obsession with art-world power systems” (Droitcour) shows its flaws. Let's take post internet's most criticized feature: its use of the gallery as a stage for taking documentary pictures to be distributed online. Droitcour writes:

The Post-Internet art object looks good in a browser just as laundry detergent looks good in a commercial. Detergent isn't as stunning at a laundromat, and neither does Post-Internet art shine in the gallery. It's boring to be around. It's not really sculpture. It doesn't activate space. It's often frontal, designed to preen for the camera's lens. It's an assemblage of some sort, and there's little excitement in the way objects are placed together, and nothing is well made except for the mass-market products in it. It's the art of a cargo cult, made in awe at the way brands thrive in networks.³³

Let's suppose this is true. After all, artists associated with post internet often claim to view mediated experience on the same level as primary experience (Laric), and to do visual art for the sake of Facebook likes (Ito); and Artie Vierkant based all his *Image Objects* project on the circular relation (another loop) between physical object and digital documentation. They all seem to agree with David Joselit when he states that value and aura, today, are not generated by uniqueness and geographical specificity, but by replicability and ubiquity.³⁴ In our framework, this only means that the physical artifact is not the artwork, but part of a (mostly immaterial) process in which the physical object is just one step; and that the white cube is not the main space in which the artwork manifests itself, but one of the contexts in which the art is created. You can't blame something for not being what it doesn't want to be, and for not doing what it doesn't want to do. Of course, the fact of creating a traditional, physical artifact and displaying it in the white cube seems to sanction the traditional systems of attribution of aura: turn your art into a commodity and place it in an art space. But how much criticism is there in this process of (subversive) affirmation?

31. Natalie Bookchin, Alexei Shulgin, “Introduction to net.art (1994-1999)”, 1999. Online at www.easylife.org/netart/.

32. For more information, visit <http://fffff.at> and check out the book: Geraldine Juarez, Domenico Quaranta (Eds.), *The F.A.T. Manual*, Link Editions + MU, 2013.

33. Brian Droitcour, “The Perils of Post-Internet Art”, cit.

34. David Joselit, *After Art*, Princeton University Press, Princeton 2012.

In 1964, Yoko Ono published an artist book called *Grapefruit*, containing a series of “event scores”, instructions that replace the physical work of art. One of them is titled “PAINTING TO EXIST ONLY WHEN IT’S COPIED OR PHOTOGRAPHED”, and reads: «Let people copy or photograph your paintings. Destroy the originals.» At the core of this piece there is the definitive traditional art object, a painting. The “score” does not need to, but legitimately can, be performed: if so, the final result (the copy, the photograph) will have the same status as the idea. It’s conceptual art at its best, claiming the supremacy of ideas over artworks-as-commodities, and combating the notion of originality. Here, the painting, the copy and the photograph are part of a process; nobody cares if they are good or bad; what’s important is the process they are part of, and its meaning.

In 2013, artist Joshua Citarella curated what looks like a good post internet reenactment of Ono’s event score. *Compression Artifacts* was a set emulating all the features of the white cube (white walls, gray floor, neon lighting), built in an undisclosed location in a forest, and performed in front of a live feed, broadcast during daylight hours. Once it was completed, works by Wyatt Niehaus, Kate Steciw, Brad Troemel, Artie Vierkant and Joshua Citarella were set up in the space. Following the exhibition the structure was demolished. All artworks and building materials were incinerated and regathered as ash. And all the process was, of course, documented in pictures.³⁵

Compression Artifacts is probably the most direct manifestation of the post internet as a subversive affirmation. The sacrality of the physical artifact and the white cube are first sanctioned, only to be demystified: the artworks are burnt, the white cube is built in a forest (and then burnt). The process was only visible on the internet, first as streaming video, then as documentation. The documentation itself is not the artwork, not the end point: it’s just a way to keep the ball rolling. Post internet art – at least, that post internet art that puts emphasis on the importance of mediation and distribution – exists in the white cube as the artworks displayed in *Compression Artifacts*, as the temporary materialization of an idea (that may eventually be destroyed, or sold to a collector). What’s important is not the piece in there, but the idea out there. This idea does not manifest itself as a single object, but is most effectively exemplified by the digital image. It is free, it travels, it gathers metadata along the way, it can be appropriated, used, abused, perused, and further developed. It can show up in different contexts. It’s ephemeral, but it can survive.

35. Documentation of the project and a statement are available online at <http://joshuacitarella.com/artifacts.html>.

IV

One could argue that you can put it however you like, but all this is done just for the sake of self promotion, and that burning a few cheap and easily reproducible artifacts to chase online success is not really such a big deal.

One project that reverse-engineers the online circulation of images, showing that there is much more at stake, is Oliver Laric’s *Lincoln 3D Scans* (2013). In collaboration with the Usher Gallery and The Collection in Lincoln, UK, the artist 3D scanned some of the sculptures on show in the museum, and made the 3D models available online for free use.



Oliver Laric, *Lincoln 3D Scans*, 2013. Image featuring “Untitled” by Leah Ferrini. Courtesy the artist

The scans include 18th and 19th century sculptures, archaeological finds, design objects, Nigerian sculptures: no masterpieces, but anonymous or semi-anonymous objects of mostly historical value. Anybody can download an STL file from the website, turn it into something else (a 3D printed sculpture, an animated gif) and upload documentation (or the artwork itself if a digital file) in an online gallery.

The source works aren’t by young, ambitious contemporary artists; their online redistribution can’t be mistaken for self promotion. They are almost forgotten fragments of our cultural history, translated into digital files to contribute to the commons and let other people do whatever they want with them; in other words, to give them another chance to come alive, different from the preservation strategies of a museum.³⁶

With this project, and its 2014 spin-off *Yuanmingyuan 3D* (featuring 3D scans of marble columns from the Old Summer Palace in Beijing, that can be downloaded and used without copyright restrictions)³⁷ Laric is involved in a complex work of negotiation with institutions, with the aim of introducing them to open content philosophies and persuading them to share their heritage, in the belief that an idea is alive only if it can be used and expanded by others. This is mostly what’s at stake in the post internet obsession with image dispersion: the survival of an idea beyond the narrow confines of the art world. More than looking for likes,

36. The project is available online at <http://lincoln3dscans.co.uk>.

37. The project is available online at <http://yuanmingyuan3d.com>.

artists are tutoring their memes, aware that a gallery show or an auction record can't save their works from oblivion. 10,000 notes on Tumblr can't either, but the combination of both can give them more chances to be the starting point for something else.

Lincoln 3D Scans also offers further proof that net art, rebranded as post internet art, didn't leave the net for the gallery, and that artists didn't stop enjoying the kind of freedom, reach, sometimes power, and direct dialogue with audiences that the internet allows them, to settle into a comfortable, shiny booth. Guthrie Lonergan is right when he says that net art's relationship to contemporary art as a whole gets more confusing every day; but this is not a bad thing. It's just a symptom of the fact that the internet has become an important part of the world we live in, to the point that it's increasingly difficult to address contemporaneity without addressing some of the consequences of this shift, at any level. Post internet might be a weak, forgettable label for this complex panorama; or it may be one of those weak labels that end up being accepted by art history. What we can say now is that, twenty years after the first net art, the meme is more alive and viral than ever, and the subject of heated debates.

Interactive Music Videos

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Within the field of experimental video production, video installation artists have been the first to deal with the issue of interactivity. This is so for several reasons mainly pertaining to operating matters: the spectator within the space created by a video installation acquires the role of performer, as a character-agent who chooses where and when to move in order to achieve his/her favourite dimension of enjoyment. Interactivity amplifies and encourages such a "game", by inviting the bystander to act directly, so that without him/her the oeuvre itself does not work or does not fully make sense. Interaction may be inadvertently generated by small unintentional gestures, such as pushing buttons, touching the screen, making noises, or by natural actions, such as walking, approaching or stepping back. For many video artists – who actively engage in video installations – experimenting with interactivity is a natural transition, almost compelled by the desire to experiment with digital technology and by consequence with new models of fruition of the work of art.

Differently, as far as the front line of the so-called "single-channel" video art is concerned, that is the experimental field favouring the single display mode, more similar to cinema, an interest for interactivity has been developed later, primarily connected to the issues of interactive storytelling, along the line of the experimenting concerning digital cinema. However, not every digital images experimenter is interested in storytelling. Therefore, besides some instances where the web is employed as an instrument in order to interactively generate images, and besides the whole field based on the so-called "VJing", which explores the potentialities of "live" management of the moving image, the interactive use of the video object had to wait for the web to develop further the ability to stream high quality video content. Internet has become the unbroken ground of experimentation for digital video interactivity, and the field which encourages such possibilities with the greatest curiosity is that of music video production (and experimentation).

However, the motivations behind the central position of the web are not merely technological. The whole field of Social Networks can be involved and supported by the interactivity process of some experiences. Also some physical objects already implemented in computers or connected to them, such as webcams, printers, etc., can be activated remotely. In brief, interactive experiences on the

web “penetrate” our computer, not only in collaboration with social networking, but also activating other devices, thus creating a complex interactive performance, which does not simply ask the user to perform some actions, but equally entails his/her “virtual” existence, his/her presence on social networks, the tools of his/her computer, finally offering a whole set of possibilities not only of interaction but also of very sophisticated personalisation of the original video object.

Recently, several interactive musical videos have been released, which start to display a whole set of style-related options and may well be taken as the models for a premature classifications of “genres”. It goes without saying that the competition among several available browsers greatly affects the production of interactive videos, to the point that in this field Google Chrome, thanks to the release of Chrome Experiment, is becoming the main platform, if not the only platform, of reference, and it offers experiences that are available on the Google browser only. Such exclusivity hides a clear centralizing intent, which usually has a short life on the web, and most of all shows a widespread commercial interest for an object that is new in its nature, and as such has to be experimented and supported also financially. Google has understood that before the others.

In order to provide a provisional map of the most interesting interactive experiences in the music video industry, one may refer, as to the first (and maybe technologically and aesthetically most simple) possibility of interaction, to the exploitation of references to media of the past, such as television. This takes place in two modes: zapping and live direction. A classic example of the so-called “zapping mode” is provided by the rather famous video by Vania Haymann, *Like a Rolling Stone*¹ of Bob Dylan’s ultra famous song. While the song is being played, a very simple interface invites the viewer to switch channel. Thus, people on camera in a series of stereotypical TV shows (the news, a quiz show, a cooking show, a history documentary, several reality shows, a fashion-themed show) lip-sync sing Dylan’s song, each preserving his acting “intention”, hence creating lyrics-images juxtapositions that are often paradoxical, ironical, grotesque, if not irrelevant. Bob Dylan’s presence is provided by one channel broadcasting TV footage of one of his concerts, introducing the viewer into a rather precise time and aesthetic dimension. Besides being an interactive music video, this video is a true ex-post tribute to the American musician. The images depicting Dylan belong to the archive footage genre, as they all refer to the past, while all the other channels display absolutely contemporary settings, thus creating some sort of short circuit between past and present which emphasizes, in between the lines, that Dylan’s music may well cross unscathed the barriers of time.

On the other hand, a particularly successful example of interactive video adopting

TV shows live direction as a metaphor is *Facing the Crowd*² by Robin Pfrimmer on the music of the band Alpes. The website’s graphics are in the style of the ‘50s, echoing the typical aesthetics of this kind of interaction. The reference to television projects the viewer into a *vintage* realm, almost archetypical; TV is taken as some kind of prehistorical stage of media, while media on the web may claim instead to have a perennially futuristic life. The user is invited to play the TV show director: he/she can choose between five camera perspectives, tune the volume and public sound effects, add live video effects (based, of course, on analogical technological possibilities) to images. The band performs live in studio according to the ‘60s and ‘70s very popular format. In this regard, the “profilmic” can only be a live performance, something that has to be captured real-time by the personalized direction of the user, who then may share on several platforms his/her own ideally recorded performance.

From the two previously described modes another rather popular possibility of interaction may be directly inferred, that is the direct action on single musicians, of course, while they are playing live, and on single instruments. Bleech has put together a rather simple but effective interactive video for the song *Evelyn*³ by the band Abby: five musicians can play the song with three different instruments, obviously of similar type (for instance, drum set, electronic drum, or kick drum only), and the user may decide real-time which combination he/she prefers. Single musicians may also be “muted”, as to totally exclude one instrument, and each of them reacts differently (falling asleep, hovering the floor, etc.). This mode of interaction amounts to some sort of development of the personalized audio remix idea, where the video presence of musicians is also included in the game. The same possibility of interaction is employed by Sam Jones for the song *I’ve Seen Enough*⁴ by the band Cold War Kids, with the addition that in this case arrangements are really diversified. The concepts of game and playability are very important in the field of music video interaction. On their basis, the user is provided with the possibility to have fun with the available visual and musical elements. The viewer is invited to literally get lost in the original music intention game, as to turn it upside-down and produce, as far as sound is concerned, mostly comical effects.

The idea of playability of audio and video material is clearly manifest in those experiences exploiting the most classic of interactive possibilities, that is the non-linearity of the development of actions, which may be directly influenced by the user by choosing among several options. Here, the exhibition of the band may

1. <http://video.bobdylan.com/desktop.html>

2. <http://www.facingthecrowd.fr/>

3. <http://evelyn-interactive.searchingforabby.com/>

4. <http://www.coldwarkids.com/iveseenenough/>

be replaced by some more style-oriented visual choices. Jacob Romanowicz has made an animation interactive video for one song by the British singer, Damon Albarn, *Heavy Seas of Love*⁵. The misadventures of a small robot in the midst of the magnet-like frenzy of London are visualized through sequences of events, where the user thanks to two-options signals can decide which direction the protagonist should go and what it should do. The graphic style of the video changes according to the selected choices, thus adopting always new aesthetic solutions, ranging from animated sketches, very simple 3D, to photo-realistic computer graphics where the robot moves within real image footage. The “root-like” narrative structure expands in several directions and is diluted into small interconnected events. There is no goal to achieve, only the pleasure to discover the next graphic style adopted. Such a form of interactivity relies more on aesthetics than on non-linear narrative potentialities.

Some other interactive music video experiences do not require the specific intervention of the user in order to activate the different options, as they rely on the concept of viewpoint. Among these, the 360° vision mode is rather widespread. The collective Weird Days, for instance, has made the interactive video *Brothers*⁶ for the band Tanlines. Within the setting of the band's recording studio, it is possible to rotate the camera viewpoint using the mouse and follow the musicians or simply observing the room. Also in this case, the live performance format is adopted, but as a clear fiction: the two musicians do not really play the instruments on display (the track is totally electronic), but they rather use them as simultaneously necessary and non-functional objects, as to satisfy purely visual needs. The performance is therefore fake, and the viewer is asked to act differently and closely inspect the several objects in the room, the TV that is turned on, the fish tank, or rather follow the movements of one of the musicians. In brief, the performance is not the pivotal axis of the action, as the space itself is, i.e. the room and its objects. Another music video interestingly playing with the concept of focus is *The Gif Me More Party*⁷, by the collective We Are from L.A. for the song *The Money Store* of the band Death Grips. Its very simple plot is conveyed by the first-person perspective of a young man delivering pizza to a pool party. Thanks to a custom mouse pointer replacing the usual arrow icon, the user can choose from what character's point of view to watch the scene. There are around fifty characters at the party and as many available viewpoints, rigorously first-person. This idea is distinctively effective as to depict the frenzy of the party and suggest some sort of almighty vision and identification, since the situation can

actually be watched and somehow also lived from all the first-person viewpoints in the space. The lack of editing of single viewpoints (each character obviously sees the scene as a long take) and the first-person choice let the viewer think that the situation experienced is real, in better words, some sort of interactive hyper-reality is achieved. Also in this case, the band is not on stage and the concept of performance is employed as an event where visibility may be managed real-time. Personalized direction is innovatively articulated, since as a matter of fact the user provides some sort of editing within the flow of events as he/she chooses the viewpoints of preference.

Nonetheless, the very gaze of the viewer is in some cases the motor of interaction in the video. In *Look Away*⁸, made by the agency Resn for the band SBTRKT, a CG female visage hides in shadows: only her eyes looking at the viewer can be distinguished. As the webcam is activated, when the user moves his/her head from the centre of the field of view, the computer generated visage comes out of the dark. In brief, in order to let the female figure reveal itself, one has to look away. Interestingly enough, the interaction is here achieved by negation: one should not look in order to make the image, here a female visage, finally visible. The webcam is employed in several interactive video music experiences in order to exploit the viewer's movements, according to the same methods employed by new generation video game consoles. Clearly, the world of video games is very close to that of interactive music videos. The interactions made possible by music videos are less complex than those provided by video games. Nevertheless they stand for yet another available path among the many existing.

The viewer's movements may be employed to manipulate the screening of images, as in *Sprawl II (Mountains Behind Mountains)*⁹, by Vincent Morisset for the band Arcade Fire, where hand's movements in front of the webcam modify the dancers' moves in the video. Differently, in *Sennheiser Momentum Duo*¹⁰, made by Fred&Farid studio for the famous headsets brand, two parallel music performances are visible, and the head movements intercepted by the webcam allow the split-screen to move accordingly. The webcam can obviously also be used to include one's own image within the video. For the band C-Mon & Kypski, Roel Wouters and Jonathan Puckey have made the video *More is Less*¹¹, where users may send the images of their webcam, provided that they comply to the body positions of some frames in the video. The most interesting element of this kind of interaction is not its visual features, but rather its being always in progress. The

5. <http://genero.tv/watch-video/38137>

6. <http://weirddays.com/brothers/>

7. <http://www.gifmemoreparty.com/>

8. <http://lookaway.sbrkt.com/>

9. <http://www.sprawl2.com/>

10. <http://sennheiser-momentum.ffshtest.net/>

11. <http://oneframeoffame.com/>

project is visible indefinitely, that is to say until the website is working the users' participation makes the experience always active, or better always interactive and modifiable. In short, its form is constantly "open" and it could last forever. Interactivity incessantly tries to include the user in many ways. Besides one's own image recorded via webcam, which makes the project visually reliant on the users as possible protagonists, there is another possible source of information, where viewers constantly leave "traces of their life", that is to say the Social Networks. Facebook, as the favourite place of people's virtual existence, is often tracked (only visually, of course) by music video interactive experiences. In these cases, the viewer's experience entails the resetting of his/her own actions. The user is not asked to interact with the video, but to passively witness the usage of his/her private data which are included in the video structure or which provide a visual experience in themselves. One's own Facebook profile pictures can be used as integral part of a linear video featuring, precisely, photo images, as it is the case in *Lost in Echo*¹² for the band Linking Park, made by Jason Zada and Jason Nickel. Once logged in through one Facebook account, a video starts displaying a post-war setting where some survivors are looking at some pictures. These images are randomly selected from the user's profile. The dimension of memory – here represented by the idea that in the destroyed world of the future no trace is left of the past apart from some paper print photos – is directly connected to the contemporary compulsive attitude towards uploaded images on Facebook, thus producing a perceptual short-circuit between present, past, and future. Facebook is often called upon and summoned while warning viewers about the dangers connected to the unaware accumulation of personal data in the public domain. Rajeev Basu has made the interactive video *Facehawk (Dangerous)*¹³ for the band Big Data, where the user is invited to log in via Facebook. The first screenshot is the usual wall where some messages of appreciation for the song are displayed, but just after that everything explodes and random pictures from one's profile and one's friends profiles wander around in a black space, visually creating streams of visual data scattered on emptiness. The experience is rather unsettling and visually interesting at the same time. The explosion of the Social Network par excellence also conveys a clear critique; the video's title is *Facehawk* (in clear consonance with Facebook), while the music track's title is *Dangerous*. In this regard, another interactive video that is a phenomenal, although simulated, violation of the user's privacy is *Whispers*¹⁴, made by Casper Balslev for the band ALB. The very mode of enjoyment of the work of art is deceiving: the website

invites the user to download on his/her computer a video which at first sight does not display any possibility of interaction. With some hints to *American Beauty* (1999) by Sam Mendes, the video shows a man taking a shower, the wife and kids ready to dine, while a disturbing female character, multiplied in several clones, breaks in the house spreading panic in an arguably way too normal situation. A flashback of the male character suggests that he had previously met the young woman and that they had an affair, it is unsure whether a real or only imagined one. Finally, one clone kills the male character with a sword.

At the end of the video, the following things happen almost simultaneously: the wallpaper and desktop screensaver are replaced by an image of the young woman (her name is Helen); a folder opens full of photo of her and the viewer, which have been taken during the screening by the webcam; the mail service gets inundated with threatening messages; many appointments with Helen are added to the calendar app; finally, the printer activates and prints an image of her. Once the downloaded program has been removed from the computer, everything goes back to normal, except for the wallpaper and screensaver, which have to be reset manually. Besides the ironic intent, the clear feeling of not having any more control on one's computer is experienced for few minutes. In this case, then, the interactive experience is some sort of surrendering to a process with which no interaction is possible, as a virus embodied by a character who from the fictional world conquers the user's daily life. Virtual elements stands for the daily life, – everything takes place within the computer –, however such elements are increasingly acquiring the value of actual reality in people's daily routines.

The introduction of the viewer's experiential ability within the interactive video music "show" may well be less invasive and more poetic. Chris Milk, video music director and author of several very interesting interactive experiences, has made *The Wilderness Downtown*¹⁵, for the band Arcade Fire, which is probably one of the currently most famous interactive music video. As other previously mentioned cases, the interaction required from the viewer is minimal, although it ensures a high degree of participation, at least emotionally. The user is required to type in the address of the place where she/he was born or grew up, not the one she/he currently lives in. Then a series of windows opens where preset images (a young man in a hoodie running on a desert road) are combined with view sequences of the chosen place taken from Google Earth and Google Maps. The video also synchronizes with crucial transitions in the song. Halfway through the video a window appears and the viewer is invited to manually write something with his/her mouse. The text then grows branches and flocks of birds come to rest on them. The initial visual structure continues, but now CG trees whirl round and round

12. <http://lostintheecho.com/>

13. <http://www.thefacehawk.com/>

14. <http://www.albwhispers.com/>

15. <http://www.thewildernessdowntown.com/>

on the images, growing as an explosion. In this interactive experience the idea of going through the place of someone's childhood leverages a specific emotional situation belonging to the viewer, as it makes use of a skilful orchestration of symbolic images, such as escape, recovery, roots, migration, identification, and finally farewell or reconciliation (these latter stimulated by the invitation to write something after seeing the chosen place). Technological features are mixed with personal situations so that the vision of this interactive video is actually an experience based on the memory of one's own past in a specific geographical place.

The field of interactive music video is clearly in its early history, although it is already producing models, authors, and trends. It is nevertheless dependent on the technological progress of its main place of action, that is the web. As a general remark, the productions investigating interaction possibilities the most often neglect – sometimes precisely due to the nature of the interaction – all stylistic and aesthetic issue, while the productions closer to image focusing research tend to decrease the coefficient of interaction as much as possible, thus presenting perceptually hybrid works between linear and interactive fruition, where linear fruition has often the upper hand.

However, this research has just started, as already said, and it is undoubtedly a challenge from the technological and aesthetic point of view. Therefore one should only wait for other experimentations to make the language mature and fully aware of its potential.

Cybernetic Nightmares, Google Street Ghosts, Dispersed Bodies, Death Media Archeology and Carbon Monoxide Poisoning.

Roc Parés

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In this essay, I will try to reflect on the practice-based research developed by our students of the University Master in Digital Arts (MUAD) at Pompeu Fabra University, Barcelona. By describing some of the most outstanding final projects, developed in last edition of our program, I will argue about the cultural relevance of art as a source of critical intervention in our technified, hyper consumeristic society. This argumentation would possibly be unnecessary if the public funds for education and research were evenly distributed between the different fields of knowledge. But in this second decade of the XXI Century, European public funds for creativity and innovation are mainly invested in techno-scientific projects and leave the arts and humanities' future to the will of the market forces.

The University Master's in Digital Arts is one of the oldest Programs of its kind in Europe. Paradoxically, MUAD takes place at Pompeu Fabra University, one of the highest performing young institutions according to the QS World University Rankings 2014. As an educational project which began in the mid-nineties, MUAD has evolved for near two decades around a group of Barcelona-based artists and researchers who are active players in the international media-art scene.

MUAD explores the creative potential of digital media at the intersection of Art, Science, Technology and Society. Our students are prepared not only to be fluent practitioners in the language of digital media but also critical with the conventional uses of information and communication technologies. One of the distinctive aspects of our program is the development of art projects which are rooted in the personal motivations of our students. With the mentoring of our professors, our students complete their Master's Degree with a final project in which, during five months, they focus on their practice-based research and develop their own experimental production skills.

The first project I'd like to briefly analyze is *Cabina Relax* by Daniel Cecilia. I think about this piece as the ultimate cybernetic nightmare. It is an interactive installation (a hermetic wooden chamber the size of a telephone booth) which uses galvanic skin response (GSR) sensors in order to control an electro-mechanical system of subjection. The participant enters the booth backwards, closes the door and places two of her left hand fingers in the biometric sensor. Once the system



Installation view of "Cabina Relax" by Daniel Cecilia, 2014.

detects the presence of a participant, it measures the electric conductance of her skin and immediately sends instructions to the servomotors. These motors close the specially designed cuffs on both hands, both ankles and head. Participants are retained immobile inside of the dark booth until the GSR sensor interprets that the participant is relaxed. The result of this paradoxical Human-Computer Interaction is of an extreme repression which questions art as human expression and questions the interactive medium as an environment under human control.

Of a very different nature, the second example is *Evulvia* by Jordi Roca. *Evulvia* is a virtual world, and an artificial life experiment which takes Google Street View as a digital distributed ecosystem. Google, and its deserted public space images become an oneiric landscape which the artist populates with 3D geometrical creatures named *evulvians*. With his advanced knowledge of code, the artist allows anyone to create new *evulvians*. The simple but effective interface makes it easy for anyone to choose a place in the map and to start a new algorithmic creature. As the artist explains: "Each creature will be influenced by the country where it's been born in, using real life parameters from that country. Some *evulvians* may migrate looking for a better life. They will move around their world looking for other *evulvians*, and they will influence each other and may even mate, creating new *evulvians*." We like to say that our Master in Digital Arts is an art



Installation view of "Cabina Relax" by Daniel Cecilia, 2014.

program which explores the fertile intersection between Art, Science, Technology and Society. We also like saying that code is a new form of creative writing, different from the literary tradition. Evulvia is a great example of such exploration, building on the works of mathematicians such as Von Nauman or Conway to create an aesthetic and social experience which pushes us prosumers into the loneliness of the aseptic street views and haunts our hearts with nostalgia for the real public space.

The third project that I have chosen is *No dispositivo* (Spanish for “No Device”) by Nicolás Villa and Citlali Hernández. Since its origins, back in 1995, our Master’s program, has always gathered people from all around the world with a constant prominence of Latin American students. In this case, we see the fruit of the collaboration between a Colombian musician and a Mexican industrial designer. Their time-based art work involves hacking a small Robot toy and repurposing its parts to create a disperse body which is animated by the movements of a dancer. With this goal, they developed their own low-cost motion capture harness, and have studied in depth some of the most sophisticated theories about embodied cognition. They are makers but also enquirers. Their research is practice-based



Partial view of “No dispositivo” by Nicolás Villa and Citlali Hernández, 2014

but informed by philosophers (such as Giorgio Agamben) and cultural theorists (like Donna Haraway or Yvonne Rayner). Their project can be presented as a performance or an installation and is always experienced by the audience as a dialogue between different levels of presence and embodiment; from the synchronous presence of the dancer’s biological body, to the synchronous but dispersed presence of the animated objects which resemble limbs, accompanied by the ghostly video image of the dancer’s movements projected onto a wall in a life-size representation of her absence.

In a very different approach to the consistence of our visual cultures, *Please, Rewind The Tape*, by Fernando Espinosa is an audiovisual installation which uses old cassette tapes. The piece is clearly an archive, offered in a living-room setup to the gallery visitor. A box full of obsolete music tapes works as a portal to an altered state of consciousness. Encouraging the visitor’s curiosity, Espinosa provides a cassette deck and a sofa where we can sit and discover the content of the audio tapes. Surprisingly, the content is not only music, but also a collection of images recorded on the same audio cassette tapes with a system named Slow Scan TV (SSTV). Developed in the late 1950’s, SSTV was the system used to transmit the first steps of our species outside of our planet. Espinosa, as you



Installation view of “Please, Rewind The Tape”. By Fernando Espinosa, 2014

can see, puts together a very unconventional system which not only makes us aware of the programmed obsolescence of technology but also of our constantly renewed expectations about the future of the media and how the access to ever changing technology determines the shape of our cultures and the texture of our realities.

And last, but not least, I want to finish this essay with a brief comment about *Suicidio*, an interactive performance with data visualization by Andrés Costa Maluk. *Suicidio* can be described as an interactive piece but the interaction is not with the viewers. It could also be described as a data visualization experiment but then we need to say that the data is not visualized on a display but in the behavior of a physical object. I'll better try to describe it to you: The piece is a glass cabinet, containing a 1/10 scale model of a car. The car is an RC Model of Costa's father utilitarian vehicle. Visitors cannot drive this car with a remote control but they will see that its internal combustion engine can turn on. If they listen to the engine carefully, they'll notice that it accelerates and decelerates mysteriously, just as if someone was playing with the gas pedal. What makes this car's engine behave this way is an *arduino* board, connected to a computer. The computer gets the fluctuations in the oil prices from the internet, on a 24/7 basis, and *arduino* turns this digital values into analogue actions in the physical



"Suicidio" by Andrés Costa Maluk, 2014.

world. What kind of actions? Costa has programmed his system in order to open and close the gas of his engine according to the rises or falls in the international price of petrol. After some minutes of the engine working under this logic, the glass cage starts filling-up Carbon monoxide (CO) and running out of oxygen. And when it finally runs completely out of oxygen the engine stops; it drowns in its own exhaust fumes. The In my opinion, what makes "Suicidio" a superb art work of our time is not only that it turns immanent self-critique towards the Internet of things and unsustainable economical systems, what really makes it a great piece of digital art is that its conceptual, formal, contextual and relational attributes become an experience that cannot be translated into words.

When I think about the singularity of our University Master in Digital Arts (MUAD) program, in a European Higher Education Area (EHEA) which is saturated with programs in the field of design and technologies, I find that there is something very specific to our digital arts approach: We refuse the role of the student as a designer who masters the use of present technology and is waiting for a boss to come and tell her what to do with it. By taking a position in the arts (as opposed to design or advertisement), we are breaking the usual clientelistic role of the cultural production. We promote our students independence beyond the hegemonic discourses about technology and expect them to move away from common places such *smartification*, *gamification*, *gadgetification* or any other cultural trend imposed by the needs of the market. As I said in my introduction, our program foster's the autonomy of the creative process of each of our students, which means that they develop their own strategies according to their personal experience, their goals, their beliefs and their own motivation. This is the case of the five projects that I have chosen to comment in this essay and, as far as I can see, it is the ultimate reason why our Barcelona-based Digital Arts' program will soon celebrate its twentieth birthday edition but is still in extremely good shape.

Sound Shifts

Gesture, Environment and Atmosphere in Sound Art

Elisa Cuciniello

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Defying concepts and deconstructing standards, sound art challenges contemporary culture and its patterns, fluxes and surfaces, directly and vigorously. In agreement with Golo Föllmer, the motivations for this statement can be traced back to those sound art experiences that reveal a profound connection with the current media context. Indeed, they range from attention to the structural peculiarities of media that sound art employs as inspiration for its aesthetic solutions to research on specific perceptive phenomena of mediated experience. The spatial diffusion of sound that has been permitted by technology is fundamental to this type of approach on account of its ability to block out a soundscape and to enact its dramatization, its scenic presence and the reaction of the listener. This is a physical reaction to the sound perceived in space by our bodies that can even modify the emotional dimension of the environment. “The most anthropological task of listening,” proposes Arnheim, “is to stabilise our body in space, support it, ease tri-dimensional orientation and especially guarantee the general safety of understanding those spaces, objects and events that we cannot see.”¹

On the basis of these assumptions, we will analyse, insofar as possible, some of the practices that operate in the realm of “sound as matter” for the recording, creation or recreation of entire acoustic environments.

The term “sound art” – or audio art – generically refers to works for radio, poetry or sound performances, sound mapping, computer and visual music, as well as installations and sculptures that employ advanced technology – and other options – to explore the infinitesimal elements of sound.

Beginning in the second half of the twentieth century, the installations developed by Max Neuhaus, Maryanne Amacher and others – Bernhard Leitner defined them as «sound-space-art» works – introduced two fundamental lines of research. On the one hand, the need, in a performance context, not to adapt sound patterns to casual forms of perception, but rather to conceive the tonal design of a space as a perceptive integration of the space itself; on the other, the objective is not to capture the listener’s attention, but to determine what type of attention the

1. Rudolf Arnheim, *Rundfunk als Hörkunst*, manuscript 1933; Rudolf Arnheim, *Radio*, Faber & Faber, London 1936

listener decides to lend to the sound context.

What emerged was a new line of research on the indispensable bond between sound and space, which has raised many questions amongst composers and sound artists - and continues to do so from a range of different perspectives. More specifically, this is research into the spatial characteristic of sound, on the relation between listening, technology and space that gives rise to specific sound statuses. It is an exploration of the possibilities of completely redesigning the relation between listening and environment, as well as ambiguities and sound presence.

Indeed, these ideas have played a central role in musical experience ever since the Middle Ages. We can certainly affirm that electro-acoustic experimentation developed in humus that was already amply prepared for the definition of credible sound environments and then pursued the creation of increasingly complex spatial suggestions and imaginary environments. As a matter of fact, the will to dig deeper into the relation between sound and environment allowed space to become a central category in the physical materialisation of sound, determining a substantial alteration in the way in which we listen to music and acoustic signals and altering the modes of perception of the entire phonosphere and thereby, in a gradual manner, reality itself.

What Jim Drobnick referred to as a “sonic turn” can thus be defined as an epistemological shift in the mediated reality of sound that obliges us to reconsider the way in which we learn about the world, through listening, and reckon with our historical immersion in sound.

From this point of view, the historical race towards Hi-Fi is nothing other than the need for a “profound fidelity” to true sound phenomena and not a spasmodic quest for “high definition.” Adapting the concept of “visual meteorology”² on varyingly defined nature of contemporary images, we could similarly refer to a robust and present sound meteorology that strives not just to record reality through a superior acoustic quality, but welcomes the diffusion of low definition as it is necessary to make sound a key with which to interpret reality or a special way to explore it, a condensed emanation.

Somaini points out that, in this sense, Benjamin’s aura - understood as an atmospheric concept, as an atmospheric element of experience – does not disappear in modernity, but persists continuously varying in density. The survival of low-fi, especially of noise and glitch music, amply proves this condition. In

2. Antonio Somaini, *Visual Meteorology. Le diverse temperature delle immagini contemporanee*, Lecture at the International International Conference Photography and Visual Cultures in the 21st Century: Italy and the Iconic turn Rome, Italy - 4-5 December 2014 Palladium Theatre, Roma Tre University.

fact, both of these minimalist shifts are based on an impersonal time, a process that has no clear structure, but is generated in every instant over the length of its manifestation. They are the result of experimentation that challenged classical opera and that, introducing tone, waste, noise and landscapes into compositions, gave rise to the epochal shift from music to sound and, in particular, to the notion of sound as flux, time and evolution. In fact, the typical construction of minimalism, of an immanent musical plane, of a pure sound event, is based on the introduction of non-pulsed time that is *Aiôn*, an intense period of time that transmits the cartographic processes of disarticulation and de-stratification that lead us to listen to a sound that escapes all intention, details, even errors and sound molecules.

If the opera works as a quasi-perfect clock, you will not feel anything. It will be recorded as a void matter fall, a nothing-nature, a complete self-blackening outcome within a black environment, the darkest image ever dared, the factorial veiling, the thickening of obfuscation, ephemerally abysmal.³

Anaqor’s investigation on sound matter - and its elaboration and destruction – is closely related to the most radical research that has emerged in recent years. The manipulation of sound waves retransmitted by hard disks, crossing urban contexts in the style of nomadic sound walks, the research and approach to sound events that this anonymous noiser requests of his listeners belong to a dimension of poetic terrorism produced by two main phenomena: street art and extreme exploration. Anaqor allows the ambiguities of the presences and sound mediations to flourish. They allow space to penetrate us, as Nancy might say, to become a part of the acoustic space and at the same time shape us as a subject of that space. From the point of view of perception, it’s about the construction of an intermediate space, one that Duchamp would have termed “infra-subtle,” in which the shapes of geometric appearance are produced and invisible forces become visible: gravitation, expansion, germination, time.

Thus, the sound space becomes an arena for the discrete unfolding of dematerialised, arbitrary and furtive frontiers; a true stage for the interaction between objects and subjects that move around and synesthetically perceive the acoustic sense of the place, its “atmosphere.”

This construction of landscapes as “constructed places,” lived and perceived by the subject – present with Anaqor at the first edition of the Media Art Festival at the Fondazione Mondo Digitale in Rome – also reflects to a certain

3. Anaqor. *Noise. Opera.*, <http://anaqor.tumblr.com/>, gennaio 2015

extent the research conducted by Simone Pappalardo, who has been creating electronic sound machines and self-built instruments for musical compositions and interactive installations. His exploration of acoustic forms combines the use of cutting-edge software for the graphical development of sound with the re-use of mundane objects in a perfect mix of hi-tech and craftsmanship. This produces a complex “sound vision” which highlights hidden material aspects and unexpected geographies, stimulating a pure and uncontrollable “wireless imagination”⁴. In fact, besides paying close attention to the composition of the sound’s micro-structure, his works reveal a strong interest for physical gestures and an exploration of objects and magnetic fields through sensors to investigate and challenge the relation between sound and context, between the subject’s presence and memory.

A perfect example of this is the 2009 performance installation entitled *Room332*, a concert for two spectators held with self-made instruments that retrace Nikola Tesla’s theories, but also the many diverse creations and site-specific systems such as *ALC/NA* (2015). In these works, Pappalardo shifts musical and sensorial statutes towards the re-elaboration and the concept of “atmospheric environment,”⁵ recognising sound as required by the gesture that produces it and therefore as the memory of an action that can be minimised or amplified to test the limits of its perception.

4. Cf. Douglas Kahn, *Gregory Whitehead*, MIT Press, Cambridge 1994

5. Gernot Böhme, *Architektur und Atmosphäre*, Fink, München 2006, et al.

A Glance at Media Art

Veronica D'Auria

Media Art Curator and principal curator of C.A.R.M.A. - Centro d'Arti e Ricerche Multimediali Applicate

What the new century has defined as “Media Art” embraces all the research that contemporary art developed in relation to technology – or better, in relation to electronic and digital devices and tools - investigating its operation and opportunities, even in terms of use and function.

So-called video-art, which inaugurated this transmedia approach to technology¹, provided, right from the outset, a range of research paths in this sense², experimenting with the possibilities unveiled by these new tools³: from recording and reproducing “reality,” which was investigated and explored from its virtual space/time shift to its manipulation and to the generation of new “realities” composed of sound and images (even thanks to the creation of new devices that were self-built or developed with the help and collaboration of technicians).

Thus, audio-visual electronic arts welcomed the century-old research conducted on sight and sound, while access to the fourth dimension opened up new areas to investigation, allowing not only a shift in formal elements, but also the manipulation of time and linearity.

Moreover, the immaterial nature of video meant that it could be transmitted by one or more devices, giving rise to a multiplicity of installation opportunities. The ductility and possibility of multiplying moving images allowed not only the creation of environments with a strong scenographic impact, but also site-specific audio-visual paths that could be introduced into a wide range of contexts (from galleries and museums to roads and common areas).

The advent of computers and especially their “democratisation” - in terms of economic accessibility and specialist computer skills⁴ - has allowed artists to pursue research on the current day use and theory of electronic video-art; not only thanks to the availability of a meta-medium capable of hosting previous devices and their products, but also on account of a vast series of new ways in which

1. Also “incorporating” research on electronic music in its audio-visions (and inheriting photographic and cinematographic experimentation)

2. See research by Bruce Nauman, Nam June Paik, Steina and Woody Vasulka, Dan Graham and Jeffrey Shaw

3. Televisions and then video-recording devices, video-recorders and all the way to computers

4. In particular, the development of graphic interfaces (HMI: Human-Machine Interface)

the imagination can now develop new programmes, new techniques and formal processes for the elaboration of audio-visual materials.

Digital software not only extends the ways in which “material” can be modified and altered, but also allows us to generate new virtual worlds and new procedures for introducing them, promoting the development of new artistic forms such as computer art, digital painting, software art, sound art and video-mapping.

Nonetheless, as artist and theoretician Lino Strangis points out: “... software is not merely a new means of production and there is no ingenuous trust in it, no easy enthusiasm or pleasure in the pursuit of the new at any cost. There is no dearth of new techniques, but these are never an objective or a starting point. Please be aware that even the most powerful and innovative tool is not “useful for culture” if it cannot be employed to express a sense as well as providing an experience.”⁵

The development and diffusion of the Internet and its applications have also provided new ways to enjoy and access content that artists have explored and experimented with (net art and net installations), even in a highly interactive manner.

While audio-visual works with a “physical” dimension – an installation – were more easily recognised by the world of art and its market (on account of their nature as a unique or numbered art “object”) – albeit with difficulty on account of their novelty – the recognition of single-channel audio-visual works was far more difficult.

Single-channel video-art, in fact, has encountered many stumbling blocks in the course of its history to gain access to art galleries and other exhibition areas, due to its immaterial and reproducible nature. On the other hand, this has allowed this type of art to be circulated and transmitted⁶ throughout the world very rapidly, allowing it to appear on television and in public projections, but especially at festivals and events that amplified its visibility.

The first and most important, prestigious and on-going events dedicated to - or at least interested in – electronic and then digital audio-visual experimentations were organised in the wealthier European and American cities.⁷ Then, during the course of the first decade of the current century, these events began to spread to every other corner of the planet. These new languages, in fact, became a global reality through an impressive number of events. France and Germany, for example,

host five important festivals and dozens of annual and biannual international exhibitions, but periodic exhibitions or festivals dedicated to this type of work have also spread to unexpected locations (even to Gaza in Palestine).

Moreover, there now are many associations, organisations and research centres that specialise in the promotion of this type of artistic work that operate at an international level and pursue the development of global on-line networks – especially based in Europe – and that exploit the web to coordinate a wide range of exchange programmes and collaborations. The Internet has become a platform for direct communication and knowledge not only amongst the actors that pursue this discipline, but also amongst the latter and artists (through the publication of competition calls for participation in events, festivals and residencies) and the public at large that can learn about events, organisations and artists, besides enjoying works, via a number of different devices, developed by video-artists from around the world.

Thus, while we may affirm that video-art is an appreciated language that is recognised and widespread and that there are places and ways to enjoy and follow it, even in non-specialist environments⁸, the same cannot be said about its market, which is very limited, if not practically inexistent. Distribution, which is fundamentally related to the so-called “art market” - which is inexorably tied to the concept of works of art as a “fetish” or “exclusive” object – has obliged this reproducible art *par excellence* to number its copies, so that it can be sold at prices that are comparable to those of “traditional art.” Unfortunately, not only has this type of operation rarely been successful, but it has also drastically reduced the opportunities to purchase it⁹ and has misunderstood the very nature of this art.

In order to democratise the enjoyment of this type of digitalised art, as well as its production and exhibition, we should expand the channels for its distribution (especially to make it more economically accessible). There are many options that may make this possible in the future: especially, the development of innovative and non-traditional market channels.¹⁰

5. Lino Strangis (ed.), *La videoarte nel mondo del software*, Palladino, Campobasso 2013 includes a collection of essays and a video-art anthology from the C.A.R.M.A Archive.

6. First via DVDs and then via the Internet (and relative file hosting and transfer services)

7. Just to mention some European ones: “Ars Electronica” (Linz, 1979); “Imagina” (Montecarlo, 1981); “Videoformes” (Clermont-Ferrand, 1986); “Video d’auteur” (Taormina, 1986); “Instants Vidéo Numériques et Poétiques” (Marseille, 1987); “Transmediale” (Berlin, 1988); “WRO Biennale” (Wrocław, 1989); “Artifices” (Saint-Denis, 1990)

8. Besides the above-mentioned festivals (cinema, short features, animation and media art) and non-specialist art exhibitions (art shows, *biennali*, contemporary art fairs and festivals), there are many museums around the world that regularly open their doors to this type of audio-visual works; press, even the generic, mass type, is fascinated by events dedicated to audio-visual experimentation, which have the advantage in the collective imagination of appearing easily because of their technological nature as typically modern arts. Moreover, from an educational point of view, Art History and Cinema Departments address the history of these disciplines and some universities even give them great importance.

9. An average artist's work is valued ca. 1000 euro a minute. (This is obviously a gross rate that varies markedly based on the appreciation of a given artist.)

10. For example: editorially (as has already happened with music, cinema and other mass audio-visual products; also as has happened with home video).

from body to mind.
new generations of italian media artists

Roma, 25 febbraio - 1 marzo 2015

Centrale Montemartini e Città Educativa di Roma Capitale



Aye Aye, *La Raggione der Perché*, 2012



Alessio Chierico, *Trāṭaka*, 2014



Dehors/Audela, *An incurable affection*, 2014



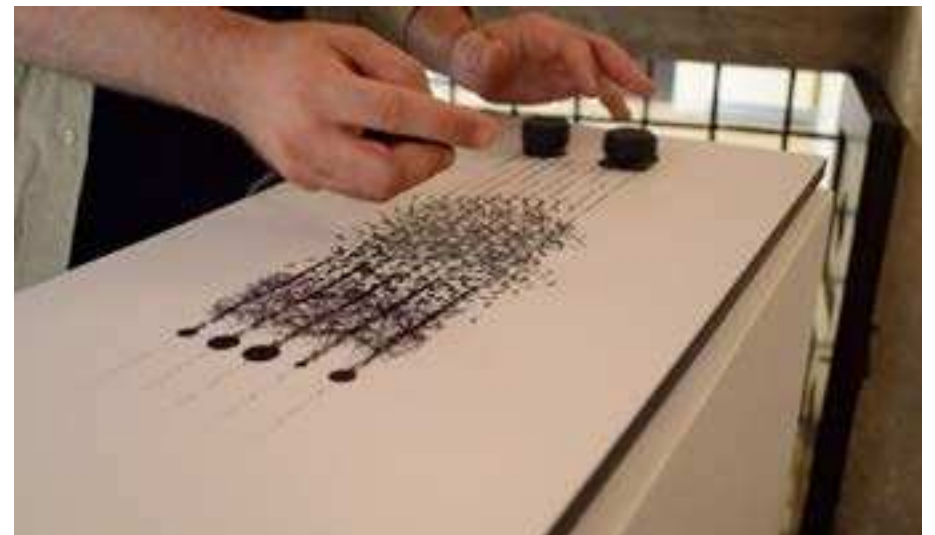
IOCOSE, *In Times of Peace*, 2014



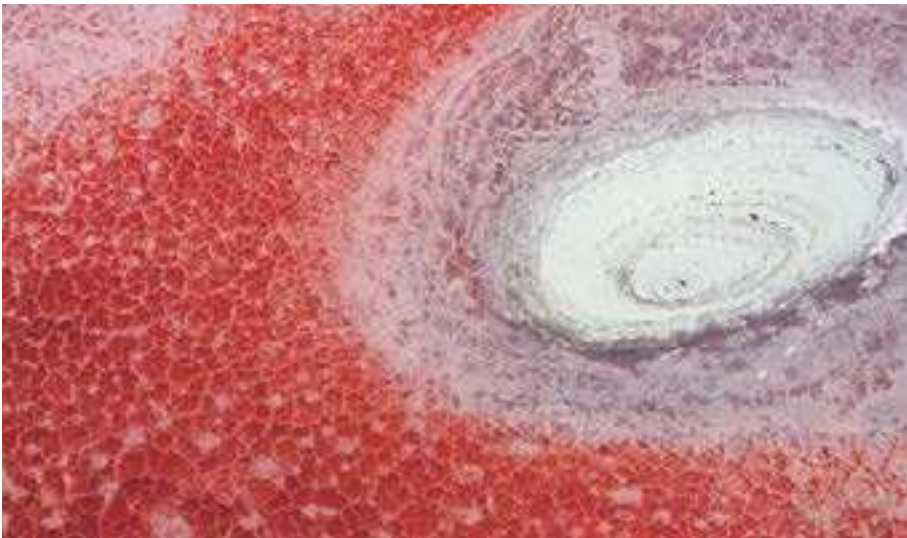
Giacomo Lion, *Nulla è impossibile*, 2015



Giovanni Mezzedimi, *HavanaLoop*, 2012



Simone Pappalardo, *Alcina*, 2015



Max Serradifalco, *Web Landscape Photography*, 2014



Daniele Spanò, *L'ora del silenzio*, 2012



Lino Strangis, *The Pied Piper*, 2015



Danilo Torre, *Oblò*, 2012

the artists and the artworks

Aye Aye

La Raggione der Perché, 2012

The installation “*La Raggione der Perché*” is inspired by Trilussa’s tales. It’s a meditation about human behavior made by animals.

The animals represent the human defects through a reversal of roles. In keeping with Trilussa’s spirit, the installation transforms the people who come in front of the projection into animals while a narrator reads the verses of the poetry. A sample of vices and defects that, after more than ninety years, still shows a picture of our society.

The Aye Aye Laboratory is a team of professional people who have worked for years in communication and interactive art for public and private clients. Aye Aye is open to experimentation and research into new forms of artistic expression and communication. Our goal is making topics more accessible with new kind of experience, interactive experience. We made interactive walk about memory, cultures and traditions, education, ecology, we experimented new interactive solutions with technology, theater, dance and literature.

Alessio Chierico

Trāṭaka, 2014

Trāṭaka is an interactive installation based on a brain-computer interface. Trāṭaka is a Sanskrit term which means “to gaze” and it refers to a meditation technique, that consists in concentrate the attention in a small object, or more commonly in a flame. This installation is composed by a device that detect brain parameters like the level of attention. Wearing this device, the user is invited to concentrate his attention on a flame placed in front of him. The level of attention detected by this system, controls an air flow located under the flame. The interaction process aims to the user engagement for increase his attention in order to put the flame out. This work create a conceptual loop: the brain activity based on the attention, brings to a meditation technique that aims to stimulate the chakra which is responsible of the brain activity itself.

Alessio Chierico was born in Perugia (Italy) in 1984. He is currently a MA candidate of the Interface Culture department in the Art and Design University Linz. Former student of the art academies Urbino, Carrara and NABA in Milan, of the courses related to the new technologies of art production, design and media theory. Chierico’s practice is combining the fields of art and design with theoretical approach. His research is based on the deconstruction of interfaces, looking for new naturalness formed by the essential properties of physical and nonphysical objects, questioning the relation between their functioning and their purpose.

Dehors/Audela

An Incurable Affection.

Digressing from the Forced Maintenance of our Body-Spirit, 2014

An installation conceived as a dialogue between generations, in connivance and coexistence of archaic and new media. Heal the wounds of the future in order to survive the past.

The curator is now the key figure in the art world. The treated is now the key figure in the society of medical-pharmacological psychosis. The incurable is the secret weapon in the hands of the society of the spectacle. The cure is the medium that attempts to execute the order. The cure is the unjustifiable end of time. The director-author care the actress-work as well as the medical care of the patient: same care, same tyranny? The doctor treating the patient as the mother care the child? Parental care extended to watchwords: Suspend (the pain or the punishment?). Stop (the ill-treatment?). The care is perhaps not have solutions.

Elisa Turco Liveri and Salvatore Insana meet up in 2010, in the space of Atelier Meta-Teatro, an avant-garde theatre space based in Rome.

The project to which they belong seeks to bring together theater, visual art, and other languages in the performative sign of ongoing research in which different artistic codes still maintain their specificity and at the same time are able to generate new forms of expression.

Under mutual interference and intervention from respective fields of action, we start from a theater in which, if the body and the action are the center of the drama, the video has physical traits, it feeds of the body and becomes an integral part of the scene.

In the last few years have produced video-theatrical works (In pieces, Into the Folds, Land(e)scapes, Strategia K), audiovisual projects research (Aperture; Recognition; Dove era che non ero), urban installation and photographs investigation (Space-time Lapse; Human, not human; Contre nature).

IOCOSE

In Times of Peace, 2014

What would a drone do if war and terror were over? We are used to think about Drones like big toys that can be used in everyday life, drones can put bomb in places too dangerous for humans, take pictures where no camera is allowed, they can check the roof of a house or deliver an order via Amazon. However, this is still a very instrumental perspective on drones, one where drones are used for a specific purpose. Instead, IOCOSE intends to ask a different question: what is the life of a drone in times of peace? What is the creative potential of a drone, a part from the things we could do with it? Indeed, drones do not have such a thing as a 'life'. But what if?

The expression 'in times of peace' is a reference to Paul Virilio's theory of logistics (in Paul Virilio and Sylvère Lotringer, *Pure War*, 1983, Semiotext(e) / Foreign Agents). Virilio, quoting a text by the Pentagon from the late '40s, notes how logistics was there defined as the procedure following which a nation's potential is transferred to its armed forces, 'in times of peace' as in times of war. But what does it mean to live 'in times of peace'? and what does it mean for a drone? This is indeed a difficult question to answer, as we have no clue on how we would live in times of peace ourselves, and how those times could possibly look like.

As 'times of peace' are becoming a strategic condition for the temporary deployment of technologies and ideologies developed in times of war, IOCOSE looks at the life of a drone in search of answers. 'In Times of Peace' is an ongoing project. So far, it has been investigated through two artworks: *Drone +* and *Drone Selfies*.

IOCOSE is a collective of four artists. The group explores possible futures and alternative interpretations of media and technologies. IOCOSE organizes actions in order to subvert ideologies, practices, processes of identification and production of meanings. It uses pranks and hoaxes as tactical means, as joyful and sound tools. The group's work has been exhibited in several institutions and festivals including the Venice Biennale, Tate Modern, FACT in Liverpool, Jeu de Paume in Paris and the Science Gallery in Dublin.

Giacomo Lion

Nulla è impossibile, 2015

The Work has been made with the secondary roman school of the Istituto Volumnia. Led by the artist, the kids have composed a story recreating a parallel new universe. A universe that reinterpretes our present world and how digital influence changes reality.

The story has two characters, Federico and Linda, who enter a painting, depicting a fantasy world, in a museum. The picture bring them into an unknown fantasy world. They are at the same time frightened and attracted.

The world depicted by the children is structured as a candy in which everything is overturned. The streets are made as piano keys and two paintings, representing the boundary between the world and the immense darkness, representing the ends of the earth: the front door and the dark design that depicts the castle of Hitler.

The story wants to be a metaphor of a confusing, gray and sad world where you can find, however, sweetness and hope. Kids can change this world since they trust in harmony and imagination.

On the basis of the story, the artist has composed the installation including a printed book with the story, two sculptures: the candy fantasy world and a magical object, a banana sound with diamonds. The artist have used the devices of the Fondazione Mondo Digitale's FabLab.

Giacomo Lion (1985) bred artistically in Bologna, where he Began collaborating with the study of architecture Cibelli Michele of Foggia, Ausenda Greek Valli Papini Baustudio of Modena and Bologna. He has exhibited in solo exhibitions at galleries and BT·F Adiacenze of Bologna, the center Nazioanle of Arts in Bucharest, at Space Onirico drills and pigneto City Open in Rome. Collaborated with Avon Celli / Woolrich in Milan and Pitti Uomo in Florence. In recent years He Has Exhibited in London for the M&C Saarchi event for the House of Peroni.

Giovanni Mezzedimi

Havanaloop, 2012

LOOP = cycle. In music a loop is a sample (sound fragment) recorded and repeated. Visual translation: repetition of the same picture. There is no beginning or end. In fact, the sound installation consists of the incessant noise of the distant cars shown in the video. They also move in a limited space by creating once again the repetition that determines the *present time*. Traffic noise becomes manifest only in the picture repeated between the two televisions, where a car is imprinted in the foreground. The frozen image of the car that is repeated in this short present time. Beyond the two screens is the future.

The distance between the plates (parallel) can reference:

EXPANSION (enlargement) of the otherwise punctiform instant-gesture (v. Linear conception - abstract mechanics of time); (Cuba: quiet - enjoyment – temporal, smiling instant) (Cuban are lords of their time) rarefied = evanescent = distanced = interspersed.

The Video at the two ends of the suspended plates may reference:

REPETITION of the same instant-gesture (the boy sitting on the wall of the Malecon moves only the head), the suspension of the time ("time is something that happens" Levinas) and how the absence of change, fixation (the only perversion is fixation – Freud = "pathological" aspect of the LOOP). So the LOOP as RAREFACTION = EXPANSION-THINNING.

Giovanni Mezzedimi is an architect with a deep passion for Cinema and the Visual arts. There have been two fundamental persons in his professional career that let him to grow: the semiologist Omar Calabrese and the the screenwriter Gilles Taurand.

At the beginning of his professional career, he soon began to devote himself to photography, video art and cinema. He has participated in numerous exhibitions curated by Omar Calabrese at important museums.

Simone Pappalardo

Alcina, 2015

The Orlando Furioso's fairy Alcina converts lovers to plants. Alcina's solitude is hidden by the beautiful nature where she is immersed. Pappalardo's artwork *ALCINA* is based on this concepts. Old radios pick up data from internet and from the context in which they are located, searching the word light on social network and transforming these data in stamps. In this manner the social network became a secure garden.

The artwork is an interactive sensitive wood platform where the sounds picked up by the radio create a surrounding rhizome.

Simone Pappalardo teaches computer music, electroacoustic, and holds a workshop on improvisation with electroacoustic instruments at the conservatory Ottorino Respighi in Latina. he began his career creating electroacoustic machines in collaboration with experimental theatre artists. he also creates musical compositions, especially for instruments (electronics or acoustics) that he designs.

Max Serradifalco

Web Landscape Photography, 2014

To love the Earth and to know how to represent it is not so usual. It is a gift that stems from a deep awareness of the time in which we are living, when indifference and the lack of respect for nature are leading us towards a no longer slow self-destruction. Many people seem to be unaware of our destiny, as if they did not know the beauties of our world, those beauties that Max Serradifalco has managed to bring back to light in a thoroughly innovative way, giving a sensitive hopeful cry for the protection of our heritage. By making use of one of the most exploited technologies of our times – the Internet and its almost monopolistic research engine, Google with its app Google Maps – Max has virtually wandered about our planet looking for places with very different features, but above all discovering a new way of observing and re-interpreting every corner of the Earth. While looking at the satellite images chosen by Max, we cannot but be enchanted by the various landscapes he has collected. At first sight, they look like abstract paintings, full of substance. This substance is nothing else but our territory and today, thanks to the new technologies and above all to the artist's work, we can feel this territory nearer and nearer, in spite of its being perhaps many kilometres away from the place where we actually live.

Max's works continue an experimental work on the use of satellites begun by Naim June Paik in the 60s and carried on by many other artists such as Douglas Davis, Kit Galloway and Sherrie Rabinowitz. These artists used distant communication to create works in which a strong interaction between the public and the artist was created. With the same media and the same desire to involve the public in a wonderful virtual journey, Max has conceived his Web Landscape Photography – an art that eliminates every space and time boundary. Through his art, Max gives us the key to discover the Earth, to learn how to love it, and to feel closer to each other. While we admire his photographs, we feel as if we lived simultaneously in many different places, from Australia to Tanzania, from Venice lagoon to Siberia, Greenland and many other sites of the six continents. Through his images, we experience a sort of telepresence, which Lev Manovich defines as the means "not of creating a new object, but of approaching it, of forming relationships, of observing what happens in a faraway place...". Faraway places which Max Serradifalco – although he had observed them by the computer and photographed them through the satellite - decided not to defile by using further digital means. He has kept the integrity of these places in their purity and magnificent uniqueness. Max's work has therefore a great and revolutionary aesthetic impact, but at the same time it strongly and courageously warns us about the earthly paradises he helps us to discover.

Daniele Spanò

L'ora del silenzio, 2012

Two inert doors animated by the projection of their image banging frantically and noisily. The artist's attempt is to give a new interpretation of the object, beyond the functional use. The door became a metaphor of our existence. The door used are old doors: a memory of the place where they have been found. On this line, memory became the principal actor of the artwork.

The intent of the artist is to perceive a known reality in new terms. An estrangement - the Russian formalist term "ostranenie" - that allows us to overcome the impoverishment of our everyday perception.

Daniele Spanò (Rome 1979) after studying set design, starts working as director and visual artist. His video-installations, commissioned by Institutions and privates, bring him to the most beautiful squares in Italy. Among the most important interventions, in 2013 "Atto Primo" in Piazza del Popolo in Rome, in 2010 "Forgetful" in Piazza Bartolomeo Romano, and "Permanent Refractions" in Piazza Colonna also in Rome in 2011, promoted by the Presidenza del Consiglio, Office of the Tourism and MiBAC. In February 2011 he's selected by the famous director and artist Takeshi Kitano to represent the artistic ferment of the city of Rome. From 2012 he is artistic advisor for the Foundation Romaeuropa. Among the last collaborations, Societas Rafael Sanzio, Andrea Baracco, Luca Brinchi and Roberta Zanardo, Veronica Cruciani.

Lino Strangis

The Pied Piper, 2015

It is a collective work in which the kids of the Benedetto Croce and Giulio Cesare's schools have been working as a real crew. The kids have been divided in different working groups according to individual characteristics, abilities and interests. The theme around which the work revolves is the tale of the *Pied Piper of Hamelin* (also known as *The Pied Piper*). The fairy tale has been chosen especially for the central role of the sound/music elements, which are able to both expel the plague of mice and to deprive the city of its greatest wealth. The artist aims at develop an experimental and artistic version of this tale, finding nonverbal solutions storytelling as well as new ways for the artistic creation.

Lino Strangis is an intermedia artist and theorist of contemporary aesthetic born in Lamezia Terme on 19/01/1981, lives and works in Rome. Already a multi-instrumentalist musician, graduated in Aesthetics, during his university studies identifies the experimental audiovisual arts as a language in the underground favorite, and after short after the Roman Empire, he held his first official staff in 2005, MLAC - Museum Laboratory of Contemporary Art of Rome, care director Simonetta Lux.

He participated in numerous international festivals in Italy and abroad. It also operates as a sound performer has founded several research projects sound and is the author of music and soundtracks for himself and other artists. Busy as a curator and organizer of events: he founded the curatorial team Le Momo Electronique and since 2011 he is artistic director of the CARMA (Centre for Applied Multimedia Art and Research). Co-author and director of intermedia Entr'acte from 2012 and is an adjunct professor at the DAMS of Roma Tre University where he teaches the digital arts lab. Creator essayist and editor of the book + dvd, The video art in the software world (published by Palladino).

Danilo Torre

Oblò, 2012

This art work could be subtitled as follows: A summer by the sea, in other words: nothing new under the sun but under water the man dies... and keeps on watching. What this installation suggests is a gaze in between, in between life and death, above and under, inside and outside the seawaters. The man who stays on the surface is unaware of the dangers hiding under water (represented by the shark) – or maybe is a false danger. The sun shines until sunrise, but when the darkness falls who knows if everything will be as we left it. Equally, on the last two portholes there is a super 8 of a naturist group on a beach (1971) - still nothing new under the sun - and some lost shoes under water... a clandestine shipwreck or a cruise ship, or the shoes simply got lost in the sea. The port hole is an opening, a circular hole of moderate size, created on a wooden surface padded by a glass plate shored up on a framework. Differently from a real window, the port hole is used when it is necessary to look outside without being exposed to hidden environmental dangers, which can be easily found in certain contexts. The videos will flow in loop and since their duration is different the port holes will never be all black together. The subjects of the videos are six: Bathers: shot on different Italian beaches, it shows us cheerful summer vacationers. Sharks: the fish which symbolizes fear in the sea, it moves its fins harmlessly but at the same time threateningly. Eye: the vision organ, represented submerged, it cross-references the sense of sight, which changes under water. Sunset: a sunset seen from the sea – from inside the water – originates a sense of fear mixed to darkness. Super

8: the sea as lived by a group of naturists from the Seventies, found in the images huddle. Shoes: shoes in the water represent dismay, loss and restitution.

Danilo Torre (Catania 1978) In 1999 starts working in the audiovisual field as an editor with the newborn digital systems. In 2003 he graduates in editing from the Centro Sperimentale di Cinematografia of Rome. He dedicates himself right away to cinema research and experimentation, working with analog techniques, Super 8 and film, achieving a position among the few Italian film-makers. Since 2007 he is carrying out research on the contemporary art world, through the themes of found-foot age, Remix and expanded cinema, working on the matter composing images and dragging the cinema out of the conventional cinematographic spaces. Therefore, he is conjugating cinema and video art in order to lead them back to a language confluence.

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