

## **Matko Mestrovic: How to Understand Media Arts, in: Zarez IX/208, 14. lipnja 2007**

The International Society for the Arts, Sciences and Technologies (ISAST) has been working for forty years. Its journal *The Leonardo Electronic Almanac* (ISSN No: 1071-4391) published by MIT Press, launched, a few weeks ago on the internet, a call for papers and artworks dealing with the emerging practice of data visualization as an immersive experience *Creative Data* (<http://leoalmanac.org/cfp/calls.asp#cd>). To the uninitiated, and very few are informed on these matters, it is hard to understand what this is about, notwithstanding the explanation given in the promotional remarks:

”Consider a simple analogy; to swim in a pool is to understand three dimensionality, interaction, spatial relationships and a macro-micro view, as well as contextual and embodied interaction. Can we swim with data?”

Two years ago the first international conference on the history of media arts, science, and technology («Refresh») was organized by the Database of Virtual Art, that was funded by German research foundation and hosted by Humboldt University. The conference was organized together with Leonardo and the second partner - the Banff New Media Institute, Canada. Oliver Grau was the chair of the conference and is the editor of the book *MediaArtHistories* (MIT Press 2007) which contains some twenty contributions of different authors discussing questions of historiography, methodology, terminology, and the role of institutions and invention in media art for which it is still not clear what it includes, to what it is related and what and whom it concerns.

But, as Grau points out in his introduction, never before has the world of images changed at such a breakneck pace as over the last few decades. Currently we are witnessing the transformation of the image into a computer-generated, virtual, and spatial entity that seemingly is capable of changing “autonomously” and representing a lifelike, visual-sensory sphere. Interactive media are changing our perception and concept of the image in the direction of a space for multisensory, interactive experience with a temporal dimension (p. 7) Digital art, following his conception, has become the art of our times, yet it has not “arrived” in the cultural institutions of our societies; it is still rarely collected, and it is not included nor supported under the auspices of art history or other academic disciplines.

Considering the current upheaval and innovations in the media sector, the societal impact and consequences of which cannot yet be predicted, the problem of social media competence is acute, going beyond mere technical skills, and is difficult to acquire if the area of historical media experience is excluded. The questions how people see and what they see are not simply physiological questions, they are complex cultural processes that are influenced by many and various social and media technological innovations. Grau, therefore, is suggesting the foundation of an image science which sets out to investigate the aesthetic reception and response to images in all areas, as an interdisciplinary subject which is in good company with the recent research area of the historical study of image techniques, the history of the science of artistic visualization, art history of scientific images, and particularly the natural-science oriented pre-occupation with images in science (p. 12).

### **Evolution versus Revolution**

Indicating the first part of the book with the title *Origin: Evolution versus Revolution*, Grau gives the floor to Peter Weibel, current President of ZKM/Center for Art and Media in Karlsruhe. Weibel explains the notion of algorithm to be understood as a decision procedure – a set of instructions to act – made up by a finite number of rules, a finite sequence of explicitly defined elementary instructions that exactly and completely describe the step by step solution to a specific problem. The most familiar implementation of an algorithm is a computer program. And a computer is itself an algorithm (p. 22).

In the “New Tendency” events of the early 1960s in Zagreb, Milan, and elsewhere, viewer participation in the construction of a work of art played a considerable role (p. 25). Images were produced by programs before the computer came along, just as interactive and virtual relationships existed between works of kinetic and op art and their viewers. In other words, he argues that it is there – and not with the availability of the computer as a technical interface – that the history of interactive and virtual art begins (p. 39). Furthermore, Weibel takes care to argue, through examples from the 1920s, of the works of Gabo, Benussi, Mussati and Marcel Duchamp, that already in that time it was possible to differentiate between the terms ‘virtual’ and ‘illusory’ (p. 31). However, this form of argumentation belongs more to a linear historical approach without considering the social context.

In attempting to dispel the commonly held belief that art merely emulates concepts that first emerge in scientific or technological contexts, Edward A. Shanken, Professor of Art History and Media Theory at the Savannah College of Art and Design, theorized that the historicization of ideas often fails to acknowledge artistic development as an originary source. His research suggested that ideas emerge simultaneously in various fields and that the cross-fertilization of those ideas presupposes that an underlying context already exists in order for seeds from one field to germinate in other. In that sense, the history of art must be revised in a way that explicitly addresses the interactions between art, science, and engineering (p. 57). Interpretive scholarship in this arena will require an interdisciplinary approach that joins together multiple methods of analysis (p. 65)

As Marshall McLuhan already stated in the early 1960s, the formative development of the “global village” emphasized the role of tactility as a part of a more general reconfiguration of the senses. In the actual practice of looking, the “optical” and the “haptic” can never be entirely separated; rather, the observer negotiates between these modes. Therefore, Erkki Huhtamo, a media archeologist from Finland, believes that any segregation of the senses from each other is out of the question, and the significance of touch depends on the cultural context. In a technological culture, forms of touch have been instrumentalized into coded relationships between humans and machine (p. 74). But the critical and theoretical exploration of this pool has only recently begun in earnest (p. 93).

### **All Senses are Included**

The actual distribution of power between art and media may be indisputable, but does this not amount to a confusion between cause and effect: it seems that the power of the factual is the yardstick for the imagination, as Dieter Daniels, Professor of Art History and Media Theory at the Leipzig Academy of Visual Design, asserts. Is it really the case that media technology and art do not find equal roots in models, sketches, and blueprints – in the imagination of things that do not yet exist – before they become concrete as apparatuses and art works?, he asks, proceeding from two cases in point, that of Alan Turing, the mathematician and the most important co-inventor of the computer, and Marcel Duchamp, perhaps the most influential

artist of the twentieth century. In their investigations, he recognises the common structural grounds between today's media practice and the design drafted by them (p.104).

Referring to Marshall McLuhan's influential interpretation of media as the externalization of bodily organs and sensory perception, Oliver Grau views new and older image media not only as conforming to the Extensions of Man, but also expanding the sphere of our projections and appearing to bring us - so the utopian idea goes - not only into contact with far-off objects telematically, but also virtually, with the psyche, with death, and with artificial life; with the most extreme moments of our existence. At the same time and in the opposite direction, these phenomena appear to be reaching out to us and to an increasing number of our senses. The pseudo-certainty of these illusions is created by the cultural technique of immersion (p. 142).

Grau thinks here of the trend towards a fusion of the observers' perception with an image medium that is moving increasingly toward the inclusion of all human senses. Digital images blur the distinction between hitherto separate genres; through the use of genetic algorithms, an image space can appear to be biologically populated and undergo evolutionary processes and changes, thereby amalgamating artificial nature and art. Berndt Lintermann created, in 1999, a phantasmagoric installation, *SonoMorphis*, that combines playful combinations with the visualization of complex forms of artificial life. This artificial creature rotates continually, enhancing the spatial effect with stereo sound, also generated by random processes (p. 152).

Phantasmagorically animated artificial life and artificial consciousness remain human projections onto human-made technology in transition, a symbolic space, which, above all, says something about the reflection of the image of the human within the development of technology. At this point, Grau explains the notion of immersion. For him, it is also today a key element for understanding the development of media, although the concept remains somewhat opaque and contradictory. Obviously, the relation between critical distance and immersion is not a simple matter of "either/or", but also in earlier and as in more recent art history, immersion is mental absorption; it is characterized by a diminished critical distance to what is represented and an emotional involvement in the same (p. 155).

The first part of the book ends with a curious contribution by Gunalan Nadarajan, from the College of Art and Architecture at Penn State University, about Al-Jazari, the author of a book from the early 13<sup>th</sup> century, who is reporting about automation in Arabic science and technology. The book is significant not only for the history of robotics and automation, but also as an important insight into the Islamic world-view of the period. The task of human creativity in Islamic thought is conceived as *referring to* and *making manifest God's creative work* rather than "showing off" one's own ability to create. Automation is thus *a manner of submission* rather than the means of control that it has come to represent in our times. Al-Jazari's work celebrates the departure from the instrumental logic of conventional robotic programming (p. 177).

### **Machine-Media-Exhibition**

The second part of the book under this title begins with an article by Edmond Couchot, Professor of Aesthetics and Visual Arts from the University of Paris 8. He describes the pregnant trajectory from automatization of the figurative technique to the autonomy of the image. It is remarkable that even though automatization increases and its functions become ever more complex, photographic, cinematic, and TV images follow a generally identical conception and perception of time and space in which the subject and the object are defined in

relation to each other, in diametrical opposition on each side of the projection plane. The subject always occupies an epistemic position as he or she remains the master of viewpoint. These techniques produce the vast majority of images, and their diffusion has created a series of perceptive habits (a perceptive *habitus*) that is all-pervasive and universally shared by image-makers and image-viewers alike, regardless of their cultural differences (p. 182).

With digital images, a radically different automatization mode appears; there is no longer any relation or direct contact with reality. Thus the image-making processes are no longer physical (material or energy-related), but “virtual”. Digital images are interactive, that is to say they can establish a form of dialogue with those who create or watch them – to the extent that interactive digital images exist only if their viewer (and their creator first) interacts with them. The position of object, image, and subject is no longer linear; through the interfaces, the subject is hybridized with the object and the image. A new feature of subjectivity is appearing which is no longer localized in a single point in space but distributed through networks and has the possibility of acting at the frontier of networks, becoming fractal. Hence, a new perceptive *habitus* emerges.

Neural networks are able to develop “cognitive strategies” and to find non-programmed solutions when they are placed in certain situations. To the physical and mechanical models of the first interactivity are now added models derived from cognitive science or biology, and, therefore, computers and the images they produce gradually acquire the characteristics of intelligent and living beings (p. 186). The capacity of human-made artifacts to simulate intelligence, life, and the evolutionary process will certainly change most human activity dramatically during this century. If every artist has always had the desire to see their creations break free from them and enjoy a life of their own in the eyes of others, that paradox is now set in terms that demand a radically different approach to the question of art (p. 190).

In the next contribution, Andreas Broeckmann, the Artistic Director of transmediale – festival for art and digital culture, Berlin, observes that today’s re-evaluation of conceptual art as a precursor of digital media art is an indication that the concepts of media art have evolved in a broad cultural environment. The notion of the “image” is receiving a wide-ranging re-evaluation in light of its production, distribution, and display in digital culture. Temporal structures within images come into view not as mere narrative dispositions, but as “programs” that need to be executed and thus actualized by the viewer (p. 196).

### **From Interactions to Alteractions**

Software was, for a long time, taken to be a neutral instrument; more recently, a growing critical and differentiated understanding of its constructedness, and of the way in which ideological presuppositions can be coded into software, has been paired with research by social historians of science and technology. Broeckmann suggests, however, that there is still a lack of deep and comprehensive research along this line.

Ryszard W. Kluszczynski, Professor of Cultural and Media Studies at Lodz University, announces deep changes in the epistemological function and ontological structure of film. The analog diegetic systems are being replaced by digital simulations, a product of synthesis technologies; instead of the images of the world, electronic cinema offers the images-as-the-world. When the two image types, the photographic and digital, appear alongside each other, the upshot is an unsettling of the relation between reality and its representation as well as between fiction and the systems constructing it. Not only do digital synthesis and

photographic film differ in their ontology, but they are also subject to different metaphysics. The deep structure of multimedia – the basic contemporary form (and institution) of communication – is essentially an intermedial system, which, in consequence, gives the multimedia phenomena the character of a dynamic palimpsest (pp. 210-212).

Louise Poissant, Dean of the Faculty of Arts at l'Université du Québec á Montreal, holds that we must locate the most prominent island, the current's flow and direction, explore possible worlds, and prepare the migration toward a universe of bits. One senses that the notion of interaction is slowly shifting toward a more refined notion of "alteraction". The notion is even more interesting since it puts the emphasis not only on the action but also on the encounter with the other, who, in the context of cyberspace, risks becoming evanescent because this "other" is not necessarily there, present on the screen. We have lost our sense of orientation: every one feels confusedly that the global rules are being changed, that at this moment in time humans are acquiring the means to reprogram themselves though they have neither the maturity nor sufficient understanding of the issues.

Christiane Paul, Curator for new media art at the Whitney Museum of American Art, New York is worried that new media art in its multiple manifestations has become an important part of contemporary artistic practice that the art world cannot afford to ignore, but accommodating this art form within the institutions is difficult. Immateriality is not a fiction but an important element of new media that has profound effects on artistic practice, cultural production and reception, as well as curatorial process. At the same time, this immateriality cannot be separated from the material components of the visual medium (pp. 251-252).

The first contribution to the third part of the book under the title Pop Meets Science, is authored by Machiko Kusahara, a media art curator and a scholar in the field of media studies. She considers that non-Western, "alternative" approaches may help us to examine what art means today. She has in mind the Japanese cultural and historical background. The idea of *Device Art*, which she favours, involves hardware specifically designed to realize a particular concept: the functional and visual design of such hardware, or a device, is an essential part of the artwork (p. 277).

Ron Burnett, President of the Emily Carr Institute of Art and Design in Vancouver, indicates the fundamental distinction between viewing a *Star Wars* movie in the cinema and playing a *Star Wars* game. He states that it is important to recognize that telepresence, immersion, and projection are also active parts of "conventional" experiences with any number of media, with the written word, and, in fact, with other kinds of game-playing, including board games. The essential difference is that digital technology enhances and extends already existing processes and desire on the part of viewers, and facilitates ever more sophisticated forms of participation and interaction. The ubiquity of digital tools and computers may mean that the role of imagination and projection as fundamental attributes of any cultural experience will be in the hands of creators and audiences. This, more than anything else, may finally broaden and deepen the interactive potential of all audiences and lead to radical changes in the cultural understanding of authorship (p. 334).

### **Societal and Ethical Implications of Nanotechnology**

Lev Manovich, Professor in the Visual Arts Department of the University of California in San Diego, draws attention to the important fact that, today, the techniques specific to all these different media can be easily combined within the metamedium of digital software. One result

of this shift from separate representational and inscription media to a computer metamedium is a proliferation of hybrid images – images that combine traces and effects of a variety of media (341). This leads us to another effect – the liberation of the techniques of a particular medium from its material- and tool-specificity.

Manovitch is concerned with historical changes in science corresponding to changes in art. Just as classical physics and mathematics fitted perfectly the notion of a highly rational and orderly universe controlled by God, the sciences of complexity seem to be appropriate in a world that on all levels – political, social, economic, and technical – appears to us to be more interconnected, more dynamic, and more complex than ever before. Having realized the limits of linear top-down models and reductionism, we are prepared to embrace a very different approach, one that looks at complexity as the source of life. Contemporary software abstraction, Manovitch believes, recognizes the essential complexity of the world (p. 346).

Timothy Lenoir, who holds the Kimberly Jenkins Chair for New Technologies and Society at Duke University in North Carolina, researches the societal and ethical implications of nanotechnology. The federal funding of nanotechnology in the United States alone is over \$3 billion, with predictions that the global marketplace for goods and services using nanotechnology will grow to \$1 trillion by 2015. Lenoir's research studies address issues related to bionanotechnology, nanomanufacturing, and nanomedicine. They are motivated by the belief first, that ethical, societal, and legal considerations should not be considered *post festum*; secondly, that face-to-face dialogue including nano researchers, scholars on societal and ethical issues, and others, including persons outside the academy, is necessary; and thirdly, that the use new media for purposes of documentation and critical debate suitable to the creation of socially responsible scientific knowledge is needed (p. 357).

It is important to understand the symbiotic-collaborative networks driving academic-industrial-entrepreneurial innovation systems, which, because of the sheer volume of interactions, leads to documentation remaining inaccessible or lost. Since almost all of it was actually born digitally, it exists in formats that are difficult to preserve and render with current technology. To address this problem, we need to engage scientists themselves in documenting and commenting on contemporary technoscience, and Lenoir engages in this effort with new tools such as data-mining techniques, Semantic Web technologies, and tools for visualizing the dynamic flow of knowledge construction (p. 377).

### **Science of the Image**

The fourth part of the book, with this title, begins with the text by Felice Frankel, from Harvard and MIT. She does not speak about the science of the image but, rather, of image in science, for the purpose of presenting exactly a phenomenon or notion, as a visual representation of scientific phenomena, and not as a part of visual art. The creation of a science image must match the rigor of scientific investigation, which requires that a minimum of interpretation be applied during its making and processing.

In nature, there are neither simple answers nor simple questions, Frankel warns. When we can better communicate the *process* of scientific investigation by inviting non-scientists to participate in scientists' thinking through more *accessible* visual language, more people will comprehend and respect the rigor of scientific methodologies and systems of evaluation. It is imperative for the public to understand the differences between the scientific thinking on the one hand and philosophical and religious discourse on the other. If we are to advance as a

society, it is the responsibility of the scientific community to develop a language to enable the public to grasp the differences and to understand that the two worlds cannot be mixed-up (p. 393).

W. J. T. Mitchell, Professor of English and Art History at the University of Chicago, holds that visual language does not exist independently. The very notion of the medium and of mediation already entails some mixture of sensory, perceptual, and semiotic elements. Visual culture is an emergent field of study that refuses to take vision for granted, that insists on problematizing, theorizing, critiquing, and historicizing the visual process as such. An important feature of visual culture has been the sense in which this topic requires an examination of resistance to purely culturalist explanations, to inquiries into the nature of visual *nature* – the sciences of optics, the intricacies of visual technology, the hardware and software of seeing. But most importantly, it puts “the visual” at the center of the analytic spotlight rather than treating it as a foundational concept that can be taken for granted. Amongst other things, it encourages us to ask why and how “the visual” became so potent as a reified concept.

Sean Cubitt, Professor of Screen and Media Studies at the University of Waikato, New Zealand, refers to the three senses of projection establishing three types of art origin: one mythological, one archeological, and one psychological. In its Buddhist and Ancient Greek versions, the beginning of art lies in projected light, whereas in our times, for Melanie Klein, the ability to project inner life onto external objects is a key and distinguishing element of human development. As a metaphor, projection has a powerful place in the way we construct our conception of humanity, from the idea of the self and its masks that recurs throughout social and anthropological reports, to the aspirations we have to beam some word of our existence out to the furthest reaches of the galaxy (pp. 408-409).

At the end of the book, Douglas Kahn, founding Director of Technocultural Studies at the University of California at Davis, attempts to compare the broad disciplinarity and interdisciplinarity of early computer arts with the true breadth of artistic practices and possibilities today, finding out that the most interesting artistic practices during the early period took place in literature and music. Barbara Maria Stafford, a researcher of the visual arts and sciences, suggests that ways to visualize the blurring, vagueness, ambiguity, equivocality, and uncertainty in all areas of scientific and cultural production are among the central issues of our time. She insists that understanding the webwork of interrelations shaping mental representation is essential for dealing intelligently with the discretely autonomous as well as the coalescent aspects of our polymodal information age (pp. 464-465).