

Shifting Media Contexts: When Scientific Labs Become Art Studios

Victoria Vesna

By declaring a blur between art and life, conceptual art has, since the 1970's fundamentally shifted relations in the broader culture by performing work outside museums and the "white box." Together with activists, earth and environmental artists conceptualists moved out of the museum boundaries to create work that engaged the public in a more direct and frequently unexpected ways and while using the museum as a space for documenting the event. With the advent of communication technologies, these boundaries were further expanded by artists working with the Internet and reaching an even broader audience without any moderation of the museum world. As technology speedily advanced, media artists became more fluid with the digital language, creating an entirely new field that at present has a particularly uneasy relationship with the museums. Many curators and other museum administrators recognize that there is something important going on that needs to be recognized, but they do not know how to incorporate this kind of work within the system that is quite rigid and established. Frequently, this type of work is easily duplicated and almost impossible to objectify, making it uninteresting for the existing gallery market system that is so intricately intertwined with the established museums. And just as interactive works become accepted and placed next to video art—in dark corners, or black boxes—media artists started discovering bio- and nanotechnology and using life-forms as a new medium and scientific labs as their studios.

Artists have always played a role in interpreting, albeit poetically, how technological and scientific advances affect society at large and our individual

perceptions of self. As the world becomes more technologically complex, with the nonstop bombardment of endless information, it is possible that this role becomes ever more important. This course is dedicated to exploring the context of science labs as the new territory media artists are moving into and engaging in a direct dialogue with scientists. Both media artists and scientists use technological tools that are almost identical, and both are used to working in interdisciplinary groups with funding issues and deadlines. This makes the language barrier that was traditionally creating a two-culture gap much easier to cross over and allow for a new hybrid culture to emerge.

Background Contexts

One could already recite a history of this highly interdisciplinary collaborative art form, mapping easily the narrative onto the technological and, in parallel, scientific innovations. Scientists have for a long time recognized the similarities in the creative process of these two seemingly opposite disciplines. For instance, physicist Werner Heisenberg (2007) believed artists' creativity arose out of the interplay between the spirit of the time and the individual. The spirit of the time is, of course, very much determined by scientific innovation and so it is natural that they go hand in hand. For media theorist Marshall McLuhan, artistic inspiration is the process of subliminally sniffing out environmental change: he believed that it is the artist who perceives alterations in people caused by a new medium, recognizes that the future is the present, and uses his/her work to prepare the groundwork for it. In fact, both artists and scientists are involved in the work of intuiting change of perception and materializing it for others to experience, and ultimately change. There are many historical examples of philosophical exchanges

between scientists and philosophers—Jiddu Krishnamurti and David Bohm’s exchanges are well known and have been influential in closing the two-culture and East–West gaps. More recently, a dialogue between psychologist Carl Jung and physicist Wolfgang Pauli have surfaced, in which we follow Pauli’s tormented obsession with the idea that certain mystical numbers can explain the world, while Jung on the other hand, looked to Pauli for the scientific explanation for his occult theories (McLuhan & Fiore, 2005).

Numerous artists have been interested and influenced by scientific developments that include famous art historical examples too long to enumerate, but it is only in very recent history that more serious, deeper collaborations have emerged between artists and scientists, and this could be attributed to both using similar computer technologies as the main tools. The relationship is not necessarily an easy one, however, complicated by the funding mechanisms of science that involve governmental and corporate entities that have well-defined interests and big monies invested. This reality of the science culture is juxtaposed to media artists, who have no established funding mechanism to speak of and have a tendency to ask uneasy questions and bring up issues that the public can usually assimilate more easily than the way scientific data is usually disseminated—as fact. Additionally, because many of these artists work in academic contexts, we frequently master the language and publish widely on issues surrounding our work, not necessarily depending on others to interpret but inviting dialogue instead.

Frank Malina is perhaps one of the first artist/scientist hybrids who introduced the concept of artists writing about their work, as scientists do. An astronautical pioneer kinetic artist, Malina founded the journal *Leonardo* in 1968 that was dedicated to exploring the triangle of art, science, and technology, which he named after the

quintessential person embodying the unification of these fields—Leonardo da Vinci. Malina made a great contribution to media arts developing as a field when he introduced the concept of publishing a peer-reviewed journal for serious artists working with technology and science. Up to that point, artists rarely wrote about their work as research, but this became increasingly necessary as the work became more technologically advanced.¹ As an artist, he moved from traditional media to mesh, string, and canvas constructions and finally to experiments with light, which led to his development of systems for kinetic painting. He was also actively involved with a group of people who were starting to experiment with art and technology in the early 1960's, Experiments in Art and Technology (E.A.T).² Since Frank Malina's death in 1981, his son Roger F. Malina has followed in his father's footsteps and contributed to significant growth of the journal. He moved the publication to Berkeley, California, positioning it in close proximity to the burgeoning Silicon Valley and expanded it to include an online publication and with the support of founding board members physicists Frank Oppenheimer and publisher Robert Maxwell.³

During the formative decades of media arts, museums rarely provided space for artists experimenting with technology. Indeed, the first venue that allowed artists to experiment and create works consistently was the Association for Computer Machinery's Special Interest Group on Graphics and Interactive Techniques (ACM SIGGRAPH), an annual computer graphics conference exhibiting the latest technological innovations. Many of the early works exhibited in this context were simply showing creative uses of new products, although from time to time really interesting work did surface. Media artists who experimented with technology in the 1980's and early 1990's frequently got

their first chance to show technologically challenging work at this conference. “Machine Culture,” a show curated in 1993 by artist Simon Penny, was a historical marker for establishing interactive artwork that used technologically sophisticated work in tandem with strong conceptual and social statements. It was at this point that the established art world started to take serious notice of interactive works that unfortunately continued to raise complex issues of ownership, credits, collection, and distribution (Prince 1993).

But, even with more venues opening their doors to this kind of work, no one has yet figured out how to establish a market, so many of us make a reliable living by teaching in academic institutions. For traditional artists, this is not the most desirable place to be, but for media artists, it happens to be an exciting context for having access to the latest technologies and information about scientific innovations. There are many examples of media artists in academic contexts who are working directly with scientists and spending quite a bit of time in labs, allowing for much deeper understanding of the subject matter and a possibility of engaging in a productive dialogue with the scientific community. In the University of California (UC) system alone, there are dozens of us artists who are professionally active and also thriving in this context where we have access to world-renowned research and scientist colleagues.⁴ In Europe, Jill Scott, co-founded with filmmaker Marille Hahne the program Artists-in-Labs at the Institute for Cultural Studies in the Arts at the Zurich University of the Arts, Zurich, Switzerland, specifically to encourage this process and to allow access to artists who are not necessarily in the privileged space of academia. In Australia, an artist / scientist group, SymbioticA was established in April 2000 by Professor Miranda Grounds, Dr. Stuart Bunt, and Oron Catts, who encouraging artists to employ biological techniques as part of

their practice. SymbioticA were the first to officially get accepted in a scientific lab to be used as studio -- at the School of Anatomy and Human Biology at The University of Western Australia in Perth. SymbioticA emerged out of recognition for a need of a physical space for this kind of art–science collaboration for the collaborative “Tissue Culture” project of Ionat Zurr and Oron Catts. They state that “by fostering critical artistic engagements with biological research SymbioticA provides a ‘greenhouse’ for developing alternatives to the commercial mainstream. The art here goes beyond the fantasy of the surrealist project; the artists are dealing with the actual wet palate of life manipulation possibilities offered by biotech.”

In parallel to the technological boom and the related emerging art form, new sciences were also taking on great momentum, likewise powered by innovations in computer technologies. The faster and more powerful machines became, the further science was able to advance in discoveries beyond the physical realm. The field of biotechnology in particular made huge advances and for a while promised to follow the Silicon Valley boom as the new venue for investment and speculation. Nanotechnology is pushing these boundaries even further by manipulating the molecular world beyond the visible realm with the help of technologically sophisticated microscopes run by computers. This promises to be a most fertile area for media artists to explore, as it is not established and is filled with more questions than answers—not to mention that it is increasingly connecting to the world of biotechnology. Even though nanotechnology is filled with rhetoric and imagery that is often based in industrial mechanical models first envisioned by Eric Drexler, the key to the field lies not in its connection to engineering

but in molecular biology (Drexler 1987). There is so little that we know about this new field, that much of it is still informed by science fiction, and that imagining the possibilities are the main activities at this stage. What better place for artists to occupy? (Gimzewski & Vesna 2003). But for now, there is much more artwork around the issues that biotechnology brings up as it is seriously affecting our reality on a daily basis. How do we move through our daily lives knowing that the human genome is decoded, that our food is genetically engineered, and that all information about us is readily available through our medical records and Social Security numbers? In 1999, media artist Eduardo Kac created a spectacle by implanting a biochip in his own body and thus becoming part of an animal database on the Web. In another piece, “Genesis,” he displays bacteria with synthetic DNA, created by him and computer users who log on to his Website, thereby shining a light on the bacteria, causing it to mutate. Later, he caused quite a stir in art and scientific communities by commissioning French scientists to help him create “Alba,” a white rabbit infused with luminescent genes from a jellyfish. The rabbit glows green in blue light. These interventions are quite common in the scientific context, but they take on quite a dramatic turn when brought out into the cultural realm (Kac 2005).

Kac’s work struck a cord in the public that was increasingly showing signs of collective anxiety in relation to the intersection of biology and technology. When life is understood as information or data, with endless debates on genetic cloning, stem cell research, gene therapy and, most recently, bioterrorism, people get confused. The news is full of contradictory responses to these issues—such as the ban on federally funded research on stem cells in 2000, which did not affect biotech corporations. An artist working with technology becomes another voice that is at least interesting to consider or

to use as an anchor for the ongoing public debates. After all, it is very close to home with our bodies, implicated particularly in the medical sense. And yet, in the media there are inherent assumptions of what constitutes a “body” and how biological “life” is defined, and political answers are separated from larger philosophical issues of how we as a society may be changing our perceptions of self.

A key component to the questioning of biotechnology is the attention paid to the ways in which biomedicine consistently recombine the medium of biomolecular systems with the materiality of digital technology. The biological and the digital domains are no longer rendered ontologically distinct, but instead are seen to inhere in each other; the biological “informs” the digital, just as the digital “corporealizes” the biological. These characteristics also point to a significant question: is the juxtaposition of “bio” and “media” (or “bio” and “tech”), not in itself a redundancy? In other words, is the “body” itself not already a medium? (Thacker 2005: 7)

These kinds of questions are extremely interesting for artists working in any medium, but they are particularly compelling for those working with technology and the media. It is not surprising that many media artists have been increasingly engaging these issues, working closer with the scientific communities and even occupying the scientific labs as studios.

We have to consider issues artists such as Kac and those working with SymbioticA face when using tools and materials of biotechnology outside of a lab

context. For instance, the recent case of Steve Kurtz, an artist and associate professor of art at the University of Buffalo and a member of the Critical Art Ensemble (CAE). The work of the CAE often played with outside-of-the-art/museum contexts to make strong social critiques frequently related to scientific research and culture. It particularly focused on placing biotechnology outside of its lab contexts and thus creating shocking actions that would blur the line between life, science, and art in ways that would generate fear and sometimes panic in the audience/public. This blur became truly critical and rocked the media arts community when, in 2003, Kurtz was investigated for bioterrorism under the U.S. Patriot Act of 2001.

You will meet Ellen Levy, an artist with a background in the sciences who approaches these issues by asking questions of taxonomy, classification, and ownership of life. She focuses on the work of artists who provoke dialogue about ethics with a critical viewpoint that is so desperately needed in the public realm.

Life forms produced through genetic engineering are necessarily a mix of nature and culture. The nature/culture distinction has often entailed legal consequences, most notably with respect to biotechnology, where patent law is premised on legally constructing a divide between them. It is important to remember that only inventions (substitute “culture” here) can be patented, not discoveries (substitute “nature”). As a result, classification decision can have specific consequences with regard to judgments of intellectual property.

Galleries and museums have responded to these issues by occasionally showing work that addresses scientific issues’ effect on our society. Although the idea of merging

contemporary art and science was played with in the art world as early as in the 1986 Venice Biennale, “Art e Scienza,” not much happened in this realm until recently. Perhaps the first large-scale attempt at this was the exhibition “Paradise Now: Picturing the Genetic Revolution” held in 2000 at the Exit Gallery in New York (for the entire text, visit <http://cat.nyu.edu/~nhj2/investnow/oped-final.html>). What became evident in this show was the difference in the quality of work of artists who were informed through the media only about these issues and those who are somehow directly in contact with scientists and usually work in academic contexts. Perhaps the most interesting conceptual statement in this exhibition was by hybrid artist/engineer Natalie Jeremijenko, who showed that plant clones are not identical in her “One Tree” art project. In the following opinion piece Jeremijenko (2000) wrote to the *New York Times*, she demonstrates clearly how risky it is to engage artists who are context providers in issues such as biotechnology:

The current exhibition at Exit Art, Paradise Now, demonstrates what is desperately needed in the current public debate on genetic information: art reviewers who can see, scientists who want to explain carefully, muddling artists who engage an opinionated public, and the transparent production of knowledge. In principal, this should not be too hard to provide. And by the way, if you are reading this line then the funder of the Paradise Now show, someone heavily invested in buoying the blind faith in science and his own biotech company is having less influence on how this exhibition is

represented in the press than I suspect. Another sign that Paradise may not yet be lost.

Theorists like Anna Munster and Carol Gigliotti raise ethical issues artists face when working with biomatter in particular, and expand the argument to any use of the animal within art—itself an artificial, human-made activity. Munster put forward the importance for artists to consider the “broader context of a humanist, ethical framework for deliberating upon the action and activities of art, its audiences, and institutions.”

Scientific research is frequently funded by large corporate interests, and the data we, the public, receive is not as pure as we may have thought in the past. There is much romanticism associated with the “Leonardo” idea of a new age of Renaissance, when artist and scientist will work together happily and be practically indistinguishable. But, if one simply maps any academic context in basic financial terms, one sees that these are radically different worlds occupying very different realms. In addition to the huge funding differences, artists and scientists are almost always located on opposite sides of campuses, making it a bit more difficult for a natural interaction to occur.

Many scientists are attracted to the idea of working with an artist to create an aesthetically pleasing visualization of their work, but rarely do they even consider actually working together on the research. A very complex interplay and dance needs to happen to balance the fine line between asking uneasy questions about funding, ethics, and safety and developing work that actually helps the scientist move the research forward. In this respect, it is critically important for artists to occupy the academic

context that allows them immediate contact at a minimum and residency in the lab as a possibility.

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¹ The International Society for the Arts, Sciences and Technology (ISAST) was formed in 1982. *Leonardo*/ISAST was created to address the rapidly expanding needs of the art, science, and technology community by participating in conferences, symposia, festivals, and awards programs, in addition to providing support for the journal *Leonardo*. In 1991, the publication grew from a quarterly to a bimonthly journal and spawned a companion volume, the *Leonardo Music Journal*, dedicated to music and the sound arts and published with an audio compact disc (CD). A conference dedicated to these topics, entitled The International Workshop on Art and Science, took place in December 1992 in the small town where da Vinci was born—the Tuscan town of Vinci, not far from Florence. The International Workshop on Art and Science was organized by the World Academy of Art and Science (WAAS) and took place in the library of the castle in the town. WAAS is an independent international organization whose members are scientists, artists, art historians, and critics. One of the participants who was unable to attend but wrote a paper for the conference proceedings was Paul Feyerabend (1996), a scientist who made interesting observations on the importance of artist–scientist interactions.

² It should be noted, however, that there was an important precedent to *Leonardo*, the short-lived journal *Transformation: Arts Communication Environment, A World Review* (1950–1952), an interdisciplinary “world review” edited by Harry Holtzman, which listed Fuller, Le Corbusier, Marcel Duchamp, and Siegfried Giedion, among others, as consulting editors. “Art, science and technology are interacting components of the total human enterprise” declared the editorial statement, which repeats in all three issues (Rheingold 1997).

³ For comprehensive documentation and history about E.A. T, see www.fondation-langlois.org/html/e/page.php?NumPage=306.

⁴ Some notable names of professional media artists in the University of California system include Lev Manovich, Adriene Jenik, and Natalie Jerejimienko (UC San Diego); Greg Niemeyer, Ken Goldberg (UC Berkeley); Lynn Hershman (UC Davis); Beatriz DaCosta; Simon Penny and Robert Nideffer (UC Irvine); Victoria Vesna, C. E. B. Reas, and Rebecca Allen (UC Los Angeles); Renee Coulombe (UC Riverside); George LeGrady, Marcos Novak, Marko Peljhan, and Lisa Jevratt (UC Santa Barbara).