Fichamento do artigo NAIMARK, Michael. Truth, Beauty, Freedom, and Money: Technology-Based Art and the Dynamics of Sustainability, 2003, disponível em www.artslab.net

A arte eletrônica vem se tornando alvo de interesse tanto pela comunidade artística, como da tecnológica e do público em geral. Hoje há diversos centros de pesquisas e laboratórios de diferentes lugares e históricos que estudam e desenvolvem essas questões.

Surgem novas oportunidades a partir do uso da tecnologia, novas formas de comercialização que criam uma nova geração de colecionadores, clientes e patrocinadores. Porém, arte tecnológica ainda é arte. O texto pretende uma discussão sobre o ambiente e as oportunidades futuras da arte tecnológica, pensando os *Arts Lab* como centros híbridos de pesquisa únicos.

"Not that long ago, it seems, a dream shared by many was on the verge of fulfillment. The dream is about connecting the world, connecting everyone to the world's information and to each other. The dream would encourage cottage industries to flourish, would level the playing field for the disadvantaged, and would empower everyone with tools for their own expression and exploration. The dream has driven the passions of artists wishing to explore new forms and researchers interested in inventing them. […]" página 05

"The dream has been around for several decades, anchored in the development of computer and communication technologies. The digital revolution began in mid-1940s with the mathematical invention of the "binary digit," the bit, by Claude Shannon and Warren Weaver, and with the conceptual inventions of "feedback" and "cybernetics" by Norbert Wiener. Also during this period, MIT hired its first artist, Gyorgy Kepes, with his vision of "The New Landscape." In the 1950s it was Arthur C. Clark and the concept of satellites, and Margaret Mead and Gregory Bateson applying cybernetic theory to society. In the 1960s it was Buckminster Fuller and his idea of "Spaceship Earth" and Marshall McLuhan and the "Global Village." In the 1970s,

Stewart Brand and the “Whole Earth” movement, and Gene Youngblood and the “Information Utility.” The electronics, computer, and communications revolution that began after World War Two continued to accelerate.”

“Art paralleled. Movements such as independent filmmaking, kinetic art, Experiments in Art and Technology (EAT), and video art were all shaping the technology as much as the technology was shaping culture.”

“Then something happened to the arts in the US in the 1980s, two things actually. First, US government social spending dwindled. The US arts community became increasingly politicized and to some extent, angry, in part because of the urgency of unaddressed social issues such as economic inequity, the homeless, and AIDS. Second, the 1980s witnessed a dramatic increase in attention to packaging. Advertising budgets skyrocketed to the point of matching or exceeding actual product costs. Not-for-profit institutions became increasingly dominated by professional marketers convinced that “being more business-like” meant more packaging. The stress was so extreme that at San Francisco’s venerable Exploratorium, known for its collective work environment, the workers unionized. Meanwhile, the electronics, computer, and communications revolution continued, and by the end of the 1980s, the cultural gap between high-tech entrepreneurs and the not-for-profit creative community had widened.”

O texto faz uma restrospectiva a partir da década de quarenta na area das descobertas que implementaram a chamada revolução digital do fim do século vinte: dígitos binarios por Claude Shannon e Warren Weaver, os conceitos de *feedback* e cibernética por Norbert Wiener, Arthur C. Clark e o conceito de satellites, na década de sessenta Buckminster Fuller e a idéia de “Spaceship Earth”. Paralelamente, nas artes têm-se movimentos como video arte, kinetic art, experimentos se utilizando da tecnologia. Assim como a tecnologia foi moldando a cultura contemporanea, a arte também foi moldando o desenvolvimento tecnológico.

"In the 1990s computers became affordable for the home and a global network infrastructure became accessible. A gold rush began. Silicon Valley turned white-hot on the world money map. A new generation that grew up with email, the Worldwide Web, and Wired Magazine simultaneously produced entrepreneurs with startup fever and artists/activists proactively engaged in a global community. The lines between commerce and creativity had blurred, and to many of us, this was good news."

"The world had become wired. Those lucky to be born in the right family, or on the right continent, now have instant, high-speed access to a global database and to each other. We've reached critical mass and there's no turning back. We can assume that for the rest of the world it's only a matter of time, albeit critical time. Get ready for some really beautiful, really unnerving, really weird new stuff.

So here we are. The technology-based revolution has arrived. It's affecting all aspects of everyday life and it's unstoppable. But everything has changed practically overnight. We have a very clear idea what doesn't work, but not much of a clue for what does."

We are in an inflection point."

A partir da década de noventa, com os computadores acessíveis a cada vez um número maior de pessoas, junto com a rede mundial de internet, tornaram o mundo conectado. Isso tem afetado o cotidiano de todos, e só tende a crescer cada vez mais.

Arte tecnológica

Este texto irá tratar sobre como laboratórios de pesquisa e centros de artes híbridos são possíveis, e para isso, primeiro tratará sobre entender conceitos básicos sobre arte e tecnologia hoje, e sua relevância na cultura e na sociedade.

"It's noteworthy that to some, "true art" can only happen in stable media, while to others, it's the opposite. Some artists have no interest in riding the wave and prefer to work in stable media, where they can concentrate quietly on what they wish to express. For other artists, once anything new and uncharted becomes decoded and

codified, it's time to move on. Stewart Brand once observed: "Creating in new media always has […] deeper possibility. You might be creating a medium itself. You might be creating creating."

"Computer Art or Digital Art stresses the use of processing in the work. Media Art and New Media Art ranges from a McLuhan-esque view that the medium affects the message, to an explicit interest in new media technologies. Art and Technology, Tech Art, or Techno-Art, is about the potential symbiosis between these two fields. Electronic Art may sound more general, but is most associated with Ars Electronica in Linz, Austria, the largest competition and festival of its kind. Cyber-Art became a fashionable term as cyber-anything became fashionable, almost always referring to the term Cyberspace from William Gibson's 1984 novel Neuromancer (rather than its actual root, Cybernetics, coined by Norbert Wiener). Art and Science, or Science Art, is the oldest and least timely of these terms, harkening back to the world before the western Industrial Revolution, when they were perceived inseparable."

Arte computacional ou arte digital enfatizam o uso do processo no trabalho, se aproximando da visão de McLuhan de que os meios afetam a mensagem. E é esse o interesse das novas tecnologias.

A ultima geracao de arte baseada em tecnologia dependia de equipamentos extensivamente caros. Já hoje, tanto os gráficos, como os projetores, computadores, memória custam muito menos e se tornaram muito mais acessiveis. Mesmo assim, esse tipo de arte ainda é uma pequena parte se comparada às exposições dos museus, galerias, colecionadores e críticos.

"The last generation of tech-based art required expensive equipment. Being a tech-based artist was often about gaining access to big computers, bright projectors, and specialized hardware. Those days are over. The power of a Silicon Graphics Reality Engine computer, the most powerful graphics computer just ten years ago, lives today in consumer toys like the Sony PlayStation Two. Video projectors once as big as refrigerators are now small enough to fit in briefcases. The cost of computer memory

is cheap enough that audio and video tapes (not to mention film) are on the road to extinction."

"Nevertheless, it's important to point out that from the perspective of the art world, tech-based art is only a minor part. Museum curators, gallery owners, collectors, and critics spend most of their time and resources on conventional art. Given how long it took photography to be accepted by the art world (almost a hundred years), and how long it took video and installation art to be accepted (ten to twenty years, depending on who's counting), this is no surprise. If anything, today's tech-based art, such as Net Art or Database Art, is being accepted as viable media for art faster than its precursors."

"An artist today making Database Art may continue to make Database Art, and after many years, perhaps the artist will become a virtuoso in Database Art. But the wave will move on, and tomorrow's New Art will be different from today's New Art. That's its nature."

The Research Connection

Nessa parte, o autor vai fazer algumas considerações positivas sobre a incorporacao de projetos artísticos em laboratórios de pesquisa.

Several years ago, as a Member of the Research Staff at Interval Research, with a business card which read "arts and media projects," I noted six reasons why art projects in a research lab have significant value to the research lab [5]:

1) art projects provide stimulation and provocation to our research community, adding meaning, entertainment, and emotional resonance to our work;

2) these projects often act as magnets to bring together unconventional combinations of skills and talents;

3) they can provide content to test tools (and even tools to test content);

4) some of these projects are means for collecting data about human behavior, both through explicit query as well as through observation;

5) these projects may lead researchers down unforeseen paths and result in new discoveries and intellectual property;

6) external deadlines and public scrutiny serve as forcing functions for decision making, rigor, and completion. They keep us street-smart. “Putting on a show” is a test bed for new ideas, a simulation of the real world.

If one swaps the words “art” and “research,” the same reasons are valid for why tech-based research has value in arts centers.

Another connection has brought together tech-based art and research: the proof of concept. Traditionally, artists make exhibits and researchers write papers. But much of the new tech-based art today is incomplete, unstable and temporary, while much of research, particularly if it’s media-related, must be experienced as much as described.

The convergence comes from opposite poles. In research labs, proofs of concept make physical something otherwise left to words alone. At places like the MIT Media Lab “the demo” is the currency for success, often in terms of funding as well as coolness among peers. In the arts, proofs of concept represent the end of an investigation that, for many tech-based artists, is enough. Any further work would be considered productization, not as interesting as exploring something else. This convergence helps to blur the line between artist and researcher.

Tech-based art is largely supported by two different kinds of institutions: art centers with an interest in new technology and research labs with an interest in art. Some are university based. Some are corporate based. Some are government funded. And because of the ubiquitousness of the technology, many tech-based artists are happy to exist entirely outside of any institutional environment. Here is a survey of my exemplars, including ones from different but relevant fields. Breadth was the highest priority.

To many, the MIT Media Lab has become the archetype by which all research labs with an art presence are compared. This hasn't always been the case.

In 1980, plans were underway for the Media Lab under its original name, the Arts and Media Technology Facility, with the goal of putting under one roof all of the relevant MIT programs, including the Center for Advanced Visual Studies (CAVS). The CAVS was MIT's art program, founded by Gyorgy Kepes in 1972. During the planning process, the CAVS community abruptly pulled out and wished to maintain its own independence. The facility's name was changed to the Media Lab (and the old name resurfaced in Karlsruhe, not by coincidence).

The result fractured the arts community at MIT and was particularly significant because it was microcosmic of what was occurring everywhere else in the US. On the one side of campus was a sparkling new, corporate-funded building full of interesting technological activity. On the other side of campus was a smaller, poorly funded group of students and Fellows determined to make art. The situation persisted well into the 1990s and is still emblematic of differences in values today.

Art has increasingly been adopted at the Media Lab for several reasons. For one thing, faculty and students were submitting their work, both art and research, to well-known art venues such as Ars Electronica and the Siggraph Artshow, where they gained visibility. Another reason is simply that the new tech-based art has become itself more visible, and accepted, to both the general public and to the Media Lab's sponsors. Perhaps most importantly, everyone involved is better at articulating and justifying why art at a place like the Media Lab has value.

The Media Lab's new satellite labs in other countries, such as the Media Lab Europe in Dublin, and the Media Lab Asia in various cities in India, are largely government funded. While corporate sponsors may require explicit justification for art making with their support, governments do not, since part of the government's responsibility is to support culture and the arts.

Similarly, a new generation of patrons interested in tech-based art is emerging that didn't exist several years earlier. If more arts patrons fund the Media Lab, more arts activity will result.

A new initiative has begun at the Media Lab to build a "Center for Art and Invention," particularly noteworthy because of its integration of the learning and education community there. As summarized by Mitch Resnick, Director of the Media Lab's Learning Group: "We are creating and designing for creating and designing."

Meanwhile, the CAVS is still alive at MIT, but with an ambiguous existence and an unresolved fate.

IAMAS

While Tokyo is clearly Japan's academic center for tech-based art, with programs at Keio University SFC, Tama Art University, and Tokyo University, several interesting experiments have occurred elsewhere. The International Academy of Media Arts and Sciences (IAMAS) is a component of the vast high-tech infrastructure built during the past decade in Gifu Prefecture in central Japan. In the early 1990s, the governor of Gifu approached Itsuo Sakane, who had recently retired from Keio (and before that the Asahi Shimbun newspaper), for guidance. Sakane told him he would only be involved if there was an arts presence. The governor agreed and proposed that he start a school. IAMAS opened in 1996 as a two-year certificate program, and expanded to a graduate program in 2001. IAMAS is also known internationally for its biannual "Interaction" art exhibitions, among the largest interactive art shows in Japan. Similar regional funding models have been used to start the Inter Medium Institute (IMI), a graduate school in Osaka and the Center for Arts and Media (YCAM) in Yamaguchi, a new media center due to open later this year.

The Media, Arts and Research Studies (MARS) Lab, located in a castle near Bonn, Germany, is an art-based unit inside the Fraunhofer Institute for Media Communication, and the Banff New Media Institute (BNMI) is a research unit inside the Banff Centre for the Arts in the Canadian Rocky Mountains. Coming from different directions, both the MARS Lab and

the BNMI are cognizant of how they must justify what they do to the larger community in which they work. Both groups are known for organizing lively seminars

The BNMI is a high-tech media facility inside the Banff Centre, Canada's premiere learning center for the arts. The BNMI is surrounded by programs in music and theater, in sculpture and ceramics, in writing, and in Aboriginal Arts. The BNMI, like much of the Banff Centre, is supported by regional and national government agencies but has been increasingly seeking in corporate support. It has been successful producing tech-based art projects, such as the award-winning "n-Cha(n)t" by David Rockeby, and presenting them to visiting scientists. "Scientists have their head turned around here. They see how this work is relevant to their research," says Sara Diamond. She sees the BNMI as being a bridge, offering an idyllic setting to gather diverse groups to gain more experience with each other.

Michael Naimark é um artista em mídias independente e pesquisador com mais de duas décadas de experiência. Tem trabalhado nos campos da cinamatografia, sistemas interativos e projeções imersivas e é mebro da Society for Visual Anthropology.

Participou da primeira equipe de design do *MIT Media Lab* em 1980 e é membro fundador *do Atari Research Lab* (1982), *Apple Multimedia Lab* (1987), e *Lucasfilm Interactive* (hoje *Lucas Learning*, 1989). Juntou-se ao *Interval Research Corporation* em 1992.

É graduado em Visual Studies and Environmental Art pelo MIT em 1979. Participa do *Board of Directors of the ZeroOne Foundation* em Palo Alto; *the Board of Advisors of the National Art and Technology Network* em Nova Iorque e *Media Lab Europe* em Dublin; e *Editorial Boards of Leonardo Electronic Almanac* e *Presence journals*, ambos do *MIT Press*.