Telomeres Project on Imminent Immortality

SIGGRAPH 2001 Art Gallery
N-Space Submission

ID: (art)n Telomeres Project on Imminent Immortality

Primary Contact:
Ellen Sandor
(art)n Laboratory
847 West Jackson Blvd.
6th Floor
Chicago, IL 60607 USA

Telomeres Interactive PHSCologram Sculpture
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title: Telomeres

artists:
Thomas J. McLeish
Ellen Sandor, Fernando Orellana, Nichole Maury, Pete Latrofa, and Janine Fron
Special thanks to Stephan Meyers, Sabrina Raaf, Steve Boyer and Barry

year: 2001

size: 4'x4'x6'

medium: Interactive PHSCologram Sculpture

materials: rotated computer interleaved Duratrans, mounted with a Kodalith linescreen to beveled plexi with interior lighting and interactive sound: GenConAD(TM) and AudioMegaTablet(TM) by SkyBoy Productions, Inc.
The structure will be composed of laminated sheet aluminum

Hardware/Software: proprietary, Softimage, SGI Indigo2, Mac, PC

Installation Requirements: 120v outlet, dim area with adequate distance for viewing the PHSColograms (6')

Interactive Sound:
The Telomeres sculpture contains interpretive sounds of a genetic environment. Genetic sounds are engaged by the audience when they step on floor mats surrounding the base of the Telomeres sculpture.

Floor Plan and Description: Telomeres Interactive PHSCologram Sculpture
The (art)n group is a core collaborative group of six artists who use new technologies to explore the future of photography and sculpture with computer graphics and virtual reality. Much like a media lab, our collective works with other artists as well as advanced scientists, animators, and post-production staff in order to create artwork which reflects the most current issues in science and technology. Over the past 16 years, the (art)n group has continued to manifest its concerns with issues of the body in technology.

The (art)n Laboratory is currently involved in collaborations with outside artists and genetic researchers for the creation of pieces on Telomeres, a part of DNA, and the extension of the human life span.

Recently genetic researchers have convened their attentions on one tiny area of complexity located at the end of the chromosome strand that, once mastered, promises near perfect relief from cancer, AIDS, and even aging. This area is where one finds what is called telomeres. Telomeres are comprised of gene-free DNA sequences which are slowly lost over time with each cell division. This natural loss of telomere material causes cellular aging and people to grow old. But telomeres do not always degrade. They can also be continuously regenerated with the help of an enzyme called telomerase.

Sometimes when this process happens, it can be sign that the body is suffering from the effects of cancer. For cancer cells are immortal, their telomeres being always restored to a constant length through the patching action of telomerase. Their natural clocks are thus reset to a specific time/age at every cellular division. A process that allows them to escape death. This endless proliferation of immortal cells overwhelms the (mortal) immune system, prematurely aging it, and often ultimately pushing life from the host. Yet, if we are able to control which groups of cells are immortal and which aren’t by turning on or off the regenerating telomerase enzyme, then we would have the power to neutralize cancer, revive the immune systems of AIDS victims, and in the least, reduce suffering and save countless lives.

What’s more, if we turn ON the telomere renewal cycle for our non-cancerous cell proteins, we could conceivably turn these into immortal cells.
This action could, at the least, double the human life span - and possibly even make individuals immortal on a cellular level. (It must be stated though that humans could, and would, still die of trauma, car accidents, etc.)

Scientists think that within just 15 years, they will be to the point of testing out this thesis in the form of a life-prolonging pill or injection. The essential effect would be to freeze the age and state of health of a person and to prolong that state indefinitely - as if threaded into a loop of time. But beyond the essential effect, this research hints to the possibility of even reversing the aging process. Thereby, if an elder person received the treatment, they would not only maintain their state of health - they will actually grow younger. Radically futuristic though this science may seem, it is tangible, invaluable, and also ethically dubious. There is no question that such malicious diseases such as cancer and AIDS should be excised, if possible, from our world. However, is age itself also a natural disease that can or should be 'cured' with a pill? Why is immortality so desirable to us? Who will receive this pill? Who will control its distribution? Is it possible that longevity will become a basic human right for future generations?

In addressing these matters in its artwork on telomeres, (art)n Laboratory is deliberately placing the most current issues in science and technology into the public sphere. Though science does stop to ponder the meaning of its experiments, those discussions are largely insular. Yet, the effects of this type of research concern our culture at large. In a refusal of passivity, the (art)n group points out the complex implications of this subject in its artworks and further broadens the critical thought base to non-scientists.

(art)n Laboratory’s work on telomeres includes both scientific and artistic visualizations of hitherto overlooked microscopic structures. Such visualizations are essential to revealing the natural processes and systems in which such structures are involved. For, without a model or structure, attempts at simultaneously conceptualizing the dimensions and function of things that exist outside of human range of vision still gives us trouble. It is dizzying and this causes our comprehension to slowly flicker in and out of focus. A visual model - be it of telomeres on a winding chromosome strand or one of our own universe - gives us something to grasp, to relate and to relate to, and to further break down. Theorist Walter Benjamin once compared the camera to a surgeon’s knife in that the camera operated similarly on the human body by seeing it in fragments and was thus able to penetrate more deeply into its true existence and reality.

With this in mind, (art)n’s recent artwork includes layers of imagery...
of the human body which bridge the gap between the microscopic telomere viewpoint to the macroscopic level of our skin covering our form. For, today the lenses that penetrate the human body include not only those of the hand-held camera but also those of the SEM - the scanning electron microscope. The body is thereby fragmented on an increasingly vast range of scales. This has profound consequences on how we perceive ourselves. Where do our physical and emotional identities lay? Do they lay in our visage, our body form, our life experiences, or more in our genes? As both our DNA and our skin (through plastic surgery) become increasingly malleable, the allure of therapeutically altering them has grown exponentially. The meticulous mapping of our genetic structure seems reasonably justified if potential cures for destructive diseases and human suffering are the result. But what of classifying wrinkling and aging as causes of unnecessary suffering? Are we only becoming more vulnerable to vain temptations of modification by science? Or, are we finally - in bold and courageous steps - wrestling charge of our species evolution away from Mother Nature?

It is unlikely that art and science may ever render the human mind and body fully transparent and/or infinitely alterable. Interestingly, often what drives both scientists and artists is that as soon as any previously invisible world such as that of the telomeres is discovered and modeled, invariably it unfolds to reveal yet another world inside - both alien and familiar. The result being that with every demystification, there is a concurrent mystification of things. What’s more, there is never one correct interpretation of each model as reality is compound and allows for many synchronous shades of factuality. A single cure for cancer, for AIDS, and for aging is enormously intriguing. (art)n Laboratory’s work not only educates through its groundbreaking visualizations of telomeres but, more importantly, it also raises social concerns over how this cure will effect the quality of our lives and that of future, immortal generations.
On Imminent Immortality

In this end of millennium era, the phenomena of gene therapy, bio-engineering, designer babies, and cloning have captured the concerned attention of scientists, scholars, and artists alike. Yet, these fascinating issues are precursors to only more monumental debates which recent advances in DNA therapy will soon unleash. What is this cutting edge research in DNA about? In one word: Immortality. Currently, genetic researchers have converged their attentions on one discrete area at the end of the human chromosome strand. This area is where one finds telomeres. These gene-free DNA sequences are fractionated over time with each cell division. The loss of telomere material is what causes cellular aging and people to grow old. But telomeres do not always degrade. They can also be regenerated with the help of an enzyme called telomerase. If scientists succeed in their current research on controlling the regenerating telomerase enzyme, they will have the remarkable power to not only neutralize cancer and revive the immune systems of AIDS victims, but potentially make individuals immortal on a cellular level. The result of this might be to double the human life span - or even render humans literally immortal (though not indestructible). Researchers think that within just 15 years, they will be to the point of testing out this thesis in the form of a life-prolonging pill or injection. (Trials have already been successful in vitro.) The essential effect would be to freeze the age and state of health of a person and to prolong that state indefinitely - as if threaded into a loop of time...But beyond this essential effect, their research hints to the possibility of even reversing the aging process. Radically futuristic though this science may seem, it is tangible, invaluable, and also ethically dubious. Who will receive this pill? Who will control its distribution? Will longevity become a basic human right? Why is immortality so desirable to us? Should the everliving? be permitted to procreate? How would consciousness be effected by the condition of immortality? The meticulous reverse-engineering of our genetic structure seems reasonably justified if potential cures for fatal disease and human suffering are the result. But can wrinkling and aging be classified causes of unnecessary suffering? In addressing such matters in its recent artwork, (art)n Laboratory (an artist's collaborative group and media lab based in Chicago) places the most current issues of science and technology into the public arena. Though science does stop to ponder the meaning of it?s experiments, those discussions are largely insular. Yet, the effects of this type of research concerns our society at large. In a refusal of passivity, the (art)n group points out the complex implications of this subject in its artworks and further broadens the critical thought base to non-scientists. Thanks the talent and sophistication of the scientists and mathematicians of note with whom (art)n has collaborated and that of its own members, this group of artists has spawned a body of work which is both invaluable for its pioneering aesthetic as well as the historical importance of the scientific concerns and discoveries first treated by them.

Essay : Telomeres Interactive PHSCologram Sculpture
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Thomas McLeish

Thomas McLeish spends his life pursuing the assimilation of art, architecture, and technology to enrich our understanding of the human environment. “Townhouse Revisited”, a piece realized with the aid of (Art)n, was exhibited in the Art Gallery at SIGGRAPH 2000. It is an interactive sculpture using PHSColograms and sound to explore domestic life in a conceptual house. The model is a result of my award winning entry into the “Townhouse Revisited” competition (1999) which has been exhibited at the Graham Foundation in Chicago, as well as the University of Illinois. He has consequently collaborated with (art)n on a series of provocative installations 1999-2001. The turn of the Millennium was spent in Malta as a guest of the government assisting with the construction and installation of John David Mooney’s series of light sculptures for their Millennium celebration. He spent 1995-2000 as an architect and visualization specialist under the tutelage of Helmut Jahn at the Chicago based architectural firm of Murphy/Jahn. There he played a key role in assembling and creating presentations for award winning architecture, ranging from airports in Cologne and Bangkok, to a private museum in Buenos Aires. His work has been published in "The New York Times", "Digital Architecture" and several books on the work of Murphy/Jahn.

Ellen Sandor & (art)n Laboratory 2001

Ellen Sandor, an MFA graduate from The School of the Art Institute of Chicago, is the founding artist and director of (art)n. In 1983, in Chicago, she produced the first large scale, digitally immersive environment entitled PHSCologram ‘83. This compelling installation opened a dialogue in new media circles for what would later become known in the digital era as 'Virtual Reality.' For, Sandor’s work not only catalyzed the evolution of photographic documentation into time-based environments, it sketched the potential for fine arts applications of virtual reality. Ellen Sandor is an Adjunct Associate Professor at the School of Art & Design at the University of Illinois at Chicago. She has co-authored juried papers and lectured by invitation in Europe, Canada and the United States.

(art)n, is Ellen Sandor’s Chicago-based collaborative group of artists who are dedicated to the aesthetic pursuits of imaging science and technology. (art)n’s works were first shown at SIGGRAPH in 1985. (art)n is currently comprised of Ellen Sandor, Fernando Orellana, Nichole Maury, Pete Latrofa and Janine Fron. (art)n collaborates with outside artists and scientists including Chuck Csuri, Chris Landreth, Ed Paschke, Karl Wirsum, Miroslaw Rogala, TJ McLeish, NASA, and the Scripps Research Institute. These collaborations have spawned a body of work which is unparalleled for its pioneering aesthetic and historical importance. Commissioned installations for 2001 include “Battle of Midway Monument” for Midway Airport in Chicago.


Group Bios : Telomeres Interactive PHSCologram Sculpture