



TOWARDS A COLLABORATIVE CULTURE

by Susan Martin

Artists have always been on the leading edge in presenting new ideas to the general public and in shifting perception of the collective reality. Like scientists, they set in motion processes that can radically alter culture and society and bring about new meaning. The intersection of art and science is nowhere more striking than in new media where artists working with computers derive inspiration from the same technological discoveries that drive much of contemporary science. Through this common language new discoveries and collaborations are changing the way traditional disciplines relate and interact—dispelling decades of misconception about the rigid division of “two cultures” put forth by C.P. Snow in the late 1950s. Based on mutual respect and dialogue, this union of opposites creates an opportunity for the emergence of a third culture that explores the uncharted intellectual terrain among the arts, the humanities, and the sciences.

“Zero@wavefunction: nano dreams and nightmares,” a collaboration between Victoria Vesna, chair of the Department of Design | Media Arts (DI MA), and James Gimzewski, a leading expert on nanotechnology and a professor in UCLA’s Department of Chemistry and Biochemistry, is just such an exploration. Negotiating the gap between the canon of rationality and the fluid poetic of art, Gimzewski and Vesna set about to make nanoscience more accessible and understandable to the broader public. A true collaboration based on interest in each other’s worlds, “Zero@wavefunction” is both an interactive website (<http://notime.arts.ucla.edu/zerowave>)



Left to right: Andrew Pelling (physical chemistry student), professor Victoria Vesna, Pete Conolly '98 (director of DI MA's Creative Technology Lab), professor James Gimzewski, and Cathy Skibo (physical chemistry student) looking at the ultra high vacuum chamber that houses a scanning tunneling microscope, photo by Patricia Williams

and an installation projected on a monumental scale based on the way a nanoscientist manipulates individual molecules (billion of times smaller than common human experience). The project premiered at the Biennial of Electronic Art in Australia and was recently chosen as one of seven collaborative works to be presented at “ArtSci2002: New Dimensions in Collaboration,” an international symposium in December to be held at the American Museum of Natural History and the City University of New York Graduate Center.

Vesna and Gimzewski began their dialogue only last year as part of a conference—“From Networks to Nanosystems”—organized by UC Digital Arts Research Network and co-sponsored by SINAPSE (Center for Social Interfaces and Networks Advanced Programmable Simulations

and Environments) (<http://sinapse.arts.ucla.edu>). Gimzewski, at the leading edge of nanoscience, was fascinated by the resulting discussion.

“I had just left IBM research and suddenly was able to interact with new ideas and culture,” he says. “I could see new territory and wanted to explore it.”

Nanoscience, described in the “Zero@wavefunction” project proposal as “a brave new world within [which] there are dangers and immense opportunities,” starts at the atomic level and extends humankind’s control of matter over ever-increasing levels of complexity up to biological, materials, electronic, and mechanical systems.

For Vesna, too—whose work has been concerned with experiments that connect networked environments to physical public spaces—the meeting was an important one. “It was not long

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before I was a frequent visitor to his lab and he to my studio," Vesna says.

It was from these visits that she realized the importance of making the work of the California NanoSystems Institute (CNSI) (<http://www.cnsi.ucla.edu>) at UCLA accessible to the general public.

Through their collaboration, Vesna and Gimzewski found parallels between media arts and nanoscience. "We have very similar concepts of breaking down traditional academic boxes," says Gimzewski. And Vesna adds, "both are emerging disciplines, both promote unusual connections and are outside the established systems of thought, and both are experiencing growing pains and constant redefinition." Working closely together to pose questions that neither would have considered alone while conceptualizing and developing the CNSI website and "Zero@wavefunction," their project combines rigorous scientific thought with the critical approach of visual culture to create a rich alternative narrative that elucidates the complex behavior of molecules, while creating a completely new interactive world.

Gimzewski and Vesna's encounter under the auspices of SINAPSE is but one example of the synergy currently at play on campus between the arts and science. SINAPSE, established last year with the strong support of then dean, now executive vice chancellor Daniel Neuman, is co-directed by media artist Vesna, scientist Gimzewski, and humanist Katherine Hayles. Hayles, a professor in the departments of English and Design | Media Arts, proposes a paradigm for the research and educational environment of the future that reflects the fundamental changes in society spurred



An overview of the installation entitled "database," an electronic reading device by Adriana de Souza e Silva and Fabian Winkler



A demonstration of "Zero@wavefunction: nano dreams and nightmares," showing how human shadows interact with virtual objects, photo by Pete Conolly '98

by information technology. Founded to foster an emerging culture that encourages exploration and relationships beyond traditional disciplines, SINAPSE's visionary mission emphasizes collaboration and communication as a way to spark advances in yet unknown directions.

"The new technology lends itself very well to collaboration," says Hayles. "Since it is capable of accepting input in many different forms—text, graphics, sound, animation, etc.—it is ideal for collaboration between artists and scholars coming from different traditions."

Fully embracing digital media to bring the perspectives of disparate disciplines together, SINAPSE proposes deeper and more radical links than the "interdisciplinary" approach: "Exposure and experimentation by faculty, staff, and students about living in an information age," says the mandate, "encourage a culture of digital adventure."

This new synergy builds an infrastructure powered by advanced communications technologies and institutes programs that include internal fellowships for faculty and graduate

students, along with coordinating grants. SINAPSE also serves as a communications center for issues relating to cross-discipline collaborations and research. The enterprise addresses head-on the asymmetry on campus between the arts and humanities on the one hand, and the sciences on the other—striving to nurture the potential for growth and opportunity in the collaborative process.

"Coming from a textually-based discipline, the collaborative process is extremely important in breaking new ground," says Hayles. "The result is often surprising and more sophisticated because the teamwork pushes each partner in new directions." When Hayles and Bill Seaman, a former professor in DIMA, taught a graduate seminar last winter that combined students from both the DIMA and literary departments, they saw first-hand the synergy that is possible among teams of students. One project from that seminar—entitled "database"—was presented at an international art conference in Brazil, and was awarded first prize by the Association for Computer Aided Design in Architecture (ACADIA) at their

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annual conference in October. Another will be published in CD-ROM form. In addition, DIMA is hosting the Electronic Literature Organization that promotes this type of interaction and has helped organize a national conference on this theme.

For Ruth West, a graduate of DIMA with a deep love of a painting and a prior degree in microbiology and molecular genetics, art and science had always been disconnected. After a career in healthcare at UCLA's School of Medicine and Cedars-Sinai Medical Center, her parallel life working as a painter in her studio led her to enroll in UCLA's Department of Design | Media Arts. West's understanding of art and science as different approaches to the same thing—the production of knowledge—has inspired her inquiry into the creation of a common ground between the two disciplines.

In the graduate seminar "Genetics and Culture: From Molecular Music to Transgenic Art," West drew upon her knowledge of genetics and visual culture to foster this hybrid space with students from such diverse backgrounds as world arts and cultures, molecular biology, design, immunology, architecture, and psychology. To find common ground in this heterogeneous group, West approached the material from themes and metaphors in the world of art and on the frontiers of science. The resulting dialogue among the students—looking from both perspectives towards an understanding greater than that contained in any one discipline—was manifested in projects informed by flexible thinking and non-linear leaps of imagination. (<http://www.viewingspace.com/genetics-culture.htm>).

This collective experience generated works of staggering originality. Installations, sculpture, computer graphics, ceramic tiles, mosaic, genetic calligraphy, collage, and even performance—all were used to express themes ranging from a genetic utopia and the meaning of Chinese characters to the relationship between the sexes and questions relating to genetic engineering and the meaning of being "normal." Initially offered in the School of the Arts and Architecture, this spring West will be teaching the genetics and culture seminar in the biotechnology and society general education cluster where she is a teaching fellow—another indication of the reciprocal interest of the scientific community in the language of art.

Creating a context for the interaction of art and science is a natural outgrowth of the activities of the University. For Vesna as an artist, the imperative to sustain and expand this dialogue with science is at the heart of the continuing growth and vitality of the university. "With so many huge paradigm shifts being introduced by scientific innovations—and at such

speed," she says, "it is more important than ever for artists to envision possibilities, pose difficult questions, and help understand the deeper meaning of these discoveries."

Whatever pitfalls may arise in this burgeoning interaction between art and science, digital information technology is unquestionably building bridges and fostering an academic climate that values genuine collaboration, "not simply," Hayles says, "a serial progression of talks where each speaker presents his or her ideas without engaging those of others." The willingness to think outside the box engendered by the collaborative climate makes imagination and intuition operating principles rather than defenses between intellectual boundaries. This, in turn, has created a dynamic and provocative exchange—an exchange that Gimzewski hails as "revolutionary versus evolutionary."

Susan Martin is a writer and editor, and has worked on numerous books about contemporary art and popular culture. She lives up a dirt road in New Mexico.



From "The Trajectory of Forgetting" (2002), Ruth West. The left portion of the image is composed of unaltered images from the database; the right portion is comprised of images that have been altered by interaction with viewers.