

How can art and design institutions bridge the gap between the academic environment and the "real world?" How can these institutions have an active role in the community at large? How can technology be used to facilitate collaborative projects in higher education? What are the promises and perils of integrating art and technology for collective action?

Innovative educators from several disciplines, including media and sound arts, architecture, and performance/installation discuss successful collaborations between students and cultural institutions, industry, other schools, and professional artists. Among the arts and education projects discussed: a student-designed virtual tour of a museum, a design collaboration that is taking place on the Web and in a city subway system, a collaborative-architecture design studio, and collaborations with Sun Microsystems, NASA, and internationally renowned artists including Robert Ashley, Jenny Holzer, and Guillermo Gomez-Pena.

The World Wide Web as a Medium for Improving Student Collaborative Learning

Thomas Fowler

Thomas Fowler has served as director of minority educational affairs at Cornell University and worked professionally as a designer for Davis Brody and Associates Architects in New York City and Hartman & Cox Architects in Washington, DC. He has authored several papers, including: "The World Wide Web as New Models for Capturing the Design Process," "Collaborative Learning Using Technology: Issues and Approaches," and "The Role of African-Americans in the Social & Built Environment." He has served as chair for two senior project committees and has served on 15 masters committees. In addition, he is a member of the American Institute of Architects, a design reviewer for Web Course in a Box (a software application), and an active participant in Educom's National Learning Instructional Initiative and Partners for Distributed Learning (Member of Standards for Indexing And Searching Large Digital Data Set Committee). He has collaborated with Sun Microsystems and NASA

A misconception of the Web is that it is a medium (Turkle, "Life On The Screen") that has revolutionized teaching and is most effective when used as a communication mechanism between the "learner and the teacher" (where the teacher and learner are in separate locations). Revolutionary aspects of the Web have more to do with changing the way students learn (as opposed to teaching). There are also pedagogical issues that should be addressed regarding the vision of how content should be configured for the Web environments to provide the most stimulating frame for student collaborative learning.

Regardless of the teacher-to-learner relationship, well-conceived content for the Web medium should:

- Capture the process of learning.
- Provide an inclusive environment for all students' voices to be heard.
- Create an environment for continuous dialogue.
- Establish a learning environment that evolves based on the "living and breathing" information from learners
- Develop content that is structured to adhere to medium framework rules of thumb: fast (pages between 30-50 kb), fluid (clear interface), friendly (graphic balance), fun (some relief from content).

Two diverse examples of Web content configuration are:

- 1 Development of a Collaborative Interactive Design Studio (CIDS, suntzu.larc.calpoly.edu/cids/) to supplement the in-person classroom student learning for a third-year architecture design studio.
- 2 Development of a Web distance-education course, where the Web medium is the only linkage between "teachers to learners" and "learners to learners."

The Web is exposed to the students as a medium to use in the design process. The Web pages become the meeting place where students, and others from outside the classroom collaborate and provide reactions to work in progress. Web page templates are provided to students to allow for easy configuration of design projects. Web tools provided help students capture project critiques.

Panelists

Mary Murphy

The Chicago Cultural Center

Thomas Fowler, IV

California Polytechnic State University

Neil B. Rolnick and Branda Miller

Rensselaer Polytechnic Institute

Silicon Graphics Indy Computers provide the means to generate VRML interactive computer models (online interaction and feedback during the developmental stages), and Power PCs provide graphic manipulation software for Web page configuration. Multiple venues of discussion (on-line reading analysis, critiques, weekly journals), provide a wonderful stimulus to classroom sessions.

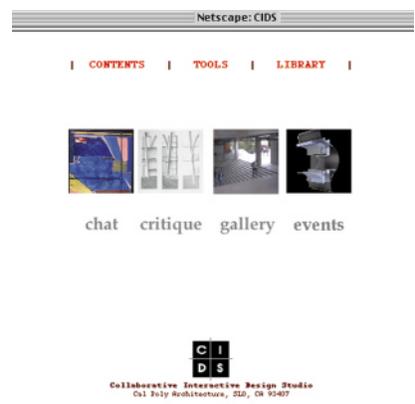
standard professional collaborations are difficult. The Web allows invited and uninvited participation from outside the university in discussions and critiques. Early collaborations with NASA and Sun Microsystems are providing additional tools to make online exchanges more interactive.

Effective use of the Web to improve collaborations is not a panacea for



The ideas for design studio projects evolve out of working with different groups of students each quarter, and each quarter builds on the previous quarter's acquired archive of information. Projects often include both a Web presence and a parallel analog mode (physical models, drawings, etc.). These two medium extremes complement each other to provide students a diverse range of "other ways of seeing" the design process. Due to California Polytechnic State University, San Luis Obispo's isolation (four hours from both San Francisco and Los Angeles),

improving collaborative learning. Having a broader vision of the relationship between this medium and configured content is important to simulate learning. The Web does allow for introduction of real-world issues in a "living and breathing" manner into the academic learning environment. Students in the classroom start to understand that the world outside of the classroom is not constrained by the structure of a syllabus. And students connected via the Web understand that there are effective means of communicating that don't require in-person discussion.



Collaborations in Higher Education

Info-Myths and Dreams: Art, Technology, and Collective Action

Branda Miller and Neil Rolnick

An internationally recognized video artist, educator and media activist, Branda Miller focuses on the relationship among art, technology and community, and experiments with media to support independent voices, explore new visions, and stimulate critical perspectives. Miller's media art works have been screened at festivals, museums, and exhibitions; broadcast nationally and internationally; and used extensively in community organizing and education.

Professor Miller is recognized for her development of media literacy and community education projects using electronic arts and media production. For the past four summers, she has led workshops for the Five College Institute for Media Literacy. She has collaborated with several community and youth groups around the country in empowerment video workshops, including the award-winning "We Have the Force," "The Birth of a Candy Bar," "talkin' 'bout droppin' out!!!," and "What's Up?" She is also co-editor of the manual *TV EYE: Media Analysis and Independent Production*, distributed by Boston Film Video Foundation. Her media activist projects include producing/editing "Art of the State/State of the Art?," "National Arts Emergency," and "Cori: A Struggle for Life." She developed free distribution, with accompanying curricular support, as part of the design for using media art as an educational tool for community empowerment.

Neil Rolnick has been active as a composer and performer of computer music since the late 1970s. He performs on a portable computer music system and concertizes regularly in a wide variety of contexts throughout North America and Europe. He has

appeared as featured soloist with ensembles such as Dogs of Desire, The California E.A.R. Unit, Relâche, Gerard Schwarz's Music Today Ensemble, Musical Elements, Gamelan Son of Lion, and the Albany Symphony Orchestra. Current compositional projects include an evening of music for voices and amplified chamber orchestra for Dogs of Desire, which is to be recorded and released by Albany Records in late 1997; a series of new works for improvising chamber ensemble; and a series of new solo performance pieces.

Rolnick studied musical composition with Darius Milhaud at the Aspen Music School, with John Adams and Andrew Imbrie at the San Francisco Conservatory, and with Richard Felciano and Olly Wilson at the University of California at Berkeley, where he earned a PhD in musical composition in 1980. He studied computer music at Stanford University with John Chowning and James A. Moorer, and worked as a researcher at IRCAM in Paris from 1977 to 1979. At Rensselaer Polytechnic Institute, Rolnick has directed creation of a unique Master of Fine Arts program in electronic arts, which focuses on a truly integrated approach to time-based art and performance with the electronic media.

Art practice, integrally connected to cultural and social action and experience, is the creative avenue for critical awareness, independent and collective action. It lets us reflect upon the possibilities of our bodies, communities, and the space we exist in, and explore our relationship to history and time. Computer technologies have produced revolutionary change in the way we experience our bodies in space and in time, construct our identities, and connect to the world outside our horizon.

With digitized fluidity, image, sound and text are woven into hybrid fantasies.

The iEAR Studios, always committed to hybrid art-making in the advanced technological landscape of Rensselaer Polytechnic Institute, has produced many collaborative projects that offer aesthetically and critically challenging models for bringing together art and technology, education and community. These projects explore new possibilities in diverse forms of electronic media, while examining the political and social manifestations of these explosive technological accomplishments.

How does the computer promise to offer more information? How is that information constructed and delivered? Who has the power not only of transmission but of real "mass" distribution? How are we educated as the receivers of that information to critically analyze and apply this information to meet our needs, not only as consumers but as empowered citizens, artists, and dreamers?

We refer to a range of works, including iEAR collaborations with internationally renowned artists including Robert Ashley, Jenny Holzer, Guillermo Gomez-Pena, Alvin Lucier, Muntadas, Tony Oursler, Pauline Oliveros and Ione; public arts events and arts and education projects located in the historic "birthplace of the Industrial Revolution" in Troy, New York; and multimedia performances and innovative experimentation with interactivity, as we share and critique the "Info-Myths and Dreams" of the Computer Age, and promises and perils of integrating art and technology for collective action.

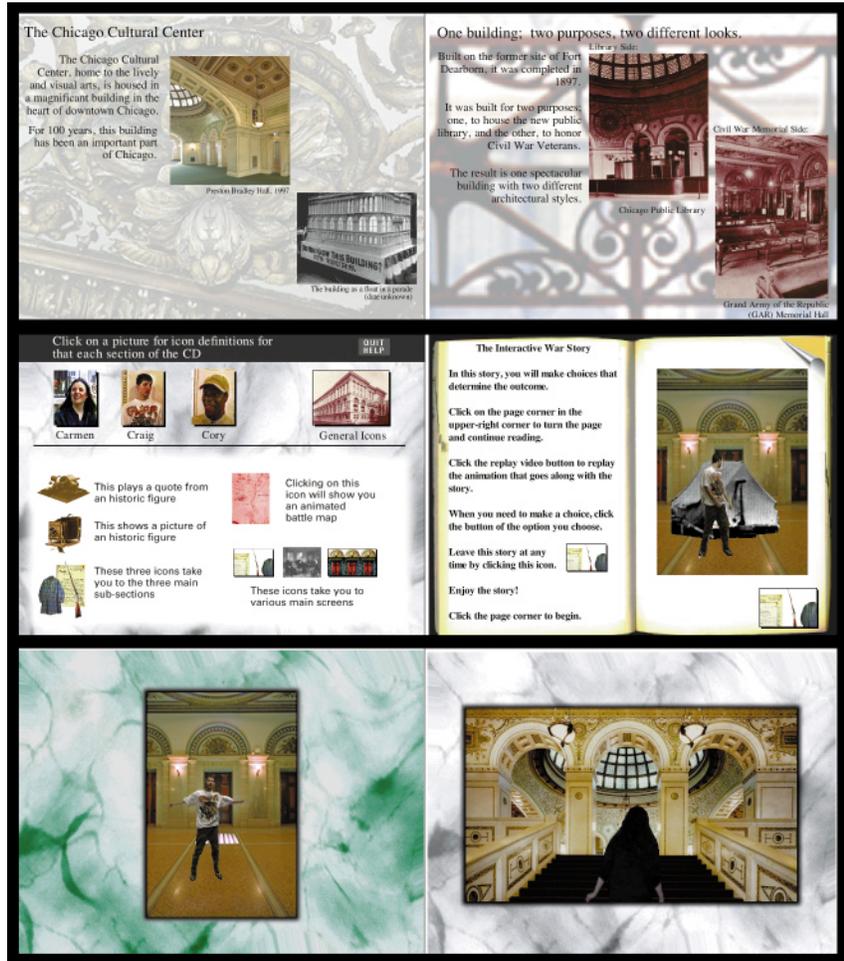
The Great Chicago Cultural Center Adventure: An Interactive Tour of the Cultural Center

Andrea Polli and Mary Murphy

Andrea Polli is an electronic media installation and performance artist who creates public performances and installations with aural and visual components. Her live system for musical improvisation between a human performer and a computer was presented at the Mathematical Association of America/American Mathematical Society Joint Conference at the Ferienkurze für Neue Musik in Darmstadt, Germany. She has recently received a Chicago Artist's Assistance grant for her current work, "Virtual Space and the Construction of Memory," published in Leonardo, April 1998, and presented at the 1998 Imagina Conference in Monaco.

She has worked internationally in performance projects, most recently with the artists' groups SEL (Super Ex Libris) and WALK, on a large-scale installation and performance project in a 200-year-old observatory in Vilnius, Lithuania. As a member of Artemisia Gallery, she has organized several national and international exhibitions: Ada, a celebration of women interactive artists, and Meme Me: Identity in the Replication Age, a project in conjunction with ISEA97 (the International Symposium of Electronic Art). She is a paper reviewer for the SIGCHI conference and a member of the American Institute of Graphic Artists and the American Center for Design.

As chair of the Robert Morris College Institute of Art and Design, Polli has helped to develop innovative curriculum for electronic art. She has created collaborative environments for students, faculty, and artists both in and out of the lab. Her most successful collaborations include The Great Chicago



Cultural Center Adventure, an interactive CD-ROM created by students of Robert Morris College with the Chicago Cultural Center, and Live live! a public art project with RMC students, The Museum of Contemporary Art, and the Chicago Transit Authority (www2.rmcil.edu/live).

Mary Murphy is the education director of the Chicago Cultural Center, one of the most diverse and innovative centers for the arts in Chicago. The center presents hundreds of free public events each year. The education department serves the entire Chicago Public School system, as well as hundreds of private schools in the Chicago area. It is well known for its cutting-

edge ideas and programs. Murphy is also an active freelance arts writer and teacher who has taught at the School of the Art Institute of Chicago, and she is a board member of Randolph Street Gallery.

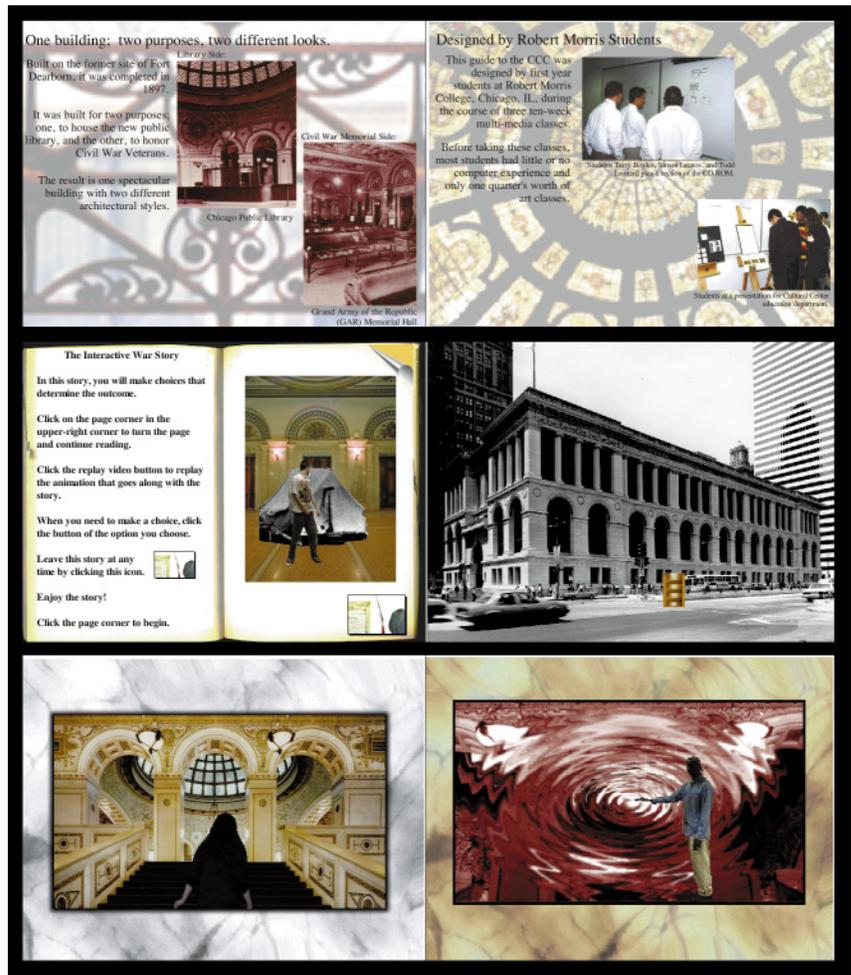
In February 1997, the Robert Morris College Design Institute and the Chicago Cultural Center Educational Department began a city-wide educational project utilizing interactive technology. The RMC Design Institute has three areas of concentration: Graphic Art, Computer Aided Drafting, and Multimedia and Computer Imaging. The focused study of the Multimedia and Computer Imaging concentration guides exploration into every aspect of

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the process of designing for interactive multimedia. Students participate in initial planning and research, identifying the target group(s) for the specific project, and creating storyboards and flow-charts of interactivity, which are reviewed and revised based on design requirements and aesthetic concerns. In the lab, students then create the interactive work in design teams.

After a model of the project is created, the students participate in user-testing research. The model-testing project is essential to give students a full understanding of the multimedia design process and to assure the effectiveness of the finished product. It is during the testing process that students explore design theory and practice. The Design Institute also hopes that follow-on research will help to further the study of interaction design as a new design discipline.

A team of two instructors in the Design Department selected a class of 15 RMC Multimedia and Computer Imaging Associate Degree students to participate in The Great Chicago Cultural Center Adventure, a collaborative design learning and production process. Working closely with Mary Murphy of the Cultural Center's Education Department before the project began, they defined the goals, basic content, and parameters of the project. The project quickly grew. An RMC Computer-Aided Drafting instructor brought students into the project to help with planning and publicity. A video instructor created a video documentary of the Chicago Cultural Center, and the graphic art area designed print material for the project.



Project Overview and Goal

Produce an interactive computer application that can be written to a CD-ROM, which will serve as an introduction for school children to the Chicago Cultural Center. The final goal is a CD-ROM that will increase students' enjoyment and appreciation of the history and architecture of the Chicago Cultural Center and the role it plays in the cultural life of Chicago.

Much of the information is based on the existing curriculum tool developed by the Education Department. The narrative focuses on three teenagers who sneak into the Cultural Center. Each character represents one of three main sections of the CD-ROM:

- 1** Knowledge, which focuses on the half of the Cultural Center that was originally built to house the Chicago Public Library. Topics include literary history, the Chicago Public Library, and the different things the space has been used for in the past 100 years, including current cultural activities. The navigational structure of this section is based on the experience of being in a library: pulling books off a shelf, turning pages, etc.
- 2** Conflict, which focuses on the half of the center built as the Grand Army of the Republic's Civil War Memorial. Topics include Civil War history and the changing uses of that side of the building. The navigational structure of this section is centered around two main ideas: place and personality.

- 3** Structure, which focuses on the architectural history and details of the entire building. Topics include architectural terms and styles found in the building, construction and renovation, and historic proposals for alternate uses of the building. The navigational structure of this section uses spatial and temporal navigation via an elevator/time machine.

Each of the three main sections contains several activities, including animated sequences and interactive games or stories. The completed prototype was tested with sixth- to 12th-grade students to evaluate the effectiveness of the content and structure of the guide.