ARTS TECHNOLOGY CENTER
college of fine arts
university of new mexico

The University of New Mexico

SPRING 2002 NEWSLETTER

Message from the Associate Director:

Dear CFA faculty, staff and ATC friends,

This past semester has been one of growth for the Arts Technology Center. We have begun hosting the initial artists' residencies (funded by the Rockefeller Foundation and the National Endowment for the Arts) and have started to design an exciting new program in collaboration with the LodeStar Planetarium, which will create collaborative art and science projects for digital domed theaters.

Jack Ox, Woody Vasulka and the Art and Science Lab have begun their research in art and high performance computing (see article for a description of Jack's residency). We are looking forward to hosting Gail Wight, Sawad Brooks, Warren Sack, and Gronk in the coming months. More information on these projects can be found on the ATC website www.unm.edu/~atcinfo. All the artists are available to make presentations or visit with students, just let us know.

Most promising is the development of the art and science collaborative projects for the LodeStar Dome. We have talked with many CFA faculty about this program, and we are working together with them on project development. I recently had meetings with the Warhol Foundation (proposal pending),and the Rockefeller and Ford Foundations about this exciting new work, and each expressed great interest in the project. Each Foundation felt that the ATC is in a terrific position to develop this project based on our current partnership with the AHPCC - projects will need supercomputing capabilities, and Professor Thomas Caudell at the AHPCC Visualization Lab has developed a 3-D model of LodeStar in *Flatland* that will be able to be used as a storyboarding tool.

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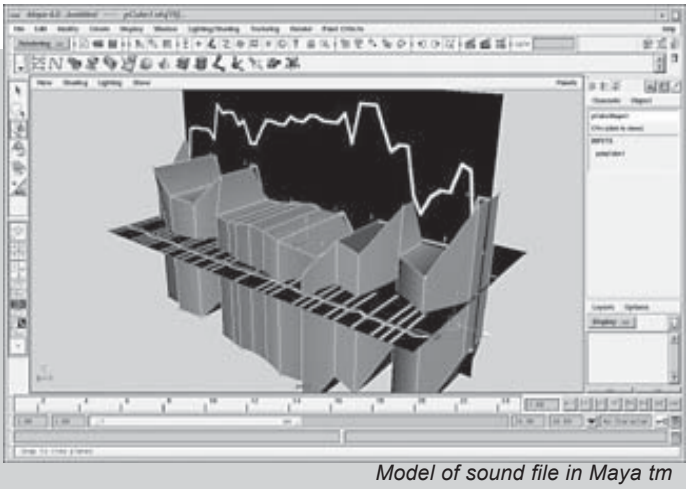

Model of sound file in Maya tm

Jack Ox Visits ATC

Jack Ox visited the Albuquerque High Performance Computing Center (AHPCC) at UNM, February 1st through 12th. She is the first artist in residence to visit the Center as part of a grant from the National Endowment for the Arts. In addition to her residency, Ms. Ox participated in the art department graduate reviews and spoke at it's visiting artist symposium. This event provided an opportunity for faculty and students to become more familar with Ms. Ox'es work and more specifically the subject of her residency.

Ms. Ox is a virtual reality artist and editor of Leonardo Journal of Art and Science. Her long-term interest has been to create and solve problems encountered in the visualization of music as an abstract phenomenon. Ms. Ox has developed 3D, fully immersive stereoscopic work at the CAVE, a virtual reality theater originally developed by the Electronic Visualization Lab at the University of Illinois, Chicago. ***Continued on back***.

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Message continued.

Initial funds for the ATC / LodeStar Project will include support for infrastructure including a Project Assistant that can work with file development, modeling and storyboarding in *Flatland*, and dome specific sofware issues; a Project Coordinator to oversee administation of the grants, copyright and distribution issues and publicity; and software licensing and hardware that can be assigned to the ATC projects.

Please feel free to contact Ed Angel, Sally Bowler-Hill or me for more information on ATC, and many thanks again for your interest and support.

Danae Falliers
Associate Director

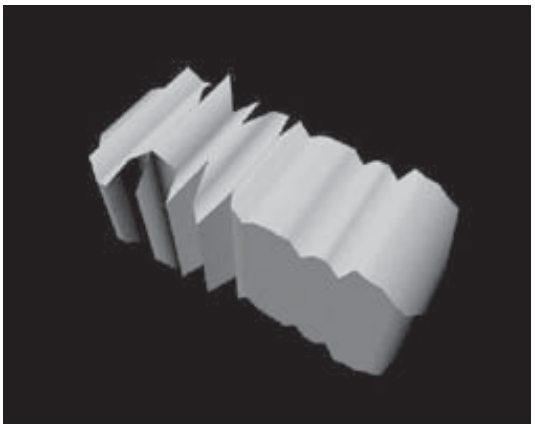
Jack Ox Continued.

For her residency, Ms. Ox began the process of creating 3D models for her GridJam inside the 21st Century Virtual Color Organ. These 3D models are visual representations of Musical Instrument Digital Interface (MIDI) or sound files. The wave pattern of each sound file forms the basis of a 3D polygon. It's variation in height, width and depth are determined by the dynamics (loud and soft) and pitch (frequency) of the sound represented. Each polygon in turn will be a visual representation of a sound file in a virtual reality environment.

The 21st Century Virtual Color Organ is a computational system for translating musical compositions into visual performance. It uses supercomputing power to produce 3D visual images and sound from MIDI files and can play a variety of compositions[1]. Musicians perform on MIDI instruments programmed to play different sound files. When played, these sound files are also represented in a virtual reality environment as polygons. The artist determines the color and texture of the polygon depending on who is playing the sound file and when it is played in the composition. As the polygons begin to fill this virtual space, they form a virtual collage.

Because virtual reality environments do not depend on all participants being in the same physical space, musicians playing a piece of music composed for this medium can be in different locations. They link up with the group through a node on Internet 2, also known as the ACCESS Grid. The ACCESS Grid is a network with a bandwidth large enough to accommodate live, interactive video and audio as well as allow participants to work together on project files in a computer program, in this case a virtual reality environment, from a remote location. Gathering a group of musicians from multiple locations to play together in a virtual reality environment is what Ms. Ox calls her "GridJam."

For the second half of her residency, Ms. Ox and the staff of the AHPCC conducted the preliminary experiments of how a GridJam would work. They tested the posting of completed polygons into a virtual environment over the ACCESS Grid. These experiments are crucial to find out how such a performance actually would work as well as to determine if additional software applications are needed to make it run smoothly.



Completed polygon of a sound file

While the complete GridJam performance on the Color Organ is more than a year away, the results of this residency have had an affect on the direction this project is taking. Ms. Ox has decided to create all of the polygons from sound files herself, giving her greater artistic control over them. "I have been empowered in an incredibly significant way during the residency," says Ox. "I am now prepared to accomplish the entire task with my own hands. . . . Now, during the long process of making 180 models the subtlities of difference and sameness in the sounds and their models will become defined in this visual language as I am thinking with my hands."

For more information about Ms. Ox and her projects, please visit her web site at www.jackox.net or on the ATC site at www.unm.edu/jackox/jackox.html.

[1] "The 21st Century Virtual Reality Color Organ" by Jack Ox and David Britton, *IEEE Computer Journal*, 2000

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