

BEYOND Y2K: A LOOK AT ACADIA'S PRESENT AND FUTURE

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The sky may not be falling, but it sure is getting closer. Where will you when the last three zeros of our millennial odometer click into place? Computer scientists tell us that Y2K will bring the world's computer infrastructure to its knees. Maybe, maybe not. But it is interesting that Y2K is an issue at all.

Speculating on the future is simultaneously a magnifying glass for examining our technologies and a looking glass for what we become through them. "The future" is nothing new. Orwell's vision of totalitarian mass media did come true, if only as Madison Avenue rather than Big Brother. Future-boosters of the '50s were convinced that each garage would house a private airplane by the year 2000. But world citizens of the 60's and 70's feared a nuclear catastrophe that would replace the earth with a smoking crater. Others - perhaps more optimistically - predicted that computers were going to drive all our activities by the year 2000. And, in fact, they may not be far off...

The year 2000 is symbolic marker, a point of reflection and assessment. And - as this date is approaching rapidly - this may be a good time to come to grips with who we are and where we want to be.

What's true for individuals is also so for organizations such as ACADIA. Who are we now? And we do we want to be? In the roughly 20 years of its existence ACADIA has taken a number of forms and a number of roles with respect to the architectural profession. Its constituency has changed as well, as is evidenced by the topics covered in twenty-odd years of conferences. ACADIA's founders focused on creating software to help architects in their practice. Computer-aided design, as we know it, is indebted to many early ACADIANS. By the late '80s CAD software was prevalent in profession, and many ACADIANS became involved with installation of CAD and computers in architectural classrooms at universities. Now - with the increasing use of the Internet in both the classroom and profession - many of members are concerned with telecommunications in the profession and how it will impact not only the design of buildings but very program of architecture as well.

And these concerns overlap. If we look at ACADIA's proceedings over the past 20 years, we see papers from varied backgrounds and interests ranging from the development of software to electronic media in the practice of architecture. This implies that the constituency - the mix - of ACADIA has also changed. Whereas ACADIA originally owed its membership to the ranks of educators, it now includes members of the architectural profession, the software industry and the international community.

Quebec 1998 Conference

In order to assess ACADIA's goals in the light of its changing membership, I arranged a symposium and brainstorm

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MODELING WITH GESTURES: THE 3D SKETCHMAKER

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The 3D SketchMaker Project has developed two prototypes for a gestural 3D sketching system to be used in the earliest phases of the design process. The goal of this ongoing research is to provide architects, and other designers involved in object conception, with a 3D gestural instrument that takes advantage of new virtual reality resources and is more natural than using the mouse, less difficult than learning complex software and less abstract than manipulating 2D entities on orthogonal projections.

The focus of this project is on the input interface, taking into consideration two factors:

First, for many architects and designers, one of the main reasons for not using 3D modeling from the very beginning of the design process is that both current hardware and software are hardly appropriate to do the spontaneous and quick drawings that are used to assist in conceptualizing their objects.

Second, three-dimensional modeling packages use two-and-three dimensional elements, in a 3D environment, but usually employ 2D input devices that are not appropriate to work in 3D environments, such as mice or pen-and-tablets. Menus and these kinds of pointing devices do not allow the freedom, quickness and spontaneity needed to establish the "continuous cycling of information from paper to eye to brain to hand and back to paper" (Laseau, 1988) as hand sketching does.

As a result of these issues, there is a gap between the first design sketches and the remaining design process (Brown, 1995). Architects and other designers are missing the potential of developing their ideas directly using the same tools that will be used later for the rest of the project's development and representation. Also they are missing the opportunity, resources and benefits of using virtual reality and 3D computer models from the very inception of the design process (Jacobs, 1991).

The 3D SketchMaker was conceived to take advantage of a natural tendency most people have in using gesture as an aid to language when trying to describe the shape or form of objects and to assist or replace the first 2D drawing steps in the design process, generating rough 3D sketches that can be refined later using any 3D package. It is, in essence, a 3D modeling system directed to do sketching with hand movements and gestures in a virtual reality environment.

The first product from this project is a prototype: a desktop VR surface modeler that allows surface description with two simple hands movements. The basis of this prototype is a sensor that returns its XYZ position, as well as its three orientation angles, azimuth, elevation and roll, to the application and a piece of software that collects and processes the data.

Two crossing spatial lines describe the surface: one, a path, and the other, a profile that is extruded along the path. Gestures are not used as a language, but as a way of describing to the computer the boundary surfaces of an object, employing the hand movements most people use when trying to describe the form or the shape of an object.

A second prototype has been developed to be used in association with the surface modeler in cases where the model has a basic regular shape, and to enable manipulation of all models. In this prototype, the input device is an instrumented glove that allows the system to recognize the user's hand formation and a primitive solid is associated with the hand as if the user were holding the object. After the solid's creation, designers will be able, using their hands, to grab, position, scale or modify the object with Boolean operations.

The system is still being developed and tested. Further development will include more methods of 3D sketching, 3D visualization devices and other VR features. We are moving toward an easy, intuitive and transparent modeling VR system.

