

Were they right?

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In 2001 I organized the ACADIA conference in Buffalo, NY. It so happened that 2001 coincided with ACADIA's 20th anniversary. So, to mark this occasion, I invited the first twenty presidents of ACADIA to submit position papers reflecting on the history, present, and future of ACADIA. To my delight, many of them obliged my request. Since then, I have gotten more involved in ACADIA as a member of its Steering Committee and more recently as its president. So, on ACADIA's 25th anniversary, I received a similar e-mail message to the one I had sent five years ago. Now I know how the presidents I asked for a paper felt – “*do I really have to do this? Where can I find the time?*” But, like many of the presidents who submitted papers in 2001, I feel it is important to ACADIA to oblige. So, the question then became, “*What do I write about?*”

I did start writing the paper along traditional lines. What will be important over the next five to ten years? Will we achieve the holy grail of a truly intelligent

building information model? Will robots build buildings like they build cars now? Will Google SketchUp and Google Earth overtake AutoDesk? Will we be designing and collaborating using wireless iPods and Wikis? Will I be able to walk into any room and view, on demand, a CFD analysis visualization? Will a building under construction text me about a problem it is having or a variation from construction documents? All these are exciting avenues for research. Some might happen and some might not. I did not feel qualified to make those predictions and comment on them intelligently.

So, faced with an approaching deadline and no topic at hand, I decided to take the easy route: “*Let's see if they were right.*” By ‘they’ I mean some of the past presidents whom I had asked to submit position papers back in 2001. Due to time and space limitations I decided to review only the first two papers in the 2001 proceedings book. These authors are among the most senior and celebrated presidents of ACADIA (the first and fourth

presidents, respectively): Charles Eastman and Chris Yessios. What did they write about 5 years ago and were they right?

Charles Eastman wrote about the original goal of founding ACADIA. He listed five original goals: 1) Gain financial support for CAD development, 2) Coordinate and share software development, 3) Share teaching material, 4) Provide regular communication (through a Newsletter), and 5) Organize conferences. Depressingly, ACADIA has only achieved one or two of the original goals and not consistently. If ACADIA prides itself in being education-focused, then sharing teaching material and software development is crucial to keeping it relevant to education. This could be an exciting new initiative that ACADIA could embark on in 2007. Financial support has been a sore issue with researchers in the field. There still does not exist a national program that explicitly supports research in the field of digital design in architecture. Ganapathy Mahalingam, a former president of ACADIA, valiantly tried to convince NSF to establish a program in Design Computing. That effort continues to face resistance from NSF, but we should continue the fight. Eastman also writes about the trend of “intelligent modeling of buildings” and ‘rapid prototyping’ (Little did he know that he was about to receive a rapid prototyped award at that same conference). Since 2001, the interest in digital fabrication grew rapidly and was marked in 2004 with the ACADIA Fabrication conference in Toronto. Obviously, it was not coincidental that Eastman’s predictions came true. He has been working on these issues for many years and setting the research agenda. The development of Building Information

Modeling is particularly curious. A handful of researchers in the 1980s worked on this problem including my mentor, Jim Turner. They specified standards, built conceptual models, and created software systems. Then nothing happened. The profession was not ready, so it continued to rely on dumb drafted drawings then dumb, but beautifully rendered, 3D models and more recently dumb, but beautifully 3D printed, rapid prototypes. Finally, with a push from big software developers, the AIA, and the GSA, everyone is talking about building information models. I believe this shift caught most researchers by surprise. They know the issues involved and they are hard. They know this is not easy to achieve. Yet, they were being told that the profession is determined to adopt this new paradigm and software developers are telling them that they are ready with unproven software and unproven processes. So, many researchers returned to the issue and decided to find out for themselves, using objective methods, whether BIM is ready to be adopted. I believe we have another five to ten years ahead of us before BIM matures enough to be adopted effectively. If BIM is adopted in the same haphazard way as 2D drafting and 3D modeling, the profession is doomed.

Chris Yessios also wrote about the original goals of founding ACADIA. He drew a comparison of the original conception of ACADIA as a research organization to its current form as a networking and education-focused organization. He also pointed to the shift of emphasis from “tool building” to “tool using.” He described that shift as a positive one. We have by now graduated one or two waves of students (and at some older

institutions far more) who have been using computers in their design studio since they started their architectural education. However, in the last couple of years, I believe the pendulum is starting to swing back in the other direction. I find more and more students getting interested in tool building. Software developers have opened up their 3D modeling systems to scripting environments. Bentley's Generative Components software is gathering a lot of momentum and interest precisely because it allows you to build your own tools and to think algorithmically about your design. In my Editor's Preface in 2001 I wrote, "For knowledge to advance in this area, we need researchers who can not only use tools, but also invent new ones to solve new problems that are not addressed by the existing crop of commercial software." I have maintained my optimism over the years as I saw less and less researchers building their own tools.

As to future trends, I cannot resist the temptation to include my own predictions: I see a danger in the current parallel development of Building Information Modeling (BIM) and – what I will call – a return to rigorous geometry. I am not optimistic that we will see the emergence of the master builder (even as a team of master builders). Rather, I worry that architects who focus exclusively on BIM face the same risk as those who concentrated exclusively on CAD faced in the early 1990s. They might be relegated to the role of BIM-operator rather than that of designer. On the other hand, if BIM does not evolve quickly such that it can handle rigorous (and in most cases non-Euclidean) geometry, designers who are involved in designing using rigorous geometry might form an elite class and might lose interest

in assuring that their creations are BIM-compatible. Integrating both trends will be a challenge and a pursuit for the next 5 to 10 years.

In the near future, I believe a critical cyber-architect – a person who knows how to use the tools creatively, invent new ones if needed, and assure the informational integrity of the design will be a rare and a highly sought after individual by architectural firms and academic institutions.