COLUMNS

YOUNG ARCHITECTS
What They Wish They Had Learned In School

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The Digital Era of Architecture
SHoP
Joseph Rosa
Bruce Lindsey

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Generation X...Y...Z

by Tracy Certo

If research on brain development is on track, my son and his generation are the first to be truly wired for the digital future.

So there I was browsing Greg Lynn's website while researching this digital design topic when in walks my sixth grader. *Wow!* he yelled as he glommed onto the screen. What is *that*? That, I told him, is a blob, one of those "isomorphic polysurfaces" Greg Lynn proclaims is the future.

Before I knew it, Daniel had edged me out of the chair and with a confident *click click bam,* he brought the model to life. "This," he said wide-eyed, "is too cool."

As I watched him I couldn't help but think: *here* is the digital divide— a child who grew up with the computer and, for his age, is digitally literate to the max. If research on brain development is on track, my son and his generation are the first to be truly wired for the digital future. Many of these kids were on the computer at the age of two, trying the first wave of kiddie software before any articles were published about the pros and cons of computer usage for children. Consequently, they also represent another, deeper digital divide, the one CMU's Bruce Lindsey speaks of here (p. 6). That's the sociocultural divide that separates the haves from the have nots. Which makes you wonder what is going to happen years hence. Will these computer brainiacs have such a tremendous advantage after all? Or in the long run, will all the hype and expectations surrounding the computer fall short of expectations?

During a conversation with Bruce, he joked that someday architects would be designing cities with SimCityPro. Hey, it's an idea with potential. I may not be familiar with stereo lithography (see the article on that cutting edge team known as SHoP p. 8) but I know SimCity—through my son, of course. He has spent hours on the computer planning and building the simulated city of Valanchia, instituting ordinances such as legalized gambling (it's a partying kind of place) and leaf burning bans (and yet, environmentally friendly). In his role as Chief Everything of this fun town, Daniel even strikes deals with other cities, like paying them when necessary to take his town's garbage. He's learning the economic realities as well as the necessity of being politically savvy since they can, so to speak, refuse the refuse.

It's just play... or is it? This simulation of reality is something a lot of young architects mentioned they wished they had learned when they were in school (p. 12).

In ten years, when Dan graduates from college, it will be interesting to see how far software has evolved. And if he sticks with architecture as planned, it will be interesting to see if his class, digital from the get-go, will be more advanced than others going in these days. Or will they be lacking in other fundamental skills?

Lee Calisti (p. 14) talked about interviewing freshly-minted architecture grads who could blow smoke out of the computer but who lack traditional lettering skills. Other architects I interviewed mentioned how they wish they had learned certain things in school but knew if they had spent more time in one area, they would have had less training in another.

So many subjects, so little time. Who's to ever know about the path not taken?

The computer is changing architecture and every other profession profoundly in many ways. And yet—I just went to a day and a half charette in Homestead (that's the *next* issue) with the collective brain power and imagination of 60-plus people laying new plans to bring back a neighborhood. They were sketching and brainstorming and coloring and there was great energy and soul in that Moose Lodge room and I couldn't help but notice one thing: there was not a single computer in sight.

So perhaps I should mention, just for balance, that Daniel is also a Legos fanatic, which is, perhaps, the brick and mortar counterpart to the computer devotion. Last fall he took the architecture for kids class at Carnegie Mellon and his favorite part was building the city, a very tactile and non-digital exercise. Maybe now he should get to work on his hand lettering.

IN THIS ISSUE

On the cover: Young Architects (see page 12)

AIA Pittsburgh serves 12 Western Pennsylvania counties as the local component of the American Institute of Architects and AIA Pennsylvania. The objective of AIA Pittsburgh is to improve, for society, the quality of the built environment by further raising the standards of architectural education, training and practice; fostering design excellence; and promoting the value of architectural services to the public. AIA membership is open to all registered architects, architectural interns, and a limited number of professionals in supporting fields.

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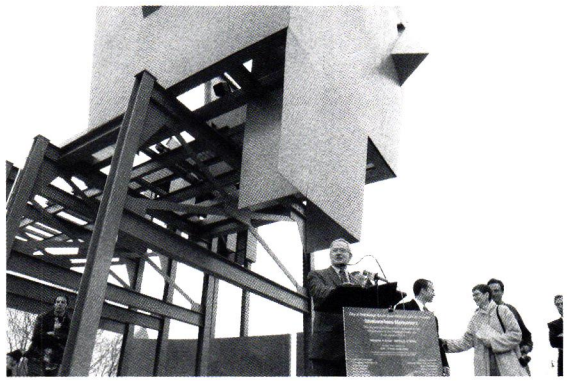
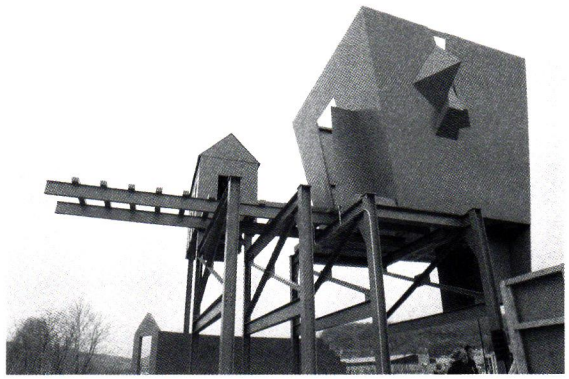
Steelworkers Monument



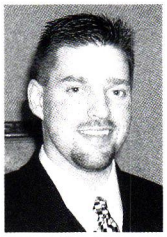


Joan Blaustein and the city planning department sponsored a public art project competition to celebrate the lives of steel workers at the former J&L (then LTV) site on the South Side. Intern architect James O'Toole (LDA-L.D. Astorino Companies) won the competition with this recently erected 50' x 50' x 35' tall structure that evokes the steel mill. Design team members include Jodi O'Toole and Jesse Seppi.

In addition to the $25,000 contributed by the city, O'Toole raised an additional $350,000 on his own to fund the building of the Steelworkers Monument. Symbolizing a steel mill and made of steel (of course), the monument features a ladle, gate, catwalk and train tracks.

Welcome new members

Joseph Touvell, Assoc. AIA of Rothschild Architects is the former director of the Architects Resources Center in the Central New York Chapter. He has studied abroad in Florence, Italy and worked in Weirton, Baltimore and New York. With an interest in basketball as well as traveling, Joe is looking forward to becoming an active member in the Pittsburgh Chapter.



Touvell

Jan Held, AIA of Perfido Weiskopf Architects, is a graduate of the University of Cincinnati interested in adaptive reuse, preservation and sustainable design. She says she is "looking forward to revitalizing Pittsburgh one building at a time." Recent projects include the Fulton Cotton Mill and Piedmont Park Educational Complex, both in Atlanta. Other interests include softball, hiking and cooking.

In Perspective:

JOSEPH ROSA

If you missed Joe Rosa's groundbreaking show on *folds, blobs + boxes: architecture in the digital era* at the Heinz Architectural Center, you'll have a chance to see it in documentary version soon. Michael Blackwood, who has filmed documentaries on Phillip Johnson, FAIA, Peter Eisenman, FAIA, and Frank Gehry, FAIA, was in town recently interviewing many of the architects featured in the show. We'll keep you posted on air dates. In the meantime, Columns caught up with Rosa to talk about the show and its implications.

How is the digital era changing pedagogy and architectural practice?

The general assumption by many is that the computer is going to wipe out any of the pedagogical tools prior to its arrival; ie, pencils, sketching, model making, studying materials and the tactility of the surfaces informing the architecture.

The reality is that this will not disappear. What's going to happen to the computer is what we're seeing today, that more people are becoming versed in it as a tool. The computer will become one of many tools architects use to expedite ideas and explore further concepts. If anything, a computer will lend itself to doing multiple tasks; for example in the Preston Scott Cohen exhibit in the show, the computer aided him in understanding the geometry, and in making the model and in the perspectives of the insides. So the computer will become a tool that is multidisciplinary.

What do you find most exciting in the digital era of computers today?

What I find most exciting—coming at it from an angle that I'm not that versed in it—is the co-opting of other technologies that are already out there to generate the architecture. Many times in history people have had wonderful ideas for a building that have been almost impossible to build.

What we're seeing with buildings built digitally today is that for example, car manufacturers can start using those modes of production, of making parts for the housing or for elements inside a building that one would never have thought of before. It's that kind of inventive thinking which architecture is all about: solving problems from design space allocation to fabrication and that's a refreshing thing.

Who do you feel is doing some of the most innovative work out there today?

Frank Gehry is probably the best known of someone who understands how to use the computer to expedite projects that were not conceivable to be built 10 years ago. But there's a complete younger set of architects coming on the forefront such as Kolatan/MacDonald. Look at some of the fabrications they did to an addition of an existing house. For the built-ins, instead of going to a custom cabinet maker, they used a company that makes amusement park rides but just reduces them in scale. If you're going to have a built-in curved tub, you might as well go to someone who builds a water flume; they've done it before. That's exciting because they're actually looking at ways of getting this done.

"The computer will become one of many tools architects use to expedite ideas and explore further concepts. If anything, a computer will lend itself to doing multiple tasks."

Another one is Greg Lynn who's exploring a concept which is interesting and almost sounds like an oxymoron: mass customization. With mass customization of a house if you want to make a change to the design, you make that adjustment within the digital representation of it—the 3-dimensional image. When it's transferred into the digital realm of production, they read the difference in the digital data and it's custom cut to absorb those differences. That's where it's quite amazing—that technology can do that moreso than ever before.

A lot of cities are clamoring for big signature buildings such as museums to draw tourists; an architecture as economic generator phenomena. Your comment?

It's one of the tools that many cities see as a way to reactivate city centers. Since the post war, many cities have been devastated by sprawl and growth and businesses leaving cities. Sometimes you need to build something new to signify a shift in the cultural ramifications of that city, that might pick up on characteristics that once made that city special but make people see it in a different light and become an attraction.

This has been going on for at least 30 years now. If you look back into the 80's when Richard Meier was doing museums, everyone wanted a Richard Meier museum. Well now Richard's not doing that many museums and now Frank is doing museums. So there's this curvature of making oneself ubiquitous that the architects are always careful of; it's like making a hit movie and worrying about doing the follow-ups. Because the patrons who are not knowledgeable about architecture want what they call the Bilbao effect. But if you build Bilbao again somewhere else that would make no sense. What they did there for that time was a very smart move. In Muschamps's review of the building, which I thought was quite funny but true, he said its one of the few sites in the world where people were going to see a building and putting their lives in danger. That's good, that means that people are going there despite what problems have existed there. The numbers are up, no one's died, and Bilbao is on everyone's list.

How the Computer is Changing Architecture:

By Tracy Certo

An interview with Bruce Lindsey

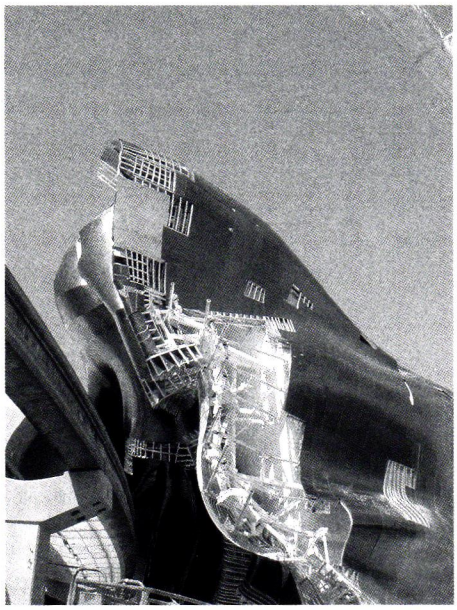


PHOTO BY BRUCE LINDSEY

Experience Music Project when it was under construction in Seattle Washington. Frank O. Gehry and Associates.

Say you're a newly minted grad with a five-year degree in architecture, heavy on the computer skills. Where do you go these days?

If you graduated from Carnegie Mellon, you may just end up in the entertainment industry where your valuable computer animation and visualization skills can be used in making movies. Or, maybe you'll open your own consulting firm—see the article on fast-tracker CMU grad Peter Korkian—or you'll use your ideas of architectural space in designing on the worldwide web like CMU grad Marc Tinkler, founder of plumb design (www.plumbdesign.com) and maker of the software Thinkmap (www.thinkmap.com).

Bruce Lindsey, associate head of the department of architecture at the university notes that graduates who move into traditional architect firms sometimes find themselves in non-traditional roles: they often take a leadership role position due to their fluency in computer software. And they're paid more—maybe 15% or so—for their computer proficiency.

Unlike other schools of architecture, Carnegie Mellon introduces the computer from the start of the program, along with other traditional media. The role of the computer at the school of architecture is one of collaboration and communication in addition to a visualization tool. "We see the computers' role as being pervasive throughout the curriculum not just in the design studio but other courses such as Acoustics and Light, Structures, History, and Design Economics," says Lindsey.

Now, however, the way in which information for the building is being managed by the architect — and not the contractor — is allowing architects to regain responsibility.

Take Semper, for instance, software developed at the university which allows architects to simulate environmental performance of a building. They can get feedback on any number of variables. "They get a sense of the energy performance of the building versus another variation of it very quickly. That's pretty powerful," Lindsey states. If one variable is changed, they can reevaluate instantaneously the difference that change made. The variations are difficult and time-consuming to test without the software. (Admittedly the software currently available for Semper is "cumbersome" to use right now, Lindsey says, although he foresees a day, within ten years, when it is common in the industry.)

The changes the computer is advancing could mean a significant shift in role for the architect. Lindsey comments that in the last fifty years, the architect has moved further and further away from direct responsibility for how a building is built to more of an advisory role. It has been more a case of construction observation, not management. Now, however, the way in which information for the building is being managed by the architect—and not the contractor—is allowing architects to regain responsibility. Frank Gehry has led the way, changing the way buildings are being built, "pushing the limits of the way the computer interacts with that process," Lindsey says, adding that it harks back to the concept of the master builder.

Lindsey, who is working on a book about Frank Gehry, (*Digital Gehry*, due out this fall) says that Gehry "is on the cutting edge of using computers not only for visualization in design but also to facilitate and coordinate the construction process." (An interesting sidenote: although noted for his computer designs, Gehry's design team does the actual computer work. Gehry spent 15 minutes on the computer and found it "lifeless", relays Lindsey. Most all the projects in the firm start with physical models.)

"Because they're (architects) using a digital model as part of the contract document, they're reorganizing the way the projects are insured," says Lindsey. An umbrella policy that covers all consultants and contractors is necessary due to the increased liability the architect assumes by allowing that model to become the source for everyone's information.