Top: Mehri Paydar works on her design at the desk of architect Helmut Jahn. Bottom: Sketches of proposed events at the Sony Center in Berlin. Photos by Gordon Welters.
At 10 a.m. on that Thursday morning in Berlin, the office was silent. Eight students—all part of McCormick’s Architectural Engineering and Design Program—hunched over their desks, hustling to finish the projects they’d been working on all week. Their charge: design an event that would take place in the atrium of the Sony Center, a multibuilding complex in the center of Berlin that has become a symbol of the city’s ongoing redevelopment. Their guide: Sony Center architect Helmut Jahn, who has designed dozens of buildings around the globe and whose Berlin office the students had taken over for the week.

Preparing to present their designs to a jury, the students drew and erased and drew again, gluing together tiny models made of fabric, felt, leaves, and cardboard. “I hope they like it,” said Francesca Ferrero (civil engineering ’11), who designed a pop concert for the venue. “Actually, I hope I like it.”

“It’s coming along,” said Matthew Shaxted (civil engineering ’11), who ditched his model in favor of simple drawings. “Well, it’s a little difficult. I didn’t sleep.”

In just a few hours, the students would hang up their sketches and try to sell their ideas to a jury most architecture and engineering students could only dream of. Jahn; Laurence Booth, who, in addition to being director of the renowned Chicago architectural firm Booth Hansen, is the Richard C. Halpern/RISE International Distinguished Architect in Residence at McCormick and director of the Architectural Engineering and Design Program; Steffen Duemler, principal architect in the firm of Murphy/Jahn; Leif Selkregg, CEO of the project management company RISE International; and renowned structural engineer Werner Sobek, who with Jahn designed the Sony Center and coined the term “archineering” to describe the combination of architecture and engineering that ultimately creates better buildings.

Finally, it was time for the students to present. Ryan Shanahan (civil engineering ’11) stood next to his drawings. The room was quiet—this time, in anticipation.

Shanahan began: “When we walked into the Sony Center, I immediately felt like I was in a coliseum.” And the jury listened.

A blended approach to architecture

The Architectural Engineering and Design Program began in fall 2008 after Dean Julio M. Ottino saw an opportunity to combine Chicago’s architectural strengths with the design initiatives at McCormick. “Given the city’s prominence in architecture,” he said, “I felt it was important that Northwestern be part of that world.”

At the same time Selkregg and Richard Halpern, cofounders of Chicago-based RISE International, began discussing how architecture could be integrated into McCormick’s curriculum. RISE often hires McCormick students for co-op programs and jobs after graduation, and Halpern is a member of the McCormick Advisory Council. “The most important buildings have this blended approach to architecture and engineering,” Selkregg said. “We thought engineering students would benefit from an architecture education.”

The pair made a generous donation to endow the architect-in-residence position now held by Booth. “I find it exciting to use my experience and pass it on to others,” said Booth. “I want to make architecture as interesting for them as it has been for me.”

The Architectural Engineering and Design Program consists of three studio courses in which students create progressively bigger projects. In 2009–10 students first designed a coffeehouse, then a school, then a skyscraper. They also learned how to use energy-modeling software to make their buildings more sustainable. Ultimately the program offers students a new perspective
on engineering: Beyond the physics and math behind materials and systems, how can those elements come together into something that is both efficient and aesthetically pleasing? How can students use both analysis and creativity to design something great?

Once the program was into its second year, those involved began discussing how to bring students into a professional architecture environment. “We envisioned the program as both practical and international,” Selkregg said. “Creating these workshops and real-life experiences was the fundamental thinking behind the program. We had a relationship with Helmut Jahn and his office, and he was generous enough to agree to be our first host.”

**Studying architecture in Berlin**

Eight students in the program spent a week early last September at the Berlin offices of Murphy/Jahn working on a design project and observing the workings of an architecture firm.

“Berlin is kind of a microcosm of Europe as a whole,” said Corey Bertelsen (civil engineering and music ’11). “You had the communist-capitalist conflicts and all the damage from World War II, but there is also an incredible rebuilding effort. The most striking thing was how mixed the buildings are—bombed buildings mixed with old refurbished buildings and really new modern buildings.”

The assignment was to design an event for the central forum of the Sony Center, a nine-building complex on Potsdamer Platz that includes offices, stores, restaurants, apartments, and a movie theater.

Ryan Shanahan—who thought the forum, with its airy oval roof, resembled a coliseum—decided his event would be the opening ceremonies for the Olympic games. But it soon became clear the space just wasn’t big enough. A better event, he reasoned, would be a festival space for watching the Olympics on giant television screens. Jahn demurred. “I told them on Monday morning: get one idea and don’t change it,” he later said. “If you come up with another idea, you’ll still have the same problems.”

The projects were as diverse as the students: a fashion show, a pop concert, a biology exhibit, an acrobatic act, a ballet performance, and a giant turbine propelled by the body heat of spectators.

That last idea belonged to Matt Shaxted, who had trouble explaining the abstract concept that stretched the definition of an event: “I wanted to create a turbine installed on the Sony Center’s spire and use it to create electricity through the use of environmental temperature. The more people you have in the space, the more the temperature will increase, and the temperature differential will cause the turbine to work.”

On Tuesday afternoon Shaxted and the rest of the students had their first review with Jahn, who is known for offering honest, unrestrained feedback. “The critiques were rough,” Shaxted said. “Everybody was pretty nervous. I went up there and put up my 10 different sheets of ripped paper, and Helmut said, ‘What is this? You need to make it clean and professional. Keep that with you your whole life.’ He was right.”

On Wednesday morning the office was silent. Students sketched and drew and considered their designs. Shaxted sat down with Jahn and explained his concept at that point. The turbine could generate electricity, he said, which could be used to power something else, like cars.

Jahn shook his head. “You just have to keep some kind of reality,” he said. “The temperature differential—that’s not enough to drive it.”

Shaxted nodded. “You’re right. I don’t know.”

By the end of the day Booth had arrived, encouraging the students whom he had mentored all year. Referring to her pop concert design, Ferrero said, “I made a telescoping catwalk that would be hidden under the stage. The artist could sit on top and be telescoped out, and the stage would be covered in reflective fabric, so the lights that shine off the disco ball will reflect in the Sony Center.”

“Keep drawing,” Booth said. “It looks great.”

Students stayed late at the office that night and arrived early the next morning to finish their designs. “There’s no sleep in architecture,” said Jeff Gellis (civil engineering ’10) as he glued tiny leaves onto his model, a mountain-themed amphitheater with rock walls and performance space.

Finally, it was time for the final jury. Jahn gathered the students in his office. “What’s important is to clearly state what you wanted to do and how you dealt with the space,” he said. “That’s what architecture is all about. You’ve got a problem, and so you design a solution.”

When the jury was assembled and the drawings were posted, students waited for their turn to stand before the five architects, engineers, and businessmen who have had a hand in designing...
and building some of the best structures of the past 30 years.

“I hope you had a good time this far,” Jahn said, smiling. “I hope you survived this.”

**Selling your design**

What happened next was more than a design critique: it turned into a wide-ranging conversation on design, business, communication, and the difference between art and science.

When Shaxted presented his turbine idea, Sobek told him it would require a building much larger than the Sony Center.

“Sometimes you get attached to an idea,” Booth told Shaxted. “We all do. You get so caught up.”

Jahn pointed out that Shaxted only had one drawing to show the jury, a sketch of the turbine and the mathematical equations he thought would show it worked. “If you’re trying to sell something to a client, he never takes the first thing you show him,” Jahn said. “The process is very important. If you come with one drawing, the client will think you didn’t take it seriously.”

“You always must be aware that there might be a specialist in the jury who is not shocked by the math,” Sobek said, pointing to Shaxted’s equations. He added that architects should always be able to clearly articulate their ideas. “You should train yourself to close your eyes, pick up a virtual phone, tell somebody how it works, and sell it to them. Sooner or later you’ll realize that you need the right key words or story.”

When Lizzie DuBay (civil engineering ’11) presented her fashion show idea, Jahn asked why she drew her designs by hand.

“It gives it more personality,” she said.

“So you can throw your computer away when you get back!” said Jahn, who is known for designing buildings using freehand drawings.

“The computer is the worst equalizer. It makes it possible for people who are not very good to do well. It’s like putting fancy clothes on.”

Sobek added: “On a flight from Frankfurt to Chicago I drew all of the special structure for the Sony Center. On one nine-hour flight. By hand. There was no computer.”

Ultimately, the jury offered praise and advice to each student—both of which, the students agreed, young architects and engineers need to become better designers. “Even when I got a lot of heavy criticism, it was really constructive,” Bertelsen said. “They really got to the core of the issues. I think I can use that to jump-start future projects.”

Others were more pragmatic: “I can finally sleep,” Gellis said.

**Architecture is about communication**

Jahn said it was fun working with the students and hoped they learned something along the way.

“I agreed to do this,” he said, “because they are involved in this relationship between architecture and engineering and how the integration of those disciplines can make better architects and engineers—and ultimately, better buildings. We architects who are somewhat established have a responsibility to young people, and we tried to teach them that architecture is a business where you’ve got to sell something. The more successful you are at designing a good building, the easier it is to sell it.”

The trip was judged so successful that McCormick plans to offer a similar trip next year. For the students, who headed back to Evanston to finish their studies and prepare for careers in engineering and architecture, the trip provided a new point of view on architecture.

“Architecture really is about communication,” Bertelsen said. “If you have a brilliant design but you can’t talk about it or draw a picture of it, nobody is going to build it. You need to be able to tell a story. That’s probably the most useful thing I learned. And you need to have as many crazy ideas as possible, and then use architecture and engineering to make those ideas concrete.”

Patrick Rice (civil engineering ’11) believes the trip will give him a leg up when he applies for civil engineering jobs after graduation. “Having experience in an architecture studio will definitely help,” he said. “Employers can see I have a commitment to design as well as this technical background.”

Booth said he was “blown away” by how worthwhile the trip was for students. “It really has become, in my mind, an integral part of the program.”

*McCrormick / spring 2011*

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*Top left: Jeff Gellis glues together a model of an amphitheater. Lower left: Matt Shaxted presents to the jury in the Sony Center. Left: Helmut Jahn discusses the design challenge with Northwestern students. Photos by Gordon Welters.*