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The article summarizes an interview that IU Vice Provost Tom Gieryn gave as the leader of a multidisciplinary investigative team that included Michael Haggans and Trevor Calarco of Flad Architects, and Michael Chippendale of Chippendale Consulting. The team investigated the scientific and sociological implications of the move of one high powered research group from its laboratory space in Myers Hall to new laboratory space in Simon Hall, designed by Flad Architects as a new generation science building to promote multidisciplinary research at IU. Simon Hall opened in 2008.

For addition information about this Simon Hall project, please look under the Communication tab of this website at the listing: 2007 Presenter at Forum "*How research productivity measures will change science building plans*" at the October 2007 Tradeline Conference.

Form follows functionality at IU's Simon Hall, with a brick or two of sociological wisdom carefully placed

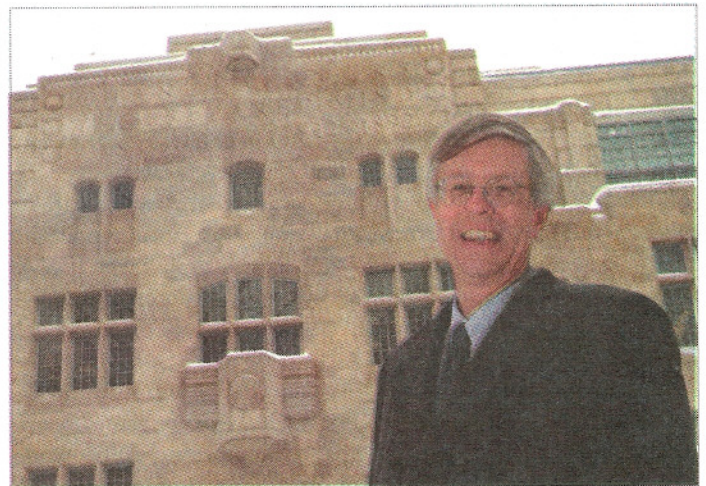
'If the whole world were rational and efficient, it wouldn't be much fun to be a sociologist.'—Tom Gieryn

by Tracy James

Simon Hall, the 141,000-square-foot, award-winning science building that opened its doors to researchers in 2007, certainly is an attractive addition to the Bloomington campus but are good looks enough? Is the limestone-clad building functional as well as striking?

Tom Gieryn, vice provost for faculty and academic affairs and Rudy Professor of sociology, has asked and studied similar questions many times as he pursued his longstanding research interest in science—and the spaces in which it occurs.

"You can't just look at the building and say, 'Ah, it's effective,'" said Gieryn, chair of the IU Bloomington Department of Sociology before assuming the new vice provost position in January. "You have to talk to the people who use the building, photograph them in their space and in some cases, you need to do this over time."



Chris Meyer

Tom Gieryn

With Simon Hall's walls rising within eyeshot of Gieryn's former Ballantine Hall office, he readily saw the research opportunity at hand, and discovered over a cup of coffee at Starbucks that he had an eager co-investigator in Michael Haggans, director of the academic group and a principal of Flad Architects, the Wisconsin firm that designed Simon Hall.

"Generally speaking, post-occupancy evaluations, when they occur, are limited to issues such as lighting, heating. They involve little detail," Haggans said. "I was interested in the physical aspects of a building that lead to higher levels of productivity, better science and functionality."

They just needed a research subject, someone willing to let Gieryn, Haggans and their multidisciplinary research team scrutinize his or her lab through the lens of social science as that lab moved from Myers Hall into Simon Hall.

Man of science

Carl Bauer, a highly regarded and heavily funded biologist, invited the research team to study his lab's move into Simon Hall. Such studies are needed, he said, because of the angst that can accompany moves into new lab space and because of the dearth of information about not only what makes lab space effective but the level of disruption that can be expected during moves.

With Bauer's blessing—and that of the university's Human Subjects Committee—Gieryn, Haggans and their team went into "the field" with their social science tools in hand—a tape measure, camera and digital recorder. The research team included Flad laboratory architect Trevor Calarco and Mike Chippendale, a life sciences facilities consultant and retired entomologist from the University of Missouri. They interviewed Bauer and the researchers in his lab before the move, immediately following the move and then a year later, probing them about expectations, satisfaction with the move, social interactions in the lab, communication and cultural issues, and nuts-and-bolts questions about equipment they used and tasks involved with their jobs.

They measured the distance between researchers and relevant pieces of equipment, estimated travel time between researchers' benches and equipment, and created a complete photo record of the lab both in Myers Hall and in its new Simon Hall space.

lishing results in order to secure more research funding. Coming in second brings little glory, or funding, in scholarly pursuits.

Bauer said the efficient design of his new lab space allows his researchers to accomplish more in an eight-hour period. Important equipment is strategically located so researchers do not have to "run around" as much or travel to different floors.

"Science is like a competitive sport where the first person to finish scores," Bauer said. "As a scientist, you're trying to get your results and publish them before anyone else. The first people to publish a scientific study get all the credit for it and publish in a highly regarded journal. If you're a trailing person, it's often in a secondary journal and often doesn't get cited as much or recognized as much."

Time was an overarching issue for Haggans during the study.

"We tend to view environments as three-dimensional objects but in the laboratory environment in particular, time is another dimension," he said.

While the importance of time may be intuitive to architects, the study provided a fact-based quantification for time- and distance-based issues because of the questions the research team asked.

"I certainly know that there is a set of relationships there that are more significant than I would have thought beforehand," Haggans said.

Researchers in Bauer's lab explore the regulation of gene expression by environmental factors such as light and oxygen, and they also study the differentiation of bacteria into different cell types. The research is multidisciplinary in nature, involving cell biology, biochemistry, microbiology, genetics and molecular biology.

The questions, particularly those about relationships and social interactions, intrigued Bauer.

"The study opened my eyes to this area of research," Bauer said. "It's good for science to have a social scientist sit down and think about the dynamic social interactions involved with a person's space. It's a win-win scenario."

It's about speed and (the absence of) low-hanging fruit

The new lab space essentially is considered a success in large part because it is "faster" and supports the multidisciplinary research that interests Bauer.

The move involved packing and moving and unpacking an array of chemicals and equipment, including freezers, balances, equipment used for DNA electrophoresis and fast protein liquid chromatography, spectrophotometers, fluorescence scanners and much more, yet the researchers in Bauer's lab were able to resume their research in a matter of days, rather than weeks, after unpacking their work benches. This "plug-and-play" feat occurred because of the standardization of biochemical research equipment. While lab designs nationwide vary, individual work spaces look surprisingly similar, Gieryn said. Photo records of Bauer's lab show that the researchers' individual work spaces looked nearly identical in both buildings, allowing them to continue their studies with little adjustment.

The critical speed up involves the never-ending cycle of securing research funding, hiring researchers to conduct research and then pub-

Bauer said the best part about the new space is the multidisciplinary nature because it is allowing him to do research that he never would have "dared" to try before the move. He said his research is becoming more structural, for example. Proteins, he said, are "beautiful" and "gorgeous," yet getting pictures of them was beyond his know-how. Not, however, for his colleagues across the hall, with whom he can easily chat over coffee.

"I'm able to do more here," Bauer said. "My lab is situated next to a crystallographer, an NRM (nuclear magnetic resonance) guy—I can do different things in Simon Hall that I would have difficulty doing elsewhere."

These interdisciplinary collaborations are important, Bauer said, because the "low hanging fruit" has mostly been plucked in science, leaving difficult questions that can only be addressed by teams of researchers from different fields. Researchers in his lab have taken advantage of the variety of expertise, too, in initiating research projects with other scientists they have met in the building.

"It's fun—that's why I'm in science," Bauer said. "It's a fun career."

Science is people

Bauer said the questions about relationships and communication intrigued him but they also touched on an unavoidable issue. Any research lab with more than, say, five people, is full of dynamic social interactions much like a family.

"People either get along well or it's dysfunctional," he said. "When you move into a lab, it's a question of who will sit next to whom. There are no cubicles—desks are attached to work benches. People look into each other's areas."

So the move into Simon Hall provided him with an opportunity to assign people to work benches in part based on their requests for whom their neighbors would be, while also trying to balance the research needs of his lab—some people just needed to be nearer each other because of their work. When new people join the lab, they are often assigned to available benches, not necessarily to benches that make the most sense strategically. It might have made sense to re-shuffle everybody in the lab as each new person was added, Gieryn said, but this became impossible because a culture of ownership had already developed about individuals' work spaces.

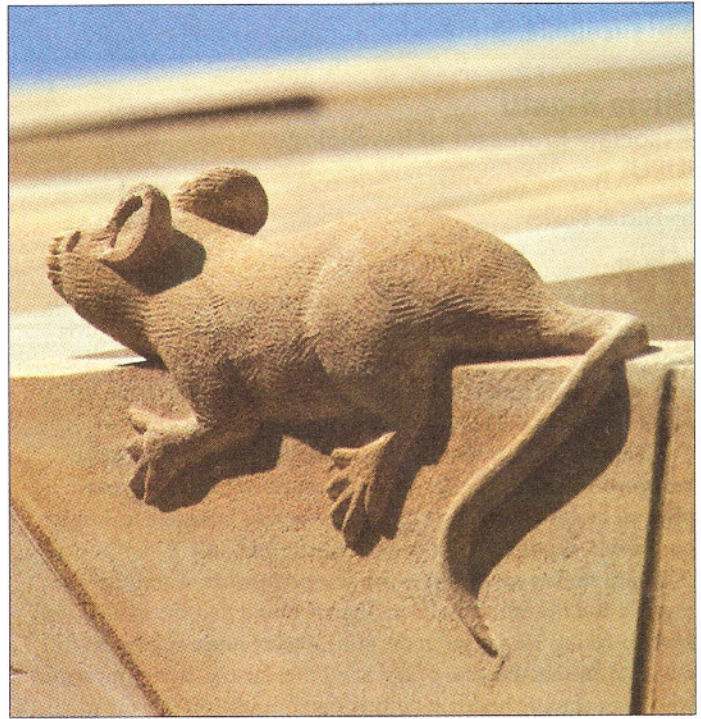
"It was easy for them to move from Myer Hall to Simon Hall but, once established in their new home, they won't move down three benches," Gieryn said. "Carl did everything right but here you have a social norm, a culture of ownership working against the maximal efficiency of the lab."

Gieryn describes this culture as a "neat finding."

"If the whole world were rational and efficient, it wouldn't be much fun to be a sociologist," he said. "Everything would be done the right way just because it's right and efficient."

Gieryn, Bauer and Haggans spoke enthusiastically about the study, which could result in journal publications, conference presentations and a better understanding of the necessary components in an effective lab building. The multidisciplinary nature of their research team made the experience all the more satisfying for Gieryn and Haggans, particularly since the lab building involved was designed to be multidisciplinary.

"This is a shared fascination," Haggans said. "No question about that."



IU's Simon Hall's ornamentation gives a nod to Bloomington's heritage of limestone carving, as well as to the natural world. Here, a mouse, *Mus musculus*, skitters up a Simon Hall wall toward the lintel.