Colleges Find Road to Riches in Transit Bill

Transportation legislation has almost $600-million in earmarks for campuses

By Kelly Field

WASHINGTON

Colleges and universities will receive more than half a billion dollars for pork-barrel projects from the federal transportation bill signed into law by President Bush last month, according to an analysis by The Chronicle.

The six-year, $286.4-billion bill (HR 3), which returns federal gasoline-tax revenue to the states for road construction and public-transit projects, contains a record 174 earmarks for colleges, more than three times the number included in the 1998 reauthorization of the transportation law.

The congressionally directed grants range from $296,000 for a transit center at Los Angeles Mission College to $20-million for a new materials-research institute at the University of Tennessee at Knoxville.

Some 142 universities are singled out in the transportation measure.

A list of Congressional earmarks for colleges in the transportation bill: Page A37

up from fewer than 50 in the 1998 bill. Overall, the bill contains more than 6,000 pet projects costing more than $24-billion.

The biggest chunk of money for colleges—$160-million—will go to 10 “National University Transportation Centers” for research and training programs. An additional $44-million will go to 22 colleges and universities to operate “Tier II” research centers.

The bill also provides $119-million for research projects, including $14.3-million for the University of Kansas for research and development on advanced vehicle technologies, and $12-million for the University of Oklahoma to develop technology to track drivers globally.

Landers, interim dean of Continued on Page A36

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RISING STARS

Each year a new group of Ph.D.‘s tries to beat the odds of the academic job market. While many struggle to find full-time work, some have universities beating down their doors with job offers. This year readers nominated candidates from scores of different fields whom they considered to be first-rate. We focused on four rising stars who seemed to be exceptional: an economist who examines corruption, a philosopher who takes his research outdoors, a physicist who studies tiny bits of fluid, and a psychologist who tries to figure out why we choke under pressure.

Making a Living on Choking Under Pressure

BY JOHN CRAYON

For any ambitious young scholar just hitting the job market, choking under pressure is a real occupational hazard. Consider Sian L. Beilock: As she was leaving Michigan State University two years ago with two Ph.D.’s in kinesthesiology and cognitive psychology, she got 12 invitations for job interviews right off the bat. That might sound like a giddy prospect, but it contained a thin layer of menace: What if her academic stock, painstakingly built up during years of research, suddenly plummeted in the glare of a few three-hour interviews?

As it turned out, the psychological phenomenon that drives people to underperform in pressure situations served Ms. Beilock astonishingly well in the hiring process. She accepted seven of the job-interview invitations, and was subsequently rewarded with six job offers—including plans appointments at Carnegie Mellon University and the Georgia Institute of Technology. That’s because, for Ms. Beilock, choking under pressure isn’t just a nerve-wracking fact of life—it’s a career-making research interest.

From basketball stars on the free-throw line to golfers on the putting green to high-school students wrestling with their grades, choking under pressure is a widespread problem. No 2 pencils in the nation before the SAT, everyone shares a vulnerability to low performance when the stakes are high. Beginning with her research for her master’s thesis in 1996, Ms. Beilock has quietly established herself as the go-to psychologist for this universal quirk. (Run a Google search for the term “choking under pressure,” and the first hit leads to one of her papers.)

“Basically, I study skill performance,” she says.

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Sian L. Beilock: Making a Living on Choking Under Pressure

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"and I'm really interested in how skilled performance fails in a variety of situations." Over the past couple of years, it has become clear that the academic and grant-making world is interested too.

With all the job offers on the table, Ms. Beilock did something unpredictable. She accepted an assistant professorship in the psychology department at Miami University of Ohio, where her husband, Allen R. McConnell, is a professor of social psychology.

But now, after spending the better part of two years at Miami, she has accepted a job in the Department of Psychology at the University of Chicago, a move she is hoping will help her set up residence there over the summer.

That's not all that's been keeping her occupied this year. Ms. Beilock spent most of August in Australia, attending a meeting of the International Society of Sport Psychology and accepting its Developing Scholar Award, a prize that is given out only once every four years.

She has also had two research grant proposals accepted in recent months. One, which will share with her husband, is a $159,000, three-year grant from the National Science Foundation to study "cognitive disengagement," a phenomenon that causes a subject's awareness of his own social identity, and its various consequences, to affect his performance of a skill. The other is a $248,000, three-year grant from the Department of Education to study how different high-pressure standardized testing environments affect students' scores.

NO PRESSURE

Ms. Beilock's research aims to settle one of the age-old questions generated by flubbed free throws and math tests: Do we choke because we over-think or because we are too distracted?

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Mr. Todd M. Squires: A Physicist Flows Between Fields

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say, water behave when you put it in a channel of the width of a human hair? Or how might tiny crystals floating in the fluid in the semi-circular canals in your ear make you dizzy when you look up?

At Cal Tech, Mr. Squires, 32, held an independent research project and was able to range widely. He worked with a professor there on a major research project involving microfluidic devices. He and an MIT professor explored ideas that might one day lead to tiny battery-powered microfluidic chips. He also got fascinated by the design of the semicircular canals that help vertebrates balance. Now he's kicking around a small project involving sharks.

It may seem disjointed, but for Mr. Squires, who describes himself as very gregarious, being at the intersection of a number of fields feels just right. Fluid mechanics, he says, "has the perfect mixture of things that are intellectually interesting but also things that I can talk to my parents about."

HAPPINESS

After an early childhood in Wisconsin, Mr. Squires grew up in Southern California. His mother taught elementary school, but his father worked in marketing for local companies. He stayed close to home for college, graduating from the University of California at Los Angeles with a bachelor's degree in both physics and Russian.

Happily, he admits, he got into both fields in high school, he had to choose between taking physics and physiology. "I didn't know the difference and just picked one at random," he says. At college, he tried to pass out of his foreign-language requirement by taking the Spanish exam, but he didn't score high enough. So he enrolled in Russian and ended up loving it.

In addition to Russian, Mr. Squires speaks fluent French and passable Arabic. He loved traveling the world, but dreams of it now that he is married and the father of two children under 22 months.

He is adept at explaining his research in simple terms. He sounds a bit like an excited kid when he starts talking about how microfluidic devices could be created using the tools that have been developed for making microelectromechanical systems.

Imagery, he says, tiny chemistry labs where a slice of a reaction could be done with a single chip. Or imagine taking a tiny drop of blood and doing a full set of lab work. Imagine an indolent device that monitors the level of a certain drug in your bloodstream.

Then he pauses, worried that he's spinning too many "child-geek" tales. "I don't want to sound like a wise-old-pitchman," he says, "but there's a whole lot of possibilities." Two generations ago, he says, "when you had the first computers that filled a room, who would have thought that now we would use computers for all the things we do today?"

He has a good sense of the overall potential of the field because he worked with Sarah Oakey, a professor of bioengineering at Stanford University on a Slipage review article that will appear in the journal Review of Modern Physics. He has not stopped dreaming about putting microfluidic devices into the human body. He has spent time studying one that's already there. That's essentially what the canals in our ears are.

In graduate school, he collaborated on mathematical models to examine the cause of one kind of vertigo. That then led him to examine how the structures work. After studying the physics of the canals, Mr. Squires says, he speculated that the canals need to be the size they are to work properly. Essentially, he says, evolution has created a sense of balance that is as good as it is going to get.

SUNNY DAYS

At Santa Barbara, the search committee was attracted by Mr. Squires' "maturity and breadth," according to Matthew Tirrell, dean of the College of Engineering, for instance, as a postdoc, Mr. Squires had organized seminars at scientific meetings—"a task generally reserved for more seasoned scholars," says Mr. Tirrell. "He has the capacity to summarize the whole field and he's also produced some interesting research on fluid motion," he adds.

He figures that either all the options are great or all the options are terrible. In this case, having his family in California made staying out West attractive. And the sunshine didn't hurt.

"I wouldn't be all down to the weather, but lifestyle is part of it," he says. "Having lunch with my kids, being able to live near the beach, being able to bike to work."

Mr. Tirrell cringes when location is mentioned. "We're continually fighting the idea that the only thing we have to offer," he says. "But he's excited. He's excited that his chemical engineering program, which is considered a top 10 in the country, is going to be a top 10 in some higher ranked programs." Part of my pleasure is in attracting him, he says. It's not a matter of saying to him, "You're going to go to MIT."

Mr. Squires says that ulterior motives have driven the interdisciplinary focus of Santa Barbara. "At Santa Barbara a scientist works with other researchers—no matter what department they're in," he says. "If you can mean you can kind of it everywhere."

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