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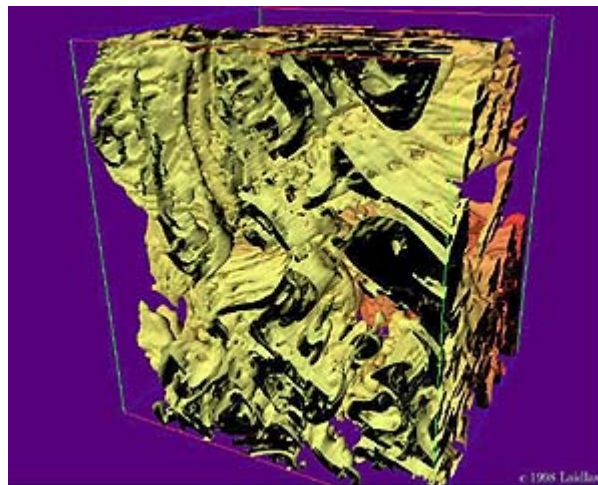
## Brown-RISD course unites two disciplines, two institutions

*Interdisciplinary Scientific Visualization pairs artists and programmers; **joint faculty committee** will explore further collaboration.*

by **Elizabeth Miller**

Science, like art, leaps forward with each new vision. Think about the revolutionary contributions of Galileo. Darwin. Monet. Picasso. E.O. Wilson. Andy Warhol. And these students in CS 237, Interdisciplinary Scientific Visualization.

Team-taught by computer science Professor David Laidlaw and Fritz Drury, head of RISD's illustration department, CS 237 folds student artists and programmers together - at least for one semester, and maybe for life. Laidlaw and Drury believe that the interaction between artists and scientists is essential to the growth of both disciplines.




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**The RISD-Brown course, Interdisciplinary Scientific Visualization, helps students create illustrations like this one by David Laidlaw. It demonstrates the temporal evolution of turbulent jet concentration isosurfaces, and was created with Haris Catrakis and Paul Dimotakis.**

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The 16 students in the class are working in artist/programmer pairs to design a scientifically accurate and visually compelling interactive virtual-reality model of an artery. This project crisscrosses several disciplines; the students use data from applied mathematics Professor

George Karniadakis' research group and bioengineering Professor Peter Richardson frequently lends his expertise.

"So how will you show blood flow?" Laidlaw asks. Enthusiastic hands go up. A RISD student asks, "Can I make the model look more organic?" "Yes." "But how?" Laidlaw instructs the Brown computer science students to walk their partners through the program. In return, the RISD artists challenge the programmers to think outside their for-loops. The partnerships are successful. "How about a red gradient to show velocity?" "Great," someone says, "very bloody."

Why a project about arteries? Simple. Understanding them could save lives. Laidlaw is pragmatic. "There is something I find immediately gratifying about creating pictures, particularly when they're related to real-world applications," he says. "Science offers endless questions that may eventually be understood through visualization and computational modeling."

Only recently have sophisticated computer models enabled scientists to see what's really going on as arteries branch, twist, expand and constrict, and are acted on by unseen forces like pressure. In "The Computer Scientist as Toolsmith II," Frederick Brooks Jr. writes, "The magic of graphics, backed by the megaflops of computer power, does indeed give us a creative medium of a totally new kind. These worlds can show us new truth about our own world."

Advances in technology revolutionize how we see the world. The students in CS 237 are

experiencing this firsthand using the "Cave" – an 8-foot immersive virtual reality cube – as a 21<sup>st</sup>-century canvas. By the end of the semester, they will have designed a graphic representing the state of the art in our knowledge of arterial blood flow. This is no small feat. "Our students are exceptionally creative," Drury says. Laidlaw adds, "And they work really hard."

For two years, Laidlaw taught CS 237 as a straight computer science course, with a creative twist. He has always been interested in artists' insights into scientific problems. Then last year he met Drury, an artist with an interest in scientific illustration. They went out for sushi, but neither remembers what they ate. The conversation was too interesting.

Here was a magnificent opportunity. They could bring together not only student artists and computer scientists but two institutions – Brown and RISD – often known in relation to each other only as up or down the hill. One of the goals of President Simmons' administration is a stronger relationship between the students, faculty and staff of these two extraordinary places.

By working in artist/programmer pairs Laidlaw and Drury are laying that foundation, as are their students. Interdisciplinary classrooms are very compelling; there is the constant spar and feint of differences of opinion that foments creativity. There will always be a demand for scientists who can translate their data and for artists who can manipulate technology. The students in CS 237 are both.

## **Brown, RISD create joint faculty committee**

The provosts of Brown and the Rhode Island School of Design have announced the creation of a joint faculty committee to explore the potential for greater collaboration on academic activities and programs.

The Brown University-Rhode Island School of Design Joint Faculty Committee will be co-chaired by Brown's Robert Scholes, professor emeritus of modern culture and media, and Paul Sproll, professor of art education at RISD. The committee includes 10 faculty members from each institution.

The charge of the committee, according to a joint memo issued Nov. 7 by Brown Provost Robert Zimmer and RISD Provost Joe Deal, is to "identify collaborations that seem most likely to significantly enhance the missions of the two institutions." The members will "evaluate and make recommendations on potential joint graduate and undergraduate programs, potential faculty collaborations for purposes of research, artistic production and education, and other potential collaborations that would promote and enhance the teaching and research efforts of both institutions."

In addition to Scholes, committee members representing Brown are Maggie Bickford, professor of history of art and architecture; Mari Jo Buhle, professor of American civilization; Tony Cokes, associate professor of modern culture and media; Wendy Edwards, professor of visual arts; John Emigh, professor of theater, speech and dance; Richard Fishman, professor of visual arts; Forrest Gander, professor of English; David Laidlaw, professor of computer science; and Todd Winkler, associate professor of music.

In addition to Sproll, committee members representing RISD are Lucretia Giese, associate professor of art history; Alexander Gourlay, professor of English; Lucinda Hitchcock, assistant professor of graphic design; Gary Metz, professor of photography; Mark Milloff, assistant professor of foundation studies; Marilyn Rueschemeyer, professor of history, philosophy and social sciences; Rosanne Somerson, professor of furniture design; Bill Seaman, professor of digital media; and Anne Tate, associate professor of architecture.

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