

Engineering

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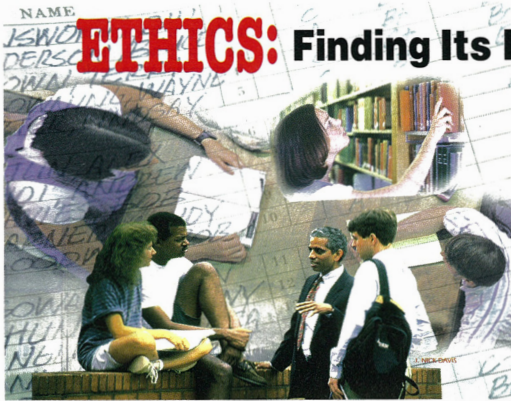
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a better
Job Board
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ETHICS: Finding Its Place in Engineering Schools



By Rachel Davis
Staff Writer

The popular "Engineering Ethics" course at Texas A&M University has just let out, and as most of the students collect their books and head for the door, a few linger behind to chat with the leaders of the class, professional engineer Michael Rabins and philosophy professor Ed Harris. One young man approaches Rabins and refers to that day's ethics discussion,

which involved an engineer falsifying timesheet information for an employer who ran out of money on a particular project. The student says he encountered a similar situation during a summer internship.

The student explains that after his boss asked him to sign an inaccurate timesheet, he told the boss, "How about I don't sign anything this week and you don't pay me—and from now on,

would you mind only putting me on projects you have money to pay me for?"

After a pause, Rabins prompts the student, "So, what did he say?" The student answers, "My boss took out his wallet and paid me for the week out of his own pocket."

It just goes to show, ethical dilemmas are everywhere. As Rabins does with much of the student feedback he receives in his ethics courses, he included this story in the second edition of an ethics resource he co-authored, *Engineering Ethics: Concepts and Cases*. Like a growing number of his colleagues at universities across the country, the now-retired (but still teaching) professor of mechanical engineering has a keen interest in the incorporation of ethics into technical engineering curriculum, to prepare students for the ethical challenges that will undoubtedly crop up during their careers.

The evolving interest in ethics stems partly from industry's

demand for engineers who possess "people skills," an understanding of ethics, and a precision in thinking with words as well as with numbers. More companies are appointing ethics officers, establishing ethics hotlines, and recognizing open-door policies, Rabins points out. In addition, ABET Engineering Criteria 2000 will require engineering programs to demonstrate that their graduates have acquired "an understanding of professional and ethical responsibility," among other outcome-based performance criteria.

Over the last two decades, funding from the National Science Foundation and others has enabled collaboration between engineers and philosophers that has yielded both stand-alone professional ethics courses and efforts to incorporate ethics into freshman courses as well as senior capstone and other design courses. Rabins estimates that about one-fifth of U.S. engineering schools either are using some

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Fire Sprinkler Design Sparks Debate Between PEs, Contractors

By David Siegel
Associate Editor

A recently introduced bill in the Florida legislature has stirred up the heated issue between professional engineers and contractors over who has the authority to design fire sprinkler systems.

The bill, which has drawn strong opposition from the Florida Engineering Society, the Society of Fire Protection Engineers, and the Florida Fire Chiefs' Association, would allow contractors without a PE license to plan, design, and lay out fire protection systems. The bill was introduced at the request of the Florida Fire Sprinkler Association, a group representing contractors.

Under Florida's current law, contractors are permitted to design only fire sprinkler systems of 49 or fewer heads. The design of systems with 50 or more heads requires a professional engineer.

Ed Spahn, vice president of the Society of Fire Protection Engineers' Florida Chapter, says the bill highlights the fact that life safety systems do not get proper engineering attention. "If you had a structure, such as a bridge or the backbone of a building, certainly the law requires that the job be performed by a properly qualified structural engineer. You would not turn to an iron-working contractor to do that, but for some reason there's the perception that it's OK on these little pipes in the ceiling," he says.

By Buddy Dewar's count, the fire sprinkler design issue began simmering about 15 years ago, when state law was changed to put fire sprinkler contractors and other construction trades "under the watchful eye of the PE." Dewar, who lobbies for the National Fire Sprinkler Association's Gulf/Atlantic region, says almost all fire sprinkler design requires engineering oversight, but there are very few engineers who are qualified to do the work.

The contractors' answer was to go forward with the legislation that at press time was in the Senate Regulated Industries Committee. Dewar explains that contractors are often faced with fixing what he calls the shoddy designs submitted by engineers who are not

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All in the Engineering Family

By Rachel Davis, Staff Writer

When Rosanne Frandina reflects on her childhood, she recalls Sunday drives through Buffalo, New York, that somehow always ended up at one of her civil engineer father's road construction jobs. She and her two brothers would climb around on the site's heavy equipment, ride on the back of a paving machine or on top of a roller, and "inspect" the work being done. On vacation trips, she remembers, her father would pull the car over at every bridge they crossed and take a picture of it.

On her road trips now, "My kids say, 'Stop! Take a picture of that bridge for Papa!'" 39-year-old Rosanne relates. A passion for engineering is not the only thing professional engineer and land surveyor Philip Frandina passed along to his daughter, who is a PE and Treatment Plant Administrator for the Buffalo Sewer Authority. Philip, Rosanne, and her brothers Frank and Joseph are all PEs, civil engineering graduates of the University of Buffalo, and the recipients of numerous engineering and society awards—and all have been president of the Erie-Niagara Chapter of the New York State Society of Professional Engineers.

Philip Frandina was president in 1983, Frank earned the title in

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Visitors to the National Building Museum in Washington, D.C., during E-Week display the "Bucky Balls" they created from toothpicks and gumdrops. The project helps teach about the strength of geodesic domes. Bucky Balls are named after Buckminster Fuller, the inventor of the geodesic dome—the strongest structure using the least materials.

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MAILING LABEL

NSPE news

Find a Job or Post a Position On the New NSPE Job Board

Answering the demand of job hunters and advertisers for a hassle-free online employment connection, the NSPE Web site's job search pages have been transformed into a more extensive employment service with immediate posting through online credit card transactions and a robust search capability. The upgraded NSPE Job Board is part of a total renovation of the NSPE Web site, www.nspe.org, made possible by a new partnership with Internet service provider Telebuild of Houston, Texas. To start your job search or post an employment opportunity, simply access the "Job Board" button on the NSPE Web site.

The Job Board's search capability allows you to look quickly for engineering jobs by discipline, geographical region, and key words. Just as easily, Job Board's

secure server permits advertisers to post their ads by using an online form and making online credit card payments.

Further job search assistance is provided through NSPE's partnership with Resumé-Link, a free service that posts NSPE members' resumes in an online database that is perused daily by engineering companies in search of new job candidates.

If you need information about using the NSPE Job Board to either find a job or post a position, contact NSPE Job Board, 1420 King Street, Alexandria, VA 22314-2794; 703/684-2875; fax: 703/836-4875; e-mail: jobboard@nspe.org. Technical questions can be e-mailed directly to Telebuild at support@nspemail.com. For information about posting a resume through Resumé-Link, phone 614/923-0608.

Family Has Four NSPE Chapter Presidents

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1988, Joseph in 1993, and Rosanne in 1998, becoming the first woman president in the chapter's history. "We did not plan it that way, but it works out to one president every five years!" Rosanne says.

Their achievements as presidents also seem to serve as markers for the growth of NSPE and its chapters over the last two decades. When Philip was president, he introduced member benefits such as an employment service, free legal advice, and the Order of the Engineer Ceremony, earning the "Most Active Chapter" award in 1983-84 at both the state and national levels. When Frank was president, he initiated joint meetings with other professional societies and an aggressive campaign to increase meeting attendance. Joseph's accomplishments as president reflected NSPE's stepping up efforts to protect the PE license, as the Erie-Niagara Chapter spoke out against the city of Niagara Falls and the city of Buffalo when they each attempted to eliminate the PE requirement for public works officials. Finally, Rosanne's creation of a Web site (erieniagarape.org) to serve as a record of her chapter's history mirrors the Society's incorporation of technology into its growth strategy.

These family members' careers are just as active as their participation in NSPE, and they all have impressive accomplishments under their belts. For example, Rosanne earned the national Young Engineer of the Year Award in 1990. Philip served as Erie County Commissioner of Public Works, Joseph oversees the extensive Buffalo Bills Stadium renovations, and Frank was the first (and as far as the Frandinas know, only) person to score 100% on the New York State PE licensure exam. Rosanne says that although her mother, who died of cancer one month before Rosanne graduated with an MBA,

was not officially an engineer, she "earned four engineering degrees as she helped us through all those years [of exams]."

Although the Frandinas don't like to talk shop much during their weekend get-togethers with the family's nine grandchildren for pizza and "Buffalo wings," or summer visits to their family cottage on Lake Ontario, the discussion will occasionally turn to engineering highlights such as the bridge options for Buffalo's new crossing between the U.S. and Canada, Joseph says.

Even if they don't spend every waking moment talking about it, engineering is in the family's blood. That goes double for Rosanne's children, since she married a mechanical engineer. She says that so far her two boys, ages five and seven, want to either become land surveyors or make toys for Disney. Three of her cousins are also engineers, and Joseph's 14-year-old son is already considering an engineering career.

Throughout their lives, the family has helped and encouraged each other in their chosen profession. Rosanne says that when she lived at home, "there was always an engineering textbook or magazine lying around. Someone was always talking about a homework problem. When it was my turn for college, I was already familiar with the curriculum. I felt like I had already done it."

Aside from their family's engineering connection, the Frandinas have felt honored by the support of their fellow NSPE members, many of whom are mutual friends. "I like to relate how each of the children when starting out in their careers were asked, 'Are you related to Phil Frandina?'" says father Philip. "Now that I'm semi-retired and they're more active, I'm asked many times, 'Are you related to Frank Frandina... or Joe... or Rosanne?'" When that started happening to her, Rosanne says, "Finally, I knew I had made it!"



The Frandina family presidents, from left to right: Frank, father Philip (holding his NYSSPE Erie-Niagara Chapter life membership plaque), Rosanne, and Joseph.

NSPE IN WASHINGTON

A summary of recent NSPE government relations activities

NSPE Pushes to Restore Trust Fund Integrity

Representatives Bud Shuster (R-Pa.) and James Oberstar (D-Minn.) have renewed their effort to restore integrity to the Aviation, Harbor Maintenance, and Inland Waterways Trust Funds by moving them off the unified budget.

NSPE strongly supports the Shuster/Oberstar effort and encourages all NSPE members to contact their representatives and ask them to cosponsor the Truth in Budgeting Act (H.R. 111). The bill currently has 92 cosponsors, far fewer than the nearly 250 who supported a similar bill last session.

The trust funds are user financed and by law are dedicated to improving our airports, air traffic control system, ports, and inland waterways. Yet Congress persists in diverting trust fund revenues to offset general fund programs, resulting in substantial unspent balances in the funds. For example, the cash balance in the Aviation Trust Fund is \$8.5 billion—and could balloon to more than \$50 billion by 2008. Meanwhile, billions of dollars of documented infrastructure needs go unmet. Citing government figures, the Rebuild America Coalition estimates that \$33 to \$60 billion is needed to maintain and improve airports.

The Truth in Budgeting Act will help the nation make the investments necessary to meet these needs. It will ensure that all trust fund revenues are used for the transportation investments for which they are collected.

For more information on the issue or tips for contacting House members, visit NSPE's Legislative Action Center, located under the "Government Relations" button on the NSPE Web site, www.nspe.org.

Transportation Takes You Where You Want to Go

Transportation plays an important role in the lives and livelihoods of Americans nationwide. Our transportation system is such an integral part of our everyday lives that we frequently take it for granted, overlooking the many contributions it makes to the economy and our personal well-being.

National Transportation Week provides an opportunity for the members of the transportation community, including NSPE, to join together to reach the general public. National Transportation Week, celebrated May 16-22, reaches out to young people as well as adults to raise greater awareness of the importance of transportation. Safety, economic competitiveness, and quality of life/environment are this year's themes.

NSPE has been actively involved in the planning of this year's campaign, and NSPE members are urged to participate in National Transportation Week. Members will find materials for use in local efforts at www.ntweek.org. The site also has school outreach materials and links to other transportation organizations.

FY 2000 Federal R&D Funding Uncertain

After last year's large increase in research and development funding in most federal agencies, the engineering and scientific communities were hopeful that the federal government would continue the trend in FY 2000. However, because of the tight constraints on discretionary spending imposed by a statutory cap, R&D programs are caught in a funding squeeze in FY 2000. As a result, the president's budget proposal contains either cuts or small-to-moderate increases for most R&D programs in FY 2000.

In order to fit new spending underneath the caps on federal R&D programs, the president proposes new tobacco taxes, an extended Superfund tax, new aviation user fees, and a one-year freeze on Medicare payment rates to hospitals. The problem with this approach is that these offsets may not materialize. If they do not, even the small increases in R&D across the federal agencies might not come to fruition.

NSPE Executive Director Pat Natale and the government relations staff met with administration officials to talk about President Clinton's proposal and how NSPE can help improve the picture for federal R&D in FY 2000. NSPE has met with Joe Bordogna, acting deputy director of the National Science Foundation, and Ray Kammer, director of the National Institute of Standards and Technology, to discuss these issues.

On a brighter note, Congresswoman Nancy Johnson (R-Conn.) and Congressman Robert Matsui (D-Calif.) introduced legislation to permanently extend the R&D tax credit. More than 100 cosponsors have voiced their support for the bill. Senators Hatch (R-Utah) and Baucus (D-Mont.) are expected to introduce an identical bill in the Senate. With bipartisan support and discussion underway on how to spend the surplus, permanent extension of the R&D tax credit is a possibility. NSPE participates through the R&D Tax Credit Coalition to promote this initiative.



NSPE Executive Director Pat Natale, P.E., (left) and newly elected Republican Conference Chair Rep. J.C. Watts (R-Okla.) discuss the importance of infrastructure investment to the country's prosperity at a recent design/construction reception held at the American Institute of Architects (AIA) headquarters. Watts is also a member of the Transportation and Infrastructure Committee.

By Laurence Bory, Linda Lindsay, & Michael Matlack, NSPE Govt. Relations