Science and engineering work best as a team

The rejuvenated national discussion of science, technology, energy, and prosperity took an interesting turn recently—a turn worth examining, given the mounting interest in the stimulus bill currently before Congress and in the question of how science can contribute. It began when Henry Petroski, an engineering professor and historian at Duke University, published a commentary piece in the Washington Post. Petroski is well known for popularizing engineering.

Petroski began by quoting the line from President Obama’s inaugural speech about harnessing “the sun and the winds and the soil to fuel our cars and run our factories.” If we really want to do that, Petroski wrote, “we shouldn’t look to science” because what “we need is engineering.” Using the example of steam engines—which did see extensive practical use even before scientists sorted out the science of thermodynamics—Petroski asserted that “the truth is that full scientific understanding isn’t always necessary for technological advancement.” In fact, we need both scientific research and engineering, as Petroski indirectly acknowledged in concluding “Obama should keep his promise to ‘restore science to its rightful place’—and put engineering on at least an equal footing.”

AIP submitted a response to this commentary, saying that although it’s true engineers’ unique indispensability needs better recognition, it’s also true that when it comes to the batteries, solar cells, and fuel cells that Petroski cited, even engineers’ most innovative efforts—though crucial and needed immediately—can’t ultimately achieve the desired technological advancements. This requires a deeper understanding of nature’s mysteries, just as was required for inventing microelectronics, DNA sequencing, medical imaging, and other technologies. Only science can deliver that understanding—which engineers can then apply.

Apparently the Post’s editors recognized that Petroski’s article needed a clarifying response. They didn’t use our letter, but they printed two that sounded much like it. In the first, Michael Kupper of Rockville wrote, in part, that “semiconductors, the basis of today’s computer technology, would have never been developed without scientific interest in materials that engineers at the time considered useless.” The letter from Andrew J. Lovinger, a member of the National Academy of Engineering, began, “I was dismayed to read Henry Petroski’s Outlook commentary. When the rest of the world is rapidly catching up to us in science and technology, the last thing our scientists and engineers should be doing is arguing about who is more important.” He too gave some examples of new scientific knowledge leading to new technology development—and he closed by declaring that “science and engineering are an integrated enterprise and work best in tandem.” Point well taken!

Sincerely,

Fred

Publishing Matters
A perfect match
AIP’s international research journal, *Biomicrofluidics*, is proud to announce the newest member of its editorial board, Professor Jianhua Qin (left), the leader of the microfluidics group at the Dalian Institute of Chemical Physics, Chinese Academy of Sciences. Qin obtained a BS from China Medical University, an MD from Dalian Medical University, and a PhD from Dalian Institute of Chemical Physics. She is considered to be one of the top researchers in microfluidics in China. Her research focuses on microfluidic-based technologies for biomedical applications with an emphasis on disease diagnostics and drug screening—a perfect match for *Biomicrofluidics*.

**Physics Resource Center Matters**

**Historical/archival study of corporate physicists**

The final report of the Center for History of Physics’s five-year study of the history of physicists in industry is now available both online and in print. Using a cross section of America’s largest high-tech companies, it is the first systematic study of the work that physicists do and how that work is organized and documented. Our findings are based on interviews with more than 130 staff—science managers, bench physicists, and information specialists—at 15 companies, comparative surveys of industrial archives in Germany and the UK, and other research.

Among the major findings described in the report:

- The funding and organizational structures of R&D have undergone radical changes since the 1980s.
- Companies haven’t achieved a consensus on how to conduct research. They are struggling to find the best mix of longer-term research, to develop new technologies, and to establish shorter-term programs tied to product improvements.
- Many of the companies rely on external sources, especially physicist entrepreneurs and physics start-ups, for innovative technology.
- No standard arrangement exists for preserving the records of corporate R&D, and historically valuable records are being lost as a result.

**Around AIP**

**Who we are - Human Resources**

Human Resources is responsible for many employment-related services for our internal and external customers. Internal customers are AIP employees and management; external customers consist of several of our Member Societies’ staff and management. These services encompass the administration of benefits, such as health, retirement, and disability; employee relations; compensation, including the performance appraisal process; training and development; and recruitment, including the hiring and orientation of new employees. Human Resources has offices in College Park and Melville, both under the guidance of Theresa C. Braun.
Vice President of Human Resources. These two offices work in tandem to meet the needs of all AIP employees and managers at each location. Reporting to Human Resources are the daycare centers—at both sites—which will appear in a separate issue. For more on the specific roles of the Human Resources staff, check out page 45 of the organizational chart.

We invite your feedback to this newsletter via e-mail to aipmatters@aip.org.

For past issues of this newsletter, visit the AIP Matters archives.