



Keeping It Close to the Vest

I just returned from the SPIE Annual meeting in Seattle. There, I did something I hadn't done in a quite a while: I gave a paper at a conference. The conference, Novel Optical Systems Design, was chaired by José Sasián from the University of Arizona and John Koshel from Breault Research. My paper concerned the use of commercial lens design programs to model and analyze ultrafast (femto-second, not $f/0.5$) optical systems.

Although I had loaded the PowerPoint presentation onto my Titanium PowerBook, I took along my transparencies on the off chance that some glitch from the digital projector would rise up and bite me. It used to be that it was difficult to make our own overheads, but we were certain we could present them when we got to the conference. Now, it seems to be the other way around: we have traded the certainty of presentation for the ease of generation.

With the exception of the undergraduate student who was working with me this summer and being paid by an NSF grant out of a Research Experiences for Undergraduates (REU) program, my research is unfunded at present. So I am free to pursue whatever I want...and then talk about it. But there have been indications that publication of the results of basic research may be curbed. Recently a draft policy statement titled "Mandatory Procedures for Research and Technology Protection within the DoD," was composed by the Office of the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence. Its purpose was to create a set of rules, in the light of the September 11th attacks, that would have required academic scientists doing military research to obtain prior approval before publishing or discussing their work. Usually this type of control was exercised only if the research was classified.

The document was circulated among the military services and those who do research that is supported by the defense agencies. The response from the research community was swift and very much against the procedures. Particularly troubling were the simplistic methods that were proposed to single out those papers that would be embargoed under these procedures. Even those in the military

research establishment commented that the policy could have a chilling effect on important military research.

Certainly there is some work that should not be published in the current climate: vulnerability of various systems to sabotage or attack, technologies that could be used to generate threats to broad areas of a populace, and other work that would augment or enlarge the arsenal of a terrorist group. But none of this material is basic research and development. So tinkering with the publication of basic research will introduce pernicious effects without any compensating increase in safety. I consider it to be an action that is supposed to show the world that something is "being done" in response to the terrorist threat.

Some of you may remember that 18 years ago, SPIE was subject to a similar action. The U.S. Department of Defense (DoD) restricted the presentation at the SPIE Annual Meeting of more than 100 papers that had previously been cleared. This action wrecked a number of conferences and serves as an object lesson to what can happen when rules for dissemination are set by a group unaware of the technical and professional implications of the decisions. Apparently, the current effort is being reexamined and the new guidelines may not include basic research.

Although researchers have to be alerted to such constraints on their research, the real threat to scientific and technological advancement may lie elsewhere. This threat may not be as easily confronted because there is no entity that can be directly challenged, as in the case of DoD policy. In 1980, the U.S. Congress passed the Bayh-Dole act, which permitted those with government grants and contracts to retain the patent right to inventions that were developed with federal funds. It also encouraged the inventors to license the inventions to industry. Since then, the number of academic institutions and the patents they received has risen dramatically. A report on this trend and discussion of academic publications in general can be found on the Web at: <http://www.nsf.gov/sbe/srs/seind02/c5/c5s3.htm> or as an Adobe Acrobat file at: <http://www.nsf.gov/sbe/srs/seind02/c5/c5s3.pdf>.

This cross-fertilization of the academy with industry would seem to be all to the good. However as the report points out:

"University patenting and collaboration with industry

in the United States have contributed to the rapid transformation of new and often basic knowledge into industrial innovations, including new products, processes, and services. Other nations, seeing these benefits, are endeavoring to import these and related practices in an effort to strengthen their innovation systems. In the United States, however, the relative success of university-industry collaboration and academic patenting has raised a number of questions about unintended consequences for universities, academic researchers, and academic basic research.

“Concerns have been expressed about potential distortions of the nature and direction of academic basic research and about contract clauses specifying delays or limitations in the publication of research results. The possibility exists that research results may be suppressed for commercial gain, deleterious not only to the conduct of research but potentially also to the perception of academia as an impartial seeker of knowledge. Unsettled questions also arise from faculty members’ potentially conflicting economic and professional incentives in their relationships with industry or as officers or equity holders in spinoff firms.

“The latter issue also arises for universities, which are moving in the direction of acquiring equity in spinoff firms they generate. They also face the question of balancing their support across different fields or concentrating on a few lucrative areas. Scholars are now asking whether academic patenting practices

may in fact be undermining the intended goal of enhancing the transfer of new technologies.”

In the field of optical engineering, where much of the advanced development occurs in industry rather than academia, there has always been a certain reluctance to publish. Part of the rationale is that publication does not lead to benefits and promotion as it does in the academic arena. But another factor is that some in management believe that by keeping things close to the vest, the directions and initiatives of their company would be protected. An unfortunate consequence of this approach is that the engineers and designers for that firm have no idea what is going on because they don’t participate in the intellectual exchange within their field. Suppression of scientific and technological advances is a two-edged sword.

Isaac Newton said the reason he could see so far was that he stood on the shoulders of giants. The publications in this journal and others like it chronicle the advances in our field, providing the shoulders for others to climb upon. It will be a terrible thing for the advancement of science and technology if dissemination of basic research is stifled by governmental regulation or if our research institutions decide to crouch down and crawl into their respective caves to count their patent royalties.

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