

## LOBBYING ENGINEERING ISSUES: ADVOCACY & THE ART OF REASSEMBLING NATURE

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Both engineers and lobbyists have the formidable power to change the quality of our lives with the simple stroke of a pen or mere utterance of a recommendation. Yet engineers and lobbyists work largely out of sight of the general public. When mentioned together, engineers and lobbyists conjure up pictures of the odd couple, with these unconnected roles: the engineer as a master of creation, combining science and creativity into the art of reassembling nature to improve the quality of life; and the lobbyist as a master of oral communication, elegantly dancing through the maze of the political process, educating people in order to defend a cause. However, despite these different images, there is a logical partnership between engineers as creators and lobbyists as communicators. By learning more about communication and the legislative process, engineers, especially women, may find an opportunity to diversify their skills.

How does lobbying for engineering issues affect engineers, the engineering profession, and the general public? Most people tend to go about the business of everyday life unaware of an engineer's impact on their life so long as technology and mother nature are in harmony. Only when faced with technological failure, a destructive act of nature, or a need for change do people realize the far-reaching impact engineering has on their lives. Then the engineer is beckoned to protect public health, safety, and welfare. Weaving the tapestry of technology, science, and creativity, engineers are called on to design systems for efficiency, cost effectiveness, long life, and easy operation -- enhancing the quality of life.

Like associates in business, the engineer acts as a supporter, sitting in the background industriously working on design, planning, or research, or as a leader, at the fore front actively managing crisis and negotiating change. The lobbyist also plays these two roles: support in the form of providing information as a public service, and leadership in the form of formal lobbying to influence legislation.

What would happen if engineers took on the more persuasive role of the lobbyist? In design and research work, engineers study and reassemble nature to influence the quality of life; why not also influence legislation? Even though formal lobbying and informal information exchange are different roles, they seek similar results. Consider the

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difference between the roles of support through providing information and leadership through advocacy -- mingling technology and politics, they both impact society greatly.

Now consider the benefits engineers can offer the legislative process by taking on the role of lobbyist -- perhaps a new dimension of engineering. Engineers are known for turning ideas into reality, and lobbying is simply another mechanism to achieve an end. Might it offer an efficient, less risky, and more accurate legislative product? For example, when dealing with the Safe Drinking Water Act, engineers often have little influence in interpretation of risk assessment data. The allowable levels of contaminants are set by the Environmental Protection Agency (EPA). However, they are usually effected by political decisions and court battles involving utilities or environmental groups. Yet engineers have the key to all the best available technology, an expertise well studied and not fully understood by lawyers and politicians.

What role can engineers, citizens, and lobbyists play in the exchange of technical information?

Engineers

- technical impact
- facts and science

Lobbyists

- legislative impact
- negotiations bridge

Citizens

- personal impact
- emotions

Engineers communicate technical information through sight and calculations. The general public communicates human needs. Lobbyists communicate opinions and interests through advocacy. Each group seems to play an important role in the process. However, consider that an engineer's background and skills can easily expand to include all three rolls. And if the engineer represented all three roles, is it possible that s/he could paint a clearer picture to legislators about the impact of engineering on society? Decisions could be made which better understand the interrelation between imagination, science, plan design, construction, job creation, quality of life, and our future in general.

How can engineers use lobbying skills to represent engineering issues? Comparing the two roles, we see the following differences and similarities:

	<u>Engineers</u>	<u>Lobbyist</u>
<i>Focus</i>	design, research, planning	advocacy, education
<i>Skill Base</i>	math, science, technology	public policy, communication
<i>Environment</i>	technical community	government establishment
<i>Communication</i>	visual and tactile	oral
<i>Process</i>	human endeavor	human endeavor
<i>Interest</i>	quality of life	quality of life

Some engineering and science societies link members with lobbying efforts through fellowship and ambassador programs. Here engineers, scientist, and technologist work with members of Congress on issues of concern to their professions. The Carnegie Commission reports that well over 500 people are now working in a program called the Congressional Fellows Program. The fellows experience the legislative system by

helping with the technical details of research, bill-writing, and reporting. Faced with a massive infusion of information, members of Congress have little time to read and utilize reports as a means to process thought and establish legitimate expertise; thus they depend on the direct assistance of engineers and others.

What are the "hot" engineering issues now being lobbied? According to active federal lobbyists in the engineering societies, engineering issues are not at the top of the agenda because the federal focus is now on health care, welfare, and crime. However, important engineering issues are being promoted both through formal (direct lobbying) and informal (educational) methods. Engineering issues now being lobbied and common to most engineering disciplines include:

Professional

- competitiveness
- education
- employment
- professional liability

Technical

- energy
- environment
- infrastructure

How do these issues affect you? Do they have an effect on your neighborhood, business, organization, professional association, or livelihood? Whether lobbying formally or informally, engineers can influence the outcome of legislative language. Ideas presented to congress or state legislators may sound good on paper, yet when the technical details are scrutinized the ideas may not be beneficial to society. Lobbyists and/or engineers who care strongly about a public issue or policy (for reasons either professional or technical) can, through lobbying: 1) offer their perspective or viewpoint, 2) use their technical expertise to show how a bill will help or hinder, and 3) endorse a bill.

Other engineering issues of interest to different engineering disciplines and now being lobbied include:

- aerospace
- clean water
- green technology
- health and safety
- qualifications-based selections for services
- research and development
- sustainable development

The potential impact of engineers and related professions lobbying for legislation is sizable. The Carnegie Commission on Science, Technology, and Government reports that "*aggregate membership claimed for 'scientific, engineering, and technical' associations tops out at roughly 16 million.*" The American Association of Engineering Societies (AAES), "*a multidisciplinary organization of engineering societies*", recognizes over 700,000 engineers as members of their associate societies.

As engineers become more involved in the legislative process, ethics becomes a major consideration. What issues would an engineer lobby for -- professional issues, technical issues, or perhaps civil rights issues? Is it self-serving to lobby for professional issues? If so, is it wrong? And some engineers contend that civil rights-related employment



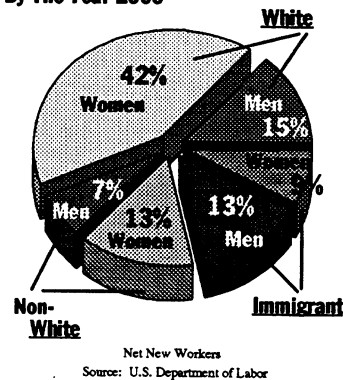
issues are not real engineering issues. One engineering society states that the human issue of women and minorities in engineering is a nontechnical issue which it does not take on, because it focus only on technical issues. Yet one category of the 1994 public policies priorities listed by the American Association of Engineering Societies (AAES), representing some 26 engineering societies, clearly identifies engineering employment and practice as an issue. One might wonder why this incongruity. An oversight? Unclear perceptions? Is the engineering profession simply new to dealing with human development issues? Yes, the human issues, especially gender and cultural diversity issues, are new and complex for everyone. And, yet the human issues related to employment are in the final analysis, about productivity, which is indeed a real engineering issue. We must look more closely at human issues in engineering and technology.

People are our greatest resource. In fact, human issues are a dimension of engineering that have the potential to improve productivity, creativity, communication and ultimately the bottom line of business.

Given that the U.S. is now faced with a global economy and changing demographics, it is noteworthy that the human issues of gender and racial diversity in engineering are not at the forefront of lobbying issues for engineers. Over the past few years, reports were made about women and minority issues in engineering. However this issue does not appear listed as a priority for engineering societies.

Engineering is a nontraditional occupation in which far less than 50% are women. Women and minorities are both underrepresented in engineering. According to the 1993 National Survey of Women and Men Engineers: A Study of the Members of 22 Engineering Societies, women represent 8% and minorities represent 4% of the engineering profession. The U.S. Department of Labor recognizes that by the year 2000 over 60% of the **entering** workforce will be women and minorities.

**The Changing Labor Force:  
By The Year 2000**



What issues are important for women and minorities in engineering? Many reports done by engineering societies and committees confirm the barriers to women and minorities in engineering. The barriers are known and clearly defined. The most frequently identified include:

1. Salary inequity

According to the *Harvard Business Review*, the United States ranks at or near the top of all industrialized nations for the strength of women's qualifications, yet

the U.S. falls toward the **bottom** of the list when women's and men's earnings are compared. Note the international comparison of the ratios of women's earning to men's earnings: Sweden .77, Austria .74, Australia .73, Norway .71, Germany .71, United States .67, and Switzerland .65.

2. Negative perceptions about women's skills  
*The Report of the NSPE Women in Engineering Task Force* discusses how negative perceptions are barriers to promotion and progress for women in engineering.
3. High turnover rates among women and minorities choosing to change careers  
*Gender & Culture In Science & Engineering*, a statewide study in Maine, reports that hostile environments caused career changes for women twice as often as men in business and nearly three times as often in education in science and engineering professions.
4. Discriminatory and harassing work and educational experiences  
*A National Survey of Women and Men Engineers: A Study of the Members of 22 Engineering Societies* recognizes job discrimination and how consistent inequities are felt by women three times as often as men.

Removing these barriers to the contributions of women and minorities in engineering is worth lobbying for. Such a lobbying effort would improve the quality of life for the engineering profession and the general public. The benefits are many -- to better compete in a global market, foster quality and economic development, provide more equal education opportunities, improve management skills, offer more creative technological solutions, fully utilize a diverse workforce, and improve productivity. It could also be a mechanism for complying with Civil Rights Policies and thus reducing the bottom line for business. The call is for engineers to fully utilize their creativity and yet keep an open mind. Ancient Chinese wisdom from Stephen Mitchell's translation of the Lao-tzu's Tao Te Ching (500 B.C.E.) reminds us about the value of having an open mind in science or engineering:

*" A good traveler has no fixed plans  
 and is not intent upon arriving.  
 A good artist lets his intuition  
 lead him wherever it wants.  
 A good scientist [engineer] has freed himself of concepts  
 and keeps his mind open to what is."*

As engineers, we would serve ourselves and the country well by taking up the role of the lobbyist, mastering the art of oral communication, expanding the nature of the "important and learned profession" (engineer's code of ethics) of engineering, and enabling us to better communicate our expertise to government as well as the public, because we hold the first responsibility for creating and maintaining the nation's quality of life. ✧



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## Biographical Sketch

Pat Hinckley is an engineer who teaches diversity. As an independent consultant, she brings 20 years experience in engineering, education, business, and diversity. She holds two degrees, Civil Engineering and Engineering Technology, from the University of Maine. She has practiced engineering at Bowdoin College, the University of Maine System, and in private consulting firms. Drawing on both experience and research, her work integrates the human and technical elements of education and business to reduce operating budgets and retain women and minorities.

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