From Public Understanding to Public Engagement

NIH Council of Public Representatives October 26, 2007





The whole science-society relationship is evolving

 A new paradigm is emerging for scientific communication with the rest of the public



Some (obvious) contextual thoughts about the science-society relationship



Baseline truism:

Science and technology (S&T) are ever-more imbedded in every aspect of modern life!



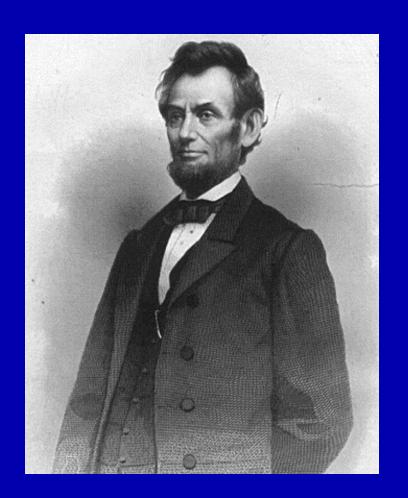
Corollaries:

- For people to prosper in modern society, they need fundamental understanding and comfort with S&T
- For science to prosper, the science-society relationship must be positive and strong



Public sentiment is everything. With public sentiment, nothing can fail; without it, nothing can succeed.

Abraham Lincoln





We have a problem

- The science-society relationship is experiencing significant tension
 - Has been eroding of late





As Charles Dickens would say.....

- We're living in the best of times
- And the worst of times





On the one hand We're living in the best of <u>scientific</u> times





Advances in science are coming at a fantastic pace

- The rate of incremental advance is accelerating
- New technologies are enabling quantum jumps in understanding
 - With great practical significance



On the other hand....



Other issues <u>within</u> science are not going so well...and negatively affect the broader (societal) context for science

- Incidents of scientific misconduct
- Human subjects concerns
- Animal welfare issues
- Conflict of interest problems



These problems are not unique to American society





These factors are *internal* to science

• There are problematic <u>external</u> factors as well



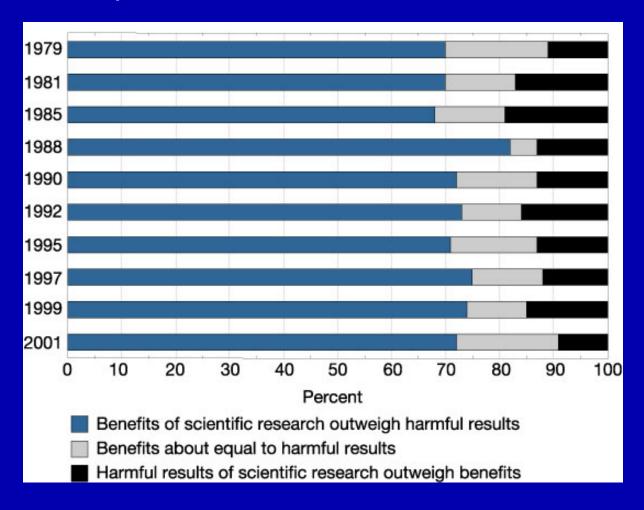


People generally still respect science and technology....





U.S. public's view of scientific research





They have little understanding of what is and is not science

- 60% of Americans believe in extrasensory perception
- 41% think astrology is somewhat scientific
- 47% still do not answer "true" to the statement: "Human beings developed from earlier species of animals"



There's a lesson here!



People need to know more about science as an *enterprise*

- What makes something scientific?
- What is "research" all about?
 - What is and isn't research?
- The limits of scientific investigation
 - Natural explanations of the natural world



Much science-society tension results from conflicts between scientific findings and

- Political/economic expediency
- Core human values



One political (economic) example...

Is there climate change/global warming?







Science-society tension results from conflicts between scientific findings and

- Political/economic expediency
- Core human values



Scientific issues that abut against values

- Cloning and stem cells
- Studying "personal" topics
 - Sex
 - Genetics of behavior
 - Intelligence
 - Aggression
 - Individual personality traits
- "Intelligent Design" versus evolution in science classrooms and science museums



Many <u>neuroscience</u> issues abut against human values

- The nature of the mind
 - Mind-body-soul concepts
 - Free will vs. determinism
- The ability for anyone to look into your brain and watch your mind in action
 - Darkest secret thoughts
 - Lie detecting



Overlay of values is having serious consequences for the whole science-society relationship

- Society wants to influence science
 - Rather than just the reverse
- Creating a growing divide between science and the rest of society
 - With negative consequences for both!



What can we do about the science-society tension?



The typical response is to advocate more public education about science



But we can't just "educate" our way out of it

- Not all problems result from lack of understanding
 - People do understand much of what we're saying or want to do
 - They don't like it
 - The conflict with their core values wins out over their view of societal benefits



We must go beyond public education/understanding

Public Understanding +



Public Public Engagement



This involves changing the <u>nature</u> of the communication

Communicating to the public



Communicating with the public

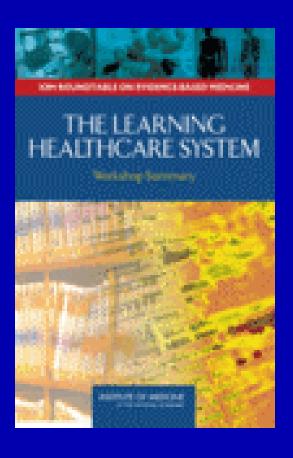


It's not just about reducing tension!

- There is mutual benefit from greater public engagement
 - Genuine communication



IOM Roundtable on Evidence-Based Medicine



Emphasized the need for active roles of both patients and health care professional in evidence development and dissemination

Autism and the Environment

Background:

- Secretary of HHS requested the Forum provide a neutral venue to bring together scientists, autism community, and sponsors to identify and discuss the most promising scientific opportunities relating to the environment's potential impact on the development and progression of ASD.
- 13 member Planning Committee included 3 IC directors and representatives from 4 different advocacy organizations

Workshop:

- About 50 people from all sectors
- Model of "public engagement" with science

Dissemination:

- Workshop proceedings with index of scientific opportunities in press
- Summary article submitted to *Pediatrics*
- Hope to feed national research agenda





EURAB Report and Recommendations on Research and Societal Engagement

- Medical relief workers learning from local customary homeopathic practice
- Surgeon's recognizing how faith can help in recovery

Source: European Research Advisory Board, European Commission, June 2007



Public engagement means <u>listening</u> (and responding) to the public about:

- Their concerns about science and technology and their concomitants
 - Risks and benefits
 - Encroachment on human values
- Their priorities among research areas
- Questions they would like or need us to answer
 - Help frame the research agenda



Government agencies need to be recipients of and respond to engagement insights!

- They are accountable to the public
- They help set research agendas
- Public information
- Bully pulpits



Government R&D agencies should all initiate public engagement programs!

 Both NSF and NIH are exhorting or requiring outreach efforts



What are we talking about doing?



Public engagement can be done in a variety of ways

- Public forums/town meetings
 - Usually don't work well
- Visits with community groups
- Small group, problem-solving sessions
- Exploiting natural opportunities
 - Science museums and centers
 - Physicians offices
 - Over the neighbor's fence



AAAS Program Activities –

Public Understanding and Engagement with Science and Technology

- Center for Public Engagement with Science and Technology
- Science Update radio show
- EurekAlert! web site for science journalists
- Family Science Days annual meeting event
- Public Science Day
- Dialogue on Science, Ethics and Religion
- Science literacy projects
- Work with science museums and centers
- Town meetings
- Meet the Scientists
- Outreach to community organizations



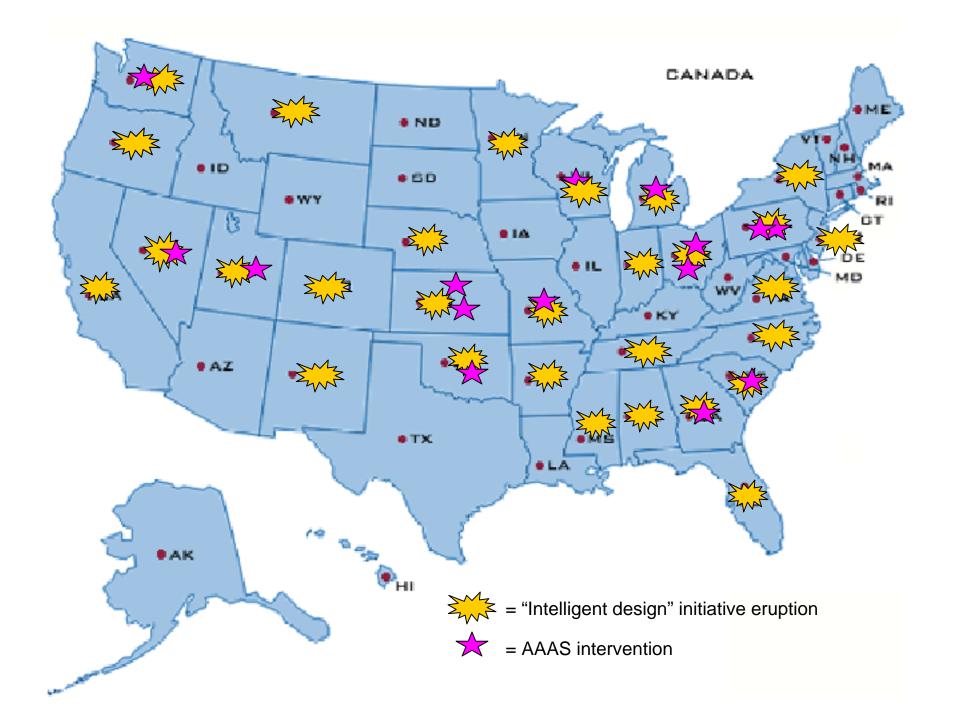
AAAS "Glocal" strategy





Working with local opinion leaders and resources (AAAS "Glocal" Strategy)

- Local media and op-eds
- Clergy
- School officials
- Local government leaders/politicians
- Science museums and centers
- Community groups
- Town meetings





What am I asking of the scientific community?



I've been railing about this for quite a while!



Scientists need to have

a real dialogue with

the public, listening

to its concerns.



Outreach Training Needed

CANNING THE RELATIONSHIP BETWEEN SCIENCE AND SOCIETY RECALLS CHARLES DIOXENS' ead for A Tale of Two Cities: "It was the best of times, it was the worst of times... advances are coming at an unprecedented page, and they hold great promise for further improving the human condition. The public is clearly happy about this. At the same time, however, society is exhibiting increased disaffection, forcered by instances of scientific flaud. and by scient into that ged with financial conflicts of interest. Perhaps worse, public skepticism and concern are increasingly directed at scientific issues that appear to conflict with core human values and religious beliefs or that prote conflicts with political or economic expediency. These include embryonic stem cell research, the teaching of evolution in schools, evidence for global dimute change, and controversion over generically modified foods. The ensuing tension threatens to compromise the ability of the scientific enterprise to enve its broad societal mission and may weaken societal support for science.

There is a growing consensus that to lessen this tension, scientists must enauge more fully with the public about scientific issues and the concerns that societ has about them. Efforts that focus simply on increasing public understanding of science are not enough, because the problem is not merely a lack of scientific comprehension. In some cases, the public generally does

understand is centific content in a fundamental way but still doesn't like it.

Thus, the notion of public engagement goes beyond guilsic education.

We must have a genuine dialogue with our fellow citizens about how we can approach their concerns and what specific scientific findings mean. This kind of cute ach is being enclanged by government agencies and private sources in Europe, Canada, and the United States. Effective public engagement requires long-term commitment, because many intues are this. It would be convenient to leave this task in the hands of a few representa-

tive surjected empecially for their communication skills, but that won Ywork. Given the breadth of inues and the intensity of the effort required, we need as many ambanation as we can muster.

Engaging the public effectively in an acquired skill, and preparation for outreach strategies.

has relicin been part of scientific this imaginate testin, and projustation for content integrates has relicin been part of scientific this imagination. There are a few exceptions, including the Alda Leopidal Leadenship Program and Research Dimers can Fedal G. Rogen Scienty for Golda Health Research Marie young colleague sace entitionates about discussing their work with the public, but they also are under testinedous pressure to stick to the bench, source hard-longer enemeth grants, and publish modely and repeatedly in high-quality icurruly. Many even feel than the culture of scenoe actively discounties them from bosoning involved in pulsic currench, because it would sometion behalf for their currench. What can be done? First, the scientific neward system needs to support our colleagues?

efforts to interact with the general public concerning their work and its implications. Funding agencies such as the Wellcome Trust and the U.S. National Science Foundation and National Institutes of Health have been encouraging the scientists they support to include oute ach efforts in their proposals. Academic institutions need to join in this cheristly rewarding faculty members who fall incommitments to such work. That will entail putting public outness of efforts among the next notice obsole principles and desire.

Second, university science departments should design specific proximing to train graduate students and postdoctural leftons in public communication. Unfortunately, this means adding yet another element to already over taxed means through programs. Many students sequen-tending expension through swintantibings but public engagement distributes are different and require other strategies. We need to add media and communications training to the scientific ning agenda. This will doubtless be an additional huiden on existing systems. Unfortunately, there is no

alternative. If someone is going to fully serve its societal mission in the future, we need to both enough and equip the new generation of sometists to effectively engage with the broader society in which we work and live

EDITORIAL

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COMMENTARY

Beyond the Teachable Moment

Alan I. Leshnar, PhD

OMEDICAL RESEARCH IS ADVANCING AT A FANTASTIC pace, regularly yielding new diagnostic tools and not-too-distant future. Yet despite great biomedical ad- somewhat scientific. 49% believe that humans did not vances that continue to be applauded by the public, there is increased tension in the broader relationship between science and the rest of society. This tension is a symptom of at least 2 factors: a lack of understanding by the general pub-endorse premarital sex, resist providing their daughters lic related to the nature of science and scientific evidence, with a concomitant reluctance to demand an evidence base for medical treatments and the increasing encroachment of science on issues related to core human values and beliefs. For science to truly serve society, biomedical scientists need to take advantage of all opportunities to engage more fully with the public.

The Nature and Need for Evidence

The acceptance by at least one-third of adults: in the United States of so-called alternative theraptes that either are not science-based or are completely untested reflects a long-standing trend. In part frustrated by the relatively slow pace of science and its application, many individuals rush to alternative treatments for their illnesses; in these cases, hope for rapid relief trumps the need for evidence-

Yet this preference for alternative theraptes is not only a reflection of impatience or inability to wait for new and better treatments. Frequently, people do not know the difference between evidence-based and non-evidence-based treatments. Even as the public is reminded that "the plural of anecdote is not evidence," widespread publicity for the purported effectiveness of nonscientific treatments perpetuates the trend and undermines the call for adherence to the science base. However, a call for an evidence base need not undermine patient choices, alternative strategies, or a holistic, individualized approach to health care. The National Institutes of Health recognized this when it established the National Center for Complementary and Alternative Medicine, which has supported high-quality research on "alternative" approaches to health care and has brought focus to what science can reveal about alternative and comple-

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mentary medical strategies, including what works and what

However, most individuals have little understanding of the nature of science and thus cannot tell the difference between what is and is not science based. According to a reatment approaches. "Personalized medicine" at 2005 survey, 60% of Americans believe in extrasensory last seems to be a realistic research product in the perception, one-third believe that astrology is at least evolve from an earlier animal species, and 54% are unable to explain how an experiment is conducted. (67.17-9.22) In can Academy of Pediatrics describes this vaccine as "highly effective" at preventing + types of human papillomayirus infection, the major cause of cervical cancer. Similarly, rumors of a link between the measles-mumpsrubella vaccine and autism remain unsubstantiated, yet public fears persist.

This lack of fundamental understanding by the public about the nature of science and about scientific evidence, and why that evidence is so critical, represents a major and growing obstacle to the ability of biomedical research to do its job. It also is a significant source of the escalating tension in the broader relationship between science and society. The issue is less about understanding specific scientific facts and theories and more about understanding the very nature of the scientific enterprise and its products.

Another major source of tension in the science-society relationship arises from the increasing encroachment of science on issues related to core human values and strongly held beliefs. This is not a new problem-think back to conflicts between Galileo and the Roman Catholic Churchbut more and more instances seem to be arising. At times it appears that an almost antiscientific attitude is prevailing, although science need not be at odds with religion. Recent studies have shown that 50% of Americans feel that "we depend too much on science and not enough on faith* and

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B20 THE CHRONICLE OF HIGHER EDUCATION



We need scientists to:

- Build relationships with stakeholders, striving to foster mutual confidence and respect.
 - Be inclusive of diverse perspectives, sectors and cultures.
 - Practice "active listening"
- Build communication around issues informed by S&T, rather than specifics of the S&T itself.
- Practice openness
 - Put information, ideas and debate in the public realm



Barriers to science communication in the UK

- 64% claim the need to spend more time on research
- 20% agreed that scientists who engage are less well regarded by other scientists
- 3% cited peer pressure as a barrier

Source: Royal Society Consultative Group, 2006



Public engagement involves learned skills

• We need to build them into our training programs!



We need to <u>train</u> researchers to engage with the public!

- Talk to the press about their research results
- Reach out to their neighbors and community groups
- We need to tell our students it's good to do!!



AAAS is starting training activities

- Online communication training
- Regional training workshops for scientists and engineers
 - Partnership with NSF



This includes how to behave in this dialogue

- Scientists must stick to the facts
 - Do not express your personal values
- Do not go outside your specific area of expertise
- Find easily understood ways to connote your meaning
 - No jargon, no nuances
- Never violate the data
- Listen!



A healthy science-society relationship is critical both for science and for society!



We Must Restore Equilibrium to the Science-Society Relationship

