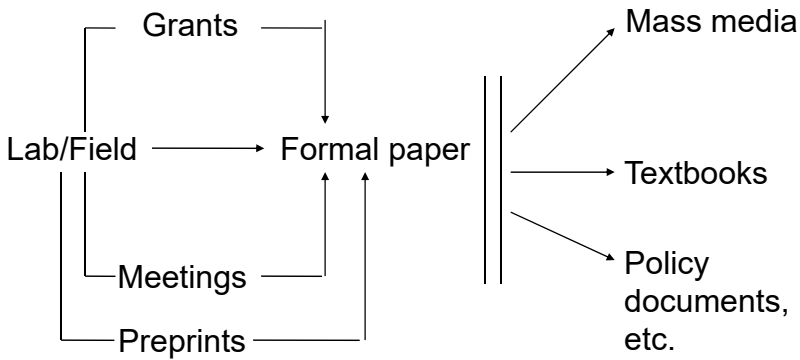


 Cornell University


What is “science communication” anyway?

Bruce V. Lewenstein
Departments of Communication and
of Science & Technology Studies
Cornell University

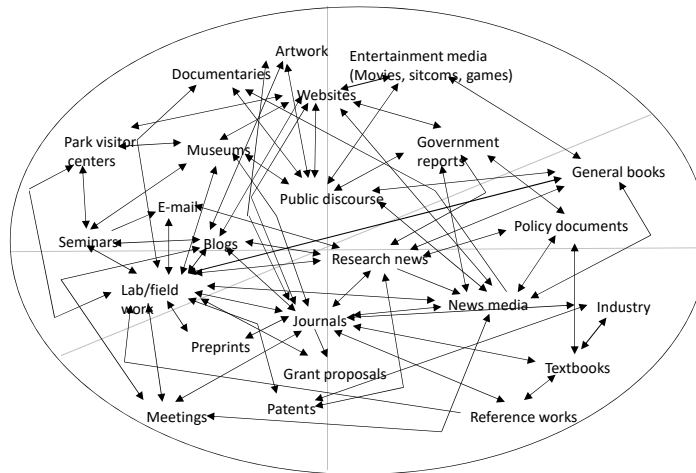
Is this science communication?



```
graph LR; Lab[Lab/Field] --> Paper[Formal paper]; Grants --> Paper; Meetings --> Paper; Preprints --> Paper; Paper --> Media[Mass media]; Paper --> Textbooks; Paper --> Policy[Policy documents, etc.];
```

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Or this?



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From Lewenstein, B. V. (2011). Experimenting with Engagement. Commentary on "Taking Our Own Medicine: On an Experiment in Science Communication." Science and Engineering Ethics, 17(4). In press. doi:10.1007/s11948-011-9328-5

CORNELL Comm 694: Public Engagement in Science

Spring 2003
 Thursday, 7:00 pm -- 10:00 pm
 Location: Kennedy 211

Prof. [Bruce Lewenstein](#)
 321 Kennedy Hall
 255-2310 (phone)
 BVL1@cornell.edu (e-mail)
 Office hours: Weds., 2:30-4:30 or by appointment

[What's new on this website?](#) [Hint: on 8 Feb 2003, it was completely reorganized!]
 (The most up-to-date syllabus will be online at <http://instruct1.cit.cornell.edu/courses/comm694>; pdf version of 8 Feb 2003 version available [here](#).)

The traditional label of "public understanding of science" has always been problematic (not least because of its acronym, PUS). In the last few years, the label of "public engagement in/with science and technology" has become more popular (though already at least [one website](#) is making fun of its acronym, PEST, while simultaneously providing some helpful links). This seminar will explore some of the recent publications justifying, proposing, describing, evaluating, and seeking the meaning of various approaches to "public engagement in science." Is the label any less problematic than PUS? What activities are contemplated under the label of public engagement? How might one measure public engagement? Some of the activities to be explored include local and national "public consultations", deliberative polling, citizens' juries, consensus conferences, foresight exercises, citizen science, and science shops.

- ◆ Public understanding of science (PUS)
- ◆ Public engagement in/with science and technology (PEST)
- ◆ Public Learning and Understanding of Science (PLUS)
- ◆ Learning science in informal environments (LSIE or ISLE)
- ◆ Outreach
- ◆ or...?

What the science community calls it

The screenshot shows the SciDev.Net website interface. At the top, there's a navigation bar with 'SciDev Net' and 'Science and Development Network'. Below that, a sidebar on the left lists various content categories like 'HOME', 'EDITORIALS', 'NEWS', 'FEATURES', etc. The main content area features an 'EDITORIAL' section with the title 'Public Engagement with Science' by David Dickson. The article discusses the importance of public engagement in science, particularly in the context of climate change and public opinion. It mentions the American Association for the Advancement of Science (AAAS) meeting and the need for scientists to communicate their work effectively to the public. The article also touches upon the challenges of public engagement, such as the lack of training for scientists and the need for more structured programs. At the bottom of the page, there's a 'Downloaded from www.sciencemag.org on May 30, 2017' watermark.

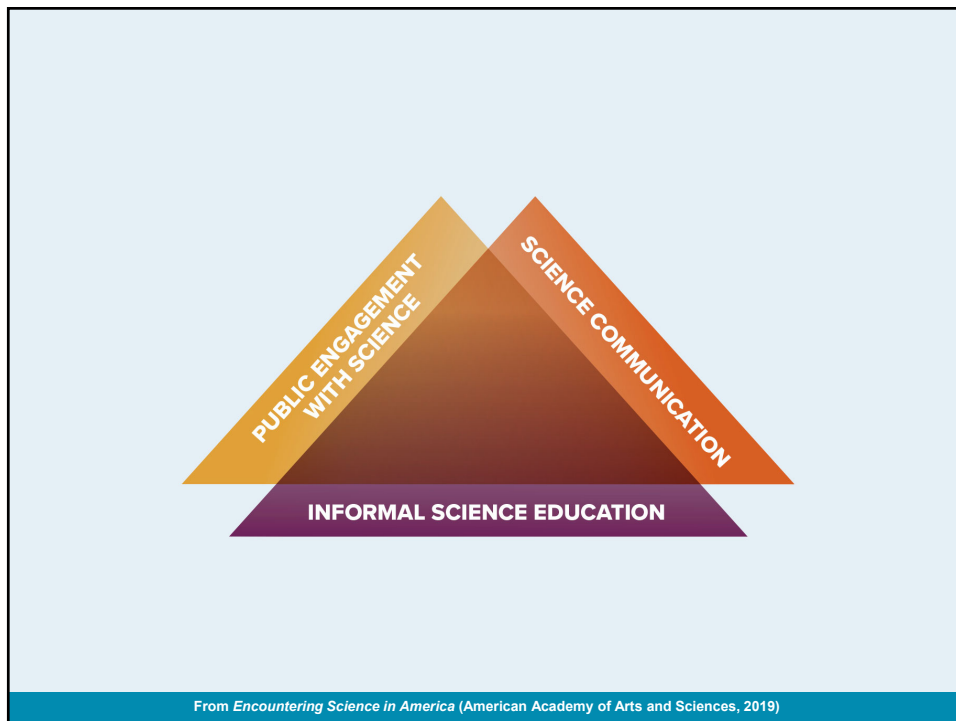
The screenshot shows a Science magazine article titled 'Lessons from Science Communication Training' by Etta Kavanagh. The article is part of a 'COMMENTARY' section and is dated January 12, 2017. It discusses the importance of science communication training for graduate students and the challenges of communicating science to the public. The author, Etta Kavanagh, is a science communication specialist at Cornell University. The article mentions that she and her colleagues recently completed a science communication course for graduate students in the Biogeochemistry and Environmental Biocomplexity program at Cornell University. The course was designed to help students develop the skills and confidence needed to communicate their research to the public. The article also discusses the need for more structured training programs and the importance of providing feedback to students. At the bottom of the page, there's a 'Downloaded from www.sciencemag.org on May 30, 2017' watermark.

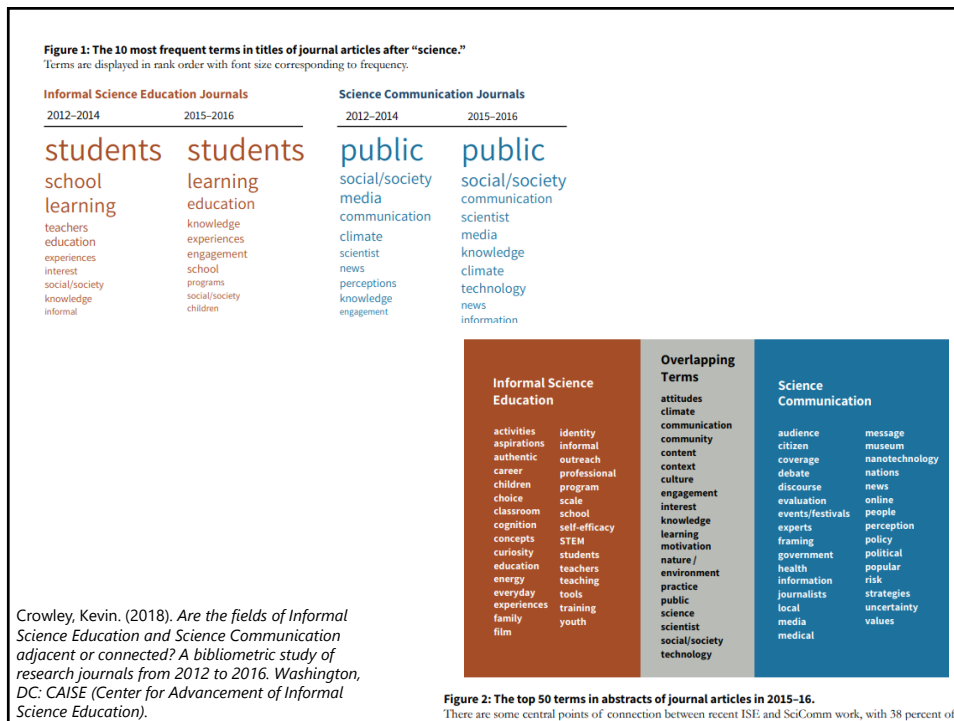
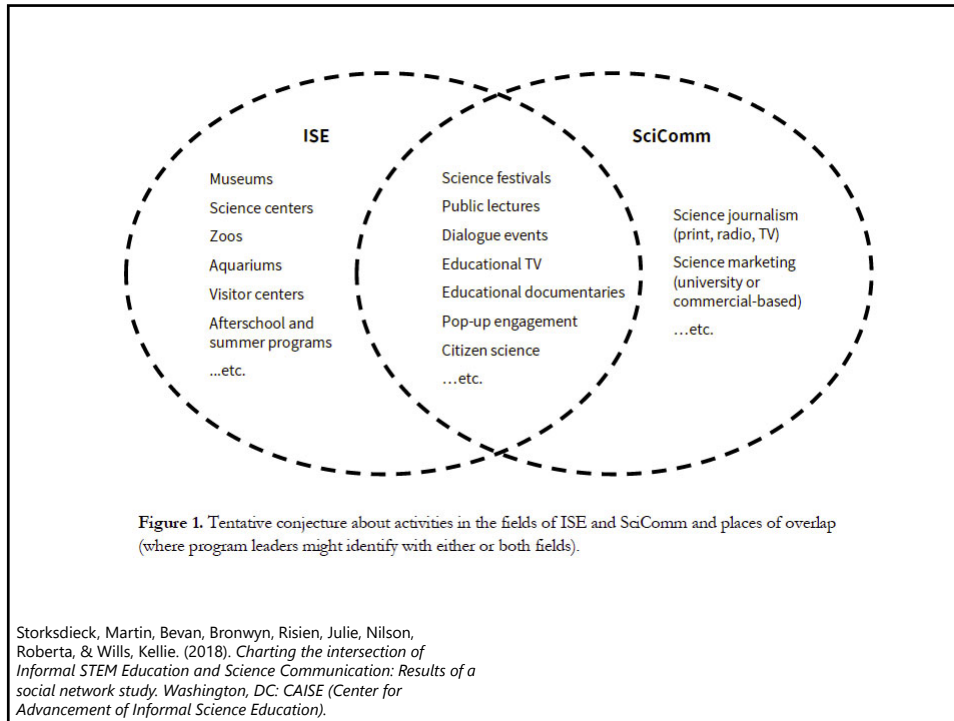
So...

- ◆ Where does a “science communication workshop” (this course!) fit into this discussion?
- ◆ Skills and applications...yes
- ◆ But also part of an ongoing discussion about...“engagement” ... “ISE” ... “communication” ...



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What *is* public engagement?

As part of the annual Sciences Enrichment Programme, organised by The University of Bristol Widening Participation Office, a group of 40 Y10 students from several schools in Weston Super Mare spent an afternoon in the School of Chemistry. During the afternoon, postgraduate student, Zoë Schnepf gave insight into the work being done in the School of Chemistry and students were also given an interactive lecture on aspects of chemistry of the atmosphere.



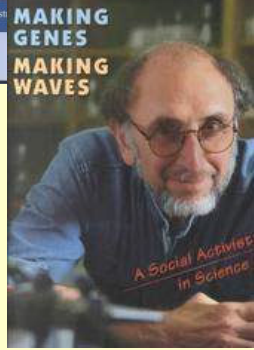

Scientists at Capitol Hill Briefing Deliver Troubling News on Global Warming

The retreat of glaciers worldwide, from Alaska and China to the mountains of Peru, offers solid evidence that human-induced global warming is real, a leading scientist told a 4 May Capitol Hill briefing arranged by the AAAS Center for Science, Technology and Congress and the AAAS journal *Science*.

Lonnie Thompson, a professor of geological sciences at Ohio State University, described the dramatic loss of ice on Mt. Kilimanjaro in Tanzania, Africa. In 1912, he said, there were about 4.3 square miles of ice fields atop the mountain. By 2000, the fields had shrunk to 0.94 square miles. At the current rate of decrease, he said, "some time before 2020, all the ice fields on Kilimanjaro will disappear."



...home, the picture is no better. Ice fields are retreating in Glacier National Park in Montana. "It's estimated that in 20 years, there will be no more ice fields," he said. In southern California, the picture is no better. Ice fields are retreating in Glacier National Park in Montana. "It's estimated that in 20 years, there will be no more ice fields," he said.






UW NSEC Sponsored Citizens Conference on Nanotechnology - April 2005

In Spring 2005, UW-Madison's MSEC sponsored a citizens consensus conference on nanotechnology. Organized by Professor Daniel Kleiman, a faculty member in NSEC, Bruce A. and Maria Powell, an NSEC postdoctoral researcher, the conference allowed a dozen Madison citizens to deliberate on nanotechnology research over a three-week period.

The citizens debated among themselves, met with a number of experts in a range of relevant fields, and considered the potential value of nanotechnology and its possible social implications. The conference culminated in the production and presentation of a *social space* which was disseminated online and presented to state and university leaders and the media at a final press conference.

The conference energized its participants who have become outspoken advocates for greater opportunities for the public to learn about and engage with nanotechnology. Several have become regular participants at MSEC public events, including speakers and social activities.



Participants in the Madison Citizens Consensus Conference discuss the value and possible implications of nanotechnology for their future.



CIPAST
 citizen participation in science and technology

Citizen Participation | Forum | About CIPAST | CIPAST Workshops | Contact

Welcome
 Bienvenue
 Willkommen
 Bienvenida
 Benvenuto
 Welkom
 Bemvindo

**People Power?
 A workshop on science, participation and politics**

Demos and Greenpeace would like to invite you to take part in a workshop for European NGOs and others to share and learn from experiences of public participation in issues involving science.
Wednesday, 20th November 2007, 11am – 4pm at Demos, London
[->>more](#)

**Call for Contribution
 Participatory Activities in Nanotechnologies**

In this autumn we intend to publish a special edition of the CIPAST newsletter on participatory initiatives in the field of nanotechnology. We would really appreciate if you could support our editorial work by sending us information about participatory activities and processes you took note of. Have you heard of a Consensus Conference or a Citizens Jury which which was organized on the topic of Nanotechnology? Or have you taken part in a Science Café to discuss expectations or concerns? Please send us weblinks or reports, and if possible a contact person.
 Roland Schaefer, Cité de Sciences et de l'Industrie, r.schaer@cite-sciences.fr,
 Norbert Steinhaus, Wissenschaftsladen Bonn, norbert.steinhaus@wilabonn.de

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IMPURE SCIENCE
 AIDS, ACTIVISM
 AND THE POLITICS OF
 KNOWLEDGE
 STEVEN EPSTEIN

NO SAFE PLACE
 TOXIC WASTE,
 LEADERSHIP,
 AND
 COMMUNITY ACTION

BREATHING SPACE
 How Activists Have Shaped Science and Education
 BRUCE V. LEWENSTEIN

CHRONICLEONLINE
Jan. 23, 2008
Two aloof elements would bind under pressure, performing a superconductor, researchers say
By Lauren Gold
It is the woeful truth: lithium (Li) and beryllium (Be) -- elements three and four, respectively -- do not like each other.
They are the two lightest known metals in the universe and have plenty in common. Regrettably, that includes a distaste for contact with each other.
But that may soon change, say Cornell researchers. Given some healthy encouragement, the scientists have found that the two elements could abandon their mutual dislike for something closer to, well, rapprochement. And that is in some surprisingly potentially very useful.
The research, supported by the National Science Foundation, is in the Jan. 24 issue of *Science*.

FINGER LAKES PRODUCTIONS INTERNATIONAL
RADIO FOR OUR WORLD
A NATIONAL LEADER IN RADIO SYNDICATION:
Now in its 19th year, FLPI produces and distributes daily radio programming to more than 400 U.S. radio stations, and internationally to more than 120 countries and territories via the Voice of America and Armed Forces Radio.
... by the Florida ...
... in 1998. RVN ...
... to broadcast

CCMR
Cornell Center for Materials Research
News Research Facilities Industry Education
Families Learning Science Together
Next FLST Program:
Magnets - January 19, 2008
A hands-on science program for children and their parents or caregivers, Families Learning Science Together (FLST) is co-sponsored with the Tompkins County Public Library (TCPL) in downtown Ithaca, NY.
The FLST hands-on workshops encourage children and their parents to explore how materials interact with each other. Faculty, post doctoral associates, graduate and undergraduate students from Cornell University present hands-on science modules on a variety of materials science topics. The FLST programs are aimed at children ages 5-13, though all ages are welcome.
The program runs during the school year monthly on select Saturdays from 1pm - 2pm in the Thaler/Howell program room of the Tompkins County Public Library. *All FLST programs are free to the public*, but space is limited. Please reserve your spot by contacting Educational Programs Manager, Kevin Dilley, by email or by phone at (607) 254-8256. *Drop-ins welcome if space allows.*
Schedule of 2007 - 2008 workshops and topics:
• **October 27, 2007: Science on the Small Scale** Families will learn how materials

Models of PUS/PEST/PLUS/etc.

- ◆ Deficit model
- ◆ Public engagement model



Deficit model

- ◆ Longstanding concerns about lack of public knowledge
- ◆ More knowledge is better (“fill the deficit”)
 - Measures of scientific knowledge
 - Best known: biennial NSF survey of public knowledge and attitudes
- ◆ Many excellent educational materials produced

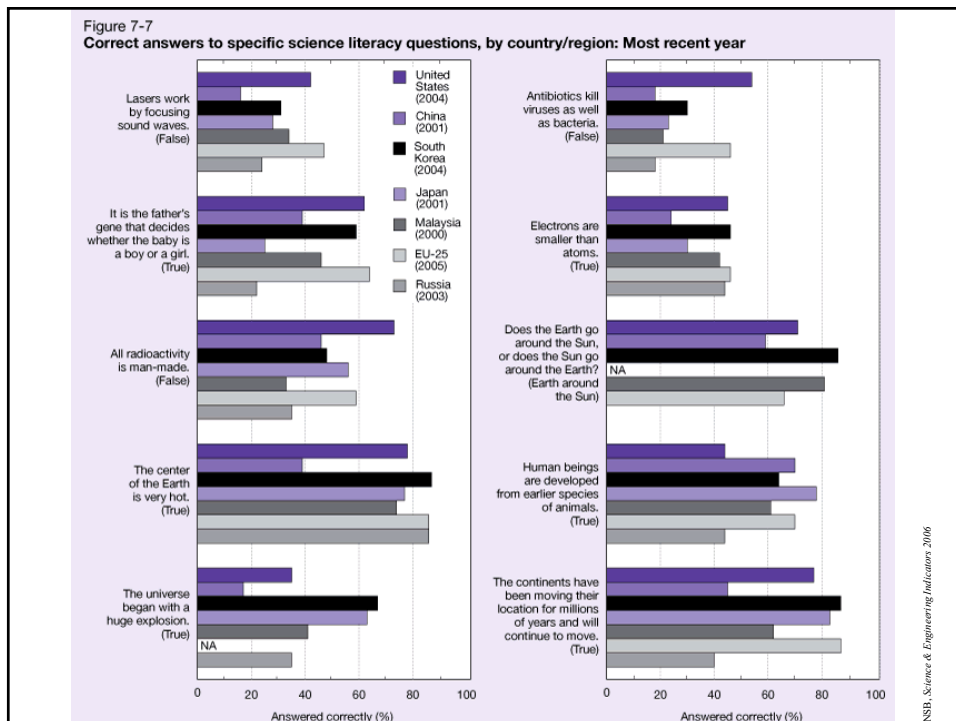
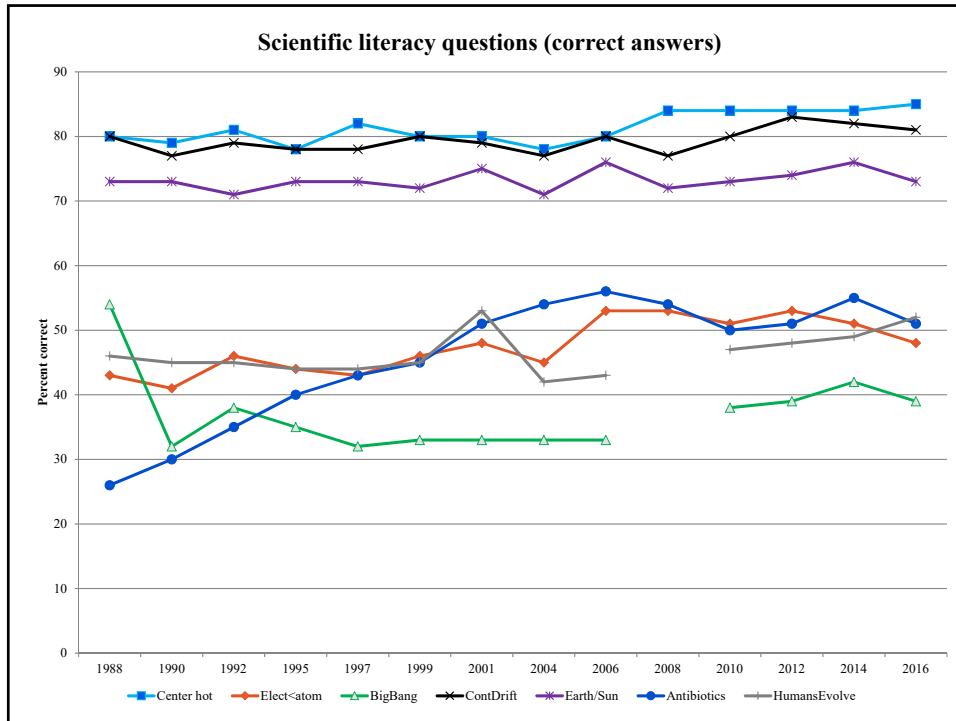


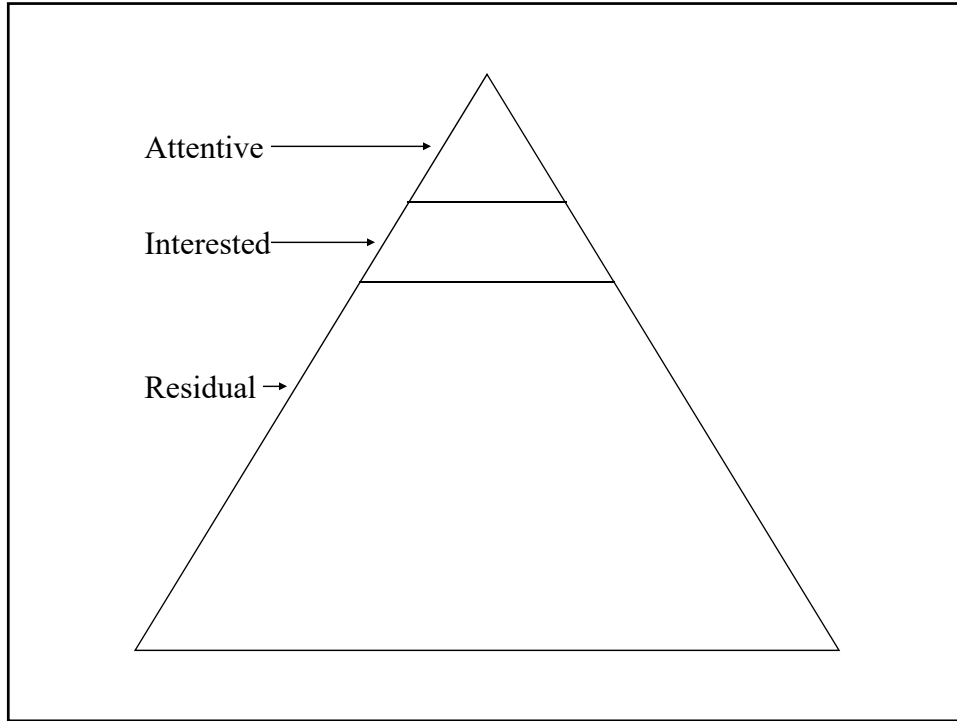
Deficit model

The image displays three overlapping screenshots of educational content:

- Top Left:** A browser window showing the website "TO KNOW OURSELVES: THE U.S. DEPARTMENT OF ENERGY AND THE HUMAN GENOME PROJECT". The page lists various topics such as "Forward", "The Genome Project -- V", "Introducing the Human CG", "Exploring the Genome L", "SERRAN Tools of the Trade", "SERRAN The Mighty Mouse", "Beyond Biology", "Ethical, Legal, and Social I", and "Resources".
- Top Right:** A screenshot of the "Nye Labs" website. It features a navigation menu with categories like "Hd Home Videos", "Ow Section of the Week", "Ec E Cards", "Un Nye News", "Ns Nye Store", "Eg Genetic Guides", and "Tv TV Schedule". A "LATEST NEWS" section highlights "NEW FRONT-BILL PASTES" and "The Bill Nye Episode".
- Bottom Center:** A promotional poster for a PBS special titled "IF YOU COULD READ YOUR GENES". The poster features a close-up of a person's face and text that reads: "A QUESTION OF GENES: INHERITED RISKS". It describes the special as a two-hour PBS special that looks closely at the social, ethical, and emotional consequences of genetic testing for individuals and families. It also includes information about the program's airing on PBS on September 16, 1997, at 9-11 P.M.







Revised Deficit: Contextual model

BLOOD THE TROUBLING LEGACY OF THE TUSKEGEE SYPHILIS STUDY

For forty years, from 1932 to 1972, 399 African-American males were denied treatment for syphilis and deceived by officials of the United States Public Health Service. As part of a study conducted in Macon County, Alabama, poor sharecroppers were told that they were being treated for "bad blood." In fact, the physicians in charge of the study ensured that these men went untreated. In the 25 years since its details first were revealed, the study has become a powerful symbol of racism in medicine, ethical misconduct in human research, and government abuse of the vulnerable.

The 1990s has been a time of reflection upon the Tuskegee Study, and its troubling implications. In February 2004, the issue was addressed in a symposium entitled "Doing Bad in the Name of Good": The Tuskegee Syphilis Study and its Legacy" convened at The Claude Moore Health Sciences Library. The discussion at this gathering led to the creation of the Tuskegee Syphilis Study Legacy Committee which met in Tuskegee in January 1996. In its final report the following May, the Committee urged President Clinton to apologize for wrongs of the Tuskegee Study. The Committee's work here fruit on May 16, 1997 when the President apologized on behalf of the United States government to the surviving participants of the study. These men and members of the Legacy Committee were invited to the White House to witness the apology.

DOING BAD IN THE NAME OF GOOD

THE TUSKEGEE SYPHILIS STUDY AND ITS LEGACY

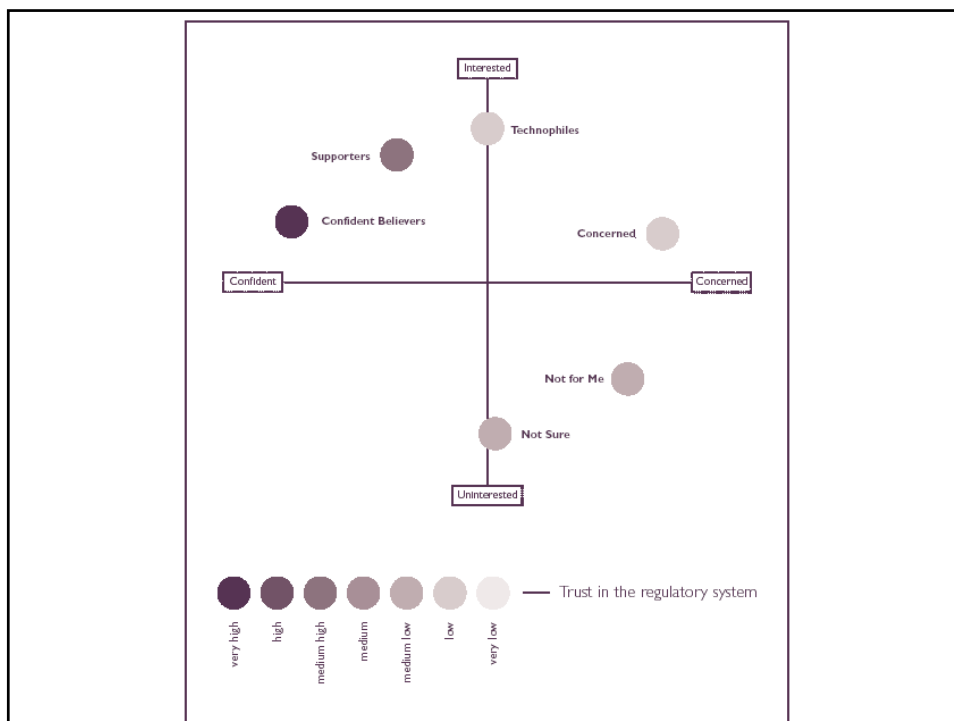
Proyecto Hispano Educativo Sobre el Genoma

Version en Inglés

Los objetivos primarios de esta beca son desarrollar, hacer efectivo, y distribuir culturalmente competente, apropiada lingüística e pertinente plan de estudios que provocará atracción entre el estudiante Hispano y su familia (con respeto a la ciencia, amatos éticos, legales, y sociales del Proyecto Genoma Humano. Atendiendo leales, con diálogo confortable, entre padres e hijos asistiendo escuela secundaria, familias enteras pueden ser expuestas a información educacional, de salud genética, y de equidad. Además, se espera que una interacción entente entre los estudiantes e maestros y entre los padres e maestros.

El plan de estudios consiste de dos componentes mayores: (a) es diseñado para los estudiantes (b) es diseñado para los padres. El currículo de estudiantes consiste de materiales ya disponible (e.g., currículos de ESCS FCSH-AELS, ejemplares de la Universidad de Washington centro de enseñanza secundaria Proyecto Genoma Humano, Virtual FlyLab) y materiales recién desarrollados (e.g., actividades desarrolladas por maestros en cuatro unidades mayores de biología, cuestionarios desarrollados por estudiantes). El currículo de los padres consiste de hojas informativas, escritas por estudiantes, disponible tanto en inglés como en español, y grupos enfocando los padres con traductores disponibles.

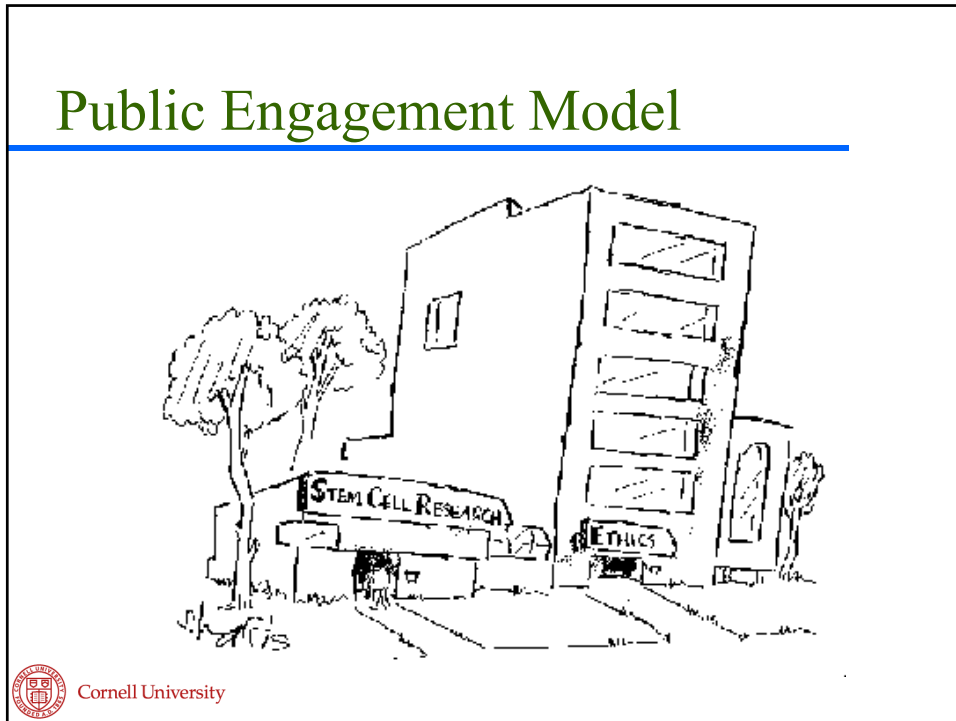
Cornell University



Contextual model

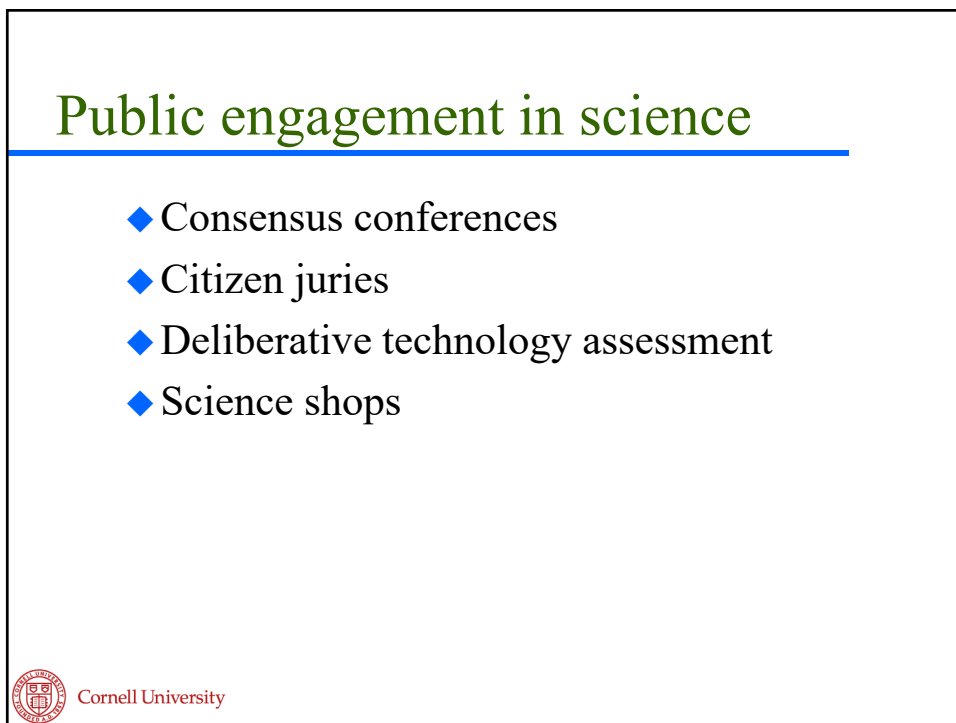


Public Engagement Model



Public engagement in science

- ◆ Consensus conferences
- ◆ Citizen juries
- ◆ Deliberative technology assessment
- ◆ Science shops



Builds on lay knowledge/expertise

The image shows two web pages side-by-side. On the left is the PigeonWatch website, which includes a 'WELCOME!' section with a 'JOIN NOW' button and a 'FEATURES' section with various articles. On the right is the ACRIA (AIDS Community Research Initiative of America) website, featuring an 'Introduction' section and a map of Norwich, VT. A map overlay is placed over the ACRIA map, showing a 'Study boundary' in pink and 'Cancer victims' in green. The Cornell University logo is in the bottom left corner.

Public participation

The image shows a screenshot of the GeneLetter website. The main content is an article titled 'TO THE EDITOR' about genetic discrimination. Overlaid on the right is a poll interface titled 'A Question of Genes: What Do You Think?'. The poll asks: 'Would you want to undergo genetic testing to learn if you were predisposed to a disease for which there is no treatment or cure?'. The poll results are shown as a bar chart: 'yes' (71%, 2564 votes) and 'no' (29%, 1023 votes). The Cornell University logo is in the bottom left corner.

Public participation

Facts flow at citizens' jury

The members of a citizens' jury have been selected by University of Illinois Extension Extension Director Lynda Jacobs. The jury consisted of 12 members who presented a range of criteria regarding the health of citizens regarding the food system.

Ms. Jacobs, who became involved in the process because she had a child with a high blood lead level, said that "the only issue for the jury was to decide on a priority action, including things like routine testing for lead in homes."

Ms. Jacobs said that the jury would be able to make recommendations to the state and the federal government.

She said that after the initial deliberative process, which took place last October, the jury presented an additional report on the health of the food system.

"We had an extra session to review our position relative to the health impacts of food and the impacts of lead in the home," she said.

"We had a question-and-answer session with Dr. Ted Muesel from the Health Department, who is an expert in lead and a fully aware of the situation here, and he gave us a clear understanding of what we needed to decide on."

Ms. Jacobs said that although the jury would have the last say on whether the state's existing conditions would change, Jacobs had shown a real commitment to tackling the lead issue.

"The jury's main goal was to recommend testing the lead levels, but also that the state should support the lead issue," she said.

Ms. Jacobs said that the jury would be able to make recommendations to the state and the federal government.

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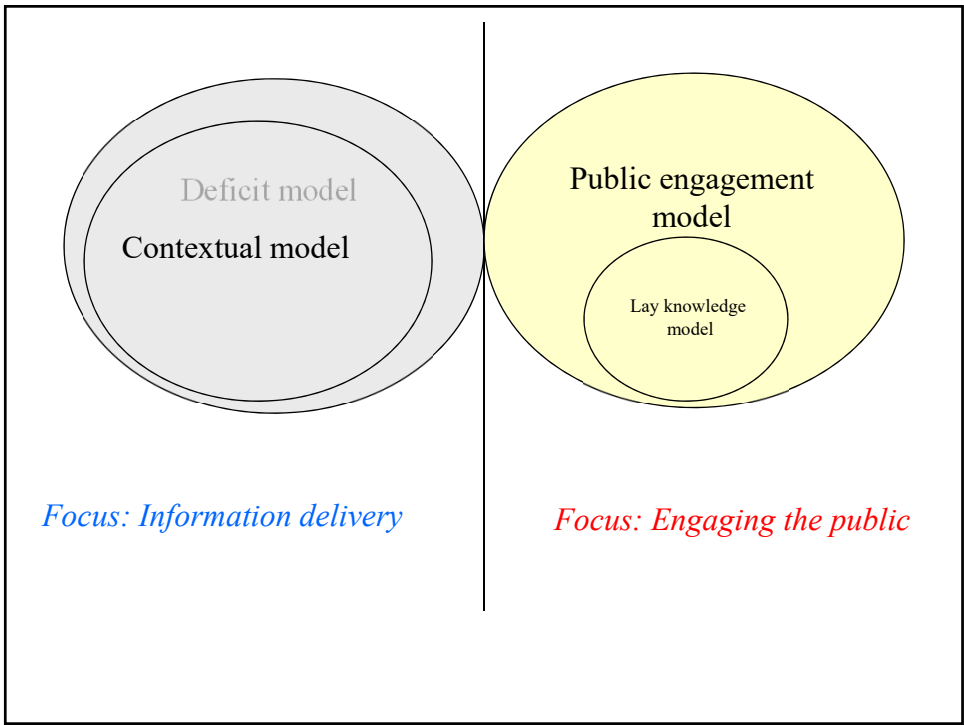
"We had an extra session to review our position relative to the health impacts of food and the impacts of lead in the home," she said.

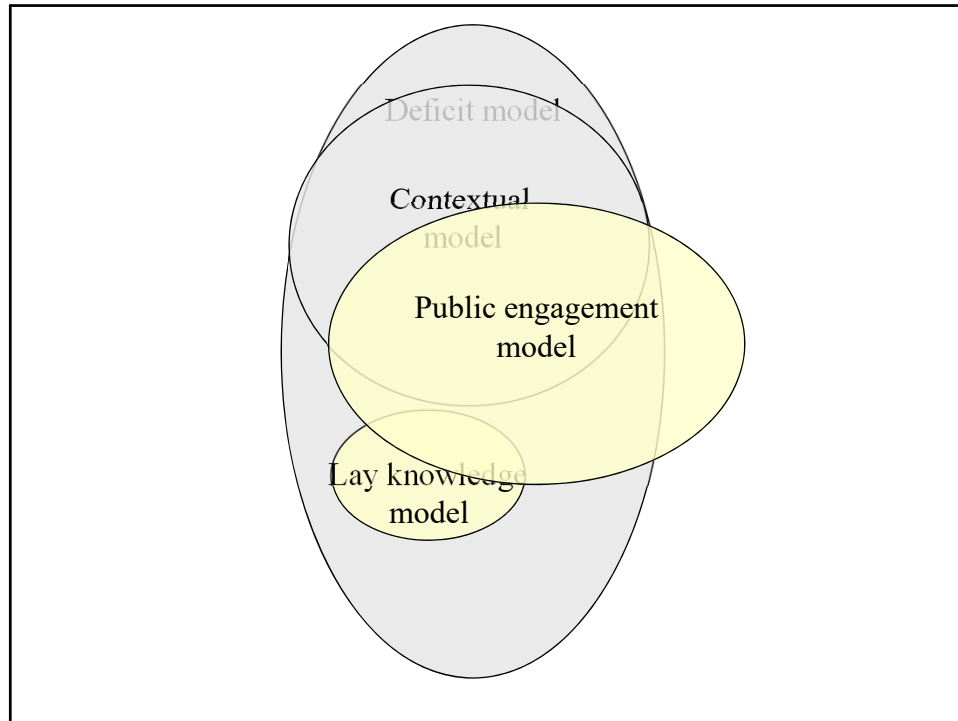
Citizens' Conference on Food Biotechnology: A Public Discussion on the Future of Food.

designer genes at the dinner table

calgary conference
citizen panel report
about citizen conferences
food biotechnology FAQ
education material
regulation & legislation

Select a link from the list on the left.





Summary

- ◆ Models
 - Deficit model: rational, “facts,” hierarchical
 - » Contextual model: social psychological
 - Public engagement: political vs. educational modes
 - » Lay knowledge model: deeply contextual, questions location of expertise and power
- ◆ But we still have a long way to go



Does Sasquatch live on Mars?



Does Sasquatch live on Mars?



Conclusion

- ◆ Public engagement is good, it's powerful, it's important for democracy.
- ◆ But be careful what you ask for



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