

## Why the research community needs to join the YouTube Generation

Lunch talk for AAAS/NSF Workshop Communicating Science

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**Y**OU SPEND your days thinking about things like quantum dots, stretchable electronics, or calculating just how CO<sub>2</sub> could be stored inside the earth... or you think about how to communicate such things if you're with public affairs ... and yet ... I am about to speak to you of ... Madonna, the breath mint Mentos, and briefly the Grateful Dead. What could this have to do with the very weighty subjects that you normally think about? The short answer: Everything.

In my brief remarks today I focus on why and how you *must* communicate your work to the public -- I'll even issue a call to action. I'll draw on my own experiences talking to the public in some 300 pieces for public radio. In the next twelve minutes I'll outline why we need to communicate research, look at *who* should be communicating, and then introduce you to the world of new media -- the world of a typical twenty-something year old - the universe of *YouTube*, *Facebook*, and *Twitter*. A place where discourse about our research needs to live.

### Illustrating the communication problem

**F**IRST, then, the problem. If we don't get concrete information about the fruits of our research to the public we risk having it defined by others. For example, a few months ago I caught the cover of Brown University's alumni magazine. A headline near the top of the page bumped an article entitled "Could Today's Wonder Fiber be the Next Asbestos?" (By "wonder fiber" they mean "nanofiber.") They echo here something that buzzed across Europe, and is now just reaching American shores. On the Continent the opponents of nano push it as the "the asbestos of tomorrow" or the "new asbestos." They work to place nanoproducts in a landscape familiar to people -- namely the legal and scientific world of asbestos. This points to the need to get a message to the public about research before it gets completely framed as asbestos. The key question is *who*, though, should do this? And *how*. The answers? Of course public affairs officers, but also researchers and their graduate students. How? Via new media.

### The Civic Scientist

**I**N 1996 Neal Lane, the former Director of the National Science Foundation, defined a new breed: The "Civic Scientist" - using the word "science" to mean

"all science and engineering, research and education." He called for the research community to send out its own to talk to the public about technology. He was very explicit that if we don't educate the public then we won't be able to continue our research mission, saying "science can only be funded if the electorate and their representatives remain convinced of its value and contribution...." To my mind Lane was ahead of his time, but now the time has come because we have entered the age of civic or participatory journalism: If you take a news-worthy video *you* can be part of the news cycle; if you start a web site and its good enough *you* can get millions of hits.

As a person who works regularly in media I find this truly an exciting time. We now have a way to make media *the* integral part of outreach. We have many great programs that work at the local level - Physics vans, high school programs, and the like - but we really need to dramatically leverage our time using the new tools of communication made possible by the web. These new media tools remove older obstacles to public expression, and thus remove the bottlenecks that characterized mass media. The internet has resulted in the mass amateurization of efforts previously reserved for media professionals. This revolution offers great promise to us as science and engineering communicators. First a little background on this revolution.

### The Facebook Generation

**T**HIS GENERATION has replaced Descartes "I think, there I am" with "I have webcam, therefore I am." No one under 25 uses e-mail any more -- its all instant messaging. *Facebook* now dominates in every campus computer cluster. And 23 year olds use media communally: At parties five or six people gather around a laptop and share their favorite *YouTube* videos. Realize that the new media aren't just a different outlet, they change fundamentally how the media world works. Consider the music industry.

The change from records to tapes to CDs was what I'll call "linear" - in order words sales followed the same model, but with better media. The iPod, though, disrupted this chain. Madonna, for example, fired her record company and signed up to be managed by a concert promotion group. iTunes and the iPod has

ended the age of the CD - music now arrives piecemeal song-by-song making little money; the big bucks are using the music to drive fans to large concerts - hence Madonna change of management. In fact, the very popular band Radiohead shocked the music industry by releasing their latest album for free -- although, and this is part of the new rules -- when they later released the CD at stores it was the top selling album!

You're probably thinking that these new media are just toys. Here's a couple of thoughts: First, every new medium starts as a toy. The first copyrighted motion picture in the U.S. was *The Sneeze* by Thomas Edison. Second, we've been at these crossroads before, just with different media. In 1950 both television and 3D movies debuted. Many thought television to be a fad; some thought 3D movies were the wave of the future. That same holds true of the "new" media we have today. We don't fully understand this new landscape: some things will be duds, some will be fads, and some will become part of our culture. But if you think something like *Facebook* is a toy, keep this in mind: *The New York Times* and *ABC News* collaborated on a project using *Facebook* to deliver election news - including sponsorship of a debate. Here's the punchline: We have entered an era where the distribution of media lies in the hands of the public. The expectation of the *Facebook* generation is that they will be able to participate, create, and share multimedia: Science and Engineering communicators need to participate, even shape those media.

### A Call to Action

SO, WHAT I suggest to you -- and this is my call to action -- is equip each of your graduate students with a video camera - if you have an NSF grant you can "tag" on \$75,000 from their Informal Science Education section. Then set up a "channel" on YouTube, or create an iTunes University site. An explosion of information will come out of your labs: A video-blog of the *process* of research - of the thrills of discovery, the perils of defeat. The goal isn't so much to communicate technical information, but to illustrate the process of research -- to humanize the research operation. Let your students create this media freely.

Now, likely this leaves you uncomfortable because it isn't the carefully controlled press releases of papers soon to be published by *Science* or *Nature*. You need, though, to take a page from the Grateful Dead play book.

For years, the group let concert-goers record and distribute tapes. These tapes increased the fan base of the group. And the fans bought high-quality commercial CDs to replace their bootlegged concert

tapes. The same will happen with some of the research exposed in these videos.

I realize that it takes a very gutsy principal investigator or communicators professional to take advice from a Deadhead, so I give you two thoughts about this new media -- rules, if you will, that can guide you in this uncharted land.

### Rules for Using New Media

ONE, "PRODUCE FIRST, FILTER LATER." The vast internet audience picks out what it likes, using metrics impossible to predict. For example, if you toss a Mentos candy (breath mint) into a bottle of Diet Coke an explosion occurs: A geyser sprays ten feet or more. But another type of explosion occurs: A media one. In 2006 two young men made a YouTube video of this phenomena. Of course many, many video were posted the same day as this one, but the public choose this Mentos and Diet Coke film. Some four million people viewed it! In the lingo of YouTube the video had gone viral. Now the makers of this video were thrilled by the response, but who do you think was the most pleased? (Please take note here communication officers!) The makers of Mentos! Their sales increased twenty percent. That's the idea for your lab or your university: Have everyone blogging, documenting their steps in research, and one of them might well hit as a viral phenomena bringing public attention to the process of research, to your work, even to your university.

Second, don't worry so much about how many people, focus instead on the kinds of people. In media we often look at total viewers, but we're now in the era of the "Long Tail" -- that phrase comes from Chris Anderson the Editor of *Wired*. In his book of that name he describes the niche strategy of businesses like Amazon or Netflix, that sell a large number of unique items in relatively small quantities. Prior to the web retailers were limited by shelf space and so only kept the most popular brands: A web-based retailer has essentially unlimited shelf space. This means you can "broadcast" to the audience of interest to you, people who you couldn't reach with traditional mass media: Potential students for your labs, budding engineers in the K-12 pipeline, funders you've never thought of, and of course the public who ultimately vote to fund research. Using the approach of tossing stuff out there and seeing what hits you'll find audience you never knew about.

My web site [engineerguy.com](http://engineerguy.com) keeps an archive of the pieces that I've done for radio - a regular audience for that site is people taking English as a Second Language classes, which I would never have predicted.

Apparently they like the adult subjects, but welcome the simple language I used for radio.

### Think community, not audience

In fact, you should likely stop thinking in terms of audience. The web has blurred the borderline between a private communication and a public broadcast. In the past one would never listen in on a phone call, or open a letter, and similarly one knows that a commentary broadcast on public radio's *Marketplace* is designed for all; yet, the web is filled with blog entries that describe mundane things like going to the store! How does this then replace "old" media?

Social networking sites like MySpace and Facebook have millions of accounts, yet the median number of friends in MySpace is two, the average is 55 - a skewed high at that. This means the social networking is largely done pairwise. A blogger, then, is one of millions of pairwise or a bit higher interactions. So, from an "old" mass media viewpoint this is a failure of sorts - an audience of tens or 100s - yet audience is the wrong word to use. What a blogger has is a "community", a community which he or she, for whatever reason, resonates. It's a secret of Web 2.0 (social networking) sites that one doesn't need professional quality in video, or narrative technique, or performance to be successful. The success of a content-rich site is like a dinner party: It isn't important what's on the plates, but instead what's on the seats. The social networking of Web 2.0 allows people to choose what appeals, rather than sit and receive coarse marketing message - with the cost of global communication so low the lowest common denominator in communication can be overcome. This means the tyranny of the most popular has been defeated by the long tail.

The long tail means that we can now serve previously underserved audience: Prior to the Web it would have been extremely expensive to reach small audiences, but businesses like Amazon find that everything in their offerings is sampled once, perhaps not more than that, but at least once. The same applies to any new media site created by your lab or University and its content. One may well ask who would want to hear about the gory details of CO<sub>2</sub> sequestration? Or, listen to the anthropological details of the African diaspora? Yet like Amazon.com and their infinite book shelf each of these videos would likely get at least one pairwise interaction because the topic resonates with someone.

So, instead of thinking of a content-rich web site as a way to filter for hits, envision it as a method to create a community and pair-up users with what exactly interests them. Each community may be small by old

media standards, but you might have a ton of such communities learning about your lab or your university. So, the power of the long tail lies in creating these communities, rather than in hit making.

### Conclusion

LET ME CLOSE with this thought. Even though I've talked of Madonna, Mentos and the Grateful Dead this effort to communicate directly with the public isn't just a game. It is deadly serious. Without an understanding among citizens and policy makers of science and engineering the economic productivity that drives the American dream may only be a memory from the past and not a part of our future. And if it isn't a part of our future we have no real future. But ... with the rise of new media we have a *chance* to influence the next generation.

I appreciate you taking the time to be here, so I've brought two things for you. First, a copy of exactly what I said here today; but also a more detailed white paper on new media. I've written it for my University outlining why we need to develop a Web 2.0 presence. If you are looking for more details behind the hows and whys of new media this paper has very much a tutorial approach which might help you get oriented. With that I close and say thanks for listening.

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### About the Speaker

IN OVER 300 radio pieces Bill Hammack has explored the technological world. He's revealed the secrets of his high-tech underwear, explored the mysteries of mood rings, probed the perils of nanotechnology, and examined the threats to privacy from technology. Bill's work reflects a humanistic approach: He emphasizes the human dimension to technology - from the trial, tribulations, and triumphs of inventors and scientists to the effect of technology on our daily lives.

He's a regular commentator for American Public Media's premier business show *Marketplace*, for Illinois Public Radio, and for Radio National Australia's *Science Show*. His home station is WILL-AM 580 in Urbana. (Be sure to donate to your station!)

Many journalism, scientific and engineering organizations have recognized his work. He's received the top awards in science journalism: The National Association of Science Writers Science in *Society Award*, the American Institute of Physics *Science Writing Award*, and the American Chemical Society's *Grady-Stack Medal*. He recently spent a year as a U.S. Diplomat working as a Senior Science Adviser at the Department of State.

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