

## **Scientists and Risk Communication**

**Presentation by Jody Lanard at the Atomium, Brussels, October 16, 2003**

The original title for this talk was: "Scientists, officials, and the public: barriers to cross-species communication." I wish I had thought of the line my morning workshop came up with: "Scientists are from Mars, everyone else is from Venus!"

Before I tell you about some risk communication issues facing scientists, I want to comment on what one of the workshop rapporteurs just said: that the media play up and exaggerate risk stories.

While it is true that the media cover and jazz up the frequent and fairly minor risk-of-the-week stories, communication research and content analysis show that at the start of a real serious crisis, the media (especially main-stream media) mostly ally with officials. The media join with officials in trying to reassure the public -- often prematurely. The media become microphone holders for press releases and announcements. Normally skeptical reporters become parrots for the official line. In risk communication, we even have a name for this: Media Stockholm Syndrome. (Some of you may remember that some Stockholm bank employees were taken hostage during a botched robbery in 1973. They were entirely dependent on their captors, and ended up forming psychological bonds with them. This became known as Stockholm Syndrome.) In fact, one way to tell the worst is over is when the media resume their more appropriate skeptical investigatory habits.

Now on to science communication. I'm going to explain some reasons many scientists systematically use poor communication techniques when talking with nonscientists.

First, here are a couple quotes from scientists that show their starting positions about public reaction to risks.

In a May 2003 economic briefing on SARS to the Asian Development Bank, Dr. Emma Xiaoqin Fan asked, "Why has attention to SARS been so prominent?" exerting "a disproportionately large psychological impact on people relative to its low morbidity and mortality."

Dr. Fan hypothesized that the media's focus on SARS casualties, combined with the lack of definitive diagnosis and treatment, "naturally leads to a somewhat exaggerated perception of the disease," and concluded that "a balance needs to be struck between alerting people to the risks involved and preventing people from panicking and over-reacting." This was a more measured, respectful conclusion than that of many other analysts, as the next quote shows.

Nobel laureate and virologist David Baltimore entirely blamed the media for how the public reacts to crises such as SARS. He even labelled the phenomenon he perceived: SAMS -- "Severe Acute Media Syndrome." He wrote that "Openness...breeds fear and overreaction," and that "those of us professionally devoted to rational analysis" need to do something about SAMS.

I think he has not heard of risk communication, and hasn't studied any actual data about hysteria, or how the media cover crises, or how people learn new information.

Dr. Fan's and Dr. Baltimore's comments suggest that they have largely factored out, or failed to even consider, the possible role of scientists and officials in the communication environment; they seem to be examining the spectacle of the public and the media from outside the system. And the casual, inaccurate use of the words "hysteria" and "panicking" is a big clue to officials' and scientists' intolerance of mostly normal public emotion and concern.

Another group of scientists, led by prominent infectious disease experts Roy Anderson and Christl Donnelly, also expressed their feelings about public alarm. In a May 7 2003 article in the medical journal *Lancet*, updating the evolving case fatality rate for SARS to a number far higher than the media's routinely-reported 4%,

Anderson and Donnelly wrote:

"The epidemic has shown the need for communication of risk that will inform and warn the public, in a way that will improve personal protection, without inducing raised anxiety and fear."

This is the Holy Grail of risk communication -- informing and warning people, getting them to take appropriate precautions about scary new information, without actually getting anxious. This is like trying to break up with your boyfriend without hurting his feelings -- it cannot be done.

This longing for a magic bullet for risk communication is exactly parallel to the public's longing for a magic bullet vaccine or drug to cure all their epidemic fears: it does not exist.

What Drs. Anderson and Donnelly and Xiaoqin Fan don't seem to know is that there are many good risk communication techniques between the magic bullet of their dreams, and their current methods of trying to educate the public without understanding how the public learns.

And beyond learning risk communication techniques, officials and experts need to learn that what they often label as public hysteria, irrationality, and panic are usually self-serving misdiagnoses. The reality is often much more threatening to expert self-image and ego: the fact that the public doesn't trust them.

To illustrate one important risk communication technique, I will tell you about some of the barriers scientists are up against when they talk to officials and the public. The technique is derived from the Anchoring and Adjustment Frame, but don't worry too much about the jargon: I'm throwing it in now to bolster the credibility of my fuzzy-sounding social science field that most scientists have never heard of! The anchoring and adjustment frame arises from learning theory, and was named by Nobel laureate Daniel Kahneman, a psychologist from Princeton, and his late partner Amos Tversky. Please note: I will be using this technique starting now, to tell scientists some stories about themselves.

**Dealing with the public, scientists overvalue strict rationality.**

In their own fields, scientists are pretty religious when it comes to being rational about using data to argue their case. They overvalue their own way of learning: doing studies; reading journals; attending conferences. And when talking to nonscientists, they overvalue the famous concept of "Educating the Public" -- by which they mean the cool straightforward transmission of facts. Curiously, they do not seem to know well-established data about how most normal people learn new information; and when the public doesn't automatically accept the scientists' new conclusions, scientists get annoyed with the public. Words like "irrational" and "hysterical" creep in.

### **Dealing with the public, scientists define themselves out of the system.**

Scientists make the false assumption that they are not part of the system they are trying to influence. They forget Heisenberg! They look upon the public as some strange breed of emotional or irrational -- or at best, merely ignorant -- creature.

### **Dealing with the public, many scientists suppress their own humanity.**

Scientists suddenly forget the way they feel when a peer-reviewer tears a draft article to shreds, or a rival gets a coveted grant. They forget the way they sometimes criticize each other with venom at conferences. Their self-image, when they face the public, is of emotion-free data-based advisers, the Great Wise Ones, deserving of trust.

Their wishful image of the public is of an interested but poorly-informed stakeholder group open to learning new facts (even if they conflict with old facts). Scientists seem to want the public to be like an empty vessel waiting to be filled with knowledge.

Then when the public reacts with alarm, anxiety, fear, skepticism, disobedience, and distrust, scientists call them irrational and hysterical, as if the new situation isn't alarming, worrisome, scary, uncertain, or incurable; and as if officials have never lied to them or misled them, or as if scientists have never been wrong before, ever!

### **Scientists often talk outside their field -- without seeming to realize it.**

As my colleague (and husband) Peter Sandman always says: "How safe is 'safe enough' is a values question, not a science question. In democratic societies, that question is answered by society as a whole, and individuals are free to make their own assessments on personal risks." But scientists often go beyond their data and tell us how we should feel about it, and how we should react to it.

### **Scientists often collude with officials' (and the public's) understandable but immature desire for premature reassurance and immediate answers.**

In a crisis, the public -- which means most of us, most of the time -- are in a state of ambivalence. On the one hand, we long for reassurance, for easy and quick answers, for magic bullets. We want to be passive and taken care of; we want to be told everything will be okay. I have gotten in trouble in the past for calling this "infantile yearnings." So I'll call it a kind of regression to a less mature coping level: it is an

understandable and inevitable reaction to a crisis -- but it is only half of our reaction.

The other half of our ambivalence in a crisis is our desire to take charge; to be involved; to have input; to learn how to help ourselves and others; to be altruistic; to fight the problem. This half of our ambivalence represents our desire to respond on a more mature coping level.

Scientists and officials could choose which side of this ambivalence to ally with, if they understood normal people better. But they often automatically present themselves as overly confident, overly reassuring, and wise, as if that pose were the only option. This colludes with the less mature yearnings of the public. When the scientists and officials turn out wrong, this backfires, of course. But even when they turn out right, this approach does not help inspire the public's optimal mature coping abilities.

I believe it is the scientists who have the responsibility to break this cycle: by insisting on uncertainty; by sharing dilemmas; by appealing to the public's ability to cope with and bear hard situations; and appealing to their more adult selves.

Sometimes scientists will have to fight hard against officials who are also yearning for definite answers. Once scientists start sharing uncertainty with officials -- "on the one hand; on the other hand" -- officials, like the public, will long for a one-handed scientist.

**Scientists act as if the rest of us are empty vessels waiting to be filled with their knowledge.**

Research about how people learn consistently shows that it is hard to learn new information when people have prior conflicting information in their minds. It is even harder to learn new information when people are angry or alarmed. So a crucial part of reaching out to the public is to learn about -- and empathically acknowledge -- the public's current beliefs and feelings. (My short-hand for this is "telling people stories about themselves," directly or indirectly.) Scientists and officials then need to go one step further, and validate the understandability of the public's beliefs and feelings, before trying to dislodge and change them.

But scientists seem so deeply committed to the superiority of their highly-valued way of learning -- which they imagine as an emotion-free, purely cognitive phenomenon -- that they understandably have a hard time taking in the new information about how normal people learn. Combined with the assumption, or wish, that the public is an empty vessel, this often leads to poor communication.

Kahneman and Tversky found that a helpful way to encourage people to consider new information was to first acknowledge their existing frame of mind -- what people already believe. This is the pre-existing "anchoring frame" which scientists tend to ignore. In my brand of empathic risk communication, it also helps to show your understanding of people's starting assumption, and how it got there: maybe it was last year's scientific "truth;" maybe it is well-known folk wisdom; maybe -- hardest for scientists to acknowledge -- it is strong public distrust and skepticism based on science having been wrong before, or based on officials previously lying to or

misleading the public. Nothing like the empty vessels of scientists' imaginations!

So those are some of the anchoring frames for why scientists have trouble understanding how nonscientists learn, especially in a crisis. They include valid cognitive and emotional frames -- on the part of scientists and public alike. Health educators and crisis communicators (and in a crisis, health educators become crisis communicators) need to help scientists and officials begin to understand and acknowledge these basic frames.

**One of my favorite anchoring frame stories: Robert Zoellick and GMO's.**

Before this talk gets any drier, I will tell you one of my favorite anchoring frame stories, from the world of genetically modified food. The person I would most like to influence on this issue is U.S. Trade Representative Robert Zoellick.

Mr. Zoellick acts as if he thinks the only reason Europe is reluctant to import genetically-modified crops from the U.S. is trade protectionism. This is his anchoring frame -- or it is the anchoring frame he pretends to believe; I'm not sure which. But this frame makes communication and negotiation with Europeans practically impossible.

In recent years, as I travel in Europe, I go to restaurants where the menus say: "To the best of our knowledge, none of our food comes from genetically-modified crops."

People I talk with -- normal citizens, my friends, doctors, cab drivers -- say they are concerned about the unknown effects of GMO's on the environment and on surrounding farmer's fields. They are concerned about the products my beloved country wants to force down their throats with no labels.

I am neutral -- due to being rather uninformed -- about the scientific aspects of GMO's. But I am militant about the labelling issue. Some people really care about whether their food is genetically modified. Some people care how their beef is slaughtered -- Muslims and halal; Jews and kosher methods. Some people want to know if their food is "organically" grown. Some want to know if McDonalds' french fries are 100% vegetarian, or if some animal fat has snuck in. Some, but not all, of these desires are for health reasons. Mostly they are for values reasons -- things people believe deeply for reasons beyond morbidity and mortality.

In the UK, and perhaps in the EU, there is currently controversy about Muslim and Jewish methods of slaughtering animals, regarding questions of animal cruelty. These are values issues, not restriction of trade issues, and most people tolerate or respect each other's values even if they disagree.

But Robert Zoellick acts as if he thinks the only reason Europeans don't want to eat GMO's is because of trade protectionism. He wants you to eat GMO's without even knowing when you do so -- no labels -- since he believes there are no health or environmental reasons not to. These are his anchoring frames.

I'm a little embarrassed to tell you this, but I think you should know: the U.S. government wants to do the same thing to its own citizens.

In the U.S., there is a small but real demand for milk from cows given no added bovine growth hormone. Customers have many reasons for wanting this milk, and many New England dairy farmers have responded by providing it. But -- our Food and Drug Administration bans farmers from labelling their milk "No added BGH" (cows, of course, have their own BGH already) since there are no known health problems with added BGH, they say. This "health" anchoring frame in the minds of scientists, passed along to officials, misses significant critical variables regarding what the public values. By only focussing on morbidity and mortality, officials then systematically discount and show disdain for the values of their citizens.

If any of you in this distinguished audience can get me into a room with Robert Zoellick and lock the door for a couple hours, I would try to adjust his anchoring frame -- by first showing I understand it; validating his pre-conceptions; validating the political pressure he is under; telling him stories about himself. And then I would try to persuade him that the public rightly values critical variables and risk attributes besides "just" morbidity and mortality, and he needs to acknowledge and empathize with these if he wants negotiation with the EU to move forward.

**One other barrier to communicating science: just as the public doesn't always trust science, scientists often do not trust the public.**

You know about the French Paradox? The Red Wine Paradox? This is the popular name for the research finding that despite a high-fat diet, French people have lower rates of heart disease than many other cultures, possibly because they drink a lot of red wine. At least this finding was true a few years ago.

That's what the Red Wine Paradox means to some scientists. But to risk communicators the Red Wine Paradox means: Scientists not drawing the conclusions that their data suggest, out of distrust of the public's ability to use the results wisely. Every time a study showed that moderate red wine drinking helped protect against heart disease, the scientist would finish his article by saying, "But that doesn't mean people should start drinking red wine."

Well, everything in the study suggested it meant exactly that! To a reader, it looked like the scientists were drawing an irrational conclusion from straight-forward data. When scientists are confronted with this, they say they don't want to encourage drinking because some people might take the findings as license to overdo it. This reveals a patronizing, insulting lack of trust in us as adults. Any way, it doesn't matter if the finding isn't true any more....

### **Science communication and the Brussels Atomium**

The Atomium, where we are having this conference -- this giant atom -- symbolizes not only progress and knowledge, but progress with unintended consequences; often oversold; its critics often ridiculed as irrational. To the public, it may symbolize a genie that cannot be put back in the bottle. It is the lens through which the public looks at Star Link and other GMO's in the field which have escaped the rational, data-bound world of science.

Jody Lanard, M.D.

The Peter Sandman Risk Communication Website  
<http://www.psandman.com>