

## Listening to Audiences for Science Information

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## Listening to Audiences for Science Information\*

Today, I want to frame my discussion of audience in terms of four propositions:

1. News matters -- including news about science, health, technology, and the environment.
2. Reporters generally have a poor understanding of their audience.
3. Audiences find it difficult to make sense of mass media science stories.
4. We can do better at bridging that gap between the interests and needs of audiences and the content of these media stories.

Let's take each of these in turn.

### Proposition 1

First, the proposition that news about science, health, technology and the environment matter. I don't buy into the theory of powerful media effects. Certainly, mass media accounts of science, even new and controversial science, are only one source of information we have access to in a very rich information environment. But that doesn't mean mass media aren't important. And I'd like to suggest two reasons why this is so.

First, people often get their information about these topics from the mass media. For example: Two years ago (August 1996), when scientists announced they had found evidence of possible fossilized bacteria on Mars, most people heard about the discovery from the mass media.

Then last year (April 1997), when scientists in Scotland announced they had cloned a sheep named Dolly, most people heard about Dolly from the mass media as well.

More recently, in March 1998, scientists announced that an asteroid might actually hit the Earth in the year 2025, followed the next day by another group of scientists who said the asteroid wouldn't come anywhere near the Earth. Most people got that news from mass media accounts.

Also, earlier this year, when doctors alerted women about the risks of getting false positive results from mammograms, most people heard about it first in news reports.

That most people, most of the time, get most of their information about science, especially science that is new and controversial, from the mass media is no surprise. As sociologist Dorothy Nelkin (1995, p. 2) has pointed out, "For most people, the reality of science is what they read in the press.

"They understand science less through direct experience or past education than through the filter of journalistic language and imagery. The media are their only contact with what is going on in rapidly changing scientific and technical fields, as well as a major source of information about the implications of these changes for their lives."

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As we know, mass media can be especially important sources of information for what communication scholar Harold Zucker (1978) 20 years ago called “unobtrusive issues,” those things we don’t typically encounter in our everyday lives. Many science issues certainly fall in that category. For example, most of us are not likely to have much direct experience with such things as cloning or global warming or endangered species.

But mass media can be a primary source of information even with an issue as seemingly ubiquitous as AIDS. Just two years ago, the U.S. Centers for Disease Control and Prevention estimated that some 600,000 people in the United States alone were infected with the HIV virus or full-blown AIDS. Even so, more than 60 percent of Americans said they did not personally know anyone with AIDS or HIV virus or who had died from AIDS (The Henry J. Kaiser Family Foundation, 1996b). They got their information about AIDS from the mass media. Specifically, two thirds of Americans said they had gotten information about AIDS from television and more than one half recalled getting such information from newspapers. Just over 25 percent of Americans said they learned about AIDS from family members, friends, or acquaintances and fewer than one in five learned about the disease from doctors or other health care workers (The Henry J. Kaiser Family Foundation, 1996c).

More recently, this past summer the Henry J. Kaiser Family Foundation and the National Association of Black Journalists released the results of a joint survey on blacks, media and health.

In that survey, more people said they received information last year about health care from television than from their doctors or other health care providers. Newspapers came in a close third with magazines and radio close behind. Overall, 78 percent said they received at least some information from television, compared with 67 percent who said they got at least some such information from health care professionals (The Henry J. Kaiser Family Foundation and National Association of Black Journalists, 1998).

In fact, 25 percent of African Americans said they received most of their health information from television, compared with 20 percent who said doctors or other health providers. Another 10 percent said family and friends, 9 percent said employers, and 8 percent each said from newspapers and magazines (The Henry J. Kaiser Family Foundation and National Association of Black Journalists, 1998).

Second, as to why mass media are important, we don’t have a very clear picture of why people attend to science information in the mass media. But we do have some indications.

For example, in the survey conducted by the National Association of Science Writers in 1957, more than one half of the respondents said they wanted to “keep up” with things, leading the authors of the study to conclude that people found science to be “very much a part of the total range of things it is important to know about” (Survey Research Center, 1958, p. 172). The authors observed, “Orientation to science seems to serve the broader functions of making sense of the world and helping manage one’s relations to it” (p. 178).

However, general awareness apparently isn’t the only reason. A 1993 survey done by Lou Harris for the Scientists’ Institute for Public Information found an even more basic reason. “Public interest in news about science is not simply an idle fascination with the wonders of science,” according to SIPI. “The survey indicates that science news provides basic, functional information necessary for living in the modern world” (Scientists’ Institute for Public Information,

1993, p. 2).

The Kaiser/NABJ survey this summer would seem to bear that out. Because of media reporting about health issues, 71 percent of respondents said they talked with a family member about a health issue; 55 percent said they changed their own behavior to improve their health; 49 percent talked with a sexual partner about a sexual health issue; and 43 percent talked with a doctor or other health provider (The Henry J. Kaiser Family Foundation and National Association of Black Journalists, 1998).

### **Proposition 2**

As for proposition two, that reporters generally have a poor understanding of their audience, one could argue that such understanding is particularly important for journalists, because their work centers on providing information to those very individuals.

Yet, in fact, journalists work with “hazy and rather naive” notions of their audiences (Levy, Robinson, & Davis, 1986, p. 227). Ask journalists about feedback from readers, listeners, and viewers; the journalists will say they rarely, if ever, get any.

We also know that journalists are unlike most newspaper readers, television viewers, or radio listeners. For example, journalists are likely to be younger, better educated, have a larger vocabulary, read more and have a greater interest in various topics than their audiences are. They also are usually better off financially (Gaziano and McGrath, 1987, p. 319; McAdams and Elliott, 1996, p. 21).

In addition, studies have found that journalists tend to underestimate the interests their readers have in news and that journalists tend to hold a condescending view of their audiences as well (cited in Gaziano and McGrath, 1987, p. 318).

It's not surprising, then, that in a study of television producers and audiences, researcher Valerie Crane (1992, p. 23) discovered that it was often difficult to find a link between what the producer thought he/she was communicating and what the audience actually saw or interpreted from what it saw. As just one example, Crane found that newsroom staffs evaluated television programs by the quality of their production characteristics, such as whether the reports included live shots or how well the reporter performed. On the other hand, audiences judged programs on the quality of the information presented.

### **Proposition 3**

Proposition three, that audiences find it difficult to make sense of mass media science stories, emerged from an analysis of some of my own recent work on how people make sense of media coverage of two particular science issues – AIDS and global warming.

This study included a series of six focus groups consisting of adults 22 to 87 years old. None of the focus group participants had any particular expertise in AIDS or global warming. Each focus group, ranging in number of participants from 5 to 11 people, either watched a network television news report, listened to a National Public Radio report, or read a story in The Washington Post about each issue.

Focus group participants, just over one half of whom were women, were recruited through flyers, newspaper ads, and phone calls. They turned out to be better educated than the population at large, with all of them having at least some college education. Many of them had advanced degrees. Therefore, although they were not representative of a more general population,

their educational backgrounds should have made it easier for them to understand the mass media stories they encountered.

AIDS and global warming have a number of similarities and differences that make them particularly fruitful topics to examine. In terms of similarities, although their individual histories are quite different, AIDS and global warming came to the public's attention at approximately the same time, in the early 1980s. So we have had similar time frames in which to become familiar with the issues and develop opinions and concerns.

Also, health and environment are among those issues that are regularly included in studies of public and media agendas. Both AIDS and global warming, in particular, have been widely studied by mass communication researchers, who have examined media coverage and, in a more limited sense, audience reaction to that coverage (see, for example, regarding AIDS: Kinsella, 1989; Konick, 1993; Neuman, Just, & Crigler, 1992; Rogers, Dearing, & Chang, 1991; regarding global warming: Trumbo, 1995; Wilkins, 1993; Wilkins & Patterson, 1991). Such studies serve to demonstrate the importance of those issues to our society and help to provide a broader context within which this study can be viewed.

On the other hand, AIDS and global warming lie at opposite ends of a spectrum that situates an immediate, personal issue, such as AIDS, at one end, and a more long-term, seemingly remote issue, such as global warming, at the other.

Further, and probably most important, the problems of AIDS and global warming reflect different types of uncertainty, each of which, in turn, make different demands on audiences. For example, the cause of AIDS and its mode of transmission are fairly well understood by the scientific community and by a broader public. The uncertainties, in part, have to do with when to begin using the new combination drug therapies in patients, what the long-term effects of the new treatments might be, who will pay for those treatments, and what the possibilities are for the development of a vaccine.

Global warming presents a more complex picture in terms of the uncertainties, which include the amount of warming that is occurring, the relative contributions of human populations to that warming, the regional distributions of the global warming phenomenon, and the likely impacts of global warming on those regions.

The issues of global warming and AIDS differ in another important way. Although a consensus exists among a majority of climate scientists that global warming is occurring and that human activities are playing a role, vocal dissenting scientists highlight these uncertainties in public arenas and are regularly included in media coverage of the topic. Few contrasting voices are prominent in media coverage of AIDS.

The AIDS stories used in the focus groups came out of the 11<sup>th</sup> International AIDS Conference held in Vancouver, British Columbia, in July 1996. The stories primarily reported on the success of using combination drug therapies in patients with AIDS. These drug therapies include the first AIDS drug, AZT, which hinders the ability of HIV to reproduce at an early stage in its life cycle, and the powerful protease inhibitors, a newer class of antiretroviral treatments that interrupt HIV replication at a later stage in its life cycle.

In addition, most of the second column of the two-column newspaper story discussed the prevalence of AIDS in young gay males. Both the radio and television reports touched on the issues of side effects and costs.

The global warming stories used in the study were based on the Intergovernmental Panel on Climate Change (IPCC) report in the fall of 1995, in which a consensus statement was approved that said there is "a discernible human influence on global climate." Much of the newspaper account was devoted to a discussion of the language contained in the document, with a couple of sentences explaining global warming projections at the end. All three reports included interviews with scientists involved in the international meeting that approved the report.

Regardless of whether the story was about AIDS or global warming and regardless of the medium in which the story appeared, two story characteristics stood out as causing particular problems for the focus group participants as they tried to understand it: lack of information and lack of context. Story structure also posed a problem, especially in the newspaper stories. Visuals proved to be problematic in television stories. And in the global warming reports, the way the story was framed appeared to inhibit understanding of the uncertainties involved. Let's take each of these in turn.

### **Lack of Information**

One of the biggest concerns expressed by the focus group participants was that the stories lacked basic information that individuals felt they needed to understand the content. Specifically, the participants found the stories assumed levels of knowledge on the part of audiences -- whether newspaper readers, television viewers, or radio listeners -- that they didn't have.

Typical were the comments of one participant about the knowledge required to understand the newspaper AIDS story:

*I had to make a lot of assumptions, that it's cheaper to not use the fancy new designer drugs ... that perhaps you don't develop a resistance to some of the other options. I had to keep making all these assumptions about how the things that they stated about the new drugs ... aren't true for some of the other less serious treatments. And I wished they'd addressed that a little more.*

In discussing the radio report, one participant was even more detailed about what information was missing:

*The story kind of assumed a lot. It assumed that you knew what AIDS was, how it related to HIV, what a protease inhibitor was, what AZT is, all kinds of stuff.*

Participants in several of the focus groups said they wanted more information about side effects and costs.

*I was curious about the side effects. They clearly mentioned that there were some but they didn't say what they were. These massive doses of drugs that they're discussing, there's got to be some sort of consequences, side effects.*

*Well, actually, I was surprised how briefly they treated the side effects. I mean they had one person speak for, like, two seconds ... I think other people have mentioned that those sounded pretty bad, so I would like to have heard more about those.*

Participants also wanted more information about various aspects of the cost issues associated with the therapies.

*Well, who's going to get it [the new protease inhibitors]? Why not give it first if it seems to be so effective? You know, it is a cost issue certainly.*

*Did you pick up anything about the economic aspects of this all? ... I know that, in part, whether or not a doctor does that [prescribes protease inhibitors] depends on whether or not the patient has insurance or can afford the medication. ... It will maybe become a case where not only are poor people more likely to become infected [with HIV] but poor people are less likely to be treated and that's sort of just really left out.*

Focus group participants found what they considered important information missing in the global warming stories as well. They seemed to be looking primarily for the evidence that had formed the basis of the consensus statement.

For example, several comments surfaced regarding the television news report on the United Nations panel's statement on global warming:

*I thought that you had to take on faith that a consensus was reached and secondly, even though the consensus was reached, it's a very complicated subject and I'd like to know exactly what the consensus was and I don't think that came across in this report.*

*They cut it off, it seems to me, so quickly too.... I felt as though I wanted more information. I didn't really get the point. It was sort of vague.*

And it wasn't just the brevity of a typical television news report that might have accounted for the lack of evidence in the story. The newspaper story generated similar criticism. Typical were these comments from two participants after they read the newspaper account of the issue:

*They didn't give a lot of evidence. They stated that the balance of evidence suggested there's a discernible human influence on global climate. But I really didn't get out anything where there is evidence....*

*I believe in global warming. But, I mean, I would have liked to have seen what evidence in particular these officials looked at that was so significant that they were coming to this conclusion. And there's no sense here of knowing ....*

Participants also wanted to know who the people were who were involved in the United Nations statement. They especially wanted some idea of the experts' backgrounds -- whether they were scientists or government officials. These comments from individuals in different groups were typical.

*A group of scientists, not necessarily ... [as] scientists but as representatives of various different fields and also different countries, have come to a consensus. And there was no real background on who the players were, who was pushing alternate resolutions. There ... wasn't even an awareness that there was a political aspect.*

*Or even like what was the background, the professional background, of these delegates? Like I said, I'd want to know ... was there a requirement that you have a scientist on it who is doing research as well as someone who is a policy maker.... Were the vast majority of these people just policy makers ... and the report comes across their desk and they either buy it or they don't, depending on what their own positions would be, what their job security is.*

Participants also wanted to know what the effects of global warming would be. They wanted more details about precisely what human activities were contributing to global warming and what steps people could take to minimize the problem.

*It's nice that the temperature is going to go up 2 to 7 degrees. I hate cold winters, but what does that mean? What's the effect? The dollar and cents would be nice or any kind of an effect.*

*It would be nice if they say, okay, this is your general pattern for warming and cooling and if you throw it off this much here you're going to throw it off this much here. And that translates into x billion dollars.*

*From a day-to-day way I'm going to live my life, this doesn't tell me anything. This doesn't tell me if my putting my can in the recycle bin does anything. They don't say what discernible human influence is. I mean, what have we been doing? Have we stopped using aerosol and has that worked? I don't know.*

A close look at these comments highlights several different problems with content -- or lack of content -- in the stories that inhibited audience comprehension of the uncertainties involved. In the AIDS stories, for example, audiences wanted more explanation to enable them to make sense of the information. They needed to know the basics about drugs being discussed and the relationship between AIDS and HIV. Equally important, two issues that were especially significant to the focus group participants and which they discussed at great length -- side effects and costs -- were barely mentioned in any of the reports.

As for the global warming reports, the focus group participants also wanted more basic information -- in this case more knowledge about how the experts came to "know" about the human influence and where the facts came from. They wanted to be "let in" to the decision-making process. But furthermore, they wanted to know more about the experts themselves in order to evaluate their credibility. They were unwilling to take the people featured in the stories at face value. In addition, although one of the stories mentioned that there was "uncertainty" about the issue, it provided no information about the nature of that uncertainty.

### **Lack of context**

Repeatedly, focus group participants expressed frustration with the lack of context provided in stories. With both AIDS and global warming, they wanted to know where this new information fit into the bigger picture of what came before and what was next. Without such context, they had difficulty making sense of the information and deciding just how important it was in the larger scheme of things.

Typical was one comment on the television news report about the new AIDS therapies:

*But there was no very good sense of how important it really is.... There's no sense of what was the last, sort of big step, how far do you have to go and how important is this really.*

Newspaper stories fared no better. One participant specifically criticized the newspaper story because it provided "no clear context," whereas another participant just expressed frustration.

*I was a little frustrated when I got to ... sort of the end of the first half of it and it was talking a great deal about what all the new drugs could do and made only a passing reference to how that related to some of the other treatments and I didn't know. I found myself wanting them to throw in a couple of lines somewhere....*

Another participant, also commenting on the newspaper story about the new AIDS therapies, said:

*I felt like they only gave part of the information. You weren't sure what the implications were.*

*I was wondering about, they said at the beginning that it can inhibit the virus or make it disappear for a year but then does it come back or do they not know because they haven't studied it long enough? I mean, is this just, you know, for a year you'll be okay and then it will go back the way it was?*

Focus group participants raised similar issues about the global warming coverage.

*It's not clear whether they're saying that the global temperature overall could rise 7 percent or 7 degrees or whether some areas are really going to get hit hard whether there is going to be two degrees in some areas and five in others, and seven in others and also it's considerably lower than earlier estimates partially because of preventative actions already taken by governments. That sentence could be so much more informative. I mean, that really could have been expanded into another paragraph to tell, okay, what were the earlier estimates and also which of these preventative actions actually work.*

Another participant felt it would have been useful had the television news report on global warming related the phenomenon to other weather events.

*I also have some knowledge of previous weather conditions that made me wonder why those previous weather conditions were not covered in this story to put it in some context, like the dust bowls of the '30s. Stuff like that. I mean, you know, do you just kind of throw out all previous experience?.... I found myself really just kind of growing less interested in the story because it seemed to have nothing but the visuals after a while. It was just kind of a statement, you know, these scientists have concurred but no reasoning, no back up, no justifications.*

Focus group participants were clearly struggling to make sense of these stories but the stories didn't provide the context that enabled them to do so. With both AIDS and global warming, the participants wanted to know how the new information related to other things; for example, they wanted to be able to relate global warming to previous weather patterns. Some of the missing context had to do with the uncertainties inherent in the issues themselves. With AIDS, for example, that missing context included information about the long-range effects of the medications. With global warming, it included the implications for the planet and the people on it.

## Story structure

We might expect newspaper stories, especially those in papers such as The Washington Post, to be somewhat long and complex. However, participants in both focus groups that read the newspaper stories said the AIDS account was particularly difficult because of the two very different aspects of AIDS it discussed. As several participants explained:

*I guess one of the big questions is why would they throw that last bit in. I mean, they were talking about the three-combination drug thing, which in itself is very interesting but then they ... started talking about the different behavioral aspects of transmission.... it really seemed like a different article and it didn't seem to me to be [a] coherent article altogether.*

*In my head these were two different articles and whether they would come together I don't know. ... both of them, both halves of the article are definitely advancements in terms of treating HIV and AIDS, whether it be education of the gay community or scientific advancement or treatment. So are they related? I don't know.... So both of them to me were interesting to know. I just don't, it is really odd the way they put them together.*

The concerns readers expressed about the AIDS newspaper report are especially interesting because the story is written as a typical meeting story. It follows the journalistic convention of the inverted pyramid structure; that is, it features the most important news first – in this case, the combination drug therapies – and includes other information if space permits. But what might make perfect sense from a journalistic perspective did not appear to help readers comprehend this complex issue.

Although participants had fewer problems with the structure of the radio reports, the radio AIDS story did present difficulties. For example, commenting about the AIDS radio report, one participant said there were "too many points." Another expressed frustration that the radio story contained "all these different things and they didn't really ... wrap it up."

## Visuals

Visuals can be an effective way to help audiences understand complex topics. Television news reports can be expected to excel on this score. But the focus group participants had some problems with the visuals in both the AIDS and global warming stories.

Participants said the visuals in the AIDS story distracted them from the story's content and, in some cases, contradicted the narration.

*But I mean everybody looked healthy, and happy, and playing. I mean, I just don't get it. Actually, I didn't even know that was a Third World country for a*

*second. It looked like it was a slum in America, the outside shot.*

*I thought there was a certain amount of irony in the visuals. One of the visuals was Abbott Laboratories and the drug companies are the object of protest of many of the AIDS activists because of the price of the drugs and that was one of the disadvantages that was pointed out in the whole story. So I think there's a certain amount of irony in using that as a visual.*

Participants raised even greater concerns about the visuals in the global warming report. Some of the participants felt the visuals were deceptive, while others simply found them unrelated.

*I felt we were being manipulated ... by showing these rising waters and floods.... I felt manipulated.*

*They made the story seem faked because clearly we're not at the point where all these, you know, natural disasters are happening. I didn't think that the point of the story was that natural disasters have begun occurring because the polar ice caps are melting and whatever and yet they showed whatever and so that really undermined their story.*

Uncertainties inherent in both AIDS and global warming appeared to be made more confusing rather than less by the visuals used in the television reports. With AIDS, for example, one of the problems with the new therapies is the side effects that can sometimes be intolerable. However, the pictures used made that appear to be an insignificant problem. With global warming, one of the uncertainties involves the extent and location of the effects of a warmer climate. But the visuals used -- of hurricanes and other natural disasters -- suggested to viewers that those impacts were well understood and had already begun to occur.

### **Story framing**

The way a story is framed can have an effect on how people understand the issue presented. For example, in news stories, AIDS is framed as a disease whose origins and means of transmission are well understood. On the other hand, news stories about global warming typically frame the topic as one about which there is considerable uncertainty among scientists as to whether global warming is actually occurring and, if it is, whether it is primarily due to natural or human causes. Reporters covering global warming seem to feel compelled to adhere to the journalistic tradition of balance – providing differing points of view within a story.

Even when the focus groups were presented with media stories reporting that a United Nations panel had reached consensus that human activity has a "discernible influence" on global warming, many study participants remained unconvinced. They wanted to see the evidence pre-

sented. They specifically mentioned being aware of the disagreement about global warming in the scientific community.

*I was actually surprised to hear this. Because I've always thought that there was a definite conflict between the theory that there was global warming going on because of human activity ... or if it was just natural events.*

*But I guess I still am not convinced. I'm certainly not convinced by this. ... There have been changes that have naturally occurred and I'm not real convinced that this isn't just a, one of those issues that there's a lot of noise about.*

*Throughout the whole interview, it was "possibility" and "might" and "we think." There is no consensus in the community as to what's happening, whether it might be man but it could be old mother nature blowing another Mt. St. Helen's, which affects the Earth's temperature for three years as much as three degrees.*

When it comes to an issue such as global warming, in which the uncertainties are many but the consensus is quite robust, these focus group participants seemed to be saying that those “he said/she said” stories they had encountered in the past lead to more confusion than understanding.

## **Conclusion**

We need to keep in mind that mass media accounts of science -- like mass media accounts of any topic -- are only one source of information people encounter in their daily lives. But that doesn't relieve journalists of their obligation to do the best job they can to make their stories informative, understandable, and useful for their audiences. That task is especially challenging and important when journalists are dealing with new and controversial issues.

## **Proposition 4**

That brings me to the fourth and final proposition I want to suggest today. We can do better at bridging that gap between the interests and needs of audiences and the content of the stories journalists produce, taking into account such constraints as time, space, and resources. And listening to audiences -- newspaper readers, radio listeners, and television viewers -- can tell us something about the type of information they need to make sense of the stories they read and hear.

First of all, in a very basic sense, journalists need to make a greater effort to understand the audiences for whom they report. They can't simply assume that the audiences share their background, knowledge, or attention to the news.

A great deal of research has been conducted over the years on the dynamic ways in which people process information to make sense of their world and to manage the uncertainties that are

regular parts of their lives. Journalism training would do well to incorporate more of this knowledge into classroom instruction alongside the time devoted to teaching the craft of writing.

The movement toward public journalism offers some promise here as well. One of the prominent features of public journalism is the development of a better understanding of audiences and the presentation of news in ways that are meaningful to them.

Further, the Internet and World Wide Web could provide new and meaningful ways for journalists to become better acquainted with audience needs and interests. Opportunities for audiences to send e-mail messages to journalists and news media outlets, asking questions and commenting on stories, are now a reality. A couple of caveats are in order here. At this point, even though such e-mail channels of communication now exist, it isn't clear that journalists and media sites are actually paying attention to the messages they receive. Also, although people's access to the Internet and World Wide Web is increasing exponentially, such access is still largely the province of a limited segment of society.

This study also has uncovered some features in news stories that make it difficult for audiences to make sense of them.

First, reporters need to go beyond the basic "who, what, when, where, why, and how" in writing about science, as well as about other complex topics. But somewhat surprisingly, these audiences told us that even some of that basic information -- the 5Ws and H taught in introductory journalism classes -- was missing.

Even when those basics were there, however, they weren't enough. These individuals consistently reported having to make a lot of assumptions in order to make sense of the stories about both AIDS and global warming. Writers need to provide complete information and avoid making assumptions about the background and knowledge level of their audience.

As writer and teacher William Zinsser has pointed out, one of the key tenets of journalism is "the reader knows nothing"... You just can't assume that your readers know what you assume everybody knows, or that they still remember what was once explained to them" (Zinsser, 1994, p. 157). Journalists need to regularly remind themselves to incorporate this perspective in their writing.

Part of the problem, of course, is that much news coverage is event-oriented, with stories focusing on what happened at one particular instance. Additional details about the topic might have appeared earlier, such as the previous day or week. But as these focus group participants reminded us, we can't assume that audiences encountered those earlier stories or, if they did, that they attended to them or can recall them.

The focus group participants in this study really had to work to make sense of the information they received. Journalists could have made the audiences' task a lot easier if they had followed the advice of Levy and his colleagues in The Main Source (1986). One thing they suggested was making the information explicit rather than implicit so that audiences do not have to "work" too hard to get the point. They also called for reporters to "slow down" the news and to build the story around one central point or theme. Several of the stories, and especially the newspaper AIDS story, would have benefited from this advice.

Writing instructors regularly stress the necessity of explaining technical or specialized terms. A decade ago communication scholar Katherine Rowan (1988) outlined an explanatory strategy for writing that could make a major difference in this area. She suggested three types of expla-

nations that could facilitate understanding: elucidating explanations, quasi-scientific explanations, and transformative explanations. As is all too common with news stories, these types of explanations were missing from the stories used in these focus groups.

Would such explanation have made a difference? One can only speculate. But consider, for a moment, the stories about global warming and the confusion resulting from previous stories that featured "dueling scientists." Might audiences have better understood the stories if the reporters had begun with an explicit acknowledgment of beliefs audiences might already have had and then explained how this new information related to that?

Of course, in addition to information and explanation, these audiences wanted context. As the report by the National Association of Science Writers concluded 40 years ago, science writers should "present science in its context, whether the topic be abstract or concrete, and not to present bits and chunks of facts in isolation." (Survey Research Center, 1958, p. 178)

Journalists need to emphasize why the story is important, to ask the "so what" question. Audiences need to be given a sense of why they should care about the story and should be given enough background so that they can understand it (Crane, 1992; Levy et al., 1986). Almost to a person, these focus group participants asked for that kind of information.

Context is especially important in stories of uncertain science that involve health or environmental risks such as AIDS and global warming. In outlining what they termed an "ethical risk communication protocol," communication scholars JoAnn Valenti and Lee Wilkins (1995, p. 192) concluded that journalists covering such stories "would find themselves producing longer pieces that include context. ... Risk, in this framing, would be treated as an issue rather than a news event." The context that they and others have said was so important was one of the key things missing from these stories, according to the focus group participants.

Focus group participants also raised serious concerns about the video used in each of the stories. Not only did they find that the video didn't support the narrative but also they said that the video, in some cases, actually contradicted it. Crane (1992) stressed the importance of using compelling video that supports the narrative in television stories. Her advice would hold true for other media as well. Good visuals can enhance even a print story, often helping audiences to comprehend complex issues.

It would be easy to dismiss these focus group individuals as being unrepresentative and these stories as atypical. And indeed, it is important not to generalize from the focus group participants to all media users. But the higher educational backgrounds of these individuals should have given them an even greater ability than the average person has to make sense of these media accounts. In addition, the media accounts themselves, although purposively chosen for the study, were standard fare produced, in most cases, by journalists who specialize in science topics.

Over the decades, journalists' work routines and the resulting stories have evolved largely to meet the needs and demands of their mass media organizations and of their sources. By listening to what their audiences tell them about the type of information stories need to have so they can make sense of them, journalists will more likely produce a product that will better meet the audience's needs as well.

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