“We Begin Tonight With Fruits and Vegetables”


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Although the literature addresses U.S. newspaper coverage of the issue of genetically modified (GM) food, there is no corresponding literature on television coverage, in spite of the fact that television is still a primary source in the United States for information about science. This article discusses national evening news coverage (ABC, CBS, NBC) of GM food on U.S. television from 1980 to 2003, critical years of both introduction and controversy. This examination of quantity, placement, length, and spokespersons pointed out minimal coverage by networks, as well as a lack of consonance, indicating different newsroom practices on the issue of GM food.

Keywords: television; genetic modification; evening broadcast news; food

Recent surveys of the U.S. public have shown that few Americans know very much about the process of genetic modification or the products resulting from the genetic modification of food (Hallman, Hebden, Aquino, Cuite, & Lang, 2003; Hallman, Hebden, Cuite, Aquino, & Lang, 2004). Of those surveyed in 2003, only 19% could remember any events or news stories related to genetically modified (GM) food in open-ended questioning; in 2004, when presented with seven stories (two of which were false rumors disseminated on the Internet), recognition ranged from 7% to 36%. These results are in spite of the fact that GM foods entered the public domain in the late 1970s

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as an offshoot of the technologies associated with genetic engineering and biotechnology and are used in many products currently on the market today. The Cornell Cooperative Extension Public Issues Education project on genetically engineered organisms notes that

there are 12 different genetically engineered [GE] plants\(^1\) that have been approved for commercial production in the U.S. A simple rule of thumb might be that any food containing ingredients from one of these 12 plants could be from a GE variety. (GEO-PIE, 2006)

They estimated that of the U.S. food products that contain GM components, as much as 60% comes from GM corn and soybeans (Genetically Modified Organisms Public Issues Education Project, 2006).

Genetic modification of foods has been touted as having the potential to increase yield, enhance the nutritional value of foodstuffs, and decrease the use of pesticides in agricultural practice. Although dissenting voices both within and outside the United States have raised concerns about the potentially harmful effects of GM food on human health and the environment arising from the usage of GM food and GM agriculture, the American public to a great degree remains unaware of the scope and extent of the products of this technology.

The media play a critical role in the public’s understanding of new developments in science, such as in the genetic engineering of food products for human consumption. They set the boundaries of debates around scientific issues (Nelkin, 1995), frame scientific problems and solutions for the public (Gibbons, 1999; Ten Eyck, Thompson, & Priest, 2001), and specifically for the field of biotechnology, play a role in the perceptions of risk and benefit (Bauer, Durant, & Gaskell, 1998). The lack of direct experience that the majority of the public has with genetics and biotechnology means that news coverage is a strong influence on these subjects (Mazur, 1981; Nelkin, 1995), and “it is very likely that the power of media to influence public opinion is stronger for science and technology issues than for other questions” (Priest, 1999, p. 29).

Newspaper coverage of biotechnology and its myriad applications—GM organisms used to mass produce pharmaceuticals, the cloning of animals for food or drugs, the genetic enhancement of plants for improved food yield, and so forth—has over the past three decades kept pace with the growing biotechnology industry and the introduction of biotechnology products to consumers (Nisbet & Lewenstein, 2002; McInerney, Bird, & Nucci, 2004). Coverage in the 1980s promoted the technology with an
emphasis on health-related applications, basic research, and industry development (Priest, 1995; Gaskell, Bauer, Durant & Allum, 1999). Coverage in the 1990s—marked by sharp increases in news coverage associated with landmark events such as the cloning of Dolly the sheep, the outbreak of mad cow disease, and the contamination of human foodstuffs with GM corn not approved for human consumption—became less positive (Marks, 2001; Nisbet & Lewenstein, 2002; Marks, Kalaitzandonakes, & Vickner, 2003; McInerney et al., 2004). This event-driven coverage opened up the debate on this technology and resulted in a reframing of the discussions to include ethics, risks, and accountability (Nisbet & Lewenstein, 2002), exposing the U.S. public to a steadily broadening debate over the 1990s (Marks, Kalaitzandonakes, Allison, & Zakharova, 2002).

By comparison, there is virtually a complete lack of research on television coverage of either biotechnology or GM foods over the course of their development, even though the 2006 Science and Engineering Indicators survey (National Science Board, 2006) demonstrated that about half (51%) of the U.S. public relies on television for information about current news in general, while 41% are dependent on television for information on science and technology. Bauer and Bonfadelli (2002) found that “Television seems to be the most important single media channel for disseminating information about biotechnology” (p. 161).

In 2005, Besley and Shanahan lamented that research on the role of media coverage on public attitudes toward biotechnology is hampered as a result of not addressing television coverage of this still volatile issue. This article aims to begin to address this concern. The research presented here is the first to examine broadcast commercial evening news coverage of GM food, focusing on the period between 1980 and 2003. This period was critical in the development of this technology as it was in this time frame that GM food was first introduced to the U.S. public and the North American consumer market, achieved controversial status due to accidental non-GM food cross-contamination of human food products, and became the subject of an increasingly vocal outcry in Europe against both GM food and GM technology.

Based on previous work, one of the first assumptions in this research was that there would be very little difference in quantity of GM food coverage across the three major news networks, and by consequence, in the valence—whether the coverage about GM food was positive or negative—of the spokespersons speaking on air about the issue. The inclusion or lack of inclusion of spokespersons is an important consideration in the analysis of media coverage, as the depth of debate around an issue is affected by the range of voices privileged to speak and whether the valence of these voices
are for, against, or neutral about the subject. Valence—which in this study was operationalized as positive, negative, balanced, or indeterminable—has been shown to have an effect on memory, and although the research on valence in television news is not consistent, messages with a negative valence are more readily recalled than messages with a positive valence (Lang & Dhillon, 1995).

Based on these assumptions, this first report focuses on three research questions addressing quantity of coverage, who is privileged with face time on the evening news, and the tenor of their dialogue about this issue:

**Research Question 1:** What was the quantity of coverage of GM food over the time frame examined on commercial television evening news programs in the United States?

**Research Question 2:** Whose voices are privileged as spokespersons on the evening news?

**Research Question 3:** Is there any difference in the tenor or tone of the spokespersons speaking on TV about GM food?

**Background**

Exposure to science information on television can be examined through the two main categories of science content: the dramatic, such as that found on the Science Channel and the Discovery Channel, and the informational, which is represented by science content on news programming on commercial and cable networks. In the United States, the three flagship commercial television stations, ABC, CBS, and NBC, have been broadcasting 30-minute news shows since the early 1960s. Although viewership has declined since the advent of the Internet and competing cable news shows, the ABC, CBS, and NBC evening news shows remain an important component for many Americans in terms of staying in touch with the world around them. Together, they account for an average nightly viewership of 29.3 million viewers or a 40% share of all televisions in use at the time (Project for Excellence in Journalism, 2003); this makes them still the three most watched news outlets in the United States (Project for Excellence in Journalism, 2004).

Their news shows—ABC’s *World News Tonight*, CBS’s *Evening News*, and NBC’s *Nightly News*—are quite similar in structure. Each show is a 30-minute program broadcast around 6:30 p.m. using the same format of a studio-based anchor and field reporters. Not counting introductions, coming news, or advertising, the amount of time devoted to news is about
19 minutes, which is down from 21 minutes in 1990 (Project for Excellence in Journalism, 2005). These news minutes are divided into an average of 10 stories per network (Project for Excellence in Journalism, 2006).

It was noted that “citizens would get in the 30 minutes of the three nightly commercial newscast roughly as great a range of topics as they would from cable over four hours” (Project for Excellence in Journalism, 2006). This has been attributed to the reliance of commercial news on the edited, taped, correspondent package; 86% of all stories on network news are presented in this format (Project for Excellence in Journalism, 2005). Of these stories, 42% were less than 40 seconds, 6% were between 40 seconds and 90 seconds, and 52% were more than 90 seconds (Project for Excellence in Journalism, 2004).

Past research has shown that there is generally little difference between the three major television networks in national news coverage on the same stories and topics (Gans, 1979; Center for Media and the Public Interest, 2003; Stempel, 2003). Although slight, occasional differences have been noted (Boedeker, 2003), the Tyndall Report calculated that “the minutes that each network devoted to such stories as terrorism in Iraq, the Presidential debates, and the Bush campaign were so close that they seemed to share a single assignment editor” (Auletta, 2005, p. 51), a consonance described as “strikingly similar” by the American Journalism 2006 annual report (Project for Excellence in Journalism, 2006). This duplication of news values, expert sources, and news treatments is based on common values in the newsroom and the structural nature of the broadcast industry (Gans, 1979; Shoemaker & Reese, 1996).

News as cultural practice. The news media are not objective sources of truth independent from political or government agencies (Gitlin, 1980; Fiske, 1989) but rather are subjective, culturally driven constructions of reality (Allan, 1998). The stories that are chosen and the way they are presented are functions of ideological processes that focus the public’s attention and awareness of issues (Schudson, 1995; Ten Eyck, 1999; Van Dijck, 2003), emphasizing certain points of view while marginalizing others (Tuchman, 1976; Kubey, Shiflett, Weerakkody, & Ukeiley, 1995).

Rather than the news serving as a mirror of reality, it presents a highly codified version of reality (Allan, 1998), encouraging the viewer to accept as natural preferred definitions of reality. This has “profound implications for the cultural reproduction of power relations across society” (Allan, 1998, p. 106) and is especially true for those topics where the content is unfamiliar (such as science) and there is no baseline of knowledge by
which to validate the accuracy of the representation (Graber, 1989). News about science can be described as a culturally produced product disseminated at a specific time for specific reasons (Miller, 1999).

The codification of news occurs through newsroom practices—news gathering, news selection, news production, and news format—that control the meaning of the news and, as a consequence, guide the viewer in not only *what* to think about but *how* to think about the subject (McCombs & Shaw, 1972). Newsroom practices are critical factors in terms of the development of the public opinion regarding complex issues, as news sets the agenda for what is considered salient to the public consciousness (McCombs, 1981; Iyengar, Peters, & Kinder, 1982). Michael Schudson (1995) noted that the function of these practices is “less to increase or decrease the truth value of the message they convey than to shape and narrow the range of what kinds of truths can be told” (p. 55).

For stories about GM food, Logan (2001) noted that newsroom practices resulted in stories on agriculture being part of the business “beat” with its focus on business investments and the economic and social challenges of companies (with the notable exception of reporting on Starlink) and not part of scientific or investigative reporting. This historical practice of reporting about GM food as part of the business beat has been blamed for not helping the public understand GM food and the related issues of risk and benefit (Logan, Fears, & Wilson, 1998). This economic basis also tends to focus reporting on scientific crises or new discoveries, with the result that reporting becomes focused on the sensational and then ends abruptly when the event is over or has lost its alleged news value (Nelkin, 1995).

The selection of source spokespersons is affected by the focus of the news story. An emphasis on a business beat will likely result in more industry spokespersons than a public interest beat where the spokespersons will be from the public or directly affected. As a newsroom practice, the selection of spokespersons to represent viewpoints on an issue creates the perspective from which the viewers determine their sense of the issue. Spokespersons give voice to debates and issues by presenting pros and cons, and as such, can drive public perceptions. Studies on risk have shown that trust in institutions and experts is an important factor in decision making (Poortinga & Pidgeon, 2003). For the issue of GM food, trust in information is dependent on the source of that information (Priest, Bonfadelli, & Rusanen, 2003).

The media control who is chosen to present opinions or information about a story presented in the news, often using the same sources across stories, such as in Hoynes and Croteau’s (1991) analysis of ABC’s *Nightline*, an in-depth interview evening news program. This is especially true for complex issues
such as science, where journalists, who may not have the science knowledge base for analysis, assume peer review of science articles implies “quality control of the science” (Conrad, 1999, p. 286) or are dependent on their sources for interpretation (Priest, 1995). This can potentially limit the polysemic potential of news stories and by corollary can limit the ability of the viewer to actively participate in the debates over a developing issue. Technocrats (scientists working within government structures), government officials, and scientists associated with industry or academia are more often used as spokespersons (Goodell, 1987; Ericson, Baranek, & Chan, 1989; Altheide & Snow, 1991). Additionally, these sources often have greater media influence due to social influence, which means that spokespersons that fall outside these categories may be less able to influence the way they are presented in the story. When this happens, the viewer may see certain voices as more credible regardless of whether they were given the same amount of space or time (Ten Eyck & Williment, 2003). In a study that examined both newspaper and television coverage of cloning in the United Kingdom, of the 354 sources, 54.4% were scientists and scientific institutions, 11.6% were politicians and officials, 28.2% were other professionals and experts, 5.1% were nongovernmental organizations and activists, and 1.7% were miscellaneous (Holliman, 2004).

Analyses of U.S. newspaper coverage of GM food have pointed out that scientists and government officials were more often quoted as spokespersons. These stories tended to frame biotechnology as progressive and positive and rarely mentioned economic, social, political, environmental, regulatory, ethical, or other concerns (Priest & Talbert, 1994; Priest & Ten Eyck, 2003). Seventy-three percent of the spokespersons represented had university and industry affiliations, while 7% were activists and 1% were farmers (Priest & Talbert, 1994).

Zucker (1978) has pointed out that the less direct experience the public has with an issue the more likely they will be dependent on the media and its spokespersons for interpretation and information. Given that the U.S. public is strongly reliant on television for science information, an examination of the coverage of GM food on broadcast evening news is critical to understanding the role and impact of media coverage of this controversial subject.

**Method**

To address the questions of structure and content in this study, content analysis was used to study the televisual presentation of GM food in the national evening news shows from ABC’s World News Tonight, CBS’s
*Evening News* and NBC’s *Nightly News*. These three shows are available on commercial network television and unlike cable television, which requires the purchase of access by cable or satellite, are free to all those with television reception, as they are supported by revenues garnered by advertising. Although the combined viewership for these three shows has dropped from more than 50 million viewers in 1980 (the year that CNN, the first 24-hour news station, began to air) to 27 million in 2005 (Project for Excellence in Journalism, 2006), access and consistency in the broadcasting of these shows were critical to the decision to focus only on commercial news television and not include CNN or Fox News. CNN was not included in the study as it was difficult to identify a consistent evening news show for comparison, while Fox News was also not included as the network only began broadcasting in 1996. For both of these cable channels, access to transcripts and video coverage was problematic, while for the three public stations, videotape and transcripts were readily available.

Prior to establishing the time range of our study, we examined the extent of coverage by searching the Vanderbilt Television Archives (http://tvnews.vanderbilt.edu). The Vanderbilt Archives offers complete access to the three networks we examined here from 1968 to the present. The archives were searched for evening network news stories on GM food using the search terms *gene*, *modif*, *enginee*, *alter*, and *food*. Due to the inconsistent use of thesaurus terms at Vanderbilt Archives for archiving news stories (Althaus, Edy, & Phalen, 2002), all abstracts from the search results were hand examined for applicability. Stories that were not about GM foods, such as a story that included one or more of the search terms in a discussion of a politician’s platform, were excluded from consideration.

To ensure that we had gotten all stories on GM food in our search of the Vanderbilt Archives, the results of the hand-selection were then compared to searches using the same terms in the Lexis-Nexis database. Based on the search of Lexis-Nexis, it was decided to include stories about the use of bovine somatotropin (also known as BST, somatotropin, bovine growth hormone, or BGH), as the search terms used initially to search the Vanderbilt Archives did not pull up stories about the use of GM BGH to increase the production of milk in cows. A second search using the terms *milk, bovine somatotropin, BST, somatotropin, bovine growth hormone*, and *BGH* was conducted in both the Vanderbilt Archives and Lexis-Nexis, and these stories were added to the total number of stories about the topic being examined.

Based on the results of these searches, the beginning date of the study timeline was established as 1980, as this was the time when the earliest references to patents and the technology of GM were aired. The end date of
2003 was chosen based on the decline in coverage of the topic. Every story on GM food between 1980 and 2003 from these two searches was then ordered on videotape from the Vanderbilt Archives. This resulted in a total of 169 stories between 1980 and 2003 that were about GM food.

All 169 stories identified as about GM food were obtained from the Vanderbilt Archives and viewed on videotape by the study’s first author, who identified those stories that had individuals (other than the reporters or anchors) speaking on camera. These spokespersons were operationalized as any individual who has been identified by the news show as being able to provide input, insight, or opinion about the issue of GM food. Traditionally, analyses of spokespersons would focus on issue experts providing content knowledge of an issue. We chose to code for all spokespersons regardless of affiliation in order to understand the range of voices privileged by the evening news shows. This resulted in a total of 111 stories that were selected for coding, which yielded an N of 384 spokespersons.

The corresponding transcripts from these stories were downloaded from Lexis-Nexis. Following training of two coders on the coding protocol, a test coding of approximately 10% (12) of all stories was selected for reliability testing. Intercoder reliability was assessed by Cohen’s kappa using SPSS, which yielded a kappa for placement, length, and network of 1.0. For source type, kappa was .80, and for perspective, kappa was .78. The remaining stories were then coded for three structural characteristics—the network on which the story aired (ABC, CBS, or NBC), the length of the story, and the story’s placement in the news lineup—and two content characteristics—affiliation of spokespersons and the tone of each spokesperson’s perspective on GM food operationalized as positive, negative, balanced, or indeterminable. This evaluation of valence is not an uncommon approach in content analysis (Gans, 1979; Croteau & Hoynes, 1994; Niven, 2005) as it provides the researcher with a good deal more precision and control in handling and analyzing the data than in trying to distill a single code for an entire story that typically presents multiple perspectives on an issue. Results of coding were uploaded to Excel, cleaned, and analyzed in SPSS.

Results

Quantity and structure of coverage. Using the Vanderbilt Archives and Lexis-Nexis to double-check every story on GM food that was aired between 1980 and 2003 on the three evening television news networks
resulted in a total of 169 stories on GM food. Assuming an average of 10 stories per show over the 23-year period (Bae, 2000), this represents less than half a percent of all stories presented on all three evening television news programs during that time frame. In 2004, science stories across commercial evening news networks accounted for only 3% of total news time (Project for Excellence in Journalism, 2005).

For each year of the first 14 years examined in this study, no network aired more than five stories on GM food (see Figure 1). Of the 169 stories, 32% (35 stories) of the stories were on ABC, 56% (62 stories) were on CBS, and 13% (16 stories) were on NBC. When the shows were examined for inclusion of on-air spokespersons, it was determined that a total of 111 (66%) of the stories included one or more on-camera actors, “talking heads” who rendered opinion or reported facts or both. On ABC, 97% of all GM stories used spokespersons, while on CBS and NBC, 87% of all GM stories had spokespersons. This subset of 111 stories was used in all subsequent analyses.

In this subset of 111 stories that included spokespersons, CBS still clearly dominated coverage of the GM food issue with 54% of all stories on the issue (compared to 32% for ABC and 14% for NBC). Within this set of stories, 11 stories were duplicated on the same evening across at least two of the networks. Three stories were carried on all three networks on the
same evening,\(^9\) while of the 8 stories that were carried on two networks on the same evening, 6 of the 8 were on ABC and CBS.\(^{10}\) The other 2 stories were on ABC and NBC (air date February 3, 1994, on milk and BGH) and on CBS and NBC (air date April 24, 1987, on field testing).

Similar to the results seen in analysis of newspaper coverage of GM food, coverage on television appeared to be driven by specific media events. In 1994, an increase in coverage was associated with the approval of the Flavr Savr\(^{\text{TM}}\) tomato.\(^{11}\) This spike in coverage quickly died down until 1999 and the controversy as to whether monarch butterflies might be affected by eating pollen from GM corn.

The following year, 2000, was marked by the Starlink controversy when GM corn intended exclusively for cattle feed showed up in taco shells widely sold in the United States for human consumption. This incident can be seen as a spike in coverage by all three networks, similar to the increases at this time seen in newspaper coverage (Nisbet & Lewenstein, 2002; McInerney et al., 2004), to the extent that more than one quarter of all the network stories from 1980 to 2003 occurred in 2000. With the Starlink story, a long-standing and key concern of opponents of GM food had been realized, that is, that it would be difficult to completely contain and keep separate GM foods from non-GM foods. This controversy continued to affect coverage through 2001, although not all the stories produced during such event spikes were about the contamination of human food with nonapproved GM animal feed (see Table 1); between 1999-2001, 44% of all GM food coverage on network television news coverage over the study time frame is accounted for.

Still, the frequency of reporting on GM food on network news broadcasts was by no means high, or even common, with less than seven stories a year on average across all three networks. Compared to CBS, ABC reported slightly less than half as much, while NBC reported only one quarter as often. Presented proportionally as the percentage of total stories on GM food by network in each year from 1980 to 2003, CBS accounted for 100% of all GM food stories reported by the three networks in 1984, 1985, 1986, and 1990.

In terms of placement, all networks had a similar news show format, with four commercial breaks during the 30-minute period. During the 23-year time frame, GM food was the top story of the evening only nine times. Of these top stories, six were on CBS and three were on ABC.\(^{12}\) Two other stories on GM food were not the top story of the evening but were before the first commercial break. The majority of stories (91 stories, 81.9%) about GM food aired after the second commercial break.

Although Ward (1992) found that the average length of stories about science on evening news was 6 seconds, we found that most stories (70.3%)
# Table 1


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<th>Year</th>
<th>Patents</th>
<th>Field testing</th>
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<th>Government support</th>
<th>Golden rice</th>
<th>GM science</th>
<th>Labeling</th>
<th>Opposition to GM food</th>
<th>Policy (NRC report; NAS report)</th>
<th>Government support</th>
<th>Cloning</th>
<th>Starlink (human food contamination)</th>
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<tr>
<td>1996</td>
<td>(no stories)</td>
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<tr>
<td>1997</td>
<td>Cloning</td>
<td>BST and milk</td>
<td>Implications and potential</td>
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<tr>
<td>1999</td>
<td>Special report</td>
<td>Opposition to GM food</td>
<td>GM products in human food</td>
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</table>

Note: BST = bovine somatotropin; NRC = National Research Council; NAS = National Academy of Sciences; FDA = Food and Drug Administration.
on GM food were between 1 and 3 minutes long. The majority of stories, by network, were also between 1 and 3 minutes long (ABC, 61%; CBS, 75%; NBC, 73%). There were 30 stories on GM food that were longer than 3 minutes; of these, 24 (21.6%) were between 3 and 5 minutes long and 6 (5.4%) were longer than 5 minutes. All stories longer than 5 minutes, which are associated with greater depth of discussion, aired between the second and fourth commercial breaks. Only ABC and CBS had these longest of stories (ABC, 11% of all stories; CBS, 3% of all stories).

When length and placement were compared, none of the longest stories (greater than 5 minutes) were before the second commercial. Stories 1 to 3 minutes in length were found throughout the broadcast lineup, but the majority (78.2%) were after the second commercial.

*Spokespersons in the news.* An examination of the spokespersons granted face time on the evening news demonstrated that these spokespersons represented a wide variety of institutions and organizations (see Table 2). By descending order of frequency, the most commonly used spokespersons were industry, activist, scientist, public, farmers, other government, Food and Drug Administration (FDA), and U.S. legislators. The Environmental Protection Agency (EPA) and U.S. Department of Agriculture (USDA), both government agencies that were charged with regulatory oversight for GM food, were each present as spokespersons less than 1% of the total.

Examining the use of spokespersons across networks, slight differences were noted in frequency between ABC, CBS, and NBC. The three most frequently used spokespersons for all networks were industry, activist, and scientist. The combination of industry and scientist, who often represent the same viewpoint on genetic engineering, dominated as spokespersons during the time frame studied. As combined frequencies, they represented 69.5%, 48.8%, and 59.7% of total spokespersons on ABC, CBS, and NBC, respectively. Activists, typically representing an alternative viewpoint, were used as spokespersons 18.8% of the time on ABC, 20.4% on CBS, and 15.6% on NBC (see Table 7).

In the vast majority of circumstances (greater than 80% of the time), individuals speaking on camera could be rated on whether they appeared to support GM foods or were against or critical of GM foods. Following are examples of positive and negative statements taken from two shows that aired April 24, 1987, and April 5, 2000:

**Coded as positive:**

ABC, air date April 24, 1987: “This experiment poses no threat to the environment, no threat to animals, plants, or most importantly to human beings.”
### Table 2
Organizational Affiliations of Evening News Sources

<table>
<thead>
<tr>
<th>Universities</th>
<th>Industry</th>
<th>Activists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stanford</td>
<td>Cetus</td>
<td>Hereditary Disease Foundation</td>
</tr>
<tr>
<td>Massachusetts Institute of Technology</td>
<td>Genentech</td>
<td>Center for Science in the Public Interest</td>
</tr>
<tr>
<td>University of California–Berkeley</td>
<td>AF Protein</td>
<td>Foundation on Economic Trends</td>
</tr>
<tr>
<td>Ohio State</td>
<td>Calgene</td>
<td>Humane Society</td>
</tr>
<tr>
<td>University of Arizona</td>
<td>Monsanto</td>
<td>Earth First</td>
</tr>
<tr>
<td>University of California–Davis</td>
<td>Eli Lilly</td>
<td>Environmental Policy Institute</td>
</tr>
<tr>
<td>Rutgers</td>
<td>Genzyme</td>
<td>Center for Responsible Genetics</td>
</tr>
<tr>
<td>University of Vermont</td>
<td>Asgrow Seed Company</td>
<td>National Wildlife Federation</td>
</tr>
<tr>
<td>George Washington University</td>
<td></td>
<td>Biotech Policy Centera</td>
</tr>
<tr>
<td>Tufts</td>
<td></td>
<td>Consumer’s Union</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pure Food Coalition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pure Food Campaign</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CARE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a. Was a division of the National Wildlife Federation.</td>
</tr>
</tbody>
</table>

- Michigan State
- Cornell
- Harvard
- University of Illinois
- University of Pennsylvania
- University of Ontario
- Texas A&M
- Purdue
- Iowa State
- Biotechnology Industry Organization
- Grocery Manufacturers Association
- Advanced Genetic Sciences
- Prodigene
- Viagen
- DuPont
- Aqua Bounty Farms
- ABS Global
- Concerned Consumers
- Greenpeace
- Union of Concerned Scientists
- Alliance for Bio Integrity
- Center for Food Safety
- Environmental Defense Fund
- Organic food industry
- Earth Liberation Front
- Friends of the Earth
- Consumer Federation of America
- Atlantic Salmon Federation
- People’s Business Association
- Center for Human Nutrition
Table 3
Number and Frequency of Source Types (1980-2003)

<table>
<thead>
<tr>
<th>Source Type</th>
<th>Total</th>
<th>Frequency, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>80</td>
<td>20.8</td>
</tr>
<tr>
<td>Activist/activist group</td>
<td>74</td>
<td>19.3</td>
</tr>
<tr>
<td>Scientist/medical</td>
<td>72</td>
<td>18.8</td>
</tr>
<tr>
<td>Public</td>
<td>54</td>
<td>14.1</td>
</tr>
<tr>
<td>Farmers/farmers association</td>
<td>49</td>
<td>12.8</td>
</tr>
<tr>
<td>Food and Drug Administration</td>
<td>19</td>
<td>4.9</td>
</tr>
<tr>
<td>U.S. legislators</td>
<td>5</td>
<td>1.3</td>
</tr>
<tr>
<td>Environmental Protection Agency</td>
<td>3</td>
<td>0.8</td>
</tr>
<tr>
<td>National Institutes of Health, Department of</td>
<td>2</td>
<td>0.5</td>
</tr>
<tr>
<td>Health and Human Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S. Department of Agriculture</td>
<td>2</td>
<td>0.5</td>
</tr>
<tr>
<td>Other government</td>
<td>24</td>
<td>6.3</td>
</tr>
</tbody>
</table>

Table 4
Positive and Negative Perspective of Actors 1980-2003 (N = 384)

<table>
<thead>
<tr>
<th>Perspective</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive tone</td>
<td>171</td>
<td>44.5</td>
</tr>
<tr>
<td>Negative tone</td>
<td>156</td>
<td>40.6</td>
</tr>
<tr>
<td>Indeterminable/none</td>
<td>54</td>
<td>14.1</td>
</tr>
<tr>
<td>Balanced</td>
<td>3</td>
<td>0.8</td>
</tr>
</tbody>
</table>

ABC, air date April 5, 2000: “The committee is not aware of any evidence suggesting that foods on the market today are unsafe to eat as a result of genetic modification.”

Coded as negative:

ABC, air date April 24, 1987: “These people, they’re mad scientists, they really are.”

ABC, air date April 5, 2000: “There’s only a small chance that this organism will do damage, but if it does do damage the event can be catastrophic.”

As seen in Table 4, over the 23-year period there are more spokespersons with a positive perspective (171, 44.5%) on GM food than negative (156, 40.6%), but the difference is very slight. This is in contrast to newspaper coverage of GM food, as noted previously, in which there is a strong bias toward a positive presentation. However, when the data set was analyzed in 5-year
increments (except for the 3-year subset 2001-2003), the perspective of spokespersons can be seen to have changed over time (see Table 5). The greater number of positive perspectives of the early years of discourse on GM food between 1980 and 1990 shifted to a greater number of negative perspectives between 1991 and 2000. This is in line with increasing concerns over GM food both in the United States and overseas, the increasing presence of activists in media coverage, and the critical events associated with Starlink (the Nature article in 1999, and the contamination of human food products with GM corn not approved for human use in 2000).

As expected, industry, scientists, and government tended to be more positive than activists and the public, while farmers and farmers associations were essentially evenly divided between positive and negative perspectives (see Table 6). The FDA, as the key regulatory agency in the United States overseeing GM food issues, accounted for nearly half of all government spokespersons consulted on camera and presents an overwhelmingly positive perspective on the technology. Legislators were the only members of government quoted in these news stories that were more negative than positive, but the number of quoted legislators is so small (only five cases) it is difficult to draw a conclusion as to their meaning or significance.

### Discussion

Over the time period examined in this study, GM food moved from concept to market in the United States, with the first GM whole-food product (Flavr Savr™ tomato) reaching the consumer shelves in 1994. Typically, for any technology, this period from concept to market would be the time when the public would first become aware of the technology through media coverage and from that media coverage would subsequently develop an opinion of the technology (supportive, oppositional, or neutral) and its value for
The results of this study indicate that over the time frame examined, the broadcast evening news coverage was minimal in quantity, event driven, and inconsistent between the three networks. This lack of in-depth news reporting during this period that was critical for the dissemination of information and development of public opinion about GM food through ongoing discourse in the media is of concern as a test case for news coverage of science and scientific issues.

Over the 23 years of coverage examined here, there were only 169 stories on GM food. This averages to approximately 7 stories a year, which is clearly a very small fraction of the 3% of network time devoted to science stories a year (Project for Excellence in Journalism, 2005). This means that for the U.S. public over the 23 years of coverage, there was less than 1 story a month on the technology. Of course, as one could expect that few individuals regularly watch all three networks each night, it is reasonably safe to conclude that relatively few people saw more than a handful of reports over the 23-year period.

But not only were stories on GM food scarce over the 23-year period, there was little duplication of stories by night across networks (an indication of equal interest on the subject by all three networks), and only rarely

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**Table 6**

**Percentage of Positive and Negative Tone of On-Camera Sources by Affiliation**

<table>
<thead>
<tr>
<th>Source</th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>18.8</td>
<td>8.2 (Combined results of below)</td>
</tr>
<tr>
<td>Food and Drug Administration</td>
<td>8.2</td>
<td>0.6</td>
</tr>
<tr>
<td>Other government</td>
<td>6.4</td>
<td>5.1</td>
</tr>
<tr>
<td>Legislators</td>
<td>1.2</td>
<td>1.9</td>
</tr>
<tr>
<td>Environmental Protection Agency</td>
<td>1.2</td>
<td>0.6</td>
</tr>
<tr>
<td>National Institutes of Health/Department of Health and Human Services</td>
<td>1.2</td>
<td>0</td>
</tr>
<tr>
<td>U.S. Department of Agriculture</td>
<td>0.6</td>
<td>0</td>
</tr>
<tr>
<td>Industry</td>
<td>36.3</td>
<td>6.4</td>
</tr>
<tr>
<td>Scientist/medical</td>
<td>24.6</td>
<td>11.5</td>
</tr>
<tr>
<td>Activists</td>
<td>3.5</td>
<td>41</td>
</tr>
<tr>
<td>Farmer</td>
<td>11.7</td>
<td>12.8</td>
</tr>
<tr>
<td>Public</td>
<td>5.3</td>
<td>19.2</td>
</tr>
<tr>
<td>Number of sources</td>
<td>171</td>
<td>156</td>
</tr>
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</table>

(Note: 3 balanced, 54 indeterminable)
did they occupy the top-story slot of the evening. Placement provides a sense of significance, as the first stories on the evening news programs are considered to be the most important for the viewing audience. Only nine times in 23 years was GM food the leading story of the evening; three of those times the same story was the lead on two networks (ABC and CBS). And each of those times, the issue related in the story had some connection to government actions (patents for GM organisms, government decision about marketing of GM food, government proposals regarding approval of GM products). Obviously, GM food became a critical issue only when government actions were involved.

Corresponding with placement, length of story is an indicator of importance of the topic in the newscast. Longer stories have traditionally meant greater depth of content and by consequence, a story that needs to be explicature more completely; it can be assumed that the shorter the story, the less the information covered. The data showed that the majority of the stories on GM food were between 1 and 3 minutes in length. Thirty stories were longer than 3 minutes in length. This stands in sharp contrast to Ward’s (1996) analysis, which found that the average length of science stories was 6 seconds. It is likely, though, that this increase in length is due less to an emphasis on GM food than to a format change introduced by ABC News in the late 1980s (which was adopted by the other two networks) to include correspondent pieces (2 to 3 minutes in length) to go more in depth into an issue without running stories that were longer than 2 or 3 minutes (Project for Excellence in Journalism, 2006). Regardless, the fact that only 3% of all stories were under a minute in length at least points to a greater depth of reporting on GM food than could be predicted from previous analysis of science story length.

However, before one strongly asserts that GM stories were longer on average, it must be pointed out that the stories analyzed for length were those that had spokespersons. It may be that length of the stories is directly related to the inclusion of these spokesperson clips. As this study did not calculate story length for the balance of 58 stories on GM food that did not have spokespersons, it is impossible to make the claim that GM stories were longer on average than other stories. Regardless, it is still important to note that on average, it appears that stories about GM were longer than might be expected from previous analysis, and that

some in network news say that modern television news stories are probably more densely packed with information than were stories of similar lengths in earlier years. The new technology—satellites, video feeds, computer-generated graphics and more sophisticated editing equipment—allow producers and editors to more easily add more information from more sources. The technology also allows journalists to include more, pithier and shorter soundbites
in stories rather than longer but perhaps longwinded ones. (Project for Excellence in Journalism, 2004)

But most startling was the discrepancy in coverage noted between networks, which contrasts with earlier work showing strong concordance in topic coverage between the three networks. CBS dominated coverage of the topic, with 54% of all stories appearing on CBS compared to 32% on ABC and 14% on NBC. In 4 of the 23 years, CBS had 100% of stories on the topic.

We could find nothing in the literature that would explain the significant differences in quantity of coverage. A critical examination of 2 days of coverage of GM food pointed to a possible explanation for these differences, which we believed were based on some fundamental news show differences in focus. On April 5, 2000, both ABC and CBS ran a story about the National Research Council (NRC) releasing a report on GM food that was generally positive toward the technology. It was a report that one might presume would generally please the GM food industry in spite of some controversy about the allegiances of some of the individuals serving on the commission and the recommendation that GM food was an important area that needed to be monitored.

ABC’s story mentioned that the report called for tighter government monitoring that should set some of the then-existing concerns about GM food to rest. CBS was substantially more critical, with anchor Dan Rather introducing the report with the statement that “Future gene-altered crops need to be checked for possible threats to other plants” and adding that “critics of gene-altered foods don’t like the study’s main finding or the scientists who’ve made it” (CBS Evening News, April 5, 2000).

An additional and notable difference between ABC and CBS, which may be indicative of why this issue was covered differently by these two networks, concerned an additional ABC story about Monsanto, which ran the day before the NRC report. Monsanto, a company with one of the largest stakes in GM food, issued a press release a couple of days ahead of the commission report stating that they would, on the day of the report, release a great deal of proprietary scientific information about GM rice. According to Hendrik Verfaillie, president of Monsanto, the data in this report could “facilitate and encourage basic research to improve rice and other crops.” This action, reported by ABC but not by CBS or NBC, made Monsanto look especially good on the day prior to the release of a positive, but not stellar, national commission report. The intent of Monsanto is almost beyond question in that the press release came out just ahead of the commission report, timed to coincide with and to increase the chances of coverage. Moreover, Monsanto had been in possession of the data for some time and could, it would seem, have released the information earlier.
One element in the report was most striking. Following the report from
the field, the late Peter Jennings commented that

one of the biggest companies in genetically altered foods, Monsanto, said
today it would give away valuable research on the genetic structure of rice
which could lead to new strains of healthier strains of rice that would be more
resistant to disease. No company has ever disclosed so much genetic infor-
mation about a single crop. (ABC Evening News, April 5, 2000)

This very favorably worded statement about the value of Monsanto’s
release of data left a positive impression of Monsanto and GM food.

ABC may well have chosen to run the Monsanto story because they
thought it had important news value. A skeptic might wonder if Monsanto
had better public relations contacts with ABC than at the other two net-
works. Relatedly, ABC News has received millions of dollars in advertising
from Archers Daniel Midland, a company that also has considerable inter-
ests in the success of GM food.

But without concrete evidence of intervention at the level of news-show
funding, this still did not explain the differences in coverage we discovered.
We continued to speculate as to what might explain the more frequent
reporting by CBS News and decided to contact the networks and attempt to
learn about the story assignment routines at each network by interviewing
executive producers, producers, and the reporters. We chose to start with
CBS primarily as it had been observed that the executive producer Jim
Murphy and producer Sally Garner were frequently cited in on-air credits
on the broadcast stories on CBS, and reporter Wyatt Andrews was a con-
sistent reporter on these stories.

CBS permitted taped phone interviews with these three key individuals.
Each interview was cleared in advance by CBS’s public affairs office. We
spoke first with Sally Garner, providing her with our basic quantitative find-
ings, as we believed that it would have been inappropriate to not disclose
our findings and would have made asking direct questions about CBS’s
heavier coverage impossible.

We did not receive comparable access to ABC or NBC. In retrospect, the
critical obstacle was the inability to identify a producer or reporter at either
network who was consistently cited in on-air credits like Murphy and
Garner. Nor was there a reporter who seemed to have the story as his or her
beat in the way that Wyatt Andrews did. As with CBS, we were routed to
ABC’s and NBC’s own public affairs departments for clearance, and
though we were told a number of times that we would hear back about proposed interviews with the respective executive producers, we were unable to obtain the interviews we requested. We did tell our contacts at both ABC and NBC that we had completed interviews with individuals from CBS.

What we learned from the interviews with CBS may well explain the preponderance of stories from that network. In short, Garner and Andrews found a very receptive executive producer in Jim Murphy from their very first suggestion that they do a story on the subject. Wyatt commented that Murphy seemed intrinsically interested in the topic because first of all it’s food, and people eat that. I think people are fascinated by that. And second, it is the technological frontier. Marry that to food and he [Murphy] sees it as a no-brainer. He just thinks the audience is going to be interested when people are messing with your food. (personal communication, A. Wyatt, October 2004)

These interviews indicated how important a production team is for a story or topic to receive regular attention. It was because Garner and Andrews stuck with the topic and were given a lot of latitude by their executive producer, James Murphy, that they ended up providing much more frequent coverage. CBS’s decision to focus on GM food through newsroom practices of news topic selection would mean that CBS Evening News viewers might be more likely to consider GM food a topic of concern (McCombs & Shaw, 1972) through the greater awareness and attention to the issue (Schudson, 1995; Ten Eyck, 1999; Van Dijck, 2003). Without surveying consistent viewers of the three networks’ perspectives on GM food we cannot, of course, go beyond speculation.

These differences in quantity and emphasis, though, do not seem to have carried over in the use of spokespersons. Within the small corpus of stories carried on the evening news shows—and in comparison to newspaper coverage of GM food—the use of spokespersons on television was more balanced across networks and more representative of the variety of voices in the GM food controversy (see Table 7).

Over the 23-year time frame, 21% of the spokespersons were from industry, 19% were scientists, 19% were activists, and the balance consisted of representatives from government, farmers, and the public (see Table 3). By network, there were only slight differences in the three most frequently used sources of industry, scientist, and activist; by frequency all three used these groups similarly when combined (ABC, 58.7%; CBS, 58.8%; NBC, 60%). Differences in the frequency of use of other spokespersons were
slightly greater but likely represent differences in focus of the networks themselves.

These results stand in sharp contrast to the 73% industry and 7% activists in a study of 18 months of newspaper coverage (Priest & Talbert, 1994). This comparison does not take into consideration access to spokespersons, as it may be that television news shows have greater access to spokespersons than do the small dailies noted in the study on newspaper coverage. However, this broader range of viewpoints does not appear to be unusual in television coverage; 72% of controversial nightly newscasts had multiple viewpoints (Project for Excellence in Journalism, 2005). Television coverage of GM food did not appear to emphasize the mainstream, large organization point of view that dominates newspaper coverage of the issue (Priest & Ten Eyck, 2003), likely because in order to appear objective and unbiased in the short format of television news, oppositional voices are presented as the “balance between opposing points of view” (Priest, 1995). These voices are important in the development of new technologies as they promote and generate public debate. Priest and Ten Eyck (2003) note that

activists can affect others through direct persuasions, though that is typically not enough. It is important that a dissenting message is publicized by the news media—that the rhetoric of a group of people with a particular, especially a non mainstream, opinion, is made available for public reflection. This has the effect of extending the range of public debate; it is easy to imagine

<table>
<thead>
<tr>
<th>Source Types by Network</th>
<th>ABC</th>
<th>CBS</th>
<th>NBC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>18</td>
<td>22.3</td>
<td>22.2</td>
</tr>
<tr>
<td>Activist/activist group</td>
<td>18.8</td>
<td>20.4</td>
<td>15.6</td>
</tr>
<tr>
<td>Scientist/medical</td>
<td>21.9</td>
<td>16.1</td>
<td>22.2</td>
</tr>
<tr>
<td>Public</td>
<td>11.7</td>
<td>14.2</td>
<td>20</td>
</tr>
<tr>
<td>Farmers/farmers association</td>
<td>15.6</td>
<td>11.8</td>
<td>8.9</td>
</tr>
<tr>
<td>Food and Drug Administration</td>
<td>4.7</td>
<td>6.2</td>
<td>0</td>
</tr>
<tr>
<td>U.S. legislators</td>
<td>1.6</td>
<td>0.9</td>
<td>2.2</td>
</tr>
<tr>
<td>Environmental Protection Agency</td>
<td>0.8</td>
<td>0.9</td>
<td>0</td>
</tr>
<tr>
<td>National Institutes of Health/Department of Health and Human Services</td>
<td>0</td>
<td>0.9</td>
<td>0</td>
</tr>
<tr>
<td>U.S. Department of Agriculture</td>
<td>0.8</td>
<td>0.5</td>
<td>0</td>
</tr>
<tr>
<td>Other government</td>
<td>6.3</td>
<td>5.7</td>
<td>8.9</td>
</tr>
</tbody>
</table>
people reorienting themselves on a revised public opinion continuum and projecting a different reaction from others as a result of learning about oppositional views. (p. 29)

Yet, when the valence of the spokespersons as a whole was considered, it was shown that there was an almost even split between the polarizing positive-negative valence. Over the 23-year period, 45% of all spokespersons were pro GM food and 41% were negative about the issue. As was expected, the perspective of industry and scientist experts was more positive than negative across the 23-year period, while activists were more often negative than positive when speaking of GM food. Yet, looked at in 5-year increments (see Table 5), valence as a whole shifted over the timeline examined. The more positive tone of the first 10 years was followed by a more negative valence in the years between 1990 and 2000. Here, television coverage mirrors the shifts from the promoting newspaper coverage of the 1980s (Priest, 1995; Gaskell et al., 1999) to the less positive coverage in the 1990s (Marks, 2001; Nisbet & Lewenstein, 2002; Marks et al., 2003; McInerney et al., 2004). Of note, within each of these categories there was still some opposite opinion to the majority valence, indicating that there is no overall unified stance toward the technology.

It is clear from the results here that television coverage of GM food over this 23-year period is different in both quantity and valence of coverage when compared to newspapers. Beyond the obvious differences as media, newspapers and television are dissimilar in the size of the news hole (that is, how much time, in terms of television, or space, in terms of newspapers) is devoted to disseminating information and the way in which the audience interacts with the medium. The results presented here indicate that newsroom practices, although strong factors in news production for both media, can affect news coverage of television in ways that likely have more of an impact than with newspapers due to the limited time available for news coverage on television.

In contrast to earlier work that has shown consonance across the evening news commercial broadcasts in the United States, this study points out that for the specific issue of GM food, newsroom practices resulted in a difference in quantity over time. Within the stories themselves, there was little difference in spokespersons or the valence of their comments. However, as pointed out in the limited critical analysis of one story, there appear to be inequalities in coverage that could be explicated by critical analysis of stories analyzed.

Limited as it was to structural and quantitative analysis of GM coverage by the broadcast networks, this study points to the need for further examination of the coverage of this volatile topic, especially in light of the
reliance of the American public on television for news about science. As well, it highlights a call for further examination of the role of newsroom practices.

Conclusions

As a mass medium, it has been said that television has the greatest likelihood of influencing public opinion about science (Nelkin, 1995; Nisbet & Lewenstein, 2002). The Pew Foundation noted that the U.S. public’s knowledge of GM food tends to be driven mostly by the degree to which it is covered by the media (Pew Initiative on Food and Biotechnology, 2006). As shown in this study, the spotty coverage of GM food in the evening broadcast news, coupled with the reliance of the U.S. public on television for information on science and technology, highlights concerns about this medium’s providing the information needed by the U.S. public to make sound and rational decisions regarding GM food.

In this first study of television news coverage of GM food, we have seen that over the 23 years of the study, coverage was sporadic and light, except for the spikes associated around the infrequent crisis event. This stands in strong contrast to newspaper coverage, which has followed the GM food issue more closely over the years examined. One network, CBS, dominated coverage, yet each network treated the issue quite similarly in its use of on-air spokespersons. Although media coverage is associated with the development of long-standing perspectives, coverage as spotty as seen in this 23-year time frame would likely have little effect on an individual’s support or opposition to GM foods; in fact, since 2001, support for GM foods has remained flat, while opposition has declined (Pew Initiative on Food and Biotechnology, 2006).

Critically, these results indicate that for a subject as ubiquitous and pervasive as food (that is, everyone needs to eat), the lack of coverage may be of concern for other, less all-encompassing technological issues. If the U.S. press does not cover a technology of food, what does this imply about the potential for coverage of technologies with less relevance to a majority of the population? As seen here, newsroom practices promoted CBS’s focus on GM food. Would it require the same serendipity of like-minded producers and reporters such as noted with CBS to push for the inclusion of stories on other science issues?

Previous studies have yielded contradictory results about the relationship of television science to public perceptions of science. Nelkin (1995)
and Nisbet and Lewenstein (2002) found that the viewing of science content on television decreases public reservations about science, while Besley and Shanahan (2005) found that attention to television news has a negative relationship to support for biotechnology. In the case of our results here, the paucity of television coverage of GM food has likely had little impact on public perceptions, which is in line with both the Hallman et al. (2003, 2004) and the Pew Initiative (2006) surveys showing that the U.S. public has “heard little about genetically modified foods, and as such, have yet to roundly accept or intensely oppose them” (Pew Initiative on Food and Biotechnology, 2006).

Recent data on the use of televised science (all science programs, not just news programming) clearly indicate that television exerts an influence on people in their attitudes toward nanotechnology, an emerging science issue (Lee & Scheufele, 2006). Indeed, the impact of television news programming about science may not be in the dissemination of knowledge about a subject but rather the emotional response toward that subject. Given the results here—that there is little difference among the networks except in quantity of coverage (which is still minimal, even for CBS, which had the most coverage over the 23-year period examined) and that there is essentially an even split between positive and negative perspectives on GM food—it is not unsurprising that the U.S. public has little knowledge about this issue and that support for or against this technology has remained unchanged.

This examination raises concerns in the ability of television to serve as the primary medium of information dissemination about science and technology. The structural and economic characteristics of television news production severely limit the capability for it to serve as a medium for dissemination of complex topics. Further examination of other developing and controversial science topics, such as nanotechnology or global warming, would be valuable to determine whether the results of this study are generalizable to other science topics.

Ultimately, the role of the news media in presenting science is complicated by what the audience brings to the table in terms of their belief and attitudes toward science. As Robert Logan (2001) noted,

> Predispositions affect how persons perceive the credibility of news sources; the extent to which adults and children are interested in learning; possible motivations to read, listen, or watch science news; and potential recall of facts or concepts within a science story. (p. 141)

As a first study in television coverage of GM food on U.S. evening broadcast news, the results presented here are limited by their focus on structural
and quantitative analyses. Yet, the demonstration that television coverage differs from newspaper coverage should serve to encourage science communicators to consider a focus or at least the inclusion of television media in their research.

Notes

1. These are corn, soybeans, canola, cotton, potatoes, squash/zucchini, papaya, tomatoes, sugarbeets, rice, flax, and radicchio.


3. Previous research, discussed below, has shown strong consonance between the three evening news shows and the extent and focus of coverage.


5. Characterized by having multiple meanings such that each viewer can take away a different meaning. Polysemy does not, however, imply an infinite set of possible meanings.

6. For example, the evening CNN news shows on Vanderbilt Television Archives were Worldview (1995-2000), Wolf Blitzer (February 2001-December 2001), Newsmagazine (2001-2005), and Anderson Cooper (2005-present).

7. Top story, before first commercial, after first commercial and before second commercial, after second commercial and before third commercial, after third commercial and before fourth commercial, after fourth commercial.

8. The total number of stories that aired over the 23-year period can be estimated at 10 stories/show × 3 networks × 365 days/years × 23 years = 251,850 stories.

9. The three stories were aired November 11, 1980 (Supreme Court and genetic engineering patents), April 17, 1987 (patents for genetically modified [GM] organisms), and May 26, 1992 (marketing of GM products without government approval).

10. Air dates were December 16, 1982; August 7, 1987; April 5, 2000; May 3, 2000; and October 31, 2003.

11. Flavr Savr™, a product of Calgene, was the first GM whole food approved for the U.S. market.

12. Three of these top stories were the top story on two networks (ABC and CBS). Story subjects included the Supreme Court decision on patenting of GM organisms, GM marketing and government approval, use of bovine growth hormone to promote milk production, Food and Drug Administration proposals about regulation of GM food, contamination of taco shells with GM corn, and an update on that issue 4 days later.

13. Similar shifts in source spokespersons are noted for the issue of global warming, with the balance of sources shifting from scientists in early newspaper coverage to politicians and interest groups in later newspaper coverage (Wilkins, 1993; Williams, 2001).

14. The article by Losey, Rayor, and Carter (1999) is considered critical in the United States as awareness raising on the possible impact of GM products.


16. The most frequent ABC reporter was Barry Serafin. On NBC, Robert Bazell accounted for nearly one third of all their stories. On CBS, Wyatt Andrews reported on 41% of all stories.
References


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