

"EVENTS, CONTEXTS AND CONFLICTS: A CONTENT ANALYSIS OF THE LOS ANGELES
TIMES AND THE NEW YORK TIMES REPORTING OF SCIENCE AND BIOMEDICINE"

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Events, Contexts and Conflicts: A Content Analysis of the Los Angeles Times and the New York Times' Reporting of Science and Biomedicine.

Abstract: In this content analysis study, the event orientation, educational versus human interest context and extent of conflict reporting are empirically compared in the Los Angeles Times and the New York Times' science and biomedical coverage from 1986-88. It is hypothesized that the Los Angeles Times and the New York Times' science and medical news coverage should contain:

1. More stories originating from episodic, event-orientation than stories generated by non episodic, event-orientation.
2. More stories with human interest detail than stories with an educational context.
3. More stories that emphasize conflicts among scientists than stories that do not emphasize conflicts among scientists.

The hypothesis that science and biomedical news is more episodic, or originated through publicity events, received some support. The hypothesis that conflicts among scientists and physicians are emphasized more frequently in science and biomedical reporting than stories without conflicts received modest support. The hypothesis that reportorial background in science and biomedical stories emphasize human interest rather than a broader educational context was not supported and reversed.

The study challenges if actual media performance is consistent with recent qualitative critiques of science and medical writing.

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Introduction

One of the surprising aspects of literature about science and biomedical writing is the dearth of empirical scholarship regarding press performance. In recent books about problems in science writing by Nelkin (1987), Friedman, Dunwoody and Rogers (1986), Efron (1987), Wilkins and Patterson (1991) most of the criticisms about science journalism are qualitative and anecdotal. A recently published literature review about the field reveals that many of the empirical studies about science writing have focused on reportorial accuracy and the readability of science news (Dunwoody and Rossow, 1988). Most of the literature about the accuracy of science news studied the number of errors scientists found in science news and has often found news reporting to be reasonably accurate (Dunwoody, 1982; Dunwoody and Ryan, 1985; and Tichenor, Olien and Donohue, 1970). Researchers also have found variables, including active voice and concisely written summaries, that seem to influence whether a science news story is accessible to lay readers (Bostian, 1983; Funkhouser and Maccoby, 1973).

But most empirical studies about the accuracy and readability of science news follow a different path than qualitative observations. Although criticisms of reportorial accuracy among scientists and the accessibility of science writing to lay audiences are often discussed by science writing's critics, these issues are often seen today as less important than current emphases on episodic reporting in the news media, the dearth of an educational context in news writing and the press' overemphasis on covering conflicts among scientists.

Contemporary science journalism is especially criticized as episodic or oriented toward events that have been set up for journalists by public relations agencies in universities, corporations, scholarly societies and public interest groups (Wilkins, 1987; Nelkin, 1987; Shepard, 1979, 1981). Burnham (1987) explains that the reduction of science and biomedicine into disjointed, independent news developments rarely reveals the underlying complexity of scientific inquiry, or the place of current research within the history of discipline. Citizens do not learn about science, Burnham (1987) believes, if research is presented as a series of independent events rather than an incremental process driven by prior research activities.

Nelkin (1987) adds that once science news is prepackaged into events by universities, organizations, and corporations, the process creates a hierarchy of authority that strongly influences what becomes published in newspapers. The news media turn to the most famous scientific and medical journals for news stories, attend a selective number of scientific society meetings, listen to a relatively few number of "visible" scientists and are attentive to those scientific societies, corporations, universities and public interest groups that are the best organized to provide information to the press. Medical journalists write about too many stages events that are often managed by public relations offices within hospitals, clinics, medical journals, or physician interest groups (Freimuth, Greenberg, DeWitt and Romano, 1984; Freimuth, Stein and Kean, 1989; Nelkin, 1987). The overemphasis of a packaged preparation of medical and science news is seen to reinforce journalistic dependence on established, well organized sources within federal, state, and local governments, the largest public health and science research facilities, the most famous scientific journals and large research universities (Shepard, 1979, 1981; Logan, 1991). Pfund and Hofstadter (1981) found, for example, that reporting about recombinant DNA was disjointed and too little attention was paid to scientific critics because journalists tended to use the same, mainstream sources to cover recombinant DNA research.

By returning to interview science and medical "celebrities", or visible scientists, journalists additionally confer status on a small number of scientists, who can exercise an unusual influence on what other reporters choose to cover (Danielian and Reese, 1989; Reese and Danielian, 1989; Goodell, 1977). Once legitimacy is conferred on a science or biomedical journal, the publication's editors have an extraordinary influence on what becomes newsworthy (Perlman, 1974; Russell, 1986). Some journals, such as the New England Journal of Medicine, even control journalistic access to information and the timing of news reporting by not permitting researchers to release findings until their research is published in the magazine (Russell, 1986).

The extensive results of episodic and event reporting in science news, Nelkin (1987, 1991) concludes, are that science and biomedical news lack diversity and an underlying context to

explain the meaning of events. The dearth of a context in science news is seen as the most serious byproduct of episodic reporting by Blakeslee (1986), who finds news reporting often lacks sociological, cultural, ethical, historical or educational context about biomedical science. In biomedical procedures, the educational aspects of the story that might help readers understand a complex medical procedure, or why changes in health care practices occur, are often secondary to introducing readers to the personality characteristics, demeanor, lifestyle and personal habits of physicians and research scientists (Blakeslee, 1986). Several critics maintain that an inattention to an educational context often results in science reporting that is too favorable to large industrial corporations, government officials or public interest groups. Efron (1985) and Whelan (1985) found that a lack of context about energy, chemistry, and food safety issues created unmerited public distrust of the U.S. Environmental Protection Agency, the U.S. Food and Drug Administration and some large industrial firms. Conversely, Wilkins (1987) and Warner (1977, 1989) found reporters who covered a toxic chemical spill in Bhopal, India and the impact on smoking on health did not investigate questionable claims by U.S. government officials and large industrial corporations. In either case, Cohn (1989b) acknowledges that the incapacity of many journalists to report sociological, historical and scientific contexts is a problem in science and medical journalism, which demands professional attention and remedies. A key difficulty in reporting context is that reporters are tempted to substitute readily available information about the personalities and lifestyles of scientists for a more difficult analysis of the importance of the scientific and extrascientific findings (Cohn, 1989a, 1989b, Hart, 1984).

Another frequent substitute for context occurs when many science and biomedical stories emphasize conflicts regarding evidence, procedures and public policy implications among celebrity scientists and physicians (Efron, 1985; Nelkin, 1987; Burnham, 1987). Although debate is a normative feature of scientific discussion, Burnham (1987) notes that the news media often overemphasize differences about data and interpretations among scientists to "balance" a story. The arbitrary use of scientists to balance a story often results in an inability for lay readers to determine which scientific source seems to provide the best evidence (Efron,

1985). The result is the authority of scientific best evidence is often undermined and the credibility of many leading scientists can be eclipsed by persons representing less grounded research. Instead of a source of context about science, contrived conflicts within news stories are seen to leave science's self-righting processes confusing and inconsistent to readers (Efron, 1985, Whelan, 1985, Burnham, 1987).

A similarity among all three central criticisms of contemporary science journalism is a surprising dearth of empirical data to confirm any of the assertions. In this study, the event orientation, educational versus human interest context and extent of conflict reporting are empirically compared in the Los Angeles Times and the New York Times' science and biomedical coverage for a three year period. In terms of specific hypotheses, the aforementioned literature suggests that the Los Angeles Times and the New York Times' science and medical news coverage should contain:

1. More stories originating from episodic, event-orientation than stories generated by non episodic, event-orientation.
2. More stories with human interest detail than stories with an educational context.
3. More stories that emphasize conflicts among scientists than stories that do not emphasize conflicts among scientists.

The study explores if actual media performance is consistent or inconsistent with recent critiques of science and medical writing.

Methods

A content analysis of the national editions of the Los Angeles Times and the New York Times from 1986-88 was undertaken. Each year was divided into four quarters. A constructed week of Sunday through Saturday editions was chosen for analysis for each of the eight quarters under investigation, with constructed weeks chosen by a procedure described by Krippendorff (1980, p. 57-69).

Science news was divided into science and biomedical coverage in the two newspapers. This discrimination was seen as providing possible insights into differences across the three variables studied between each newspaper's science and medical reporting staffs. Science and

biomedical news coverage also was divided because the Los Angeles Times and the New York Times have a different staff and supervision of science and medical reporters.

Science news was operationally defined as reporting about environment, computers, biology, ethics, geology, space, social science, chemical sciences, physics, nuclear energy and miscellaneous categories. Biomedical news was defined as reporting about cancer, health prevention, medical advances or research, heart disease, AIDS, environmental influences on health, birth control, abortion, addictions, health services, medical competence/malpractice, disabilities, dental health and other diseases.

Two independent coders read all the science and biomedical news and news analysis stories in all sections of the two newspapers. Editorial commentary, columns and question and answer sections were excluded from the study.

Episodic and event-oriented reporting was operationally defined as a story that primarily reports on information from a news conference, release of journal article, conference paper delivery, or press release from a university, public interest group, government agency, scientific organization, biomedical organization and industry. In the rare circumstance the origin of the story was not stated or unclear from the news article, the Science Journalism Center at the University of Missouri-Columbia called the relevant scientific society, corporation, organization, or press office, or verified from the Science Journalism Center's own records of press releases from 1986-88 if the story was generated outside a news organization and sent to journalists. If the story (a) did not originate from a news conference, release of journal article, conference paper delivery, or press release from a university, public interest group, government agency, scientific organization, biomedical organization and industry, (b) raised broader issues such as sociological, cultural, ethical, historical, educational, scientific and biomedical questions, contentions, problems and topics and (c) clearly represented independent reportorial enterprise generated by a news organization, the story was categorized as generated by non-episodic or event oriented. All stories categorized as non-event oriented did not originate from a news conference, release of journal article, conference paper delivery, or press release from a university, public interest group, government agency, scientific

organization, biomedical organization and industry, and they either raised broader issues such as sociological, cultural, ethical, historical, educational, scientific and biomedical questions, contentions, problems and topics in the story's opening paragraphs, or clearly focused on independent reportorial enterprise by a news organization.

Human interest reporting was operationally defined as a feature story that provided the personality, characteristics, demeanor, lifestyle and habits of a scientist or physician, or the ambiance surrounding a scientist and physician's work. Educational context reporting was defined as (a) primarily excluding human interest reporting about the scientists or physicians discussed in the story (b) raising sociological, cultural, ethical, historical, educational, scientific and biomedical questions or contentions and (c) explaining, elucidating, clarifying, describing, or analyzing science and biomedicine. All of the stories categorized as human interest stories primarily contained a background about scientific research that concentrated on informing readers about personality or lifestyles of relevant researchers. All stories categorized as educational context reporting provided background about the previous history of similar research, explained how the research worked, explained its impact with the discipline, explained its sociological, cultural or practical impact to readers.

Unlike the episodic, event-oriented variable that analyzed the initial approach to a story, or the lead paragraphs, the second variable (human interest versus educational context) examined reporting that filled out details within news stories, or occurred after the opening paragraphs.

Conflict reporting was operationally defined as stories that primarily contain arguments, debates, disputes, disagreements between scientists and physicians, or describe a scientific or biomedical controversy. Stories that primarily focused on a body of work, or ideas without refutation, critical discussion, or challenges among scientists or physicians were categorized as non-conflict reporting. Similar to educational context and human interest, this category was measured by reporting that occurred after the opening paragraphs within news stories.

The Los Angeles Times and the New York Times were chosen because their science and medical reporting is frequently criticized in the aforementioned literature, their science and medical coverage is widely reprinted in other publications and both newspapers are ascribed to provide

leadership in science and medical news writing (Shoemaker, 1989). Studies by Danielian and Reese (1989) and Reese and Danielian (1989) found that science and biomedical coverage in the Los Angeles Times and the New York Times established a news agenda for science and medical reporting in other U.S. newspapers.

Coders were trained in content analysis techniques prior to data collection. Intercoder reliability ranged between .90 to .95 for the three variables measured in the study. Intercoder reliability was determined via a formula proposed by Holsti (1969, p. 140).

Findings

The discussion in this section refers to Table 1 and Table 2. Table 1 provides the sum of the observed findings for each newspaper's coverage of science and biomedicine for the three variables during the twelve quarters investigated. Table 2 contains chi square totals for the two newspaper's coverage of science and biomedicine for each of the three investigated variables.

Hypothesis one predicted that in the Los Angeles Times and the New York Times, more stories would originate from an episodic, event-orientation than stories with a non episodic, event-oriented origin. This was supported in three findings and was reversed in one case. Table one reveals the Los Angeles Times originated 166 science stories from an episodic, event-orientation compared to 84 stories originated from a non episodic, event-orientation. These differences are statistically significant. ($X^2 = 25.2, p < .05$) The Los Angeles Times also originated 178 biomedical stories from a episodic, event orientation compared to 134 stories with a non episodic, event oriented origin. These differences are statistically significant ($X^2 = 42.8, p < .001$) Table one reveals the New York Times originated 132 science stories with an episodic, event orientation compared to 97 science stories with a non episodic, event orientation during the 12 quarters investigated. These differences are statistically significant ($X^2 = 34.3, p < .001$)

However, the New York Times originated 122 biomedical stories from an episodic event-orientation compared to 134 stories from a non episodic event-orientation, which was a statistically significant reversal of the predicted hypothesis ($X^2 = 42.7, p < .001$).

The second hypothesis predicted that The Los Angeles Times and the New York Times would

publish more stories that provided background in terms of human interest detail about scientists than stories which provided an educational context to explain the underlying meaning of research. The hypothesis was not supported and reversed in both newspapers for their science and medical coverage for the 12 quarters surveyed. The Los Angeles Times published 40 science stories with an human interest background compared to 210 science stories with an educational context. These differences are the reverse of the predicted hypothesis and are statistically significant ($X^2 = 15.1, p < .01$). The Los Angeles Times published 74 biomedical stories with a human interest background compared to 238 stories biomedical stories with an educational context. These differences are the reverse of the predicted hypothesis and are statistically significant ($X^2 = 25.1, p < .01$). Similarly, the New York Times published 47 science stories with an human interest background compared to 182 science stories with an educational context. These differences are the reverse of the predicted hypothesis and are statistically significant ($X^2 = 82.9, p < .001$) The New York Times published 53 biomedical stories with a human interest background compared to 203 biomedical stories with an educational context. These differences are the reverse of the predicted hypothesis and are statistically significant ($X^2 = 123.1, p < .001$).

The third hypothesis predicted that the Los Angeles Times and the New York Times would publish more science and biomedical stories that emphasized conflicts among scientists than stories which did not emphasize conflicts among scientists. The hypothesis was confirmed in one finding, reversed in one finding and not supported in two other cases.

The Los Angeles Times published 162 biomedical stories that emphasized conflicts among biomedical scientists, or physicians compared to 150 biomedical stories that did not emphasize conflicts among biomedical scientists or physicians. These differences are statistically significant ($X^2 = 31.5, p < .001$). In contrast, the Los Angeles Times published 121 science stories that emphasized conflict among scientists, or physicians compared to 129 science stories that did not emphasize conflicts among scientists or physicians. These differences are the reverse of the predicted hypothesis and are statistically significant ($X^2 = 34.3, p < .01$).

The New York Times published 120 science stories that emphasized conflict among scientists, or physicians compared to 109 science stories that did not emphasize conflict among scientists or physicians. These differences are in the direction of the predicted hypothesis but are not statistically significant ($X^2 = 18.1, p < .08$). The New York Times published 159 biomedical stories that emphasized conflict among biomedical scientists, or physicians compared to 97 biomedical stories that did not emphasize conflict among scientists or physicians. These differences are in the direction of the predicted hypothesis but are not statistically significant ($X^2 = 16.9, p < .11$).

Conclusion

The hypothesis that predicted that science and biomedical news would be more episodic, or originated through publicity events, received some support in this study. The hypothesis that predicted conflicts among scientists and physicians would occur more frequently in science and biomedical reporting than stories without conflicts received modest support. The hypothesis that predicted reportorial background in science and biomedical stories would emphasize human interest rather than a broader educational context was not supported and reversed.

The study suggests that utilizing publicized events and placing science and biomedical research within an episodic context is normative in the Los Angeles Times and occurs in the New York Times' science coverage. But a countertrend is revealed in the New York Times' reporting about biomedicine, where more stories were generated by reportorial enterprise and outside of publicity channels in Universities, corporations, medical societies, government agencies and medical journals.

Although a reportorial emphasis on scientific and biomedical conflicts occurred in both newspapers, this practice did not dominate either the New York Times or the Los Angeles Times' coverage of science and biomedical news. The preponderance of conflict reporting in the Los Angeles Times' biomedical coverage contrasted with the newspaper's science reporting, which covered science with an inverse emphasis. Conflicts among scientists and physicians outnumbered non-conflict reporting in The New York Times' science and biomedical coverage, but the emphasis within both news beats was insufficient to be statistically meaningful.

The most surprising finding in the study was that both the New York Times and the Los Angeles Times infrequently utilized human interest detail as background information in their science and medical reporting. In contrast, both newspapers frequently provided an educational context that raised sociological, cultural, ethical, historical, educational, scientific and biomedical questions and contentions, or made an effort to explain, elucidate, clarify, describe or analyze scientific and biomedical events. This finding, in conjunction with data that reveal a partial emphasis on covering publicized events, seems to indicate that science and biomedical reporters are compensating for stories which originate within a narrow, episodic, publicized context by providing broader perspectives within subsequent paragraphs (after the opening of a news story). The Los Angeles Times and New York Times' science reporters and the Los Angeles Times' biomedical reporters seem to depend on publicity channels in Universities, corporations, medical societies, government agencies and medical journals to originate stories. But reporters also provide a broad educational context to help readers understand the importance of the same story.

It is the consistent provision of an educational context in science and biomedical news reporting in the Los Angeles Times and New York Times that challenges some of the conclusions reached in recent qualitative literature. The discrepancies between the findings herein and qualitative literature seem to reveal that studies which reflect the performance of a science and biomedical news staff over time may be different than research about the performance of science and medical reporters within one or two story cycles. This study suggests the value of looking at a newspaper's reporting for an extended period before assuming that short term work is indicative of overall performance.

Some of the study's surrendipitous findings include, first, the relative consistency in science and biomedical reporting that occurred within the variables examined in the Los Angeles Times and the New York Times. Only one discrepancy in comparisons between science and biomedical coverage was evidenced within each newspaper. Although the New York Times' science reporting originated from publicity events and was episodic in nature, their biomedical coverage reflected the reverse trend. The Los Angeles Times' biomedical reporting emphasized **conflicts among**

scientists and physicians while their science reporting exhibited the opposite trend.

Second, these findings reveal that science and medical news staffs' approaches to reporting may be slightly different within the same news organization. It may be unwise to assume the traits and habits of science and biomedical journalists are similar, even within elite newspapers.

No content analysis results are singularly definitive and these results are not generalizable to other newspapers, nor represent the performance of the Los Angeles Times and the New York Times in years other than 1986-88. Yet the inability to broadly extrapolate from this study explains why an analysis of press performance during a several year interval would have special value.

This study is designed to establish a baseline for future research. The investigators hope to use compared these findings to ascertain changes in science and biomedical news performance over time.

It is hoped that more empirical research about science news will investigate assertions in the current literature. More quantitative research and content analysis of science and biomedical news will benefit all interested parties in the science and biomedical communication disciplines and could provide new insights into current assumptions about press performance.

Table 1- Summary of observed findings

Episodic/Non Episodic			Human Interest/Educational Context		
	<u>Science</u>	<u>Biomedical</u>		<u>Science</u>	<u>Biomedical</u>
L.A. Times	166/84*	178/134**	L.A. Times	40/210*+	74/238*+
N.Y. Times	132/97**	122/134**+	N.Y. Times	47/182**+	53/203**+

Conflict/No Conflict

	<u>Science</u>	<u>Biomedical</u>
L.A. Times	121/129*+	162/150**
N.Y. Times	120/109	159/97

Statistical differences determined by Chi Square

d.f.=11

* p less than .05

** p less than .001

+ = statistical significance observed is reverse of hypothesis

Frequency counts in two percent of all observed cells totaled 5 or less.

Table 2- Chi Square Totals

Episodic/Non Episodic			Human Interest/Educational Context		
	<u>Science</u>	<u>Biomedical</u>		<u>Science</u>	<u>Biomedical</u>
L.A. Times	25.2	42.8	L.A. Times	15.1	25.1
N.Y. Times	34.3	42.7	N.Y. Times	82.9	123.1

Conflict-No Conflict

	<u>Science</u>	<u>Biomedical</u>
L.A. Times	34.3	31.5
N.Y. Times	18.1	16.9

Reported statistic in each cell is Chi Square. Figures rounded off.

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