Exploring How College Magazines Frame Science: A Comparative Analysis of *Harvard Magazine* and *KU* (Korea University) *Today*

Hwalbin Kim
Doctoral Candidate
School of Journalism and Mass Communications
University of South Carolina

Jeongheon JC Chang
Associate Professor
Department of Health & Strategic Communication
CHA University, Pocheon
South Korea

Christopher Frear
Doctoral Student
School of Journalism and Mass Communications
University of South Carolina

Ju-Yong Ha
Associate Professor
Department of Communication and Information
Inha University, Incheon
South Korea

Abstract

This study explores how two college magazines – Harvard Magazine and KU Today – frame scientific research. Based on previous framing studies, this study examines the organizing themes and issue attributes in two college magazines that are published in different cultural, social, and organizational contexts. Using framing theory, we conducted a qualitative content analysis of science stories. The findings show that Harvard Magazine more often framed science as an issue of progress while KU Today most frequently portrayed science as a matter of convergence and communication. Also, the findings indicate that two college magazines mainly framed science and the universities as useful for human advancement. This study indicates that the collectivism or authority-centered culture of Korea might affect which attributes were highlighted.

Keywords: college magazine, Harvard Magazine, KU Today, framing, science communication.

1. Introduction

The public typically learns about important scientific knowledge through mass media coverage. Many people, especially after their formal science education ends, depend on the media coverage for new scientific information. Scientific topics are reported in ways that media organizations want to communicate with their audience. For example, science news coverage has described research as a patriotic task or as a race against other researchers or countries (Nelkin, 1995). Most commonly, the news media shed light on scientific honors, such as the Nobel Prize, rather than the work that led to the honor (Nelkin, 1987). Mass media have also portrayed scientists as engaged in esoteric activity beyond the understanding of ordinary people (Nelkin, 1987). As a consequence, we may say one of the main attributes of routine science coverage in the media is not explanatory journalism but a type of reporting that emphasizes national rivalry, similar to "horse-race journalism" common in political stories.

In this context, this study focuses on the following two key questions: at the level of cross-media comparison, do college magazines follow the pattern of traditional news media and at the cross-national comparison of science communication, what are differences between college magazine frames in different countries. First, do the college magazines emphasize national rivalry? Answering this question will enhance our understanding of how college magazines frame science topics. Most universities publish their own magazines that carry news and stories about college life and information for students, faculty, alumni, and parents of students. These magazines have been one of the most efficient means for the institutions to communicate with important constituencies. In particular, college magazines may focus on the honors of their colleges' programs, institutes, or faculty members to an undue extent. That is, college magazines will always provide good news about their own university. If so, readers – mostly alumni of the colleges – would have a biased view of science or scientists at the university. Because college alumni, who are mostly the elite of society, regularly receive college or alumni magazines, the influence of these magazines cannot be disregarded.

Second, the researchers can ask any differences between college's magazines across countries. Science can be universally understood, but science communication may be culturally and socially specific. Social and cultural disparities between countries might plausibly affect the ways that mass media frame science issues, even though there might be invariant social and organizational mechanisms that explain mass media frames. Few studies compare scientific knowledge and attitude between countries (Bauer, 2009). For example, according to the contextual model in science communication, people deal with scientific information based on their social and psychological schemas that have been developed by their cultural and social contexts and personal experience (Brossard & Lewenstein, 2010). So, it is important to compare how college magazines frame scientific topics in different countries.

Drawn on this perspective, this study compared the science coverage of two college magazines– *Harvard Magazine* and *KU* (Korea University) *Today* – in the U.S. and South Korea. In analyzing college magazine frames in these two countries, this study first explains two different cultures and their dimensions because a relationship between culture, organization, and communication can be expected. In fact, communication interacts with culture. Communication affects culture (Hall, 1981) and it is also influenced by culture (Hofstede, 2001) at the same time. Individual communication styles are different across cultures while cultural cues are transmitted through a communication medium. Therefore, the different cultural, social, and organizational contexts of *Harvard Magazine* and *KU Today* may lead to differences in college magazine frames.

2. Literature Review

2.1. Theoretical framework: Framing analysis

"Framing" or the concept of a "frame" has been used in various academic fields and is useful in this study because it has proven to be a powerful theoretical tool to help researchers better understand science controversies (Nisbet, 2010).Framing usually means the sense of "shaping" and a frame establishes a "framework" (Van Gorp, 2007), even if both framing and frame are used without clear distinction. Framing is related to selection and salience of key elements of phenomena covered in media stories (Entman, 1993). Frames are central organizing ideas, which are constructed from language containing specific concepts, symbols, and visual images emphasized in a news narrative (Gamson& Modigliani, 1989; Entman, 1989). By presenting, repeating, omitting, and thereby reinforcing specific words and visual images, news frames work to make some ideas more important and dominant in the text, other less so, and others entirely invisible.

Framing studies have investigated an organizing theme (Gamson & Modigliani, 1989) and an issue attributes (Ghanem, 1997; Kim, Scheufele & Shanahan, 2002). For example, Gamson and Modigliani (1989) focused on how mass media organized a nuclear issue, and then examined what were the relationships between media discourse and the formation of public opinion. Through reviewing news stories about the issue in several news outlets, they found that the news media used the organizing themes such as *progress* and *public accountability*, and that these media frames were associated with support for nuclear power and a plant in one's own society. Ghanem (1997) posited that certain issue attributes emphasized in the media had influence on the salience and importance of the public agenda. In line with this previous research on framing, this study focuses on the how college magazines frame science topics.

2.2. Science communication in mass media

Over the past several decades, science communication has received much attention and research (Suleski & Ibaraki, 2010). As scientists use mass media as a source for science news and publicize scientific findings through them, mass media have increasingly played an important role as a primary information source about science (National Science Board, 2014). Science journalism, which refers to "portrayals of science in newspapers, magazines, books, and television news and documentary shows" (Lewenstein, 1995), entered the stage as a special journalism area since the early 19th century (Lightman, 2000).Numerous studies have analyzed science coverage in news media and science journalists' roles. Most of them have focused on the science and technology articles in traditional news media and mainly used a quantitative method, such as content analysis (Bucchi & Mazzolini, 2003; Pellechia, 1997). Pellechia (1997), for example, investigated science coverage in three American newspapers – *The New York Times*, the *Chicago Tribune*, and the *Washington Post* – between 1966 and 1990. The researcher content analyzed the categorization, the comprehensiveness, and the methodological measures described in science coverage. In addition to studies of science news coverage, numerous studies have examined how scientists have been portrayed in media (Chimba & Kitzinger, 2010; Shachar, 2000). In general, scientists were described as different from the general public. Nelkin (1987) argued that mass media in the U. S. have portrayed scientists as "socially removed, apart from, and above most normal human preoccupations." Gender differences in science news coverage were also found. Female scientists were mainly under-represented. Chimba and Kitzinger (2010), for example, examined the representation of scientists in 12 national UK newspapers. They found a small percentage of newspaper coverage included representations of female scientists, and often their mere physical appearance was the focus of coverage.

2.3. Culture and mass media in the U.S. and South Korea

Media coverage inevitably contains social and cultural elements in a given society (Van Gorp, 2007). Journalists work through the cultural norms and values of dominant subcultures, and media coverage — as the journalist's product— is associated with the cultural norms and values of the news organization. Journalists' practices may follow social and organizational patterns of behavior common to the organizations operating in a given society. These include routines and news values that get internalized and perceived as somewhat natural ways to go about doing things. Thus, media framing can be bound to the cultural and social contexts. Science communication is also closely related to the social and cultural contexts of a given society that supports it. Public understanding of science is not universally identical across countries and over time. The types of relationship between science and a society are manifold based upon distance between science and the society and the quality of its relationship (Bauer, 2009). For example, Bauer (2009) posited that the relationship between knowledge scale and attitudes toward science is positive in Indian states but negative in Europe. In particular, scientific literacy studies focused on making comparisons among nations and over time (Bauer & Schoon, 1993; Kawamoto, Nakayama & Saijo, 2011).However, science communication scholars have not yet been interested in studying the framing of scientific issues between Asian and Western countries, which have quite different cultural and social contexts.

To better understand the relationship between culture and science communication in the U.S. and South Korea, we should first consider the manifest social and cultural characteristics of both countries in order to link cultural variables with science communication variables. The two countries have similarities and disparities in terms of cultural, social, historical contexts. For example, five dimensions of social culture can guide us in comparing the U.S. to South Korea: individualism or collectivism, power distance, masculinity or femininity, uncertainty avoidance, and Confucian dynamism (Hofstede, 2001). However, it is beyond this study to examine how culture affects the framing of science stories. In this study, cultural factors will be considered when comparing two college magazines because they are published in different cultures.

2.4. College magazines between the U.S. and South Korea

Comparable to Ivy League schools in the U.S., South Korea has three most prestigious "SKY" universities,[1]all of which publish their own college magazines. Harvard University is one of the best institutions of higher education in the U.S. Korea University, established in 1905, is one of the oldest and prestigious universities in South Korea.

[1] SKY refers to the first letter of three universities: Seoul National University, Korea University, and Yonsei University. Three universities are widely recognized as top-level universities in South Korea. In South Korea, most of senior government officials, Congressmen, lawyers, CEOs, etc. are the graduates from these universities.

In terms of independence, *Harvard Magazine* is owned, published, edited, and operated by an independent organization, Harvard Magazine Inc. On the contrary, *KU Today* is owned and published by the university itself. The president of Korea University is the publisher, and personnel in the Office of University Communications edit the magazine.

KU Today, established in 2000, is published quarterly. It is public relations medium used to enhance the public brand-image of Korea University, but the first mission of *KU Today* is to produce a high quality college magazine to expand readership and provide diverse content for alumni. Its contents are organized in four sections. The first three sections are named for the school motto – *Justitia*, *Veritas*, and *Libertas*, or justice, truth, and liberty – and those sections report science stories. The fourth section is the donation report and includes donation news, a donor's interview, a list of donors, and a donation agreement. Thus, the university makes use of this magazine for fundraising and donor relations.

Harvard Magazine, founded in 1898, is issued bimonthly. Since 1977, it has received a subsidy from the university to help underwrite the cost of shipping the magazine to all alumni in the U.S. free of charge (Harvard Magazine, 2015). However, as mentioned above, it is independently edited and requests contributions to maintain its editorial independence. The main mission of *Harvard Magazine* is to build the social network between its alumni and the university and among alumni, and *Harvard Magazine* has a greater circulation (245,737 in 2009) than *KU Today* (31,000 in 2013).

2.5. Focus of this study and research questions

Based on framing theory, this study focuses on how scientific research is portrayed in college magazines. This study follows Gamson and Modigliani (1989)'s perspective, looking for the organizing theme in science stories in *Harvard Magazine* and *KU Today*. We also examine which issue attributes appeared most often in the magazines' science stories. According to McCombs and Evatt (1995), issue attributes are certain aspects or characteristics of an issue employed by people for thinking about the issue. In this study, we assume that issue attributes include any characteristics related to scientific achievement or reasons why science or scientific research is important. Furthermore, this study compares the differences in organizing themes and issue attributes between two magazines.

As a preliminary study, we ask three broad research questions to explore how college magazines frame science stories.

RQ1: How do two college magazines – *Harvard Magazine* and *KU Today* – report science stories differently?
RQ2: What organizing themes do two college magazines – *Harvard Magazine* and *KU Today* – use in discussing science?
RQ3: What issue attributes do two college magazines – *Harvard Magazine* and *KU Today* – use in discussing science?

3. Methods

3.1. Selection: KU Today vs. Harvard Magazine

In the present study, *KU Today* and *Harvard Magazine* were selected for analysis. Even if the two college magazines differed in ownership, frequency, circulation size, history, and financing, the international comparisons of two college magazines can provide a starting point to examine how cultural factors can influence news frames in college magazines. In addition, the investigation of college magazines should also reveal the distinctions of news frames between college magazines and other mass media. We used the year 2011 as the time period for analysis because of availability. During that year, four issues from *KU Today* and six issues from *Harvard Magazine* were published. Online editions of *KU Today* were not available on the webpage when we analyzed. Thus, we used the printed magazines for four issues, which were delivered by the Office of University Communications in Korea University. On the other hand, all online issues were used for *Harvard Magazine*, which are available on its webpage. This study examines news articles on the topic of science. The authors followed a standard sampling procedure: First, the authors reviewed all the news stories in *KU Today* to find out the total number of science articles were published. The news articles associated with any scientific field were selected for the analysis. Second, in the case of *Harvard Magazine*, the authors searched for science articles from the "Science" research section of its website. After reviewing all the articles in the "Science" section, the authors excluded articles unrelated to science and scientists.

That is, this study includes all news stories associated with science including articles about scientific studies and stories about science in general. Thirty-two science stories from *Harvard Magazine* and twenty-five science articles from *KU today* were analyzed.

3.2. Analysis: Framing and pattern coding

There are several ways to explore science journalism. Examining the interpretative language that journalists used to report their topics, Shachar (2000), conducted textual analysis. That is, she investigated decoding connections between the text and the journalists. However, we do not employ such textual analysis but rather focuses on the framing perspective as text (science coverage in college magazines). By using a qualitative approach to framing studies, the authors analyzed science stories in two college magazines. One of the reasons for using a qualitative approach is that the number of articles analyzed is not large enough to use quantitative methods. More importantly, however, qualitative studies can help researchers to discover deeper meanings of texts (McKee, 2003).By interpreting and considering cultural and organization contexts (e.g., ownership, mission, values, etc.), this study hopes to indicate new implications or findings that cannot be reached with a quantitative research method.

We examine two types of frames: organizing themes and issue attributes. In this study, an organizing theme refers to a key frame that provides meaning to science issues or events reported in a story (Gamson & Modigliani, 1989). This frame is a central idea that summarizes the issue in a certain way. Meanwhile, issue attributes are defined as specific characteristics of a science issue that can be engaged to evaluate and think about the issue (Kim et al., 2002). Thus, organizing themes are conceptually broader and more comprehensive than issue attributes. To find out organizing themes and issue attributes for the analysis, the authors closely reviewed all the news articles related to science topics. After several discussions about themes and attributes, we found specific patterns presented in the articles. This approach is an inductive and interpretive reasoning that is emphasized in qualitative research (Keyton, 2011). This method is called "pattern coding" (Miles & Huberman, 1994). Pattern coding refers to an inferential coding that identifies an emerging explanation or idea. First, we summarized organizing themes and attributes of each news article. Then, we classified summarizing segments into a smaller number of themes and attributes. This method can help the researcher arrange numerous articles or data into significant and simple units of analysis (Miles & Huberman, 1994). Therefore, the aim of this study is not to test any predictions and generalize findings. Instead, in this study, we employ a qualitative analysis method to understand the themes college magazines use in portraying science and scientific developments to readers.

4. Findings

4.1. Comparing Harvard Magazines with KU Today

RQ1 examines how two college magazines differ in reporting science stories. First, the magazines differed in reporting university-based vs. general research. *Harvard Magazine* frequently placed emphasis on research stories associated with Harvard University. These stories were not first published in mainstream magazines or newspapers. On the contrary, *KU Today* tended to cover general, high-profile scientific research conducted by other research institutions, although *KU Today* primarily reported articles related to university researches well. Second, the sources and subjects of the stories differed between the two magazines. In *Harvard Magazine*, the news sources and subjects of the articles were mostly members of the university: faculty, former faculty, staffs, students, graduates, and postdoctoral fellows. The news articles analyzed were oriented entirely to Harvard University. *KU Today*, however, published several articles about the recent scientific achievements of well-known scientists not related to Korea University.

For example, one column reported a story about Francis Crick, who described the double helix structure of the DNA molecule in 1953 (Kang, 2011).Third, *Harvard Magazine* showed an inter-media agenda-setting influence on major American newspapers (Lopez-Escobar, Llamas, McCombs, et al., 1998). While *KU Today* showed no explicit evidence of inter-media agenda-setting, *Harvard Magazine* had an influence on the content of traditional newspapers, and the newspapers had an influence on the magazine. For example, several magazine articles reported that *The New York Times* and the *Boston Globe* reported the research conducted by Harvard faculty and originally covered in *Harvard Magazine* articles.

For example:"The front pages of the *New York Times*' news, arts, and science sections on September 27 featured articles bearing on pioneering research conducted by senior Harvard faculty members. … But Sue Goldie … proved the cost-effectiveness of just this approach in her research, featured in "Medicine by Model"[2]a 2002 article from this magazine's archives" (Harvard Magazine, 2011a)."A front-page article in today's Boston Globe looks into the use of digital media by very young children, those aged less than six years. … The story quotes Michael Rich, M.D., founder of the Center on Media and Child Health, based at Harvard Medical School, who is the subject of "The Mediatrician," a profile in the current issue of *Harvard Magazine*" (Harvard Magazine, 2011b).

4.2. Organizing themes

RQ2 investigates what organizing themes appeared in science coverage in the two college magazines. *Harvard Magazine* most often presented a *progress* theme (eight stories). The terms such as promise, advance, improvement, innovation, and vision, were used in the articles. The scientific achievement and scientists' attempts to improve the society or personal life were reported approvingly. Science was often expressed as a technological advance or change. For example, one article highlighted the progress of social science: "The youth of the social sciences is exciting: progress is still being made at a ferocious pace, and the contours of these fields are rapidly evolving. … Technological change has also made life easier to examine" (Glaeser, 2011).Next, a *preservation* theme was repeated in two *Harvard Magazine* articles. This theme was used predominantly in articles regarding the environment or a specific ecosystem. For example, one article reported that Harvard students in the Amazon grappled with the fate of the rainforest in a changing climate (Shaw, 2011a). However, a *preservation* theme does not include references to science destroying the environment. Another article framed the crisis of marine ecosystems: "The fact that reefs everywhere are threatened, therefore, is more than just a sad footnote to the ecological changes that are taking place on land. When a reef goes, it takes a key part of the global marine ecosystem with it" (Shaw, 2011b).

Two articles portrayed science using a *convergence* theme, which refers to the interdisciplinary work in scientific fields. For example, one article focused on the effects of media and children's health (Feinberg, 2011).In this article; media were not used typically as a research tool in the medical field. However, the reporter highlighted the attempt of the scientists to use media. An article headlined "Engineering in the Twenty-First Century" also used a *convergence* theme: "Rather, this century will call on all fields to address the most compelling issues on the planet – call this 'convergence' – and engineering will underpin them all. The engineers of the future will likely be 'T-shaped thinkers,' deep in one field but able to work across all fields and communicate well" (Murray, 2011).In *KU Today*, a *convergence* theme was most frequently used in articles about scientific research. Eight articles reported that fused or blended scientific knowledge and mutual understanding between disciplines should be required in scientific research. For example, sports science was covered as comprehensive studies blended with sports kinetics, sports psychology, and sports physiology (KU Today, 2011e). In particular, *KU Today* often highlighted a *convergence* theme between the natural sciences and human sciences.

KU Today, like *Harvard Magazine*, employed *progress* theme frequently. Four articles with this theme framed science as a powerful tool for better lives. For example, one article described, "Professor Lee who is interested in connecting the technology for human lives with nano materials projects so that many difficult problems will be solved thanks to nano materials" (KU Today, 2011d).In particular, a *progress* theme was often used in the area of medicine and health-related new technology, such as MRI nanotechnology contrast media, nanofiber-based tissue engineering, and new video technology, for early detection of heart failure. *KU Today* used an *imaginative power* theme in three articles. This theme suggests that the crisis of science can be overcome by the power to create a new one. Imagination, or originality, can help scientists deal successfully with a slump. That is, imagination was affirmatively framed as a useful means to solve problems in science stories. The final major theme used in *KU Today* was a *social responsibility*. In two articles, science was framed as a type of social movement, a social responsibility, or service to society. Covering volunteer medical service in Mongolia, one article framed a doctor's volunteering as an example of medical science providing a valuable social service (KU Today, 2011b).

4.3. Issue attributes

RQ3 explored what issue attributes were used in discussing science in the two college magazines. These attributes suggested the reasons why science or scientific research is important. In *Harvard Magazine*, three key issue attributes were found: *scientific methodology, empirical science* and *Harvard's reputation*.

[2] The researchers made the underline. The underlined phrase is the news title actually used in *Harvard Magazine*.

First, fourarticles showed a *scientific methodology* as the reason why science is important. That is, the articles used the attribute to show that science is different from other disciplines. For example, one story reported, "Social science had to take experimental methods to the real world. Many early approaches relied on natural experiments" (Glaeser, 2011).Second, three articles used an *empirical science* attribute. For example, the article about research work in Amazon employed this attribute. Another article highlighted the importance of empirical research, in this case research that included Harvard faculty or students. "By bringing models and data together, we can slowly but surely get the big picture, and get it right" – so he stressed to the students the importance of empirical work: "We need more meteorological data, and we need good data on forest composition across the Amazon basin" (Shaw, 2011a).The third attribute was a *Harvard's reputation*. This attribute was likely present because the magazine is circulated to the university's alumni. However, the magazine did not emphasize this attribute and published only a few articles during the year referring to the university's reputation: "Harvard has been central in this evolution. … Harvard was, again, ahead of the curve in founding these programs, which are aimed at the next level of understanding in biology" (Silver, 2011).In *KU Today*, on the other hand, the news stories with *Korea University's reputation* as an attribute were found with greater frequency. Seven articles portrayed KU's programs, institutes, or faculty members as excellent and having a good reputation. The achievements of institutes or professors were often covered, and the reputation was noticeably highlighted. For example, the article that reported chemotherapy wrote. "The remedy technology of 'tailored chemo' that stunned the world and was found in Professor Lee's laboratory … an epoch-making method. … Dr. Lee finished at the top of her class in medical school and completed postdoctoral program in the Anderson Cancer Center (U.S.) of the world's highest authority. Before starting for her new post in Korea University, she worked as head of the breast cancer center in the National Cancer Center in South Korea" (KU Today, 2011c).Another attribute found in *KU Today* wasan *importance of science*, although not always in an affirmative way. One article reported that national research in basic sciences was gloomy and merely technology, not science, was treated with great significance ina South Korean society (KU Today, 2011a). The news story framed scientists as those who exerted themselves to the utmost but failed to receive respect.

5. Discussion

This study investigated how two college magazines – *Harvard Magazine* and *KU Today* –framed science and scientific research. Specifically, we examined organizing themes and issue attributes of two magazines in different cultural, social, and organizational contexts. In frequency of organizing themes, *Harvard Magazine* used the ideas of *progress*, *preservation*, and *convergence* to frame scientific research in articles. *KU Today* used the themes of *convergence, progress, imaginative power*, and social *responsibility* to frame science topics. The Harvard publication chiefly framed science as an issue of *progress*, whereas the Korea University publication mainly portrayed science in a *convergence* theme. In a broader view, a *convergence* theme can be included in a *progress* theme because *convergence*, or interdisciplinary research, represents an advancement of technology. For example, articles with a *convergence* theme suggested that science should be fused or merged for innovation or overcoming a crisis in science. Thus, after accounting for this broader theme, the results show that both magazines used the idea of *progress* most often to frame science.

After the broadened *progress* theme, *Harvard Magazine* employed a *preservation* theme frequently, while *KU Today* used the themes of *imaginative power* and *social responsibility*. An *imaginative power* further highlights the positive side of science and technology. The themes of *preservation* and *social responsibility* are associated with the vital contribution science makes for the future of human beings. As for issue attributes, *Harvard Magazine* often presented reasons why science is important with attributes such as *scientific methodology*, *empirical science*, and *Harvard's reputation.* Similarly, *KU Today* frequently mentioned attributes such as *Korea University's reputation* and an *importance of science.* However, *KU Today* mentioned the attribute of *reputation* more frequently than *Harvard Magazine* did. The difference in references to *reputation* between both magazines might be explained by the difference in organizational contexts rather than social and cultural contexts.

As mentioned above, *KU Today* is owned and operated by the university, while *Harvard Magazine* is not, indicating that *KU Today* operates more explicitly as a public relations vehicle for the university, which might explain its more frequent use of *reputation* in its articles. The two magazines employed several organizing themes and attributes, but they mainly framed science and the universities as useful: "Science is good for human advancement"; "Thanks to science, we can make progress";"Further, our university is one of the best institutes in the sciences."

The mainstream mass media do not always show such a hopeful or optimistic viewpoint toward science. The media often report not only social progress but also scientific risk or uncertainty and ethical responsibility issues (Nisbet, 2010).Considering the different purposes of college magazines and other news media, it is not surprising that news media provide a watch-dog function and college magazines emphasize a public relations-like function for their target audiences. Thus, the mainstream media seem to provide evaluable perspective on the same scientific issues for a given society. As mentioned earlier, the publishers of college magazines and their readers are educational elites in both countries. According to Scheufele (1999), news media have the power to affect individual thought.

Thus, framing science coverage in university magazines with a *progress* theme may promote a stereotype by framing science in an optimistic way and by not presenting the problems of scientific research. However, the failure to report problems is not only the case in university magazines (Nelkin, 1987). In discussing the peril of progress, Dorothy Nelkin pointed out: "Though some of the methodological issues of risk analysis require little technical background, few reporters try to explain to readers the nature of evidence necessary to evaluate human risk and the problem of judging how much evidence is necessary to warrant policy intervention. Perhaps more important, the press tends to reject statements by scientists who try to explain that they themselves do not know the extent of risk. … But in doing so, they perpetuate a false image of science, its contributions to the resolution of risk disputes, and its limits as a basis for public policy decision" (Nelkin, 1987, pp. 68-69).

Considering that both college magazines published articles about newspaper coverage of the university's scientific research, the news agenda of college magazines is generally influenced by that of mass media. However, as elite media, college magazines can serve as a source to report scientific research. The effects of inter-media agenda setting will make a useful line of inquiry for future research, because *Harvard Magazine* published scientific news that was later picked up by *The New York Times*. However, this did not appear to be the case with *KU today*. This difference seems to be caused by different relationships between each university and magazine. That is, the goal of two publications is different in that *KU Today* performs a public relations function, while *Harvard Magazine* builds a social network among its readers. Contrary to our expectations, this study failed to find the clear influence of cultural dimensions on news framing of college magazines. It may be due to the selection of two college magazines as the study sample because they cater to a different demographic that is for the most part better educated and with higher economic standing than the regular audience reading a science article in a local newspaper or magazine. On a subtler note, however, the fact that *KU Today* dealt with Korea University's reputation as an issue attribute more frequently might be considered as the influence of cultural dimensions on organizational contexts. The collectivism of Korean culture may lead to more emphasis of goals at the level of an organization. On a more structural level, the authority-centered Korean culture may determine the university ownership rather than independent ownership of the college magazine with the result that university administrators may promote the focus on Korea University's reputation as an organizational goal.

The present study has several limitations because it was conducted as a pilot study. Although there are many college magazines in the U.S. and South Korea, this study analyzed only two magazines. In addition, the number of articles analyzed was relatively small and confined to one calendar year. Detailed statistical data on college magazines readership was not available. Nonetheless, because this study explores news frames of science issue in college magazines that have been rarely studied in an area of science journalism; the findings will enlarge our understanding of science communication at the level of cross-media (traditional mass media vs. college magazine) studies. That is, this study can make a contribution to the literature because it provides a model for how to analyze the frames of science communication in an under-examined but important media context. Further, even though this study did not find significant influence of cultural and social contexts on organizing themes and the issue attributes in college magazines, future research likely will be able to discern such difference. Also, future studies that attempt to investigate news frames of science issues in different cultures can consider the relationship between media organizational contexts and cultural or social contexts in each country.

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