The Korean press and Hwang’s fraud

Jaeyung Park, Hyoungjoon Jeon and Robert A. Logan

This case study explores why South Korean journalists overlooked allegations of scientific misconduct against South Korean scientist Dr. Woo Suk Hwang and even indirectly defended him in 2005–6. Nineteen journalists, who covered Hwang’s story for five of South Korea’s leading daily newspapers, were interviewed. The interviewees added insights about the news coverage of the Hwang scandal not identified in previous literature, such as the difficulties among journalists to suspend their personal disbelief about the criticisms and evidence against Hwang. The findings suggest the news judgments that occurred in Korean newsrooms during the Hwang scandal reflected a socially constructed process of negotiation among news media professionals and between journalists and scientists. The findings also suggest it may be best to consider journalistic mores within a multidimensional framework that includes journalistic perceptions of socio-cultural norms, internal newsroom standards for evidence, newsroom competence and training, normative journalism ethics, news gathering techniques, perceived dissonance and professed risk avoidance.

Keywords: Woo Suk Hwang, news judgment, public understanding of science, science journalism, scientific fraud, South Korea

1. Introduction

This case study is about South Korean (hereafter Korean) journalists and the oversights within Korean news organizations that resulted in missed opportunities for explanatory and investigative reporting regarding a scientific fraud. The study explores the reticence of the Korean news media to report allegations of scientific misconduct against Dr. Woo Suk Hwang.

Hwang became a national hero by publishing two cover-story articles on cloning human embryonic stem cells in Science between 2004 and 2005 (Chong and Normile, 2006). However, both articles contained fabricated evidence and were withdrawn from Science in January 2006. PD-Notebook, an investigative television news magazine on MBC, a Korean television network, was the only Korean news organization to allege fraud and ethical lapses in Hwang’s work before mid-December 2005. After a five-month investigation based on a message sent by a former researcher on Hwang’s team, PD-Notebook reported on 22 November 2005 that Hwang’s scientific team unethically obtained human eggs and fabricated data for a 2005 article published in Science (Chong and Normile, 2006). However, PD-Notebook’s initial report was sharply criticized in Korean society and by most of the Korean mainstream news media. It was perceived to harm Hwang’s international reputation.
and Korea’s national interest (Han, 2006). PD-Notebook’s report also was seen as socio-culturally dissonant because Hwang was admired and covered as an exemplar of professionalism and scientific distinction (Han, 2006).

Within two weeks after the PD-Notebook report, a few anonymous scientists added new claims on the website of the Biological Research Information Center (BRIC) that Hwang’s research manipulated some of the stem cell photos in the 2005 Science article (Normile and Vogel, 2005). Once again, most of the news media did not cover these claims actively because journalists believed the suspicions lacked evidence and Hwang’s critics were anonymous (Kim, 2006).

In response to faculty concerns, in December 2005, Seoul National University (SNU, Hwang’s home university) began to investigate the integrity of his research. A university committee announced on 23 December 2005 that nine of the 11 stem cells that were reported in Hwang’s 2005 Science paper were fabricated. The announcement jarred national opinion; the news media’s and the public’s prior disapproval of Hwang’s critics (such as PD-Notebook) was challenged in a pre–post, event-generated demarcation (Chong and Normile, 2006).

Within a highly compressed period of time, the Korean news media, which initially played an important role in building respect for Hwang as a national icon, reported his work was fraudulent and unethical (Choi, 2006). Since most of the Korean press initially hesitated to investigate suspicions about Hwang, little contextualization of the charges against him occurred before or after the SNU investigation (Kim, 2006).

Moreover, the Korean news media’s attitudes toward Hwang raise some intriguing questions about how the press covers scientific uncertainty. Although the scientific uncertainty of Hwang’s work could have been explored previously because of anonymous criticisms by scientific peers and PD-Notebook’s disclosure, most of the news media continued to minimize it by overlooking claims against him, or writing articles that emphasized denials and defense of his actions (Choi, 2006).

This paper explores why most of the Korean news media overlooked the initial allegations of scientific misconduct against Hwang and even indirectly defended him. The paper explores factors that deterred the media from actively investigating the scientific uncertainty that surrounded Hwang’s research (even after SNU’s disclosures).

The Korean news media’s pre–post disclosure attitudes about the Hwang scandal also provide an opportunity to investigate the process by which scientific uncertainty is socially constructed. The paper explores how Korean journalists perceived and reported contentions about the scientific uncertainty surrounding Hwang’s research. The paper explores how news and some science groups directly or indirectly influence a social construction process, and how professional interests are compromised and negotiated. The Hwang case provides a scenario to explore the social construction of scientific uncertainty as it changed in a defined pre–post setting as well as how the journalists who covered Hwang responded to the public and professional criticism of their work. The latter potentially adds to an understanding of how the social construction of news and scientific uncertainty unfolds and links the case study to the international science communication literature (Stocking and Holstein, 1993; Stocking, 1999). This study addresses these issues by interviewing Korean newspaper reporters who covered the Hwang scandal.

2. Literature review

The literature review is divided into two sections, which introduce literature regarding the social construction of news and scientific uncertainty and previous Korean studies of the press’ coverage of the Hwang case.
The social construction of science news and scientific uncertainty

The decisions to pursue, write, and edit news reports about scientific claims are influenced by complex and multidimensional factors. These include: reporters’ and editors’ knowledge, experience and training in science, newsworthiness standards, editorial norms (such as covering the critics of research to “balance” a story), and the news media’s penchant to attract consumer attention (Stocking, 1999). These and external factors, such as access to scientific sources and information provided or withheld by scientific journals and institutions, contribute to the process by which scientific uncertainty is reported. The combination of journalistic and scientific standards and practices and how they influence a story’s depiction also are perceived as socially constructed among the story’s participants (i.e. journalists, scientists and readers) (Stocking and Holstein, 1993; Dunwoody, 1999). The social construction framework emphasizes that scientific uncertainty is not generated by scientists but is a socially derived product constructed through a process of compromise and negotiation among journalists, their sources and audiences (Smithson, 1993; Stilgoe, 2007).

Specifically, Fahnestock (1986) and Ebeling (2008) find reporters often try to attract public attention to a science story by framing research results in a narrative that emphasizes novelty, rarity and originality. This approach is perceived as often reducing the level of uncertainty about scientific research results.

The way in which journalists select news sources and juxtapose them also plays an important role in the process of constructing scientific uncertainty. Journalists often gravitate to globally prominent scientists who publish in internationally eminent scientific journals, such as Science, as primary news sources because the individual’s and journal’s gravitas is perceived to heighten the credibility of subsequent news reports (Entwistle and Hancock-Beaulieu, 1992; Zehr, 1999). Occasionally, journalists ask scientists, who are perceived as authoritative, to provide opposing views to a scientist, who is the primary social actor in a news story. This is seen as a journalistically self-imposed strategy to make a news report appear fair and balanced (Shortland and Gregory, 1991; Stocking and Holstein, 1993). In contrast, when a science news story is based on a single source this similarly reflects a journalistic strategy, which often occurs when other sources are unavailable or when a story is written on deadline (Hartz and Chappell, 1997). In addition, news reports about emergent science tend to be based on one source if: a) the research domain is so new that it has generated few peers, and b) scientific sources have little time to assess a manuscript (Weigold, 2001). Hence, the use of sources is discretionary and their positioning and number can influence whether research is perceived as certain or uncertain.

The way journalists deal with caveats within research additionally reflects self-imposed professional strategies and can serve bi-directional functions. Stocking and Holstein (1993) note reporters sometimes avoid research’s limitations, subtleties, and nuances because such details are seen as detracting from a story’s clarity, impact, brevity, and capacity to get public attention. On the other hand, when a story is perceived as highly controversial journalists sometimes add caveats to avoid criticism that a report is sensational and lacks an evidence base (Stocking and Holstein, 1993). So, in the interest of protecting their reputation, journalists occasionally write defensively.

Other factors that occasionally influence the news media’s construction of scientific uncertainty include when journalists report or ignore researchers’ political or economic motivations, or if a study’s authors have a potential conflict of interest. By reporting or ignoring these types of conflicts, the press adds to or subtracts from the uncertainty that the public ascribes to the findings (Nelkin, 1995).

Previous research suggests the social construction of science news and reporting about uncertainty is highly situational and ubiquitous. As a result, it is a reasonable expectation that
some social construction of events occurred between the press and scientists during the Hwang scandal. The Hwang scandal also represents a bipolar scenario where journalists who were perceived as building a level of certainty about a scientist’s work declined a chance to overturn it and then were forced by events to reverse their decision. The professional stress associated with the conditions surrounding the Hwang scandal suggests it is a good template to explore the degree of social construction and the management of scientific uncertainty that occurred among Korean journalists and scientists.

Previous commentary about the Hwang scandal

Some Korean studies have discussed why the media hesitated to cover Hwang’s research integrity prior to late December 2005, or comprehensively contextualize the Hwang scandal even after SNU found research impropriety.

Kang, Kim, Kim, and Lee (2007) found that reporters trusted Hwang and widely depicted him as a hero. Kang et al. added that the Korean press held the credibility of research published in *Science* in high regard. Jun and Kim (2006) found most journalists were not critical of Hwang because of his elite reputation within Korean society, which the press helped foster.

Ban (2006) and Kim (2006) noted that Korean reporters celebrated Hwang and reported the economic value of his research, although some Korean reporters had difficulty understanding the details of Hwang’s work as well as some of the scientific community’s initial criticisms of its veracity and ethics. Lee (2006) added only a few Korean newsrooms had experienced science reporters with the professional background and educational training to cover the complex charges against Hwang.

Prior to SNU’s findings in late December 2005, Kang et al. (2007) noted that Korean journalists focused on Hwang’s defense of his research. However, Kim (2006) maintained the initial skew toward Hwang was exacerbated by the press’s inability to obtain scientific sources to critique Hwang’s research. Kim (2006) added that news reporting often included unverified information because reporters had limited access both to Hwang and his team and to scientists critical of Hwang’s work. The press’s inability to obtain sources also was a result of Hwang’s preemptive efforts to shield the details of his work from scrutiny (Kim, 2006).

Kang et al. (2007) suggested the news media joined other Korean social institutions that suppressed initial efforts to investigate criticisms of Hwang. Kang et al. implied the initial suppression was related to the intense cultural dissonance and disbelief that occurred when Hwang, a celebrated exemplar of integrity, was accused by peers of fraud and deceit. Choi (2006) suggested public dismay with the press during the weeks after the SNU investigation, partially stemmed from excessive coverage of breaking events and little effort to help Korean culture and society manage a national embarrassment about an icon partially created by the press’s previous coverage. Kim (2006) implied prior press coverage of Hwang was flattering about both his scientific work and personal life, and journalists found it professionally difficult, if not embarrassing, to reverse course. Jeon (2006) argued while a few news organizations helped reveal Hwang’s fraud, the mainstream of Korean journalism neglected an investigative, fact-finding role. Mun (2006) concluded the Korean press’s inability to cover the Hwang case with acumen and context reflected widespread intra-professional failures, including many of the shortcomings outlined above.

Although the criticisms of the Korean press are robust, questions linger about their face validity since few authors attempted to verify their allegations by interviewing the Korean journalists who covered the story. In addition, most of the previous Korean research has been atheoretical, or devoid of a research framework that might help place the Hwang scandal in a context that can be linked to some of the international science communication literature.
Research about the Korean news media is applicable to international science communication research because journalistic freedoms and news gathering practices (e.g. interviews with news sources, press conferences, and heavy use of official sources are routine) in Korea are similar to those in the US and Western European nations. Korean news coverage often frames breaking news reports within a Western wire service inverted pyramid style, which emphasizes who, what, where and when (Sin and Park, 2004). Most of the US Society of Professional Journalists’ ethics guidelines operate informally in most Korean newsrooms (Kim, 2004). As in the US and Western European nations, there is some legal protection for press freedom in Korea and there is significant news competition including: newspapers, radio, over the air and cable television, magazines, books, and Internet services.

The current case study, then, partly seeks to fill a gap in the literature and assesses what the journalists who covered Hwang’s fraud think about their reporting and the criticisms of their coverage, and if their responses add to an understanding of the social construction of science news and the depiction of scientific uncertainty.

3. Methods

Qualitative, open-ended interviews with reporters were deemed as most appropriate for this study. Qualitative interview methods are primarily inductive and develop data-driven theories from concrete observations (Wimmer and Dominick, 2006). Such an open-ended approach fosters a familiar data gathering atmosphere that mimics how a journalist does his or her job (cf. Pickard, 2007). Qualitative interviews also are useful to determine why a person forms opinions or behaves in a certain way and to understand the interpretations that people attribute to their motivations (Lazarsfeld, 1944). Researchers can ask follow-up questions during interviews and thus, obtain unexpected information that other forms of research might not discover (Berger, 1998). In addition, the number of Korean journalists from major news organizations who wrote about Hwang is too small for a meaningful quantitative analysis.

The authors interviewed 19 reporters from five major daily newspapers in Korea. The interviewees were selected to reflect a diversity of news organizations by size, editorial orientation and journalistic professional experience. Most of the criticism of the media’s coverage was targeted at these five newspapers because of their comparatively large influence on Korean society and the rest of the media. While the conservative newspapers, Dong-A Ilbo, Chosun Ilbo, and JoongAng Ilbo, are widely regarded as the “big three,” and each has a circulation of 1.5–2 million readers, the more editorially progressive Kyunghyang Shinmun and Hankyoreh have smaller circulations (Heo, Uhm and Chang, 2000).

The reporters interviewed were responsible for the news appearing in their respective dailies that covered Hwang’s 2005 Science paper and the ensuing scandal. The interview pool consisted of five reporters from Chosun Ilbo, three from Dong-A Ilbo, two from Hankyoreh, five from JoongAng Ilbo, and four from Kyunghyang Shinmun (see Table 1). The reporters’ careers ranged from 1 year and 11 months to 24 years in length. Ten of the interviewees had no experience reporting on science-related topics prior to the Hwang scandal. The other nine reporters covered science-related topics for periods ranging from about 2 years to 24 years. Six reporters majored in natural science in university, two in medicine, three in biology and one in electronic engineering. Five of the reporters majored in science-related fields in graduate school. With the exception of Dong-A Ilbo, each of the other four dailies featured a “Specialized Science/Medical Reporter,” who either majored in natural science or had experience with science-related topics. More information about the interviewees is provided in Table 1.
The one-to-two-hour interviews were conducted between 1 June 2006 and 30 October 2006. The authors used a qualitative instrument that included the questions in Table 2. The questions were designed to look for response patterns to enable aggregate comments from the interviewees and to encourage interviewees to discuss their news organization’s work. Thirty-four supplementary questions were used, if needed, to ensure that recall of factual information was correct, draw attention to details of the case history and encourage general comments about other news organizations. The names of both reporters and news organizations are removed in the results section to preserve requested anonymity.

4. Results

Results are reported within the common categories discussed by all interviewees. The categories focus on the self-perceived issues that influenced coverage.

The authority of Science

Interviewees agreed a primary reason why Korean reporters did not question Hwang’s research was that his most important manuscripts were published in *Science*. Reporter Q said,
I couldn’t doubt the thesis since it was published in Science, especially as a cover story, and the journal held a world press conference about it.” Reporters H, K, and N agreed that a Science paper in itself provided verification and discouraged skepticism. “I thought it was utterly ridiculous that a thesis already carried in Science needed to be examined by another specialist, especially by the press [such as MBC’s PD-Notebook],” said reporter N. The power of Science’s credibility was overwhelming, according to reporter C. Likewise, reporter L said, “Even when PD-Notebook became skeptical of the paper, the other media didn’t dare challenge both an internationally respected refereed journal and a star scientist.” Reporter H said: [Earlier] news stories inciting suspicion about Hwang were not a reconfirmation via several different sources but a mere sharing of information from [a] single source, PD-Notebook, which lowered their persuasive power. Of course, Science is also a single source, but the authority and credibility of Science was incomparably greater than that of PD-Notebook.

Interestingly, most interviewees noted that their awareness of Science’s reputation created a form of dependence on the journal to publish accurate, scientifically endorsed and dependable research. Specialized Medical Reporter I said, “Science is a journal whose brand power is better known by those with a deep knowledge of science.” Reporter A, who has an M.D., said, “I knew what the journal Science was and therefore fully trusted Hwang’s achievement.” On the other hand, reporter P, who was less aware of Science’s reputation, said, “That the paper had been published in Science didn’t affect my news report.” However, reporter P’s response represented a minority view.

**Difficulties in finding news sources on cutting-edge science**

Since Hwang’s manuscripts reported highly sophisticated biotechnology, there were few sources to advise reporters about the veracity of his findings. Reporters C, L, and P agreed that few individuals had the standing to comment on Hwang’s research paper and fewer were available to the press. Reporter S asked, “Isn’t it natural that there would be no advisors if the paper was ‘the first in the world’?” Although a few scientists began criticizing Hwang early on, several interviewees said this group was not large or vocal enough to be deemed newsworthy. Reporter K said, “Medical doctors raised suspicions but didn’t provide any evidence.”

Moreover, expert opinions differed on the DNA fingerprint fabrication—a key element in the challenge to Hwang’s work, according to reporter F. It became widely known in early December 2005 that PD-Notebook had tried to verify its claims by acquiring stem cells from Hwang’s research team. The producers of PD-Notebook asked some scientists to verify the genuineness of

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**Table 2. Questions used for the interview**

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<th>Question</th>
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<td>1. When and why did you become suspicious of the 2005 paper Hwang published in Science? When did you realize that Hwang’s paper was a fabrication and how did you discover this?</td>
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<td>2. Did the fact that Hwang’s paper was published in Science influence how you covered his story?</td>
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<td>3. Did your personal relationship with Hwang influence how you covered his story?</td>
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<td>4. How in-depth was your understanding of Hwang’s paper? If your understanding was limited, how did this impact how you covered his story?</td>
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<td>5. What kind of international/domestic specialists did you contact to verify Hwang’s paper, and what did they tell you?</td>
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<td>6. How did the prevailing societal atmosphere which considered Hwang a “national hero,” affect how you covered his story? What kind of influence did his status have on your editor?</td>
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<td>7. How did your scientific knowledge and that of your editor affect your reports related to Hwang?</td>
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the stem cells, and controversies arose among other scientists about the verification procedures. Reporter H e-mailed 10 non-Korean scientists requesting they verify the paper’s findings, but received only two replies containing no useful information. While reporter Q questioned Hwang’s paper relatively early on, she noted that, “Though I learned there was the possibility of a DNA mismatch from my sources, I couldn’t write a story based on such an impression.”

Since there was little obtainable counter evidence, interviewees said they were inclined to believe Hwang. Reporter G argued that the only verified fact before the SNU investigation took place was that Hwang’s paper had been published in *Science*. He asked, “Wasn’t it finally proven by the SNU investigation and the subsequent conclusion by the prosecutor’s office that there had been no stem cells from the very beginning?”

Also, a few interviewees’ opinions about the initial allegations of fraud shifted when they met Haksoo Han, the producer of *PD-Notebook*. Of the 19 interviewees, three reported they met with Han. Two of the reporters, who work for a smaller newspaper, met Han together in mid-November 2005 and said they quickly became convinced that Han’s doubts about the veracity of Hwang’s paper were evidence based.

On the contrary, reporter F, who did not meet Han, said, “I thought the Hwang scandal would be limited to a science ethics issue when viewing the first episode of *PD-Notebook* on the unethical acquiring of eggs.” Reporter H said, “I simply thought some findings of the paper might be exaggerated but never imagined a full fabrication.” Reporter N even said, “What was more questionable was whether television producers were able to verify professional scientific research.”

The interviewees who did not meet Han also ignored the assertion posted on the BRIC website. In early December 2005, several anonymous visitors to the website posted messages suggesting five photos of 11 stem cells featured in Hwang’s 2005 *Science* article could have been manipulated, and added that Hwang’s DNA fingerprinting data seemed to be fraudulent. The suspicions rapidly spread to the public through Korean Internet news media services, such as *Pressian*, and contributed to SNU’s decision to form an investigative committee (Chong and Normile, 2006). Reporters H and D agreed that the suspicions were disregarded since BRIC was neither a well-known group of scientists nor an authority on the subject of Hwang’s research. Reporter B said, “I couldn’t take the risk of writing a story based on information from anonymous sources.”

In addition, some doubts about the credibility of Korea’s Internet news outlets fostered a reluctance to further investigate their claims. While *Pressian* often reported on the potential ethical problems in Hwang’s research and spread BRIC’s assertion as news, interviewees said pursuing the story would result in fostering a counterproductive legitimacy for an Internet news service. Reporter D said, “We had an implicit understanding in the newsroom that we didn’t need to ‘help’ *Pressian* by delivering its stories on BRIC.”

Further, there is a tradition of little interaction between journalists who work at Korea’s Internet-based newsrooms and major newspapers. Reporter A said, “The reason my newspaper took a long time in changing its stance toward Hwang was because it had no connection to MBC or *Pressian*.”

Risk avoidance

When few perceived concrete facts (and allegedly compromised sources) exist, reporter E explained that the Korean press tends to prepare “escape routes” by counterbalancing stories. Reporter A asked, “Isn’t the press usually careful when controversies outweigh factual information?” Reporter Q was nearly confident that only two of the 11 stem cells were real but said, “It was dangerous to write that the entire paper was false since two were genuine.” Reporter R said.
he provided a balance between supportive and critical opinions of Hwang in his reports because siding one way or the other was risky. Reporter P added, “I dealt with the suspicions negatively. When one source said something, I wrote it in parallel with another source that rebutted it.”

Several reporters said their editors also were cautious to report suspicions about Hwang. Reporter R said, “My editor urged me to report criticisms of Hwang’s work cautiously, saying that it would be dangerous to take a stand one way or the other when we couldn’t tell what the truth was.” Reporter O noted that, “Our reporting team asked for active coverage of suspicions about Hwang after the first episode of PD-Notebook but editors disagreed.” He added that editors were not intentionally protecting Hwang but were merely trying to be prudent. Reporters and editors at one Korean newspaper discussed how to cover a critical moment when allegations of fraud surfaced against Hwang. The head of the social affairs desk summoned the reporters covering Hwang and directed them to write stories including only verifiable facts, instead of taking a “he-says-she-says” approach. “Editors didn’t find their own footing regarding Hwang until the last moment,” said reporter C.

Almost all newspapers practiced this type of risk avoidance. Reporter A said, “Most papers tried to read each other’s minds.” He added that each paper adjusted the level of its criticism of Hwang after considering social sentiment and measuring the effects such reports had on their credibility with readers and on circulation. Several interviewees noted veteran news organizations gauged public opinion incorrectly and thought a non-aggressive approach was more appropriate than enterprise reporting.

**Personal trust in Hwang**

Reporters’ personal relationships with Hwang contributed to their failure to immediately investigate his research once doubts were raised by PD-Notebook and BRIC. The reporters with direct connections to Hwang said they trusted him implicitly. For instance, reporter B, who met Hwang once for 20 minutes said, “He was a very kind news source who seemed completely open.” While noting Hwang seemed a little ostentatious, reporter B added that Hwang radiated credibility. Reporter F, who met Hwang three times, said, “In a word, he was respectable.” After having witnessed Hwang transfer a cloned embryo to a pig, reporter C said, “I was deeply impressed by his brilliant hand skill and his enthusiasm in that stinky, dirty pigsty.” Reporter A replied:

He took my calls even in the middle of the night and didn’t forget to make a return call when he couldn’t get to the phone. He said “thank you” after reading my reports. He knew my newspaper supported the revival of science and its influence on our society, so he tried to maintain a good relationship with me. I was the only reporter who could interview him exclusively. I was a bit paralyzed by the personal trust he showed me. When he was afflicted by PD-Notebook’s broadcast, he called me and said, “Justice will prevail in the end!” I was moved by his words.

Reporter Q said, “He is a natural born communicator who has both expertise and popularity. He had an understanding of which research topics the press might be interested in.” Several interviewees said the press had no choice but to cover Hwang after he announced the successful cloning of a cow in 1999 and published his thesis in Science in 2004. Reporter H said, “Reporters were very thankful for a single word from him.” Reporter E said, “Reporters tried to look good in front of him and actually get close to him. No wonder they couldn’t ignore such personal relationships.”

However, some reporters who did not develop personal relationships with Hwang evaluated him differently. Reporter R, who never met Hwang, said, “He seemed to know the press too well and butter them up, so I couldn’t trust him.” Reporter P noted that, “He looked like a politician.” Likewise, reporter J asserted that, “When a news source is too kind, I feel reluctant to trust him.”
Hwang was not uniformly kind to reporters, and some journalists were excluded from the unofficial meetings he held. Reporter J said, “He treated reporters from my newspaper unfavorably since the newspaper repeatedly reported on science ethics.” Reporter H said that Hwang favored providing information to larger newspapers, which oddly enough made them more vulnerable to his influence after allegations of fraud and deceit were raised.

Some newspaper editors also had personal friendships with Hwang. Reporter Q said, “Some editors who were close to Hwang worried they might lose an important news source by writing stories based on questionable claims.” Similarly, reporter S said, “An editor who was an alumnus [of the same university as] Hwang once directed me to revise my story criticizing him.”

**Hwang’s status as a national hero**

Interviewees agreed that an important factor that constrained reporters from exposing Hwang was his elite status in Korean popular and socio-professional culture. Many Koreans expected Hwang’s research to bring the nation economic prosperity. Reporter E said, “People regarded him as a popular icon whose work would be a ‘jackpot’ for Korea.” Reporter A said, “‘Stem cell’ was a code word for hope, which was worth more than its value as a scientific product.” Similar sentiment might have been strong enough to challenge doubts raised by *PD-Notebook* and may have presented a psychological burden for reporters. In fact, *PD-Notebook* had to delay its second episode scheduled for 6 December because viewers of the first episode criticized the program severely and its sponsors dropped their advertising. (*PD-Notebook’s* second episode was finally broadcast on 15 December, one week before SNU reported the findings of its investigation.) Pro-Hwang social sentiment influenced reporters from late November 2005 through late December 2005, when the veracity of allegations against Hwang remained uncertain. Reporter Q said, “Readers sent letters and emails protesting against negative stories about Hwang and I was psychologically withered.” Reporter C said:

The social pressure to advocate for Hwang was too much for the media to cope with ... Editors, too, understood that defending Hwang was the trend among public opinion and media organizations, and they didn’t dare take the lead in reporting against it. Witnessing how *PD-Notebook* had been beaten up by public opinion made them sense their vulnerability.

The social pressure to conform and not challenge Hwang’s credibility was ubiquitous in most newsrooms. Reporter S said, “I received a call that threatened death.” Reporter R described it as “blind nationalism.”

In addition to a culturally emotional atmosphere, another reason some reporters did not want to be personally responsible for Hwang’s downfall was that his potential disgrace was perceived as deleterious to Korean national interest. Reporter P said, “I was reluctant to be suspicious of him because I thought Korea needed a nationally treasured scientist like him, and public opinion shouldn’t kill him without verified facts.” Reporter S said, “I wanted those doubts to be false because he was the only hope for incurable patients.” Reporter F said, “News content that was disadvantageous to Hwang was written objectively, while advantageous stories were written emotionally.” Reporter G agreed, “Editors didn’t want to see Hwang go down, either, so they often printed stories that might work to his advantage.” Reporter A added:

Even reporters have [loyalty to] their mother country. Although it is one of a reporter’s ethical dilemmas, [thinking about Korea] gave me some exhilaration when I was writing about Hwang. I felt a lump in my throat when reading his 2005 thesis in *Science*. I was excited myself.
Lack of science knowledge

Most of the interviewees acknowledged that the information in Hwang’s papers and the details of his research eclipsed their knowledge domain. Only six out of 19 reporters read Hwang’s Science paper. Those six majored in medicine or biology or had covered science for a long period of time. They reported that they consulted with and sometimes supervised peers who were covering Hwang. Reporter P noted, “I started to cover him without understanding his paper, and the difficulties I suffered in reporting were mainly caused by the fact that I had little basic knowledge of science.” Reporter S stated, “I learned about stem cells from my peer but I didn’t understand half of it.” Reporter B said, “I attempted to memorize all previous news stories to be familiar with scientific terms.” And reporter O said, “Frankly, I couldn’t position myself even after BRIC raised doubts since I didn’t know what they actually meant.”

One may argue that if reporters had a thorough knowledge of science, they might have been able to independently verify the falsehood of Hwang’s paper. However, reporter I, who majored in medical science, said the relationship between the degree of scientific knowledge one possesses and an ability to independently verify scientific research is spurious:

That reporters should have scientific knowledge means they have to be at a certain level of understanding when it comes to science terminology, but not at the level of verifying scientific research. Reporters cannot be that professional and don’t have to be. A reporter who majored in biology can report terms like “teratoma,” “DNA fingerprint,” or “peak” more easily and more accurately but it doesn’t mean that he has the ability to test the genuineness of research. If research data were manipulated from the very start, who would be able to find whether they are true?

To reporter I, Hwang’s fraud and deceit presented a scenario in which it was very difficult for even the best-trained journalist to confirm counter evidence. So, journalists were limited to interviewing confidential sources or whistle-blowers (who were often unavailable to comment). Similarly reporters B and F said testing scientific research was beyond the reasonable expectations of journalists and news organizations.

Most of the interviewees added that since editors knew less about science than their reporting staff, they began to leave judgments about covering Hwang to their staff. Reporter P explained, “Editors trusted reporters since they didn’t know much about the case.” Reporter S said, “My editor didn’t change a single word of my reports, which was rather a burden to me in writing.” This delegation of news judgment is unusual in Korean newspapers. Reporter H said, “Editors routinely direct reporters in how to report, especially in big cases, based on the information delivered by reporters, but not this time.” Reporter B noted, “Editors were indeed at a loss because they hadn’t experienced a scientific research fabrication case like Hwang’s paper.” Reporter C said critically:

Editors’ scientific knowledge didn’t match their level of education. They asked for stories of economic or political issues on a college level but on a middle school level for science issues. I had to be a translator to help my editor understand my stories prior to making my readers understand them.

Development-centered reporting

Some interviewees noted tendencies to focus on new developments in the Hwang scandal, which commandeered reporters’ time, gobbled up the limited news space devoted to the story,
and thwarted efforts to initiate enterprise reporting. For example, several interviewees said after reports in some US newspapers that one of Hwang’s peers decided to leave his employ in mid-December 2005, the Korean press immediately covered whether Hwang’s peer demanded $200,000 from Hwang (as a patent loyalty) to remain silent, or whether any of Hwang’s research team members applied for permanent residence in the US. The follow-up story focused on whether there was an effort to sneak scientific technology out of Korea.

Reporter A said, “Editors were willing to prominently place any stories having new facts because of severe competition among papers.” He added, “Those news items were not important at all from the science reporter’s perspective, but editors considered them ‘good items for showing something’ to the reader.” Reporter H said, “The Hwang scandal flowed like a big criminal incident.” Reporter C concluded, “Most reporters had to work like criminal reporters since they had to check every [related] event occurring in the U.S. and Korea.”

Pressured to deal with breaking developments, reporters became less interested in investigating the veracity of Hwang’s paper. Reporter C said, “I wanted to talk about science in my news reports but my editor valued incidents.” This gap in interests was larger for reporters with more scientific knowledge. Reporter A noted:

My editor and I had very different senses about what news was. He perceived the Hwang issue as a huge scandal that was way over the boundary of science. In retrospect, science journalism should treat scientific truth and value seriously, but the Korean press was concentrating too much on Hwang as a person.

Reporter C added, “It was impossible to pursue a single issue because incidents broke simultaneously, resulting in time constraints for reporters.”

A shift in momentum

Interviewees noted that some Korean news organizations were slow to adjust the direction of their reporting about Hwang after PD-Notebook’s broadcast, BRIC’s claim and the SNU investigation. Even after the SNU’s investigation, some interviewees said it was not easy to change the momentum of news reporting and focus on: the veracity of the claims against Hwang, explanatory information about the process of determining scientific fraud or deceit, and the socio-cultural impact of the demise of a national icon. For instance, reporter A noted that BRIC’s claim of a photo fabrication was not considered important news because, “… we had the ‘original sin’ of reporting on Hwang’s side so far.” The reporter added, “Even when Hwang’s scam was unraveling, it was not easy for us to turn critical because we had been so cautious in our reporting for a long time.” Reporter F asked, “Is it easy to suddenly condemn a respected hero?” Reporter S added:

We’ve talked about the so-called Hwang myth for years, and the next day we have to say it’s totally false. It perplexed me as a person and citizen as well. It was not easy to accept that a proposition I had believed was proven false.

Reporter E noted, “Reporters didn’t want to believe Hwang’s fraud because it was hard to say their past stories were all lies.” In hindsight, reporter G found, “It was ‘willful negligence’ ... not to tell the truth by sheltering Hwang.” He explained that reporters should always doubt and pursue the truth even if disclosure is delayed, but he noted that most Korean reporters remained reluctant to actively counter popularly held beliefs about Hwang’s gravitas.

A few months after the scandal, some of the interviewees characterized their reporting about Hwang as inadequate and noted the media’s overall coverage of the scandal should be remembered as a “failure of the press.” Reporter F said, “All the press were losers except MBC’s PD-Notebook, which obtained verified facts.” Reporter G said, “It was a tragic failure as all the problems and
limitations of Korean journalism joined together.” He added, “I want to give marks to PD-
Notebook, which pursued the case indefatigably when there was ... doubt.”

5. Summary and discussion

The findings suggest that Korean journalists agreed with many of the criticisms raised within
the previous Korean literature. Interviewees agreed with critics that the Korean press’s cov-
erage of the Hwang scandal was timid, favorable to Hwang, harsh towards PD-Notebook, dis-
missive of scientific critics of Hwang’s research, and failed to contextualize the underlying
scientific or cultural issues raised by the case. The current findings also appear to be consist-
ent with some of the previous research about the journalistically self-imposed and external
factors that deterred comprehensive coverage of science news.

Some of the previously identified external (or non-newsroom sited) barriers to coverage
confirmed by the interviewees include:

- a lack of access to Korean scientists who could discuss or provide quantitative evidence
critical of Hwang’s work;
- some lack of access to Hwang’s critics.

Some of the previously identified internal (newsroom sited) self-imposed, barriers include:

- trust in Hwang and Science
- concern about Korea’s national image and interest
- the decision to save face to preserve the reputation of Hwang and the news media them-
selves
- the science knowledge gap among some reporters and editors
- the dearth of Korean specialty reporters and editors
- the conformity of news judgment among Korea’s mainstream newspapers
- the low regard reporters at major newspapers have for perceived journalistic standards in
Internet news services
- the skepticism journalists at major newspapers have for broadcast investigative reporting
- an overemphasis on breaking news developments rather than the underlying issues, such
as the veracity of Hwang’s work and the cultural challenge that his research retraction
had on Korean society and social institutions.

Moreover, the interviewees provided new insights into what deterred the Korean press from
critically investigating the veracity and ethics of Hwang’s work. These included:

- Some Korean journalists put significantly more trust in Science and fact-finding in a few highly
respected, international scientific journals than in other scientific media and mass media.
- Some journalists had a perceived lack of access to international scientists who could dis-
cuss or provide quantitative evidence critical of Hwang’s work.
- Some journalists were concerned about the sufficiency of evidence critical of Hwang’s work,
its verification, and the use of anonymous sources.
- The tendency to counterbalance stories (or avoid giving the impression that Hwang’s
research might be either fraudulent or unethical) was influenced by a perceived inability
among journalists to obtain evidence about the veracity of Hwang’s findings.
- Little intra-professional dialogue occurred between journalists working for elite national
newspapers and small circulation publications, broadcast and Internet news organizations.
Some journalists found the pre-disclosure momentum in the Hwang story took on a life of its own, which deterred aggressive investigative and explanatory reporting (after SNU's investigation reported his research was fabricated).

The Hwang scandal caused personal dissonance for some journalists, who reported difficulties suspending their personal disbelief about the criticisms and evidence against Hwang.

Some reporters realized the press’s coverage was dominated by risk avoidance and a reluctance to criticize Hwang while the scandal was unfolding. They understood at the time that this left their news organizations (and peers) vulnerable to future public criticism.

Some news organizations believed they would incite a hostile (and possibly violent) public reaction by publishing exclusive investigations about the veracity and ethics of Hwang’s research. The atmosphere in which reporters worked was emotionally charged.

Some editors discouraged their reporters from more aggressively pursuing the Hwang story, and there were disagreements among reporters and editors about news judgment and reporting strategies.

The broader impact of the Hwang story and the press’s influence on Korea’s national morale, interest and culture was discussed widely in several news organizations.

Some interviewees expressed regret that their reporting and news judgment concerning Hwang failed readers and the public.

Most of the rare defensiveness that occurred in interviewees centered on reasons why Korean journalists did not challenge the veracity of Hwang’s research. Several interviewees noted it is difficult to challenge the veracity of research when both it is pioneering and the results are fabricated.

While the current study may not provide the complete array of factors that influenced press coverage, it adds to the understanding of why the Korean press was hesitant to cover charges of scientific impropriety, and why most of Korea’s mainstream news media avoided investigative and explanatory reporting about the Hwang scandal. Hence, one of the study’s contributions to the literature is it expands the range of factors that influenced journalistic performance in the Hwang case. The insights that surfaced during the interviews also partially demonstrate the value of comprehensive interviews with journalists as a tool to add face validity to criticisms of press performance.

In addition, some of the insights provided by interviewees seem to be consistent with previous research about the social construction of science news and how the press covers scientific uncertainty. For example, the findings strongly suggest that during the Hwang scandal a complex negotiation process occurred: within Korean newsrooms, among competitive news organizations, between journalists and scientists, as well as among journalists and other sources. Although none of the interviewees used the term “socially constructed” to describe how the news about Hwang was depicted, most described an extensive process of internal and external negotiations that fostered news judgments about how stories should be pursued and framed. The interviewees explained that the decision to not pursue investigative stories reflected an array of complex issues in which an accumulation of newsroom, intra-professional, inter-professional, cultural and personal mores and values influenced news judgments. Similarly, some interviewees suggested the news media acted as a gatekeeper to block unfavorable news coverage of Hwang and preserve his credibility partially because of a previously constructive working relationship. Both of these findings are consistent with previous research that finds science news judgment is often negotiated, or socially constructed (Stocking and Holstein, 1993).

Regarding the social construction of uncertainty, some interviewees described their awareness that the degree of the uncertainty or certainty ascribed to Hwang’s work and reputation
was linked to how news organizations framed developments in the story and how the counter claims against Hwang were perceived. Of course, the Hwang case adds an interesting scenario in which journalists decided to err on the side of scientific evidence and reputation only to discover their confidence in a renowned scientist and a major journal was misplaced.

Interviewee comments also seem partially consistent with previous literature that explains the use of one-source stories tends to increase when the press covers frontier science. In both examples from the literature and the current case, the combination of a scientific frontier and the dearth of time for scientists to review the manuscript (or assess the supporting data) helped foster one-source stories about Hwang’s research (Weigold, 2001).

Yet, there are some findings that seem to add new dimensions to the conceptual framework underlying the social construction of science news. For example, the findings suggest that journalistic science knowledge, training and experience are not always a panacea to foster insightful news coverage. Despite a range of knowledge, training and experience some Korean reporters were less mindful that: science is fallible, peer review does not confirm research validity and even internationally renowned scientists are not always ethical (Rowan, 1999; Cohn and Cope, 2001; Levi, 2001). The latter instincts did not eclipse the prior knowledge and experience among some interviewees, which partially led to decisions to not aggressively challenge the authority of Hwang’s work. Hence, an under-appreciated variable in the social construction of science news and the press’s depiction of scientific uncertainty may be the degree to which journalists are cautious about the limits of scientific evidence, remember that science can be precisely incorrect, and appreciate that fraudulent articles sometimes are published inadvertently.

The findings also suggest a number of other issues to consider in the conceptual framework underlying the social construction of science news. These include:

- The stress on journalists caused by public and cultural pressures to save face. There were times during the Hwang scandal when the Korean public was hostile to press criticism of Hwang’s work and credibility.
- The stress that resulted when the press had to reverse course and begin reporting doubts about Hwang, which rebutted the momentum of all their previous reporting.
- The degree to which a news organization is willing to take risks when reporting science that is anticipated to create disbelief and dissonance among peers and the public.
- The willingness among journalists to suspend their disbelief when a trusted source is alleged to be a fraud and a trusted scientific journal is alleged to publish fraudulent research.
- The fluid nature of what constitutes evidence within news organizations. In the Hwang case, anonymous sources and negative claims without supporting evidence were seen by most news organizations as an insufficient basis for news stories and as sufficient by a few others. The threshold of evidence sufficiency shifted within many newsrooms as events unfolded.
- An appreciation that thoughtful consideration of the news media’s roles and responsibilities does not always lead to wise news judgments.
- Whether a tradition of dialogue exists between journalists who cover the same beat, and if dialogue exists between journalists and scientists. The findings suggest without specialty reporters’ organizations, such as the National Association of Science Workers, and press-scientific collaborative efforts, such as by the American Association for the Advancement of Science, journalists who cover a similar beat in different types of news organizations are unlikely to know each other.

The study’s primary contribution to the literature appears to be the finding that journalistic mores unfold in a multidimensional dynamic that includes: journalistic perceptions of socio-cultural
norms, internal newsroom standards for evidence, newsroom competence and training, normative journalism ethics, news gathering techniques, perceived dissonance and professed risk avoidance. The study also suggests that a diversity of factors converge and influence the press’s construction of scientific uncertainty.

The Korean press faced a challenging scenario and had considerable internal discussion about news judgment, tactics and strategies. Many newsroom decisions (regardless of their direction) were made with some collaboration, premeditation, and deliberation. While journalists may be a source of their own incapacity to respond, there are numerous, intersecting and overreaching reasons why journalists may not be institutionally prepared to provide comprehensive reporting about scientific fraud and uncertainty. Paradoxically, the most serious failure of Korean newspapers probably was their failure to explain these reasons to the public. The Korean newspapers could have reported how the claims against Hwang had been raised, how trustworthy these claims were, whose interests they reflected, how credible Hwang’s counter-argument to those claims was, and why Hwang’s research might or might not contain errors. Such explanatory reporting might have helped the public understand the essence of scientific uncertainty and the social process by which scientific uncertainty was constructed as the Hwang scandal unfolded.

The study’s limitations include a small sample size. The study did not triangulate the perspectives of critics of Korean news coverage, the opinions of journalists and other science communication professionals, and the public perceptions of the news media’s coverage of the Hwang scandal. The study did not conduct interviews with editors. The study did not include interviews with public information officers, who sometimes are an important factor in the social construction of science news (Weigold, 2001). In terms of future research, the study underscores why a triangulation of views of press critics, the perspectives of journalists and communication professionals, and the public is needed to provide a comprehensive and grounded understanding of how science news is socially constructed, and if public awareness and attitudes reflect the press’s agenda setting. The study’s findings also present new insights for consideration in an expanded conceptual framework of: a) science news’s social construction and b) how the news media help manage public perceptions of scientific credibility and uncertainty.

References


Authors

Jaeyung Park is Associate Professor at the School of Journalism & Mass Communication, Korea University, South Korea. He received his Ph.D. from the School of Journalism, University of Missouri-Columbia, and conducts research on journalism routines, media sociology, and science reporting. Correspondence: School of Journalism & Mass Communication, Korea University, Bldg. Jeongkyung, Room 318, Anam-Dong, Seongbuk-Gu, Seoul 136-701, South Korea; e-mail: jaeyungp@korea.ac.kr

Hyoungjoon Jeon is a Research Professor at the Dankook Center for Dispute Resolution, Dankook University, South Korea. He majored in chemistry (M.S.) and received his Ph.D. from the School of Journalism, University of Missouri-Columbia. He worked for the Seoul Metropolitan Government of South Korea as a public affairs representative, and teaches public campaigning and science communication in universities.

Robert A. Logan Ph.D. is a social science analyst and senior staff member at the US National Library of Medicine. Logan is a professor emeritus at the School of Journalism, University of Missouri-Columbia. Logan’s research interests are: public understanding of science, consumer health informatics, health communication, and Q methodology.