

“Trust us ... We’re Doctors”: Science, Media, and Ethics in the Hwang stem cell Controversy

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When doubts were first raised about the veracity of the dramatic advances in stem cell research announced by Professor Hwang Woo-Suk, a significant minority response was to question the qualifications of journalists to investigate the matter. In this paper I examine the contemporary relationships between science, scientists, the public, and the media. In the modern context the progress of science often relies on the media to mobilise public support for research and also for the purpose of communication within the scientific community. As a result, attempts to counterpose “science” and “the media” should be treated with some caution. I argue that because of the essential role played by ethics in good science, journalists may in fact sometimes be well placed to investigate scientists. At the conclusion of my paper I draw out some of the implications of my analysis for the ethics of investigative journalism directed towards scientific research.

Key Words: Cloning, ethics, Hwang Woo-Suk, investigative journalism, journalism ethics, media ethics, science, stem cells, research integrity

1. Introduction

When doubts were first raised about the veracity of the dramatic advances in stem cell research announced by Professor Hwang Woo-Suk, a significant minority response was to question the qualifications of journalists

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to investigate the matter. In a letter to the journal *Science* at the height of the controversy, eight senior stem cell researchers of international repute contrasted the “recent trial [of Hwang’s research] in the press” with the appropriate way of settling scientific disputes, which — the authors insisted — is “within the scientific community” (Wilmot et al., 2005). According to remarks reported in *The Chosun Ilbo*, Professors Lee Young-soon and Cho Moo-je have also suggested that journalists are not adequately qualified to question or investigate scientists (The Chosun Ilbo, 2005). In a similar vein, *The Korea Herald* quoted legislator Won Hye-Young as saying “It is wrong for journalists to attempt to verify scientific research. ... The verification should be done by an officially recognised scientific agency” (Kwon, 2005).

In this paper I examine the contemporary relationships between science, scientists, the public, and the media. In the modern context the progress of science often relies on the media to mobilise public support for research and also for the purpose of communication within the scientific community. As a result, attempts to counterpose “science” and “the media” should be treated with some caution. I argue that because of the essential role played by ethics in good science, journalists may in fact sometimes be well placed to investigate scientists. At the conclusion of my paper I draw out some of the implications of my analysis for the ethics of investigative journalism directed towards scientific research.

2. The context of the controversy

Before I proceed any further, I want to make a few general remarks about the media reporting on — and public reception of — the Hwang stem cell controversy, as I believe a proper understanding of the context of responses to Professor Hwang’s research is essential to understanding the

subsequent debate about the appropriate role of the media in relation to science which is the object of my study.

The Hwang case is not the first case of a scientist fabricating results, nor is it likely to be the last (La Follette, 1992; Batty, 2006).¹⁾ However, there are a number of reasons why this case was always likely to achieve the extraordinarily high profile that it did.

The first thing to observe about Professor Hwang's research is that both the 2004 and the 2005 *Science* papers (Hwang et al., 2004; Hwang et al., 2005) claimed results that had been eagerly anticipated within the science community (Couzin, 2006). Ever since the cloning of Dolly the sheep, scientists have believed — and still believe — that the same technology should make possible the cloning of human beings, at least to the early stages of embryonic development (Vogel, 2004; Gurdon & Colman, 1999). There was intense competition amongst researchers to be the first to achieve this and the announcement that the Korean team had succeeded only confirmed the prevailing belief about the possibility of the result. Moreover, a great deal of other current research, especially that dedicated to unravelling the molecular signals which direct stem cells to become different tissue types, relies for its potential applications on our ability to create patient specific stem cells. Scientists working in these areas therefore also had good reason to welcome Hwang's announcements.

The production of patient specific stem cells had also been eagerly awaited by much larger community of people who believe that stem cell therapies are the best hope for treating currently incurable medical conditions, including heart disease, Parkinson's disease, and spinal cord injuries (Gurdon & Colman, 1999; Normile, Vogel, & Couzin, 2006;

1) Indeed, an unexpected consequence of the controversy has been that another significant instance of the fabrication of scientific data published in *The Lancet*, by a Norwegian scientist, has recently come to light (ABC News Online, 2006).

Weissman, 2005). The results that Professor Hwang claimed to have achieved are absolutely essential to realising the promise of stem cells as a therapeutic technology and so were widely hailed as justifying enthusiasm for — and further funding for — stem cell research (Cyranoski, 2006; McCarthy, 2004; Vogel, 2004).

Because it involves the destruction of human embryos, embryonic stem cell research has been an intensely controversial area of science policy, especially in the United States. There has been an ongoing political battle in the US and also in Australia about whether the legislative and ethical frameworks governing medical research should allow research involving the creation and destruction of human embryos to proceed, and also about the importance of funding research into embryonic stem cells. Hwang's results seemed to vindicate the claims of enthusiasts for this research and thus help win the argument about the importance of devoting further funding to stem cell science and of establishing a regulatory context in which it could be pursued (McCarthy, 2004). One suspects that in the light of the retraction of Hwang's papers, opponents of stem cell research are feeling similarly vindicated and drawing precisely the opposite conclusion. The high stakes and high emotions in the larger public debate about the prospects for, and ethics of, embryonic stem cell research guaranteed Hwang's original claims — and their retraction — global coverage (McCurry, 2006).

Finally, to a certain extent, I think that the publicity that Professor Hwang received reflected the fact that he had already proved himself to be a remarkably “media savvy” researcher. His apparent dedication to his work and to the public good, his Buddhism, and his photogenic appearance, all worked to make him an ideal subject for media interest (Lee, Schurmann, & Pacific News Service, 2006; McCurry, 2006). It is barely possible to read an article about the controversy without viewing one of the images of Hwang holding Snuppy the puppy. I suspect that the availability of such

compelling “human interest” material concerning Hwang played a significant role in ensuring publicity for his research beyond the ordinary bounds of scientific journals.

3. “Science” versus “The media”

The December 23, 2005, edition of *Science* contained a letter entitled “Human Embryonic Stem Cells”, and signed by eight scientists, all of whom are major figures in stem cell science internationally (Wilmut et al., 2005). After noting the high hopes in the community at large for regenerative medicine associated with stem cell research, and the responsibility this places on scientists working in the area, the authors go on to attempt to frame a distinction between science and the media and to suggest a division of labour between them. They refer somewhat disparagingly to “the recent trial in the press of the ethics and scientific validity of publications on human somatic cell nuclear transfer”. They argue that “accusations made in the press about the validity of the experiments published in South Korea are ... best resolved within the scientific community”. Clearly implicit in this claim is the idea that these media accusations are themselves not “within” the scientific community. In part, then, this letter expresses the wish that the media would “stay out” of science.

Let me note at this point that I can understand, and to a certain extent sympathise with (what I presume were) the motives of the signatories to this letter. As scientists involved in stem cell research — and also public advocacy of such research — they are undoubtedly all too aware of the range and strength of the forces opposed to human embryonic stem cell research and the likelihood that opposition to it will be reinvigorated by the

revelation that its most impressive results have been fabricated. The possibility that the public will jump to unwarranted negative conclusions about stem cell research more generally is very real and no doubt disheartening to these researchers. I should also note that this letter to *Science* includes some serious and sensible suggestions about steps the scientific community could take to reduce the likelihood of accusations of fraud in the future.

Having said this, there is also something breathtakingly naive about the argument of this letter. It is far too late to ask the public or the media to “leave it to the scientists” in relation to the Hwang controversy. Right from the start, the Hwang controversy was a media phenomenon, even “within” science. Professor Hwang’s claims began to unravel as result of criticism from a science journalist and then anonymous tipoffs sent to a Web bulletin board for young Korean scientists (Chong & Normile, 2006). U.S.-based Professor Gerald Schatten’s request that his name be withdrawn from the paper in *Science* followed upon his learning from his Korean collaborators that Professor Hwang’s research was being investigated by the journalists from “PD Notebook” (Kim & Lee, 2005). According to a report of the findings of the University of Pittsburgh investigatory panel, in *Nature*, Professor Schatten’s primary contribution to Hwang’s famous (and genuine) paper in *Nature* which recorded the birth of Snuppy, the world’s first cloned dog, was, according to his own account, to recommend the use of a professional photographer in preparing the photographs to accompany the publication (Holden, 2006). This was apparently sufficient to allow him to claim credit as a co-author on the paper. In the light of revelations like these, the plea to let scientists resolve the controversy amongst themselves, free of the pernicious influence of the media, comes more than a little too late.

There is also more than a hint of hypocrisy involved in the attempt to

distance “the media” and “the scientific community” in this case, coming from a research community that has been all too willing to use the media to its own ends in other circumstances, and in particular to mobilise public support for its projects. Debates about legislation and ethics regulations relating to research on human embryos have been extremely important in determining the direction of stem cell research and also the relative success of scientists in different nations pursuing particular research projects in the area. As a result, many scientists have themselves been vigorous participants in these debates, lobbying for changes to legislation and regulations in order to make such research easier to carry out in those nations in which their laboratories are based (Mooney, 2004). Scientists involved in stem cell research have also conducted a concerted campaign to gather support for funding stem cell research by advertising its potential to lead to revolutionary advances in regenerative medicine (Brumfiel & Marris, 2004). This campaign has been carried out in the political arena by means of the media. Given the role played by the media in promoting stem cell research to the public, it is difficult to see why the media should not be allowed a role in cautioning the public about it as well.

Of course, the role played by the media in competition between scientists for funding and for public support for their research projects is not confined to stem cell research. Science is no longer, if indeed it ever was, an autonomous field of human endeavour, divorced from politics, economics, and the media. Instead, scientific research is nowadays often directed, at least in part, towards the pursuit of national priorities. When it comes to determining national priorities for research in a democracy, it is entirely appropriate to be concerned with the level of public support for different sorts of research (Resnick, 1998, 167-171). These decisions will ultimately be made by the representatives of the public, with an eye on the public support for various competing options. However, the public has little choice

but to rely on the media for information about the latest scientific and/or technological achievements. The need to gather public support for research therefore means that scientists must promote their activities and discoveries in the media. As a result, universities and other research institutions regularly produce press releases which publicise the activities of their researchers. Indeed, it is an important part of the job of any senior scientific administrator nowadays to ensure that there is political support for continued funding for their institution and its research. Increasingly, therefore, the media plays an essential role in determining the level of government funding available for science and for particular areas of scientific research.

The media also plays a significant role in determining the level of *private* funding available to different researchers and technologies. Much scientific research today, especially in the area of cell and medical technology, is carried out by small companies that have been "spun off" university laboratories, when researchers realised that one of their results might lead to a commercial product. Often the primary assets of these companies, especially in their early years, is the intellectual property of the researchers involved in them. However, the ability of these companies to attract investment depends in part upon the *perceived* value of their intellectual property portfolio. This depends in turn, in part, on the publications of the scientists involved. The perceived value of their intellectual property also depends in part on how investors think that other people perceive it (LaFollette, 1992, 27-29). Research that has been widely publicised is therefore likely to be perceived as more valuable. The major "scientific" journals have close links with larger media organisations, to whom they provide science news, and upon whom they rely to publicise their own content. According to their websites, both *Science* and *Nature* have media officers, who work to publicise their journals' papers. Popular

science journals like *New Scientist* and *Scientific American* are also regular contributors of content to other news agencies. Publicity in these journals, and consequently in the wider media sphere, can therefore have a significant impact on the prospects of the research carried out by these sorts of companies by affecting their ability to secure funding from investors.

There is another important way in which modern science relies on the media, which also undermines attempts to counterpose science and the media. Increasingly, media institutions play a central role *within* the scientific community, publishing and publicising results within it. Publication in the journals is one of the primary goals — and essential tests — of scientific research. Researchers complete to publish their work in journals with the highest “impact factor”. Journals compete to be awarded the highest impact factor, by publishing the best research, in order to be able to attract more institutional subscriptions and revenue from advertisers.²⁾ Universities subscribe to the best journals so that their researchers have access to the best research. If the system is working properly, this means that the best research is published in the places where it commands the most attention and thus can have the maximum impact on the research of others working in the field. In this way, the “science media” plays a key role in promoting the goals of science (LaFollette, 1992, Chapter 3).

Interestingly, because of the role of the media *within* science, the publication of the two papers of Professor Hwang’s that were subsequently withdrawn can itself be seen as the result of a failure of media ethics. The assumption of honesty made by referees when refereeing papers for journals

2) It is worth noting here the increasing role played by commercial considerations in science publishing. Whereas once upon a time scientific journals were overwhelmingly published by professional associations or research institutions without regard to commercial profitability, large publishing houses now maintain significant academic publishing divisions, which must ultimately be concerned with their economic “bottom line”.

is perhaps naive in the modern context in which scientific research takes place. The rewards for publishing first — and the costs of publishing second — are too great (Radford, 2006). As noted above, there is also intense competition between journals to publish papers that can be expected to have a high profile. Some critics have suggested that there was a failure by the editors and referees of *Science* to investigate Professor Hwang's claims properly, motivated perhaps in part by the desire to be the first to publish his (apparently) groundbreaking results (Shaywitz, 2006; Martin, 2006; Wade & Choe, 2006). There have also been questions asked about the way both *Science* and *Nature* applied their conflict of interest policies in relation to the publication of several of Hwang *et al*'s papers, given that no conflict of interest was acknowledged therein, despite the fact that both Professor Hwang and Schatten had lodged patent applications relating to their discoveries (Check, 2006).

These observations therefore suggest that not only does the *media* play a role in science but that the field of *media ethics* may have something important to offer discussions of the implications of the Hwang stem cell controversy for science more generally. Debates about the ethics of journalists investigating science are therefore also important contributions to broader debates about the practice and place of science in the contemporary world.

4. Good science and “good scientists”

In response to my argument to this point, it might be held that while science and the media are intertwined, the roles of scientists and journalists remain importantly and appropriately distinct. Perhaps the job of scientists is to investigate nature, where the proper task of journalists is to serve the

public by entertaining, providing information, and serving as a check on government and other abuses of power. Because their roles are different, the appropriate qualifications for those working in each discipline are also different, with journalists needing generalist skills in the humanities, and scientists requiring specialised knowledge in particular scientific disciplines.

I have argued above that the institutions of science and the media are no longer as distinct as perhaps once was the case. As a result, there are now many professional “science journalists”. Scientists are also more involved in public affairs than was previously the case. This means that the qualifications required for success in these professions are no longer *entirely* distinct. However, the question of the qualifications of journalists is a complex one. There is a clear sense in which critics of journalistic assessment of science are correct. Journalists do not have the scientific qualifications and expert knowledge to reliably assess the plausibility of particular scientific claims. Even science journalists must be capable of reporting across a number of different topics and there is no way possible for them to have sufficient expertise to be able to reach their own judgements about scientific hypotheses in all of the areas on which they report. At least some aspects of scientific controversies must therefore be resolved by scientists themselves. Yet in another sense, this claim has been revealed by recent events to have perhaps been too hasty. In the light of the success of young Korean journalists at revealing a scientific fraud to which the scientific community had been blind for nearly 2 years, which had distorted research priorities, and which had thus had significant negative impacts on science, it is arguably time to reconsider the claim that they were not qualified to conduct their investigation.

If we focus only on the impressive specialist knowledge and skills that scientists must have in order to pursue their research, it is easy to reach the conclusion that only other scientists are qualified to question or investigate

their work. However, importantly, scientific progress is not just a technical/empirical project. It is also implicitly an ethical one. Good science relies upon scientists possessing certain ethical virtues. Scientists without these virtues are not capable of being good scientists. While journalists may not be qualified to directly assess the scientific claims of researchers, they may be qualified to investigate their ethics and character — and thus their ability to produce good science.

I must emphasise at this point that the expression “good science” is not here itself intended as an ethical evaluation. By “good science” I mean only science that meets the goals of science and contributes to human understanding of the natural world. My argument is not that scientists must have certain virtues in order to be good people, it is that they must have these virtues in order to do good scientific research. This is the case because good scientific data consists in more than just a set of numbers or cell cultures. It also consists in a description of how the results were arrived at, the techniques used, and the methods employed to ensure that they were accurate. More generally, it consists in our capacity to rely upon it. If scientists are to be able to rely on and build upon the results of other researchers, they must be able to trust that these researchers have reported their findings truthfully (Macrina, 1995; Resnik, 1998, Chapter 4). A dishonest researcher is not merely a bad person — they are a bad researcher. The fabrication of scientific results is a threat to the very foundations of the scientific enterprise (Cho, McGee, & Magnus, 2006).

Truthfulness is the most obvious example of an ethical virtue which lies at the heart of the scientific enterprise. There are others — although, because the connection between science and ethics is the reliability of evidentiary statements, they also tend to be closely related to honesty (Resnik, 1998, Chapter 4). Other virtues necessary to scientists are courage, proper self-love, and a sense of justice. Courage is necessary for researchers

so that they are capable of pursuing ideas where they lead and challenging repressive orthodoxy. “Intellectual cowardice” is an obvious failing in a scientist. “Proper self love” — an *appropriate* amount of concern for one’s own character and reputation — is a virtue for similar reasons. A lack of proper self love may cause a scientist to give up a promising line of research unnecessarily as a result of criticisms by her colleagues, or to fail to publicise important results that should in fact be brought to the attention of others working in the field. It is arguable that an excess (and therefore, within an Aristolian framework, a corruption) of this virtue has been a factor in the undoing of both Professor Hwang and Professor Schatten, causing them to promote their reputations at the cost of scientific accuracy. Finally, a sense of justice is necessary to good science because science is a collective enterprise. Scientists must not only be able to trust each other’s data, they must be able to trust each other to treat other people justly. If they cannot do so, they will not be able to collaborate, or plan projects together (Seebauer & Barry, 2001). If scientists cannot trust a colleague’s sense of justice they will be rightly reluctant to send students to their laboratory or engage in any of the hundreds of other cooperative activities that are essential to modern scientific research. Modern science would grind to a halt without such cooperation (Resnik, 1998, Chapter 4).

The scientific project cannot advance, then, unless scientists possess these virtues. Importantly, as these virtues (and vices) inhere in the character of scientists, the presence or absence of these virtues is revealed in their life and work and not just in their work in the laboratory. If a researcher is dishonest outside of their work this undermines our trust in them. This assessment of their character also undercuts our faith in the reliability of the results that they report in their scientific work and thus their ability to contribute to progress in science. This means that journalists are well qualified to investigate and comment upon aspects of scientific practice

which are absolutely central to the production of good science. It might even be argued that given the social role of journalism as a check on power in a democracy, and because of the skills at accessing the public record that journalists possess, journalists are in fact the people best situated to investigate these matters. Such investigation is a contribution to science in its own terms. Scientist should therefore welcome the investigations, and questions, of journalists — just as much as they welcome the publicity that journalists provide to their successes.

5. Implications for investigative journalism

What are the implications of these conclusions for the ethics of journalists involved in reporting science? I have suggested that it is entirely appropriate for journalists to question and investigate the activities and ethics of scientists. Given the important role that science plays in our lives, and the increasingly close connections between science, governments and corporations, it might further be argued that journalists have a duty to do so.

There are also reasons to believe that investigative journalists in this field may need to use “robust” methods, if they are to have a reasonable chance of success in investigating allegations of scientific fraud, as well as other controversy surrounding science. I am being deliberately provocative here. I do not wish to endorse any particular piece of journalism, or even any particular journalistic methods. However, I do want to draw attention to the difficulties surrounding investigative journalism directed at science.

Science journalists are in an invidious position when it comes to reporting accusations of scientific misconduct. Lacking sufficient knowledge of the intricacies of the topics on which they must report to be experts

themselves, journalists must rely upon their contacts in the scientific community to interpret and comment on the claims of other researchers. Yet there are weighty institutional reasons why scientists may be reluctant to criticise the work of other, especially high profile, researchers in their field. Senior researchers wield significant power over more junior researchers in science, especially in relation to their access to funding and future career prospects. Even quite senior figures may be reluctant to be perceived to be fuelling controversy and collaborating with critics of science. For these reasons, it will often be difficult for journalists to find scientists who are willing to “blow the whistle” on their colleagues or cooperate with their investigations. This may mean that if we wish journalists to be able to expose scientific fraud, we must allow them the same leeway that we allow them (if any) in investigating political or other forms of corruption.

Of course, if journalists are going to take up this role, it behoves them to look to their own ethics. There are both pragmatic and philosophical reasons why journalists should be concerned to live up to the highest ethical standards. Investigative journalism will only lead to social reform if it generates an appropriate sense of outrage in the community, directed at the injustices it reveals. If this outrage is directed instead, or even substantially, at the journalists themselves as a result of their perceived hypocrisy for failing to live up to ethical standards, then social reform is much less likely to occur as a result of the journalists' efforts.

This is a pragmatic reason for concern for media ethics. However, the connection between ethics and the goals of journalism arguably goes deeper than this. An argument similar to that which I made above, about the connection between the goals of science and the necessity of the presence of certain virtues in scientists, can also be made in relation to journalism (Sanders, 2003, esp. Chp 14). If journalism is to be able expose the truth

and question injustice then it also must rely on its practitioners being able to trust each other. Like scientists, journalists must be able to work together in teams dedicated to a common goal. If journalists routinely breach ethical principles in their relations with other people, it will be extremely difficult for them to feel confident in their relationships with each other. In this way, breaches of ethics may undermine the capacities of journalists to achieve the goals of journalism. Similarly, the practice of journalism also relies upon the support of the public. Loss of public trust in journalism would not just mean that journalists could not expect to motivate political change, it would also deny journalists access to the public resources that they need to pursue their investigations. Thus, again, egregious failures of journalistic ethics may undercut the ability of journalists to pursue the proper ends of journalism (Tanner, Phillips, Smyth, & Tapsall, 2005, 238).

However, the effects that I have described rely on understanding what would ordinarily be described as breaches of ethics as breaches of ethics *when engaged in by journalists in the course of their investigations*. It may be, though, that the public goods — an informed society, and important checks on the abuse of political and economic power, essential to a flourishing democracy — which good journalism serves, justifies a conception of a distinct professional role of “journalist” which sustains both special obligations and special privileges (Oakley & Cocking, 2001; Tanner, Phillips, Smyth, & Tapsall, 2005, Part 1). These privileges may include exemptions from what would ordinarily be considered to be our ethical obligations when relating to other people, as long as the failure to act on these obligations occurs in the service of the proper ends of journalism (Jackson, 1992). Whether such exemptions exist (I suspect they do) and what their precise limits are, are the subjects of a much larger investigation than I can carry out here. In the meantime, we must be satisfied with observing that no matter the precise limits of ethical journalistic practice,

journalists may properly direct their investigations at the work of scientists. In doing so they make a contribution not just to an open society, in which social priorities are not distorted by possible corruption in science, but also to the enterprise of science itself.³⁾

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