

## FOREWORD: SCIENCE IN A COMMUNITY OF VALUES

Through a framework that prefers to accompany Big Science with press releases and, in turn, to make scientists into celebrities, the media has ensured itself an important role in what used to be a slow process of scientific discovery and peer-reviewed publishing. This star system has certainly not subverted proper scientific methods of publication, but it has greatly accelerated the speed and intensity with which breakthroughs reach the public. At first blush, this might seem to be an immediate way for science to interact with community, and to be shaped by its values. But instead, it seems more likely that the news media is exclusively interested in canonising this star system, in which the values are those of celebrity – or pariah – rather than values mirroring the community’s higher interests.

At the tail end of 2005, the media ensured that the ethics of science rocketed into public consciousness. Although by no means the first superstar (earlier names like those of Carl Sagan and Stephen Hawking, and perhaps even Albert Einstein, inevitably spring to mind), Dr. Hwang Woo-suk was among the first to be laid low by the very system that raised him high. Like cold-fusion researchers Martin Fleischmann and Stanley Pons before him, Hwang found himself in a very public trial prosecuted in and often by the media. Spurred on by a Korean television investigative news programme, the world’s media quickly brought about the scientific review that toppled Korea’s official Chief Scientist.

Noted South Korean scientist Hwang, famous as the outspoken lead author of papers from 2004 and 2005 in *Science* detailing path-breaking successes in developing patient-specific tissues derived from cloned human blastocysts,<sup>1</sup> faced the world’s press on two separate charges. Although widely reported in the press during the last two weeks of December 2005, the sequence of events, the rapidly accelerating charges and counter-charges, and the scientific fallout from the Hwang affair are overly complicated and almost resist summary exposition. But in short: by

mid December, not only did Hwang's team stand accused of paying for eggs (some of which were taken from his laboratory assistants), but also of fabricating the published results of his research. By December 29, the scientific community upheld both of these charges,<sup>2</sup> and Hwang's disgrace was so great that his university's discipline committee, planning its own justice, initially rejected his resignation letter.<sup>3</sup>

These two scientific lapses seem to be of a different nature. In the first, Hwang's team broke with the guidelines commonly expected in the scientific community regarding the interaction between laboratory colleagues. The source of the eggs themselves ought not to affect the results of the team's studies – the guidelines simply regulate laboratory behaviour, and nothing more. Indeed, an internal review, quoted by *Science*, held that “the identified concerns [i.e. the egg affair] have no impact on the validity of the scientific conclusions.”<sup>4</sup> Scientifically, the second charge seems much graver. Hwang's team faked the data, an unforgivable sin not of behaviour, but of scientific method, the very lifeblood of science. Yet, despite the apparently different realms, or, put better, the attempt to keep these two realms separate, these two charges turned out to be related. Why would it be wrong to use eggs from one's own assistants? Clearly, the fear is of coercion – the junior colleagues in the lab could somehow be coerced, or feel coerced, into the donation. Money could also be a tool of coercion, unduly pressuring poor woman to sell products of their bodies. And indeed, SCIENCENOW.COM, *Science's* daily news Web site, reports that “all circumstantial evidence and testimony from his researchers” indicates that Hwang also forced assistants to falsify the data.<sup>5</sup> The investigations into the Hwang affair seem to have revealed a culture of coercion at his lab, which expressed itself both in its egg procurement, and in the treatment of data.

As is usual, there have been notable attempts to reduce this affair to a technical question of knowledge: “the Bush administration's antiquated policies are driving this research out of the country ... by driving it offshore, we're not able to ensure the same amount of scrutiny you would

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expect in the U.S. and Europe. I think this [the Hwang affair] is a direct consequence of U.S. policy,” the *Bloomberg News* service quotes Dr. Robert Lanza, one of America’s foremost stem cell experts and a direct competitor of Hwang, as saying.<sup>6</sup> Let us ignore, if we can, his implicit claim of the superiority of Western scrutiny, which is by no means self-evident, and simply note that Lanza’s voice was just one in a chorus claiming that more knowledge, more (Western) research would solve this problem. Were the West, and specifically America, to have developed the technical expertise and garnered the knowledge such expertise brings, well, Hwang’s seeming duplicity – a direct consequence of George W. Bush, so it is claimed – would have been avoided. No doubt exists that the Bush administration, like most recent American administrations, attempts to hijack science for political, and in Bush’s case, for populist gain. Nevertheless, Lanza’s claim is far from obvious – embryonic cloning is not banned in America, as it is in Germany (for instance). Bush’s currently enforced policies, rightly or wrongly, only block federal funding for research on embryonic stem cell lines, and that ban is not absolute.<sup>7</sup> American scientists do have the wherewithal to carry out embryonic stem cell research, and in fact do so: Lanza is an embryonic stem cell researcher working in America. Moreover, public funding does not provide any demonstrable security against fraud: not only did the Korean government lavishly fund Hwang’s laboratory, stem cell research is also well funded in many European countries – and yet the Hwang affair was not averted, despite the scrutinising European science to which Lanza makes passing reference. I would dismiss Lanza’s claims as pure polemic if there were not something else at stake.

Clearly, the issue here is larger than technical knowledge. Lanza sees this moral issue as capable of resolution through research and the technical knowledge it brings. But *techne* – for Plato, the knowledge of how to do something – by its very nature is innocent of philosophical questioning. As a concern for results, *techne* aims at material progress. It may be slow and methodical; it may be fast and rapacious. And in the high-stakes

world of funded research, the rush to be first is seemingly irresistible. As such, let me point to a name missing in the news reports on Hwang, a name completely unconnected to Hwang's project, but a name nonetheless who, like Hwang, also put *tebne* first. A name whose deception sailed unnoticed through the scrutiny of American science – the scrutinising science of Lanza's America.

Before Hwang, there was Dr. Craig J. Venter. Around the recent turn of our millennium, Venter's company Celera raced to sequence the complete human genome ahead of the publicly funded Human Genome Project (HGP), whose meticulously compiled genetic map Celera nevertheless needed to use as a template for its innovative and successful "shot-gunned" or scatter-shot approach.<sup>8</sup> Venter succeeded in this project, even if his research ultimately disappointed his company because of its low commercial viability, which ultimately resulted in his golden parachute from Celera. However: Venter's own DNA was included among the five samples of his project. Despite Celera's attempts to study anonymous DNA, the team studied Venter's and he remains the first and only identifiable human being alive whose decoded genome is public knowledge. Whether this substitution provides any benefit beyond hubris to Venter is an open question. Possibly, but far from certainly, this detailed knowledge could lead to personally tailored medicines and therapies. Of course, this knowledge also brings risks for him, and for his stem line; now the whole world has access to the data that could reveal what diseases he and his direct descendants are genetically predisposed toward, including those connections yet discovered. Who knows how this knowledge could be used, but it is no longer up to Venter, or, perhaps more importantly, to his child (and so on). His laboratory followed the clinical practice of anonymity for good reasons – reasons going beyond science and stretching into the community.

Volumes of ink have been spilled on this act, but these volumes seem to have solidified long ago into the slowly retreating glacial process that old news traces in our contemporary media's lust for novelty. Today,

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Venter is celebrated for his audacious plans to “collect the DNA of everything on the planet,” as *Wired* recently put it.<sup>9</sup> Yet, the fact remains simply: Venter deceptively used his own DNA, directly in contravention to the guidelines and selection procedures of his own company. In so far as Venter broke the guidelines of his own laboratory, this act seems similar to Hwang’s act: it would seem that, by definition, somebody at Venter’s lab had to secrete his DNA into the study – just as somebody at Hwang’s laboratory had to have secreted the eggs of the female assistants into the study. Common ethical practices were placed to the side in the two of the largest bio-medical stories of the last decade – the sequencing of the human genome, and prestigiously published claims of successful therapeutic cloning.

But – so what? Science has often advanced through seriously unethical practices, practices that the public officially abhors – when it is capable of understanding these practices. Does not modern surgery owe much to body snatchers? Where would today’s internal medicine be without those “resurrection men” immortalised by Dicken’s Jerry Cruncher, or his enablers, London’s barber-surgeons? If we consider only the first charge against Hwang (and this piece was begun when that was the only charge), why should we judge him and Venter by their apparently minor lapses? Surely: results, advancement, achievement, these are what matter – and nothing more.

Although not born as twins, science and fear remain intertwined. I mean neither the fear of novelty nor the fear of undermining religion: the fear of coercion as outlined above is neither of these. Like the others, however, this fear is a non-scientific fear, because no fears are scientific. Science is about inter-objectivity, about understanding efficient causality, and about making discoveries therewith. In a certain sense, science is utterly and rightly naïve, which is why it often takes itself as unfettered. Yet, fear creeps into science. This fear is fear of human nature – the fear that scientists will act like human beings and place their ambitions, or the ambitions of their cause or nation, ahead of the universal scientific

project. Since many scientific projects literally offer the power over life or death, this fear of human nature is greatly amplified. “Scientists feel the pressure of our society like everyone else,” the *International Herald Tribune* quoted Adil Shamoo, editor of the journal *Accountability in Research* and an ethicist at the University of Maryland, as saying, “their decisions are clouded by visions of fame and dollars.”<sup>10</sup> Scientists are human, and the laboratory is a sort of community (indeed, anthropologists have studied laboratories to great profit). As a community, it needs an ethos, and this ethos must be tied to the ethos of the larger community. Thus, despite the claims that our ethics and our laws are failing to keep up with technology, despite the claims that we need professional ethicists trained to understand what the rest of the lay community never could, we must assert that the communal ethos always ought to precede *techné* because at some level the *techné* is there to serve the ethos. Although rightly naïve, science is never unfettered. It is a founded practice and the foundation is the community. If the laboratory takes the lead, then ethics becomes *post hoc* and runs the risk of becoming a sort of *apologia pro technologica*. Hence does Jürgen Mittelstrass talk about the social value of truthful science and research.

This is not a new claim. The priority of the community and its values is in fact a very old claim. But it is forgotten whenever the ethical issues of science are reduced to questions of knowledge. Some scientists may feel comfortable with this reduction, but this epistemological reduction can also have expressions that are immediately harmful to science. Consider the case of Intelligent Design (ID). American partisans of ID hold that because evolution is a ‘theory,’ schools may not teach it as fact.<sup>11</sup> Here epistemology rises against itself; it here attacks science, but this attack itself is misguided. ‘Theory’ does not mean ‘counterfactual.’ Yet, the ID lobby uses this very notion of the supposed epistemological contrariety of theory and fact as an *argumentum ad populum*. The advent of talk radio and its much younger cousin the ‘blogosphere’ (Google it, as they say) amplifies this refrain into a white noise that has threatened to

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jeopardise the education of a generation of students: as the *New York Times* has reported, the state of Kansas has proposed to re-write its definition of science so as to omit the term “natural explanation.”<sup>12</sup>

To reduce the ethical issues of science to questions of knowledge, whether *techne* or simply *episteme*, is, paradoxically, to undermine the very basis of science. Science may officially be seen as the pure study of efficient causality, as the domain of quantifiable matter and force. But scientists do not at heart seem to think this, or at least, they do not want their patrons to think so. Science tacitly admits of other forms of causality too, most specifically final causality. Embryonic stem cell research is carried out, not for the sake of embryonic stem cells nor for the sake of the instruments nor even for the sake of the researcher, but for the sake of the betterment of the lives of people suffering from disease. Aristotle told us this long ago, but now appeals to his teleology are made to justify the expenditure of our taxes. Thus, although science has seemingly long since jettisoned this very idea, the public face of the bio-medical sciences remains teleological. The ultimate final cause is the community (whatever its extent), in whose name and in whose regard science officially operates. Hence, science not only recognises the community, but also depends on it and its values; a community that does not value the lives of its sick and weak is not going to find in them a proper *telos*, and thus will not fund medical research.

Of course, conflicts of value are possible within science when community is taken to mean world community, but when the community is more localised, its values – after debate – can be more or less ascertained. And in the case of Hwang, like Venter before him, these values were laid fast. To dismiss Hwang’s use of his assistants’ eggs and Venter’s use of his own DNA as scientifically unimportant is to dismiss the very communities that produced these values, and to replace them with the values of celebrity, which exist in a moral vacuum outside of these communities. Without this social basis for values, science is in danger of becoming synonymous with fear, for knowledge alone, as both John Newman

and Albert Einstein recognised, does not lead to humanisation. Without a clear social *telos*, it might even lead to the opposite.

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As usual, this number of *Ethical Perspectives* also situates itself with the community of values. Cowley is concerned with the plurality of moral perspectives within community. Arguing for a highly nuanced relativism that situates the actor's practical activity both within maxims and the concrete situation, Cowley dismisses what he calls the reigning Impersonalist model of ethics, which posits an ideal moral actor bound to preordained precepts. The rightness or wrongness within a particular situation is the ethical issue for the community.

The contribution of Diedrich, Gastmans, and Burggraeve is concerned with grounding the ethics of care in a true ethical community, which they describe within a Levinasian framework. They find the community of the face, and the responsibility that it engenders, to provide care ethics with the philosophical foundation that it has been accused of lacking. In their eyes, the asymmetry of responsibility would overcome any grasp of care ethics that would see it as altruistic.

Bauer addresses the communal acceptance of homosexuality, which she sees as still wanting in Western society. Offering reflections based on impressive empirical data, Bauer argues that the institutionalisation of social reality, itself based on essentialist views upon human sexuality, is the basis of discrimination against homosexuals. She thus offers a challenge to those who object to homosexuality on the basis of any sort of naturalism.

Tollens and De Tavenier concern themselves with feeding the world community. The developing world can feed itself best, they argue, by carrying out market reforms within a development perspective. Poverty is best solved through agricultural reform, but in turn, effective reform there depends on the same factors that enable healthy markets in the First

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World. The contribution of Tollens and De Tavenier is remarkable in pointing out not only the relationship between food and poverty, but also in exploring the incredibly complex web woven by development aid and the market economy. The ethical challenge is bringing about the political will for policies enabling the poor to help themselves out of poverty.

Harriott's philosophical gerontology argues forcefully against the social barriers to graceful aging. Claiming that "successful" old age is linked with the execution of a kind of Jamesian life plan guided by ideals, Harriott clearly puts forth how a life of significance may be led, how it is a preparation for old age, how the aged can still be seen as valuable members of our society, and thus how they remain vital within our community of values.

## NOTES

1. The *Science* website is the best source of information for the constantly evolving facts. *Science* has taken the unusual step of making all the papers and letters concerning this affair public on their website. Please see "Science Editorial Statement Concerning Stem Cell Manuscripts by Woo Suk Hwang, *et al*," *Science* (Dec. 29, 2005), [http://www.sciencemag.org/sciext/hwang2005/science\\_statement.pdf](http://www.sciencemag.org/sciext/hwang2005/science_statement.pdf).

2. Lee Jin-joo, "Shock turns to anger in S.Korea on fallen scientist," *Reuters AlertNet* (Dec. 29, 2005), <http://www.alertnet.org/thenews/newsdesk/SEO274633.htm>.

3. Joohee Cho, "S. Koreans Back Disgraced Scientist," *Washington Post* (Dec. 25, 2005), <http://www.washingtonpost.com/wp-dyn/content/article/2005/12/24/AR2005122400828.html>

4. "Science Editorial Statement Concerning Stem Cell Manuscripts by Woo Suk Hwang, *et al*," *Science* (Dec. 29, 2005), [http://www.sciencemag.org/sciext/hwang2005/science\\_statement.pdf](http://www.sciencemag.org/sciext/hwang2005/science_statement.pdf).

5. Sei Chong, "South Korean Cloning Researcher Resigns," *ScienceNOW* (Dec. 23, 2005), <http://sciencenow.sciencemag.org/cgi/content/full/2005/1223/1>.

6. Heejin Koo, "Landmark Stem Cell Study Retracted After 'Errors' (Update2)," *Bloomberg* (Dec. 16, 2005), <http://www.bloomberg.com/apps/news?pid=10000080&sid=aaipfwRjTeRo&refer=asia>.

7. Unlike Bush, President Bill Clinton tried to place a moratorium on all embryonic research, which federal legislators rejected. In fact, Bush's policies allow federal funding for research on the 60 stem cell lines that had been created previous to August 2001. See: George W. Bush, "President Discusses Stem Cell Research" (presidential address, August 9, 2001), <http://www.whitehouse.gov/news/releases/2001/08/20010809-2.html>. For a helpful overview of all American state and federal legislation concerning embryonic research, please see: National Conference of State Legislatures, "State Embryonic and Fetal Research Laws," <http://www.ncsl.org/programs/health/genetics/embfet.htm>.

8. For a detailed account of Celera’s use of data from the HGP, please see: Robert H. Waterston, Eric S. Lander, and John E. Sulston, “More on the sequencing of the human genome,” *Proceedings of the National Academy of Sciences of the United States of America* 100 (March 18, 2003) 6: 3022-3024.

9. James Schreeve, “Craig Venter’s Epic Voyage to Redefine the Origin of the Species,” *Wired* 12 (August 2004) 8, <http://www.wired.com/wired/archive/12.08/>.

10. Elisabeth Rosenthal, “How rapid should the march of science be?,” *International Herald Tribune* (Dec. 22, 2005), <http://www.iht.com/articles/2005/12/22/news/scientists.php>.

11. The Cobb County school district in the American state of Georgia had required in 2002 that the following sticker be placed on certain textbooks: “This textbook contains material on evolution. *Evolution is a theory, not a fact* [emphasis added], regarding the origin of living things. This material should be approached with an open mind, studied carefully and critically considered.” In early 2005, this sticker was ruled as unconstitutional, on the grounds of separation of church and state. Such is the complicated ethos of America. See *Selman v. Cobb Country School District*, No. 02-2325 (N.D. Ga. Jan. 13, 2005), (<http://news.findlaw.com/hdocs/docs/religion/selman-cobb11305ord.pdf>).

12. Jodi Wilgoren, “In Kansas, Darwinism Goes on Trial Once More,” *New York Times* (May 6, 2005), A, 18. Kansas ratified this change in November, 2005.