BOOKS & ARTS

Science, dogmas and the state

Misrepresentation of stem-cell science in Italy by political and religious groups is damaging that nation's laws and the funding and perceived value of biomedical research, argues **Elena Cattaneo**.

Staminalia: Le Cellule Etiche e i Nemici Della Ricerca

by Armando Massarenti

Guanda: 2008. 205 pp. €14.50 (in Italian)

On 1 April 2004, Elizabeth Blackburn, co-discoverer of the telomerase enzyme, published an article in the *New England Journal of Medicine* entitled 'Bioethics and the political distortion of biomedicine'. In it she reported her experience of working on, and being suddenly fired from, the US President's Council on Bioethics as it drew up its report on monitoring stem-cell research. Blackburn suggests that she was removed because her evidence-based views were not politically acceptable.

Sadly, similar cases have become common in Italy in the past two decades, particularly in the arena of stem-cell research, as Armando Massarenti explains in *Staminalia: Le Cellule Etiche e i Nemici Della Ricerca* (Staminalia: Ethical Cells and the Enemies Of Research). Massarenti, a science philosopher who writes for the Italian newspaper *Il Sole 24 Ore*, describes the political and bioethical disputes under way in Italy, highlighting the contradictions in how research carried out on stem cells derived from early human embryos (blastocysts) compares with studies on stem cells from adult tissues. He reveals the existence of a strategy to generate confusion between the scientific, ethical, religious and political aspects of stem-cell work.

Stem-cell research has evolved rapidly, from James Thomson's first isolation of human embryonic stem cells in 1998 to Shinya Yamanaka's recent discovery of cellular reprogramming. As the field has developed, researchers have held vigorous discussions about the validity and repeatability of results. In parallel, a debate has broken out on the morality of experimenting with early human embryos or their stem-cell derivatives, as some religions or moral philosophies consider human embryos consisting of more than 100 cells to be ontologically and symbolically equivalent to a human.

Most countries have avoided misinterpretation of the results and uncertainties of stem-cell research for political purposes. But in Italy manipulation has been widespread, the book reports. Indeed, some members of the Catholic church hierarchies still claim that research on embryonic stem cells is unnecessary. As

Protesters' efforts to overturn Italy's law on embryonic stem cells were thwarted by misrepresented science.

Staminalia describes, Yamanaka and colleagues noted the continued need for embryonic stem-cell research in a 2007 letter in *Cell Stem Cell* about the discovery of induced pluripotent stem cells from adult tissues; yet the religious media reported the opposite. Other parts of the Catholic political milieu have incorrectly stated that scientists working on embryonic stem cells in Italy are acting against the law. And I have myself been depicted in the media as a bad scientist and teacher and worse, following my organization of an open workshop on embryonic stem cells.

Such distortions coloured the law on *in vitro* fertilization passed by the Italian parliament in 2004. It made it illegal to derive embryonic stem cells from supernumerary frozen blastocysts, and the political process itself stirred up wider opposition to stem-cell research. With few exceptions, the majority of Italian biomedical scientists protested against the law in a subsequent referendum campaign. They objected to the misuse of science to sustain a controversial ethical debate with consequences for research freedom, including the risk of reducing opportunities to learn about early-derived embryonic stem cells and their developmental potential. The protest did not stop religious hierarchies and political parties from continuing their campaign. Despite a 2006 Eurobarometer survey that showed more than 60% of Italians approved of embryonic stem-cell research,

the referendum failed to overturn the law. Massarenti reminds us that the media also played a role in conveying the incorrect view of a split scientific community, as if scientists debated the ideological issues in the same way as did the political and religious personalities.

Similar attitudes have prevailed in the United States under President George W. Bush. There, a presidential decree prohibits the public financing of embryonic stem-cell research — but this is camouflage. By allowing private funding of the same research to continue, the government can pretend to ban something yet still take advantage of it. In Italy and the United States, politicians are allowing religious ideas to influence the rules of a state and opposing science without clarifying the consequences to the citizens who have elected those politicians.

The book then comes to its most crucial point. Those opposed to embryonic stem-cell research in Italy and elsewhere are not simply presenting their ethical or religious arguments and asking those who share them to adopt a consistent behaviour. Rather, they are denigrating scientific results by emphasizing disagreements and spreading false information about the alleged scientific or therapeutic superiority of the research that they wish to support. This approach is applied to stem-cell research today, but tomorrow could be directed at any other field of science judged to be troublesome.

Misinformation has consequences for the

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political guidelines that sustain research. In countries where funding allocations are based on peer review, these effects should be containable. Competition for the best ideas will not depend on a scientist's political or religious points of view or public perception. Where conflicts of interest pollute the management and public funding of science, as in Italy, misinformation may inspire and strengthen political interference with devastating effect, beyond damaging the research that could otherwise enhance the cultural and economic contribution of a country rich in creativity.

Where a peer-review culture is lacking, a country will not benefit from open competition for the best ideas. Negotiation between the public administration and research institutions will lead to an allocation of funds without a transparent evaluation system. Committees will finance their own members, and financial acts could assign millions of euros of public money every year to favoured institutions, according to the biases of ministers.

Such a background of patronage is fostering the political distortion of biomedical research and undermining the autonomy of science in Italy, in my view. Factors leading to the manipulation and censoring of Italian science, particularly stem-cell research and plant biotechnologies, should be analysed thoroughly. This would educate the public in the ethics of science and prevent similar situations from arising in other countries.

Italy does have excellent scientists who understand the basic concept of peer review. What is missing is ethical public-asset management. As Massarenti explains, many researchers find it difficult to accept that it is impossible to support and invest in science effectively if conflicts of interest are not eliminated. Other countries have recognized this. In 1986 Spain created the ANEP, a national

evaluation and foresight agency that is charged with selecting the best projects on behalf of ministers, regions and even private foundations. I hope that a similar mechanism will be adopted in Italy for public funding of biomedical research. The Italian government is moving in the right direction, through propositions from some of its past and current members. But a reliable peer-review system requires two things: the removal of conflicts of interest and of the suspicion that decisions may be influenced by personal interests.

The ethical dimension of science is at the core of *Staminalia*. Science's objectivity has been appreciated since Galileo Galilei, even

though for a long time it was judged as a heresy. Yet, many principles of democratic coexistence have been built on this ethical dimension. The possibility of criticizing and reviewing results is an essential part of science and of the moral and civil growth of a nation. Those attacking these values and representing science and scientists as a threat to humanity are expressing intolerance and contempt for democracy itself. ■

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A blogging professor in print

Academeology: Random Musings, Strong Opinions and Somewhat Bizarre Anecdotes from an Academic Life

by Female Science Professor

Lulu: 2008. 283 pp. £9.26

As a science undergraduate, I imagined that being a professor involved little more than teaching a class each semester and 'doing research'. The inner workings of academia were a mystery to me. Since then, an explosion of blogs written by students, postdocs and faculty members has opened a new window into academic life. Blogs allow scientists at all levels to peek into the professional lives of colleagues at other institutions and in different fields.

Pseudonymous blogger Female Science Professor (FSP) first introduced herself in May 2006: "I do not look my age, I do not look like a professor, I do not look like a scientist. My colleagues are, with a few exceptions, very kind and polite to me, and some (many? most?) even like me ... but they do not take me seriously."

That post set the tone for what has become a collection of more than 500 short essays describing her experiences as a scientist, a professor and one of the few women working in her field of science. She has revealed little about her life beyond the fact that she is a 40-something professor in a physical-science department at a large US university, is married to a fellow science professor and is mother to a "tween"-aged daughter. FSP's blog has steadily gained popularity, with her clear writing style, candid revelations and often humorous musings. The blog's comment section allows her readers to share their own academic experiences.

FSP has published a selection of her essays as a book, *Academeology*. Arranged by theme, the posts are interspersed with pithy points

of academic etiquette. Many of the topics she covers, such as getting a job in academia, tips on teaching, giving seminars and writing grants, might be found in any academic career guide. But rather than give generic advice, FSP presents her own experiences in an informal and entertaining style. Writing under a pseudonym allows for candid descriptions of students and colleagues. Among the topics she covers are graduate student admissions from the perspective of a faculty member, dealing with coauthors — and advice on how not to be a 'sexist jerk'.

FSP's stories of being a woman in a male-dominated field are engrossing. She describes the casual sexism, such as being ignored or treated as a secretary by visiting scientists, or having male colleagues comment that she received an award "because she is a woman". These tales might be disheartening to some. But FSP also relates her successes as a scientist and in navigating difficulties as one half of a scientist couple who began her academic career with a young child. Never claiming that her experiences are universal or that her path has been easy, FSP shows that it is possible to have both a career as a scientist and a life outside of science.

Yet the book's strength in discussing many aspects of academic life is also a weakness. Each essay has a different audience: some are aimed at undergraduates applying to graduate school, others at graduate students or fellow faculty members. The style and tone vary between entries. And the book misses the added value of the comments associated with FSP's original blog entries. That said, *Academeology* is an enjoyable read for anyone interested in how academia works. I would have loved to have had a copy during my own student days. ■

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Golden eggs symbolizing fertility were used in a campaign against Italy's *in vitro* fertilization law.