Opinion

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Selling Dolly: An Ethics Hoax

By Hiram Caton

On Friday, February 21 of last year, Nature magazine distributed its usual media briefing on the forthcoming issue. The handout reported a major advance in reproductive technology - Scotland's Roslin Institute had cloned a sheep by nuclear transfer. As usual the story was embargoed until Wednesday pm, just prior to the magazine's publication on Thursday. The media generally respect embargoes, since jumping the gun sours the trust of news sources. But in this case the London Observer flouted best practice to run the story as an exclusive in its Sunday edition.

Happily, the early release didn't take the Institute by surprise. A 'source' tipped it off to the early publication. Besides, Roslin's public relations firm, De Facto, carefully prepared the publicity bonanza. News agencies had scarcely opened when calls began to come in, first from around the UK, then from Europe and the United States, and before sunset from everywhere. By Monday morning Dolly, to appearance just a well-groomed Finn Dorset, had been transmogrified into a world historical miracle presaging humanity's own transmogrification. The Institute's car park filled with vans of television crews from around the world. Photographers clamoured for Dolly to pose for yet more pictures of the most celebrated animal on earth. The share price of the project's investor, PPL Therapeutics, jumped 5% on Monday and would soon jump 50%. Public affairs television producers deluged Roslin with requests for in-depth interviews. Astrologers requested Dolly's birth date, and grieving persons pleaded with the miracle workers to resurrect deceased relatives and pets. It was the science scoop of the year. And all that BEFORE the article itself was published!

In such a super-heated atmosphere, it's mean-spirited to quibble about ethics, and no one did. Announcing scientific discoveries to the media prior to publication was once regarded as serious misconduct because it short-circuits scientific review of new findings. It's called 'science by press conference'. But it happens so frequently these days that it's old-fashioned to censure. Thus Nature's editors, science journalists themselves, mentioned the embargo breach without comment. Perhaps Nature, through a 'source', gave the Observer the nod. (By an odd serendipity, the New York Times also ran the story in its Sunday edition).

In their preface to the issue's contents, Nature's editors did some path-breaking of their own: they discovered an ethics loophole in the UK's *Human Fertilisation and Embryology Act*. The loophole proved to be scarcely less newsworthy than the clone, for it was rapidly taken up by the science press and drove high-level ethics deliberations for a year.

Discovering a loophole was quite a feat because the Act expressly means to ban all human cloning. The Act references the Roslin technique by prohibiting 'replacing a nucleus of a cell of an embryo with a nucleus taken from a cell of any person, embryo, or subsequent development of an embryo'. How did the editors manage to detect an ethics gap? It was simple. They merely quoted a Glasgow law professor, Sheila McLean, who said: 'My view is that the legislation is restricted to [prohibiting] the cloning of embryos'. That is all. Other legal opinions were not reported, although balance is standard practice, demanded in this case by the gravity of the issue.

Strange to the point of bizarre was Nature's silence about opinion at Roslin. The scientific and business principals had issued an ethics briefing paper stating that, in their view, the application of their technique to humans is unlawful under UK statute and unethical in the absence of law. A double restraint. Nature's readers would have attached great weight to this opinion; weight so considerable that it would have sufficed to dismiss an ethics gap that hadn't been suggested anyway. But the editors wanted that gap; they had fish to fry.

The media seized on the ethics gap because it raised Dolly apoplexy to a new plateau. Plateau 1. Picture and interview frenzy transforms a sheep-like object into 'evidence' of a major scientific achievement. Plateau 2. This spectre is in turn transformed into a creature of a different species - Clonal Man. Plateau 3. This phantasm of a spectre - 'true lie' is Hollywood's daffy name for such effrontery - becomes a mass anxiety merely by applying a label, 'ethics loophole'. The label expressed a faked panic, that is, a hoax, that altered the drab reality of the legal and technical barriers into perception of the nearness of a monster nonentity, Clonal Man. Thus science journalism, operating at the top end of hype, hoaxed a world dumbed down by continuous consumption of 'true lies'.

In the circumstances, the House of Commons Select Committee on Science and Technology had little choice but to react. The Committee might have met the press to hose down the hysteria and rebuke the science press for bingeing on ethics disinformation. Alas it took the Dolly story at face value. It met to hear testimony. The Chair of the Human Fertilisation and Embryo Authority (HFEA), which administers the Act, confirmed the loophole: 'we are 100 percent convinced that we are able to deal with everything except the one technology that the Roslin Institute applied'. Dr Wilmut, despite his declared view that the Act prohibits the application of his technique to humans, poured oil on the blaze by speculating that the Roslin technique would be ready to clone human beings 'within two years'.

The Commons Committee was probably influenced by the discovery of the ethics gap on the other side of the Atlantic. Within 48 hours of the Dolly story release, the White House issued a statement on the cloning peril that echoed the media scare. President Clinton gave a brief to the National Bioethics Advisory Commission (NBAC) to make recommendations to keep Clonal Man at bay. He underscored the urgency by requiring the report in 90 days, and he appealed to scientists to abstain from cloning humans until the protective safeguard was in place. He styled it a 'moratorium' on cloning. This

spectacular promotional package drove the hoax through Congress and state legislatures, where numerous anti-cloning bills were introduced.

Although Australia was also dosed with the hoax, public ethics bodies didn't panic. Human cloning by any technique is prohibited under Victorian, South Australian, and Western Australian statute. It is also prohibited administratively under NHMRC's ethical guidelines on assisted reproductive technology.

In the United States, although there is no statute on cloning or human embryo experimentation, state statutes and federal regulation provide protection. The Food and Drug Administration regulates all cell and gene therapy, including the laboratory products required for experimental and therapeutic purposes. Its authority is sufficient to prevent human cloning. The National Institutes of Health have authority of about equal scope. The President can issue executive orders in the absence of statute. Thus, even without a law - apparently a huge gap - American society was protected from Clonal Man by four tiers of enforcement power. This of course was known to White House staff when it devised the President's 'moratorium'.

The ethics hoax was exposed when an attention-seeker, one Dr. Richard Seed, dramatically announced his intention to clone human beings before the procedure was legislatively banned. Seed is not medically qualified, he is not even a biologist, he had no laboratory, and he produced no evidence of claimed financial backing. But the media define 'news' to include anything grotesque, so the imposture was reported even by the science press. Now that the 'moratorium' had been openly defied, the public required reassurance. The FDA issued a terse statement that Seed would not carry out his threat because it would not give permission for supply of needed biomedicals nor for human experimentation. When Seed retorted that he would take his work to Mexico, Attorney General Janet Reno told the press that if he did, he would be arrested and prosecuted.

Although Seed's threat was all sham, it exposed the power of federal regulation to prevent human cloning in the absence of legislation. It thus revealed the ethics gap to be a hoax. Here was a big story for an enterprising journalist or science magazine editor. It wasn't pursued.

The reportage implied that cloning took ethics by surprise. The trite story about the rapid pace of science eclipsing law and ethics was run. The mundane facts were that cloning by nuclear transfer was discussed by Paul Ramsey three decades ago in Fabricated Man (1970), and by many bioethicists since. In 1985, Leon Kass (Toward a More Natural Science) reviewed Ramsey's assessment and noted that human cloning was approaching feasibility, 'possibly even as early as the year 2000'. Cloning awareness long ago became a stock device of science fiction and film, where it is often coupled with the Frankenstein stereotype (scientist playing God). Everyone knows about cloning. All publicly constituted bodies to consider reproductive technologies have been informed about cloning and have unanimously recommended prohibition. But 'news' is showbiz and facts that chill a hot story are omitted from the news dispatch.

If the ethics gap was theatre, was it a paparazzi event, or was there method in the madness? To decide which, consider exactly what happened.

The Dolly story broke as an exclusive to two highly credible newspapers, Observer and the Times, reporting on a finding to be published in the highly credible magazine Nature. The combined credibility of these publications is irresistible - a dream start for a public relations exercise. I've mentioned that the PPL Therapeutics engaged a PR firm to manage the story. That's nothing unusual. Biotech firms, scientific and medical organisations, universities, and governments routinely engage lobbyists to sell science. Lobbyists were very active with U.S. lawmakers because of the huge potential of the animal production and medical market associated with cloning techniques. Their argument was - and always is - that legislators should not, in the rush to regulate, inadvertently ban medically beneficent and commercially lucrative research. This line was also taken by the HFEA in its evidence to Commons. Ms Ruth Deech, the Authority chair, warned the Committee not to 'stifle potentially beneficial research' by an 'outright ban on human cloning'. With this statement, the bureaucrat snatched from lawmakers the legislative prerogative.

Similarly the NBAC's report to President Clinton, which advised that 'at this time it is morally unacceptable for anyone in the public or private sector … to attempt to create a child using somatic cell nuclear transfer'. This judgment merely confirmed the sense of existing restraints. But only 'at this time'. What? Might the procedure become morally acceptable at some future time? Yes. Perhaps as soon as five years, the NBAC's recommended term for the 'moratorium'. By then the circumstances that render cloning morally unacceptable (non-viable pregnancies or non-viable live births) may have changed. In House debate, five years was changed to ten. But the Senate, its understanding of the cloning 'dilemma' expanded by massive lobbying, killed the bill.

Thus eighteen months of legal drafting to protect society from Clonal Man added not a featherweight of safety. On the contrary, the rush to ban cloning actually subtracted a hundredweight from pre-Dolly protection. Prior to Dolly, human cloning was ethically beyond the pale. Now in the opinion of the nation's foremost ethics body, the only impediment was medical safety and reliability. The ethics goal posts had been moved from complete prohibition (Never) to acceptance in principle (Why Not?). The decisive change agent was saturation lobbying in Congress and in the science press about expected markets for cloning technologies. (Contemporary marketing textbooks discuss such initiatives under the heading, 'ethics management', usually illustrated by examples of how conservation threats to industry were successfully thwarted by skilful public relations).

Similarly in the UK. Pre-Dolly, the ban on cloning was complete. After Dolly, HFEA does not want to 'stifle potentially beneficial research' by an 'outright ban on human cloning'. When ethical imperatives collide with saving lives, ethics gives way.

Is Dolly an Ordinary Finn Dorset Ewe?

I mentioned that the highly touted breakthrough was 'science by press conference'. It's bad ethics because the pre-publication publicity instils broad public belief before experts have the opportunity to examine the findings. This tends to cut critical thought out of the loop. Would-be critics are cast in the role of spoilsports.

This is what happened to Wilmut's claims about Dolly. Questions were raised soon after publication; by the year's end, a number of scientists, among them a Nobelist or two, had found the Roslin research to be seriously flawed. Here are their criticisms.

(a) Roslin should have replicated the experiment before publishing because a sample of one is an anecdote, not an experiment. It's especially not good enough when Dolly was the only animal produced from 277 attempts. Embryos were achieved in only eight attempts. No other laboratory replicated the results and Roslin has no plans to replicate.

(b) The Institute could not document that the nuclear material derived from adult stem cells. Doubt arose because the cell donor was pregnant at the time of cell collection, which meant that the fetal cells could have been included in the collected cell sample. The possibility could be excluded had Roslin tested the cell sample for the presence of fetal cells. It did not conduct that test.

(c) These uncertainties could be eliminated by direct DNA comparison between the donor animal and Dolly. Alas, the donor animal had died three years prior to Dolly's birth and Roslin had no means of making the DNA test. This evidence gap prompted critic Richard Gardner, an Oxford University embryologist, to style the team's negligence as 'staggering'. The Institute's excuse only increased Gardner's scepticism. It apologised that the cells used in the cloning study were prepared for a different purpose (investigating the expression of milk proteins). The cloning experiment was an afterthought; hence the team didn't conduct the tests needed to authenticate the experiment. Gardner rated the face validity of this excuse at nil.

(d) In his criticism, Rockefeller University geneticist Norton Zinder, called the experimental sample an 'anecdote, not a result' and declared that despite the hullabaloo 'the emperor has no clothes': cloning not proved.

Criticisms so fundamental were a whisker away from allegation of fraud. That sounded the trumpet for the fertility fraternity to close ranks behind the embattled Wilmut. The rebuttals did little to dampen doubts that fertility science is in safe hands. They dismissed demands for documentation of Dolly's cellular pedigree as 'nit-picking'. This suggests that when reputation is paired against research integrity in a win-lose competition, integrity looses. They were easy with the fact that the experiment had not been replicated and that the experimental sample contained but one individual. Replication, they were sure, would soon be common place. They saw their field as a steady progression from embryo cloning, to differentiated fetal fibroblasts, to the generation of embryos from adult somatic cells. Various laboratories had created mammalian embryos, but none had produced a live birth. That was Roslin's

achievement. At the present writing, the fertility interest promotes the Dolly miracle despite the absence of satisfactory evidence. She may be an ordinary sheep transmogrified by public relations, by the liability of experts to believe their own hype, and by the rise of stock prices.

As for ethics, the pretext of closing an ethics gap weakened the unconditional ban on human cloning by inserting a promissory note of clinical and commercial benefits into the decision making process and into public opinion.

The Dolly caper was a marketing exercise to promote the fertility industry. Marketing operates with a distinction between unlawful deception and lawful 'puffery'. The distinction gives wide berth to launching melodramas. The publication of the Dolly story in a reputable scientific journal cleared the marketing exercise of any actionable liability for deception. Source credibility creates a strong demand for space in highly credible science journals as it also makes those journals lucrative businesses. The result is that editors, authors, and referees are all shareholders in science-based corporations. According to the old rules, a financial interest in the outcome of one's research puts the investigator in conflict of interest. The same applies to editors. But now that science is business, these rules are so widely in breach that they have no force. This is not to suggest that promotion of itself renders a discovery untrustworthy. It does mean that scientific claims should be treated with the same caution that we bring to advertising. Indeed, any claim that makes news probably IS advertising. This suggests that the trade practices legislation that provides legal recourse against misrepresentation, collusion, and other deceptive practices should be applied to science.

Experience with efforts to make the media accountable suggests that for now there is no remedy against puffery. The 'truth in reporting' movement is an effort to impose standards, and it has experienced some success. But we need a fallback position. It is that we should not expect 'news' to be truthful. Instead, we should position the media as popular dramaturgy that weaves opportune facts together with true lies to spin good yarns. In the present instance, the cloning yarn adds new dimensions to the familiar story of saving lives and curing disease. It also adds resurrection of the dead. In addition, it adds open horizons for re-engineering humans into the menageries invented by Star Wars and X-Files casting. As science fiction consumers, we are residually aware that the entertaining true lie is still a lie. But the cloning yarn comes with a voice-over authenticating it as Science. It is pointless to remind scientists of their duty to truthfulness. They themselves consume a steady diet of true lies in the science press. As for the experts on a particular coalface, their duty of truthfulness is in tension with their corporate interests and loyalty to colleagues. So society will just have to take whatever special interests decide to promote, until the cost of medical beneficence exceeds affordability. It's possible that health services budgets will implode before Clonal Man acquires a budget line.

Notes

- Online sources for the Dolly story include the Roslin Institute, Nature, Science, New Scientist, the New York Times, MSNBC, and CNN. Criticisms of the Roslin experiment

are covered particularly by Science and the New Scientist. The crux of the matter was that the accumulated evidence indicated that mammalian reproductive physiology was a barrier that cloning by nuclear transfer could not cross. An experiment purporting to achieve the clone would thus not only need to be well documented and reproducible, but it should explain the flaw in the interpretation of the accumulated evidence. The Roslin experiment fulfilled none of these conditions. The Institute published a report replying to critics in February 1998, but it is not available at the Institute's website.

- Gina Kolata, the New York Times writer who covered the cloning story, has published her investigations in a book, *Clone: The Road to Dolly, and the Path Ahead*, Morrow, 1998. On the use of the media to promote science business, see Dorothy Nelkin, *Selling Science: How the Press Covers Science and Technology*, 2nd ed. W.H. Freeman, 1995.

- Promotion is not the only motive for science by press conference. Another motive is to prevent reviewers of submitted publications stealing the author's concepts and data.

- Many scientists have recorded their experience with prejudice, deception and other malpractices. A distinguished biologist, Lynn Margulis, has recorded hers in *Slanted Truths: Essays on Gaia, Symbiosis, and Evolution*, Springer Verlag, 1997. A user-group based at the State University of New York, Albany, tracks misconduct in science. To access its large database, email LISTSERV@ ALBNYVM1.BITNET.

- There is an abundance of online sources on cloning. See particularly "Cloning issues in reproduction, science and medicine" (www.dti.gov.uk/hgac/papers/papers_c.htm) a briefing prepared by the Human Genetics Advisory Commission as part of a UK consultation organised jointly with the Human Fertilisation and Embryology Authority, January 1998. The National Center for Genome Resources (www.ncgr.org) maintains a website, Genetics and Public Issues: Cloning (www.ncgr.org/gpi/odyssey/dolly-cloning/). The Executive Summary of the National Bioethics Consultative Commission advice to the President is at http://bioethics.gov/bioethics/pubs/executive.htm.

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