

Power without Responsibility: Media Portrayals of Dolly and Science

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Introduction

The majority of adults in Britain cite the mass media as their main source of information about developments in science and technology.¹ This alone makes it worth studying how the press covered the story of Dolly the cloned sheep. However, the media's reporting of Dolly revealed serious difficulties in the relationship of science to society. Although there were failures of journalistic accuracy and balance, these should not be allowed to obscure the deeper issues.

The coverage provided ample vindication of the contention put forward by Dorothy Nelkin and Susan Lindee in their recent book,² *The DNA Mystique*, that the "gene has a cultural meaning independent of its precise biological properties." They continue, "The gene of popular culture is not a biological entity . . . its symbolic meaning is independent of biological definitions." Time and again as Dolly's story unfolded, one would see a tension between the scientists' desire to keep their discourse to the scientific context where they were figures of authority,³ and the desire of the press to discuss the cultural context of cloning.

In this article, we will analyze principally the British broadsheet newspaper coverage of the Dolly story. We also look at some of the corresponding U.S. newspaper coverage and find striking contrasts, relating not just to journalistic practices but also to the public status and position of science in the two countries. For reasons of space and difficulty of obtaining archive material, we do not address the role of the broadcast media.

A word of caution: the focus of attention here is the press coverage, and although newspapers profess to reflect the concerns of their readership, one cannot necessarily extrapolate from a short burst of media interest to the long-term public reaction to these events. The following striking characteristics are apparent in media portrayals of Dolly:

- Traditional methods of scientific communication are inadequate in modern, technologically sophisticated societies.
- The scientific community in Britain failed to address the cultural significance of Dolly's birth.
- There is a strange dislocation between science and British society, illustrated by the scarcity of scientists quoted as experts in British newspaper stories, in marked contrast to the United States.

This article represents the authors' personal views and should not be construed in any way as reflecting the policy or attitudes of the Wellcome Trust.

This paper takes as its starting point the coverage-attitude hypothesis put forward in 1981 by Allan Mazur.⁴ He argued that “the rise in reaction against a scientific technology appears to coincide with a rise in quantity of media coverage, suggesting that media attention tends to elicit a conservative public bias.” That conservative bias was evident in the press, public, and political reaction to Dolly.

There are at least two strategies for minimizing the extent to which the media will elicit this conservative bias. One is to intervene directly in the reporting process and this was the approach adopted by the team at Roslin. A second approach is more indirect and involves recruiting “allies” from other sectors of society to form constituencies in favor of the new development.⁵ We shall argue in this paper that the first strategy is necessary but insufficient and at one point was counterproductive, and that the second path might have been more fruitful, but was not tried.

The Public Communication of Science

It is now a commonplace for the major scientific journals to seek publicity for themselves by sending out press releases in advance of the publication date of the journal itself. The press releases are embargoed—that is to say, their contents cannot be made public until the day of publication of the journal—but contain a simplified resume of some of the scientific papers, together with contact telephone numbers for the scientists who carried out the work and for other researchers who might be able to comment on its (scientific) significance.

Among the most important journals to do this are *Science*, *Nature*, and in the United Kingdom the *British Medical Journal* and the *Lancet*. The system works to everyone’s satisfaction. It eases the workload of the journalists reporting on the “news event”—publication in a scientific journal—because they have privileged access to the information before everyone else and thus have several days in which to construct their stories for publication. This is a consideration that is particularly pertinent in Britain where economic recession has made fast turnover of stories a necessity of print journalism.⁶ It suits the scientific journals because, by making it easy for the journalists, they increase the chances of getting free publicity for their journal. It also serves the interests of the scientific community as a whole, since it increases the likelihood that stories in the mass media about science will be better informed and more accurate than would be the case if journalists had to turn copy around on the day of publication without access to phone numbers and other aids.

But there have been problems with the system. *Science* has already suffered one notorious episode of embargo-breaking,⁷ where advance knowledge of a paper on the genetics of human obesity stemming from the press release led to fluctuations in share prices on the U.S. Stock Exchange prior to publication of the paper itself.

The Dolly story similarly began with an embargoed press release sent out by *Nature*. *Nature* is published every Thursday but makes its press release available by fax or electronically on the preceding Friday. *Nature* also operates a fax-back service by which bona fide journalists can obtain faxed copies of the scientific papers themselves by quoting numbers listed on the press release. According to the rules governing the use of embargoed press releases, although journalists are free to contact scientists in advance for comment, they must

refrain from publishing those comments until the Thursday morning—*Nature's* publication day.

How the Story Broke

However, this procedure was not followed for Dolly. It appears that, in addition to *Nature's* publicity efforts, the scientists at Roslin had attempted to condition the way in which the story broke by hiring a public relations company and cooperating with a television documentary intended for broadcast after the *Nature* publication.

There are several examples in biomedical science where attempts to manage the way in which the news breaks have failed—most notably the announcement that new variant Creutzfeldt–Jakob disease might be connected with the outbreak of mad-cow disease (BSE) in British cattle.⁸ A common feature is that giving one media outlet privileged access tends to be counterproductive. The immensely experienced science editor of the *Observer* got wind of the Dolly story because of the TV program rather than the *Nature* press release.⁹ The arcane rules of embargoes are such that, having obtained the significant information—that a cloned sheep had been born—from a source other than the *Nature* press release, the *Observer* no longer had to respect the vow of *omerta* which bound all the other print journalists. It ran the story on its front page.¹⁰

Significantly, the story made no mention of publication of a paper in *Nature* but did credit the television company by name,¹¹ saying that the Roslin team's work "will feature in a forthcoming edition of Carlton TV's *Network First*." This is the journalistic equivalent of the references at the end of an academic paper and an implicit indicator of the original source of the information. However, some information contained in the *Observer* story was not in the TV documentary (Dr. Ian Wilmut, private communication, 22 July 1997), indicating that a further source must have been available. In addition, the story was illustrated with a photograph credited to a photographer who had taken advance pictures of Dolly for a weekly journal with the permission of *Nature*.

Balance of the Coverage

The *Observer* story is generally upbeat in its description of Dolly, describing her in the second paragraph as "a landmark in biological research—and a triumph for U.K. science, one that should lead to breakthroughs in work on ageing, genetics and medicines." The third paragraph, however, moves from the biomedical to the wider cultural context of this research: "But cloning is also likely to cause alarm. The technique could be used on humans, drawing parallels with Huxley's *Brave New World* and the film *The Boys from Brazil*, in which clones of Hitler are made." This point is tempered with the report that human cloning would be illegal in Britain and the assertion, attributed to unnamed scientists, that no responsible biologist would support work on human cloning. The rest of the 13-paragraph story discusses the biomedical background: sketching how the work was done, the history of Roslin's work, and the beneficial consequences of this cloning experiment.

Only in the last paragraph does the discourse of concern reappear: "it is the prospect of cloning people, creating armies of dictators, that will attract most attention."¹² The story notes that "a sheep is a complex mammal, after all, so

cloning one raises concerns" [about cloning humans, from the context]. In an attempt at reassurance it concludes with the assertion "Whether anyone would wish to clone a human is a different matter."

Because the information in the *Nature* press release was now in the public domain with the *Observer* story, no one was any longer bound by the *Nature* embargo. It is customary for each British national newspaper to obtain copies of the first edition of its rivals and to incorporate any rival's exclusive stories into later editions. This practice is facilitated by the heavily metropolitan character of British national papers—all are published out of London.¹³ Thus both the *Sunday Telegraph* and the *Sunday Times* managed to run stories about Dolly,¹⁴ on the front page and page two respectively, on the same day as the *Observer*. These were much shorter, contained less scientific detail, and the newspapers clearly did not have prior access to a photograph—all of which pointed to the writers not knowing about the story in advance.

Significantly, both the *Sunday Telegraph* and the *Sunday Times* mentioned the publication in *Nature* but did not mention the TV documentary. Significantly also, their articles contained rather more "discourse of concern" than of promise, compared to the *Observer*. The *Nature* press release that together with the *Observer* article is all they would have had to work with at first is comparatively scant on technical detail. Moreover, it contains *no information at all* on the practical benefits of the work. Journalistically, if there is little in the way of factual information, then it is relatively easy to fill space with cautionary remarks. The *Sunday Telegraph* reported that "the scientists have raised the spectre of a race of 'perfect' humans by a process once dismissed as nothing more than science fiction." It also produced quotes from two socioethical commentators expressing concern and worry about the wider implications. The *Sunday Times* headline set the tone for its coverage: "Sheep clone raises alarm over humans."

International Pick-Up

The *Observer* story was picked up by national and international news agencies—the wire services as they are traditionally and now inaccurately known. Agence France Press, the Associated Press, and Reuters were among those who ran stories that would have been automatically available to any of their subscribers. This, together with the time difference between Britain and America, allowed North American newspapers to come out with the story on the same date as the *Observer*. Thus among those carrying the story in their Sunday editions were the *New York Times*, the *Toronto Star*, and the *Ottawa Citizen*.

The *New York Times* article was long and full of scientific detail.¹⁵ At 34 lengthy paragraphs, it was about three times the length of the *Observer* story that had broken the news. The *New York Times* story included concerns in its very first sentence: "In a feat that may be the one bit of genetic engineering that has been anticipated and dreaded more than any other, researchers in Britain are reporting that they have cloned an adult mammal for the first time." However, most of the text was devoted to the scientific technique and the ethical concerns were articulated only in the last nine paragraphs of the story.

The story of Dolly really took off with the publication of daily newspapers on Monday. Having run the story on the front page of its Sunday edition, the *New York Times* did the same on Monday.¹⁶ Continued inside, the *New York Times* article covered almost a full page in total. Its 31-paragraph main story went

over the scientific ground once again in some detail, but this time the wider implications of the work were explored more fully and were the main focus of both the early and the late paragraphs—with the science sandwiched in the middle. Two lengthy sidebars covered the commercial prospects of the technology and profiled the chief scientist, Dr. Ian Wilmut, respectively. The *Washington Post* covered the story in about 25 paragraphs in its Monday edition.¹⁷ It too focused largely on the scientific detail, but pointed out that there was a “regulatory vacuum” in the United States such that human embryo research was prohibited in federal laboratories but not in private ones.

Subsequent Development of the Story

In contrast, the British press reaction was comparatively muted on the Monday. The London *Times* published the longest story, and the only one to be run on the front page.¹⁸ The *Times* covered the issue in 27 paragraphs—almost all of them given over to the wider implications of the research. Very little scientific detail was given. Significantly, the story was written by the paper’s health correspondent rather than its science correspondent. The paper’s confusion on the issue can be gauged from the fact that the news story cross-referenced an editorial comment that was concerned entirely with labeling genetically engineered food and not with cloning.¹⁹

On Monday, the *Daily Telegraph* ran half a page on Dolly on page 5; the *Independent* ran 16 paragraphs on page 3; the *Guardian* just 11 paragraphs on page 7, together with a jokey question-and-answer guide in its humorous “Pass Notes” section. If anything, even less was published in the British press on Tuesday, February 25th, with the exception of a lengthy comment and opinion piece by the philosopher Mary Midgely in the *Guardian*.

However, the weight of press coverage in the United States fed back to British newspapers (David Felton, news editor, *The Independent*, private communication). When President Clinton announced an inquiry into the ethical issues, this transformed the British newspaper coverage. The story had shifted from the abstruse, unfamiliar ground of developmental biology on to something very familiar indeed: international politics.

In addition, the Roslin team met the British press for the first time.²⁰ On Wednesday 26 February all the main British newspapers profiled the research team—two days later than the *New York Times* had done. They also started to explore more precisely the legal situation governing human cloning in Britain—again a couple of days after the U.S. press had examined the legal position in their country. However, the interviews with Dr. Wilmut did not lead to greater scientific detail appearing in the British press; rather, the story had moved on to the wider implications of cloning people and even of bringing people back from the dead.

By now, the story was still running on the news pages, but increasingly bylines were being shared between science and foreign correspondents. Space was also made available inside the newspaper on the comment and opinion pages, illustrating once more how this had ceased to be a science story but was now the purview of those whose profession was to have an opinion, no matter what the subject matter. This is a routine dynamic of major news stories and a similar pattern was discernible last year in the British press coverage of the possible connection between new variant Creutzfeldt-Jakob disease and the epidemic of mad-cow disease in British cattle.²¹

British newspaper coverage continued at great length throughout March even though very little in the way of fresh information was forthcoming. Again, it was economic and political developments that provided the peg on which to hang cloning news stories. Thus pronouncements by Jacques Santer, president of the European Commission, and by Jacques Chirac, the French president, both revived the story on the news pages. Other scientific claims provoked news coverage. The Oregon Regional Primate Research Center announced that it had “cloned” rhesus monkeys. This was confused in some accounts with the nuclear substitution technique of Roslin.²²

For the most part, however, the coverage consisted of comment and discussion in the form of lengthy features, rather than news stories, about the implications for human cloning. Whereas Ian Wilmut had stated a year earlier (on the occasion of the birth of twin sheep “cloned” by a different technique) that “I cannot see why anybody would want to do such a thing,”²³ by the end of Dolly’s first week the newspapers had produced feature-length interviews with individuals who asked to be cloned.²⁴ An eloquently simple letter in the *Sunday Times* on 9 March 1997 expressed a father’s wish to clone his elder son who had been killed in a road accident so that “our family would be complete again.”²⁵ By April, supermodel Claudia Schiffer had joined the list of those who had applied to be cloned.²⁶

The true legal position in Britain became apparent only after the Human Fertilisation and Embryology Authority was called to give evidence to the House of Commons Science and Technology Committee. The committee’s hearings also provided the first public arena in which claims for the beneficial consequences of the technology could be made and assessed. After nearly a fortnight in which human cloning had been held out as a terrible prospect against which international legislation was urgently needed, stories appeared for the first time stressing that cloning could have beneficial consequences and that legislators should not rush to ban the technology wholesale.²⁷ This discourse of promise was reported absolutely straight, with no editorializing. However, the upbeat effect was rather undone the following day when Dr. Ian Wilmut incautiously admitted to the Select Committee that human cloning might be possible in a couple of years.²⁸

British press coverage of Dolly became more sporadic in April as the general election campaign overshadowed interest in the story. Among the month’s events that did spark an interest were the pregnancies of Megan and Morag (the “cloned” sheep born a year earlier). However, a striking exception to the metropolitan nature of the British press is the vigor of the Scottish newspapers. Roslin is situated just outside Edinburgh, so Dolly was in many ways a home story for the Scottish newspapers and they continued to cover aspects even when the London-based dailies had lost interest.

Although interest in Dolly specifically may have declined, the concept of cloning had entered general usage: there were 259 references to cloning in British papers in April, only a handful of them to Dolly. Judging by the number of references, interest continued at about the same rate in May. There was considerable press interest when Dolly was first sheared and her fleece auctioned for charity. The story took off again in June with coverage triggered by the report of the U.S. National Bioethics Commission. This once again exemplifies how the British press agenda is dominated by U.S. concerns.

Comparisons between U.S. and U.K. coverage

One of the striking contrasts between British and American press coverage is the copious scientific detail provided in U.S. broadsheets, whereas British papers provided parsimonious scientific reporting. This contrast has been noted before in a comparison of U.K. and U.S. newspaper coverage of the “gay gene” story.²⁹

Several factors could be at work here. One is clearly manpower: there are more science writers on the *New York Times* alone than on all British broadsheet newspapers.³⁰ It is therefore impossible for individual British science writers to maintain expertise across the whole field that they have to cover. Stories that draw upon their own background knowledge will be better informed than others. As it happens, those science reporters on British newspapers with science degrees studied in the physical sciences (mainly chemistry, in fact) rather than developmental biology. They therefore came to the Dolly story with a built-in disadvantage.

The narrow base of expertise among British science journalists thus means that they are dependent on assistance from the scientific community. Yet very few scientific sources were cited in British newspapers other than the scientists who carried out the work. The major scientific institutions in Britain—the Medical Research Council, for example—were conspicuous by their silence. The head of the Biotechnology and Biological Sciences Research Council (which part-finances Roslin) was quoted in support of the research, but not until 28 February, five days after the story broke, and his comments were tempered with the accompanying sentence, “he did so [supported Roslin] as the Vatican and the European Commission followed President Clinton and called for an inquiry into the ethical implications and a German Euro-MP said the Roslin Institute . . . should turn to fighting AIDS or cancer instead.”³¹ The antithesis perfectly illustrates the conservative bias elicited by a science portrayed as being without allies of international stature.

Science in Its Public and Social Context?

A news event such as Dolly does not happen in a vacuum. There is already a social, cultural, and scientific context that will color the way in which the news is reported and interpreted. In a sense this is a trivial observation, for if such a context did not exist the news event would be literally incomprehensible. We have searched the FT Profile computerized database of British newspaper clippings for 1996—the year before Dolly—and discovered that the words “clone,” “cloned,” “clones,” or “cloning” appeared in 1,440 articles. The term appeared with “sheep” just 101 times and was linked with “fear,” “peril,” “danger,” or “warning” just 47 times. For reference, the terms appeared 1,820 times in the first six months of this year, whereas items relating to nuclear power appeared 2,280 times in 1996 and 886 times in the first half of 1997. The cloning issue does not compare in the British press with BSE, which appeared in some 10,117 items in 1996 and 2,970 items between January and June 1997.

There was clearly a preexisting level of interest and public consciousness about cloning. We have discovered several unusual appropriations of the term—a Gaelic football team is named after a village “Clones” (pronounced Clo-nass) in County Monaghan, Ireland, and the term is frequently employed in discussions of mobile phone fraud.

Despite this general background, no specific guide for the perplexed was available when the story of Dolly broke. The only information journalists had to go on was a highly technical scientific paper—even an accompanying commentary in *Nature* was couched in forbidding language. But the failure went beyond that of assistance with technical accuracy: no easy guide was available either as to *why* this research had been done and what benefits it could bring. Although the *Nature* press release was available, it was sketchy in content and did not address the questions of benefit and rationale. Roslin released its own press information sheet on 24 February, but it too was somewhat sketchy.

As American press coverage showed, neither of these defects was necessarily fatal to accurate and informed reporting, because the U.S. scientific community was willing to articulate the issues freely. In Britain, however, there is little tradition of scientists speaking directly to the media about the work of other researchers. British coverage was inevitably affected by the way in which journalists were trying to understand the technical details of what *had* been done at the same time as they were trying to explore the implications of what *could* be done. It is difficult to assimilate and understand information presented in highly technical language such as *Nature* and there can be a lengthy time lag between *reporting* the event and *understanding* what is going on, and thus being able to put it in its proper context. Had the scientists at Roslin made public their research aims before they embarked on cloning Dolly there would doubtless have been a vigorous public and media debate but it would have been different in character.

Instead, Dolly was initially treated as an event within the scientific community, to be handled in the traditional fashion of reporting the technical details of the experiment in a learned journal, with a PR company hired to provide an extra gloss. When the inadequacy of this means of communication was revealed, it became evident also that few other channels of communication exist between science and the rest of society. Once in the public eye, British science found itself with few institutional allies from other areas of society. The possibility of preparing the public ground in advance was raised when the Roslin scientists were called to give evidence to the House of Commons Select Committee on Science and Technology on 6 March 1997.³² The response was that Roslin scientists could not go public until they knew that they had actually achieved a clone. Once they knew that, they were bound by the publication rules of the journal *Nature*—no prepublication disclosure.

One MP expressed surprise that the Committee had been given no hint of the work which led to Dolly when the Committee had visited Roslin in the course of its investigations into human genetics two years earlier. Since Roslin had had to apply three years earlier for a Home Office license to conduct the experiments (the nuclear substitution procedure falls within the purview of the Animals (Scientific Procedures) Act 1986 which is administered by the Home Office), government officials certainly knew of the work and its aims. Yet there seems to have been no realization on the part either of the scientists or officials that the work would affect a much wider constituency and that other organizations (such as the Commons Committee or the HFEA) should be prepared well in advance to deal with the fall-out from the announcement of Dolly's birth.

From the press coverage, few other institutions joined the HFEA in trying to reassure the public that Parliament's intention in passing the Human Fertilisation and Embryology Act in 1990 had been clearly to ban human cloning. There

was a deafening silence from the scientific and policy world. No major funders of medical research stepped forward instantly to state that they would not fund human cloning research. No one reiterated the legal point being made by the HFEA. Dolly would have been a sensation whatever happened, but an authoritative statement, from the MRC for example, on the first day of the crisis might have helped dampen some of the extreme comments. In the end, only when Sir Colin Campbell, chairman of the newly constituted Human Genetics Advisory Commission, announced publicly that his commission would investigate the matter did a public sense grow that the issue was under control.

The dynamic of news stories in the media is that such claims (even if true) have to be more than just “one-source” stories. Much reporting in British newspapers is taken up with party politics and the habits and underlying assumptions of political journalism spill over into other areas. Thus the media almost unconsciously tried to assess the size of the “constituencies” in the cloning debate. Rather than recruiting institutional allies before the event, however, Roslin had attempted to condition the reception of their news by direct intervention in the newsgathering process—cooperation with a TV documentary.

British press coverage conveys a strange impression of the isolation of science. Scientists appear as figures possessed of great power—in this case, the ability to create life—but also as remote from the public at large and from the familiar social institutions by which power is diluted and distributed through society. As portrayed in the press, it is science rather than the media that appears to enjoy “power without responsibility.”³³

Notes

1. Ciba Foundation Conference. *Communicating Science to the Public*. New York: John Wiley, 1987.
2. Nelkin D, Lindee MS. *The DNA Mystique: The Gene as Cultural Icon*. New York: W.H. Freeman, 1995:2, 16.
3. The recombinant DNA controversy culminating in the Asilomar conference of 1975 is now interpreted by some scholars as a strategy whereby scientists asserted their authority over the social agendas, by ensuring that discussions were framed in a technical discourse. See Wright S. Molecular politics in a global economy. *Politics and the Life Sciences* 1996;15(2):249–63 and references therein.
4. Mazur A. Media coverage and public opinion in scientific controversies. *Journal of Communication* 1981;Winter:106–15.
5. The concept of recruiting allies is fundamental to Bruno Latour’s anthropological description of scientific research (*Science in Action*. Cambridge, Mass.: Harvard University Press, 1988). He deploys the notion to argue that even the construction of factual knowledge in science is a political process of negotiation and that those who win—those who are credited with having made a scientific discovery—are those who have recruited the best alliances. We use the concept in a more conventional sense relating to the process by which public acceptance is secured that a given piece of scientific work is an inherently valuable addition to the stock of knowledge and that it will have beneficial consequences. This process has been very fully explored by Michael Mulkay in *The embryo research debate: Science and the politics of reproduction* Cambridge University Press, 1997. However, there is an echo of Latour’s usage in the argument, made toward the end of this article, that social and legal facts will not readily be accepted as such unless constituencies or alliances exist to defend those facts in the public domain.
6. Wilkie T. From labs to hacks: are scientific journals doing their job? Paper given at seminar on Scientific Journals and the Public, University College London, 18 April 1997.
7. Roush W. Fat hormone poses hefty problem for journal embargo. *Science* 1995;269:627.
8. The then British government hired an advertising company to develop a PR campaign to persuade consumers that British beef was safe. The story broke out of control of the govern-

- ment because the advertising industry's journal *Campaign* got wind of the story and this was picked up by the media correspondent of the *Daily Mirror*, on the morning of the day the government made its announcement. Another example was the story of "Boxgrove Man"—an important archaeological discovery of human remains in Britain.
9. In fact, what appears to be a case of embargo-breaking did occur, with the publication of a two-paragraph story credited to the news agency, ANSA, on page 16 of the Italian newspaper *La Stampa* on Saturday, 22 February. But the size and positioning of this story indicate that the paper did not understand its full significance and it appears to have had no impact on the English-language media.
 10. McKie R. Scientists clone adult sheep. *The Observer* 1997;Feb 23:1.
 11. In the London editions. It appears that this reference was not included in the Scottish edition read by the Roslin scientists and led them to believe the information had come from a different source.
 12. Durant and colleagues have distinguished two discourses in which the new genetics are often described: the discourse of great promise and the discourse of concern. Durant J, Hansen A, Bauer M. Public understanding of the new genetics. In Marteau T et al., ed. *The Troubled Helix*. Cambridge: Cambridge University Press, 1996. See also Bauer M et al. *Science and Technology in the British Press 1946-1990*. London: Science Museum, 1995.
 13. Wilkie T. Sources in science: who can we trust? *The Lancet* 1996;347:1308-11.
 14. Matthews R, Thornton J. Scientists create an adult sheep. *Sunday Telegraph* 1997;Feb 23:1; Norton C. Sheep clone raises alarm over humans. *Sunday Times* 1997;Feb 23:2.
 15. Kolata G. Scientist reports first cloning ever of adult mammal. *New York Times* 1997;Feb 23:A1.
 16. Kolata G. With cloning of a sheep, the ethical ground shifts. *New York Times* 1997;Feb 24:A1.
 17. Weiss R. Scottish scientists clone adult sheep; technique's use with humans is feared. *Washington Post* 1997;Feb 24:A1.
 18. Laurance J, Hornsby M. Warning on "human clones" fears follow production of sheep from single cell. *The Times* 1997;Feb 24:1.
 19. Jon Turney, of University College London, has suggested that "equally plausibly it could be read as an astute recognition that the public do not parcel up these objects of concern into discrete bundles but regard the biotechnological enterprise as interconnected" (private communication).
 20. According to Roslin's site on the World Wide Web, in the first week after the story broke, it fielded 2,000 telephone calls, talked to 100 reporters, and arranged for 16 film crews and 50 photographers to photograph Dolly.
 21. Wilkie T. Prions, politicians and the press. Paper presented to the annual meeting of the British Association for the Advancement of Science, Birmingham, 10 September 1996.
 22. See, for example, Letts Q. Scientists make monkeys by cloning technology. *The Times* 1997;Mar 4:12.
 23. Ian Wilmut, as quoted in Hawkes N. Cloning breakthrough sounds ethical alarm. *The Times* 1997;Mar 8:9.
 24. Boseley S, Vulliamy M. Fearful symmetry. Nobody would want to clone a human being? Meet David Pizer, the man who wants to be cloned and so escape mortality. *The Guardian* 1997;Mar 1:1(*The Week* Section).
 25. Harris H. Cloning can bring back my dead son. *Sunday Times* 1997;Mar 9(part 5):8.
 26. I want to be a clone! *The People* 1997;Apr 20:15.
 27. Arthur C. Don't rule out cloning urges ethics body. *The Independent* 1997;Mar 6:5; Laurance J. Embryo watchdog backs trials in human cloning. *The Times* 1997;Mar 6:4.
 28. Brogan B. Dolly's creator: humans can be cloned. *Daily Mail* 1997;Mar 7:1.
 29. Conrad P. Constructing the "gay gene" in the news: optimism and skepticism in the American, British and gay press. In Conrad P. *Markers and Links: Genetics and Behavior in the News*, forthcoming.
 30. See note 13, Wilkie 1996.
 31. Radford T. Researcher hits back at clone critics. *The Guardian* 1997;Feb 28:13.
 32. House of Commons Science and Technology Committee Session 1996-97. The cloning of animals from adult cells. Minutes of Evidence and Appendices, Vol. II. HC 373-II. London: Her Majesty's Stationery Office, 1997.
 33. This is the title of James Curran's and Jean Seaton's classic text on the British media (Routledge 1997). The full quotation ends: "The prerogative of the harlot throughout the ages. A comment by Rudyard Kipling on Lord Beaverbrook, *Journal* 1971;38(December):180. Used by Stanley Baldwin in a speech in London on 18 March 1931."