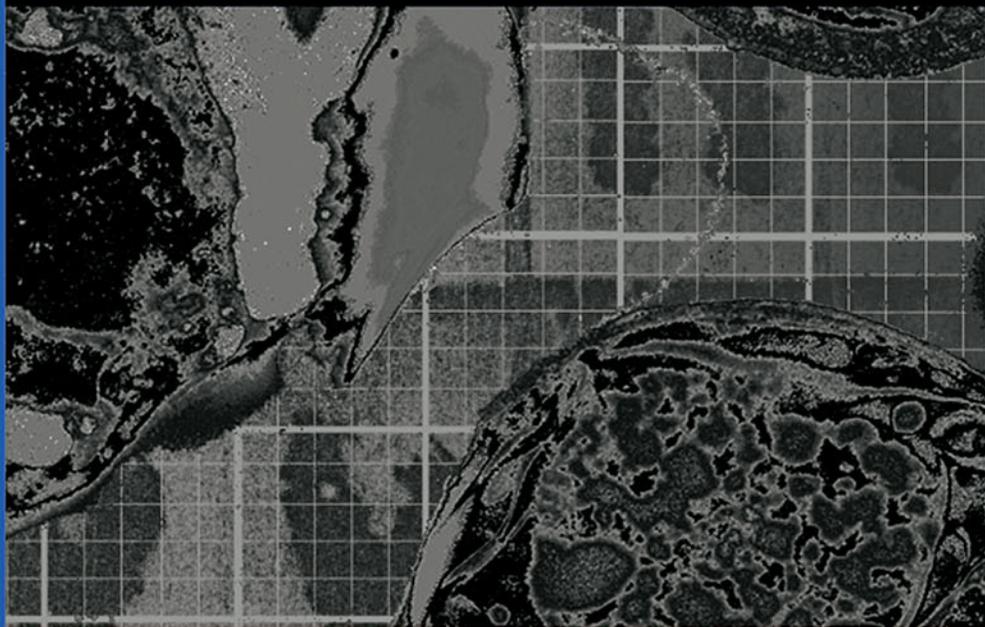


Human Cloning in the Media

From science fiction to science practice

Joan Haran, Jenny Kitzinger, Maureen McNeil
and Kate O'Riordan



Human Cloning in the Media

This book examines the cultural production of cloning, its transformation from science fiction to science practice, and how this plays out in the global arena. The authors analyse the controversies surrounding both 'therapeutic' cloning for stem cell research and 'reproductive' cloning. Case studies are used to illustrate key issues, including:

- the 'story-telling' involved in scientific accounts of the future;
- the image of the scientist, scientific expertise and institutions;
- the governance of science;
- the representation of women's bodies as the subjects and objects of biotechnology;
- the ways in which 'the public' is perceived and represented in the human cloning debate.

Drawing together insights from science and technology studies and media and cultural studies, this book offers a timely contribution to debates about the public communication of science and the status of scientific truth. This book will be a valuable companion to students and researchers of media, science communication, cultural studies, sociology and science and technology.

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1 Introduction

In the last years of the twentieth century and the early years of the twenty-first century, human cloning captured global media attention. Hailed as the source of potential cures for a wide range of human ills and feared as a violation of nature and an abuse of human beings – cloning has been the subject of news reporting in the UK, the USA and South Korea, as well as in many other parts of the world. It has also featured in Hollywood films, in television drama-documentaries and in notable best-selling novels. There is nothing surprising about this. After all, this decade has also seen celebrated, but also controversial, staged public media events pertaining to cloning: the 1997 announcement of the cloning of Dolly the sheep and the first declaration of the ‘completion’ of the Human Genome Project in 2000. Due in no small part to these announcements, this has also been a period in which expectations about cloning have grown exponentially and dramatically.

This book sets out to investigate the phenomena noted above: the flurry of cultural productions and texts which appeared in the wake of these two important markers in the history of genetics and biotechnology, the changing expectations regarding human cloning, and the state of this technoscientific field in the early twenty-first century. Our particular interest is in tracing and analysing some of the processes of mediation which have been a crucial, though often neglected or misconstrued, feature of the making of genomics in its recent incarnations. The particular focus of our concern has been human cloning.

By ‘human cloning’ we refer to the creation of a cloned human embryo – whether for stem-cell research, or with the aim of creating a human baby. Human cloning is often presented differently depending on the intended outcome – with the cloning for stem-cell research being designated as ‘therapeutic cloning’ and that oriented for reproduction being labelled ‘reproductive cloning’. Indeed, ‘therapeutic cloning’ is sometimes simply referred to as ‘stem-cell research’, without any link with reproductive cloning being acknowledged in the terminology. At other times therapeutic cloning is represented as a sideline to the central project of embryonic stem-cell research. However, this distinction between ‘therapeutic’ and ‘reproductive’ human cloning is important and we investigate its significance in this book. There is, as we shall

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show, a long-established tension between cloning as re-generation and cloning as re-production. Nevertheless, therapeutic cloning builds on the technologies of reproduction, and 'reproductive' cloning may be framed as a therapy for infertility, following the model of *in vitro* fertilisation.

We begin our introduction by situating this book within a strong body of insightful analysis of recent formations of biological technoscience which includes important cultural and media analyses. Hence, we will identify some of these key influences and draw attention to our indebtedness to other scholars for valuable concepts which we have borrowed and adapted.

We continue with a short overview of the research project which generated this book and sketch the parameters of the analysis offered here, including the time period covered and the scope of our investigation. We briefly review our materials, our methods and our approach to data. We also include a preliminary signalling of two key issues. The first of these is the foregrounding of the mediated nature of technoscience as a challenge to much scholarship within recent technoscience studies. The second is our concern to highlight global flows but also to address national specificities in the analysis of technoscientific developments. Finally, this introduction offers a brief overview of the structure of the volume and an outline of each of the chapters.

The team, the field and conceptual tooling

This book has been produced by four feminist researchers who were brought together to constitute the flagship project on Media, Culture and Genomics, working from two different sites (Cardiff University and Lancaster University) within the ESRC Centre for Social and Economic Aspects of Genomics (CESAGen). We were virtually strangers when we assembled in this cross-site team, but we came together in the process of interrogating recent developments in genomics and we focused on cloning as a particularly controversial aspect of recent biotechnological development. This research was, from the outset, very much a collective process. Our most substantial gesture towards a division of labour was an early decision that the Cardiff University team (Jenny Kitzinger and Joan Haran) would focus on news and documentary media and that the Lancaster University team (Maureen McNeil and Kate O'Riordan) would devote its energy to fictional and more 'imaginary' forms, particularly film. As we discovered and indicate later in the book, this division was, in many respects, thrown open by the research that emerged and, indeed, by our developing conceptions of the field. As the arguments of this book suggest, to have maintained a rigid division between our analysis of fact and fiction would have required distorting a particularly important dimension of the picture of cloning discourses that we identify (see especially Chapter 6).

As four researchers with disparate academic and personal backgrounds, our coming together facilitated the sharing of a rich repertoire of conceptual resources from many different fields. Our disciplinary heritage includes anthropology and history, as well as cultural, gender, literary, media, science,

science-fiction and women's studies. Moreover, we were eager to identify appropriate concepts, insights and framings that would help us during our somewhat unconventional and unwieldy journey. Because our 'findings' include these findings – these very useful borrowings – we will briefly outline some of them here. They should also help to orientate our readers for the rest of the book.

In shifting our project away from an unwieldy tracking of the proliferation of genomic discourses in the media to a more specific focus on cloning, Evelyn Fox Keller's (Keller 1995, 2000) work on twentieth-century biology and the development of genetics was very influential. Keller's overview of these biosciences encouraged us to think that exploring cloning in the era after the mapping of the human genome would be a valuable and distinctive project. She has suggested that, in the early twentieth century, the emerging discipline of genetics – in part through the introduction of the distinction between genotype and phenotype – distinguished the problem of hereditary transmission from that of embryological development, marking a disciplinary split in biology between genetics and embryology (1995: 5). Developments in genetics and the mapping of the human genome at the end of the twentieth and beginning of the twenty-first centuries, combined with some successful initiatives in *somatic* cell nuclear transfer in mammals, have opened up the prospect of bringing together these two disciplines again, as part of the pursuit of therapeutic interventions. In a sense, Keller's work provides the conceptual framework that illuminates the consequent transformation in cloning imaginaries. Indeed, the genealogies of cloning that we discuss in Chapter 2 indicate that specific understandings of the historical relationship between genetics and embryology are being produced and called upon to underwrite key contemporary biotechnological projects.

Steven Shapin and Simon Schaffer's *Leviathan* (1985) has been a landmark contribution to the history of science and science studies. These historians recast conventional understandings of the foundations for modern science in their detailed analysis of the struggles between Robert Boyle and Thomas Hobbes in the forging of arrangements for obtaining knowledge of the natural world. Shapin and Schaffer demonstrate that the making of modern science involved a very particular configuration of social and political structures in seventeenth-century Britain.

It may not seem obvious that this historical study should capture the attention of researchers investigating twentieth- and twenty-first-century genomics and the media. But Shapin and Schaffer's emphasis on the performative nature of modern science and their concern to delineate the technologies that enabled the enactments of science became crucial to our understanding of late twentieth- and early twenty-first-century bioscience. We took from them the idea that the generation of scientific knowledge has, in diverse and specific ways, involved a carefully regulated system of 'witnessing'. Part of our assignment was to investigate the specific ways in which such witnessing occurred and was contested in and through recent developments in genomic

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science. Shapin and Schaffer's foregrounding of the literary and social technologies which enabled such witnessing also intrigued us. Our pursuit of the features of more contemporary scientific literary and social technologies became another thread in our research. This was particularly the case since recent genomic science has been characterised by notable disputes about how these technologies function.

While *Leviathan* has been a landmark text within science studies, it has not remained immune from criticism. In a respectful engagement with Shapin and Schaffer's work, Donna Haraway (1997) has drawn attention to the specific historical conditions which contributed to the forging of the figure of the scientific witness. She insists that the story of the making of modern science must also be told as the story of the making of gender and invokes Elizabeth Potter's historical research to substantiate this claim (1997: 26–32). Haraway's proposal of the figure of 'the modest witness' as the ideal model of the modern scientist encapsulates the problematic gender relations of modern science. Her interrogation of this figure brings the realist epistemological orientation of modern science and the claims to legitimacy of its apparently disembodied and disinterested observers under scrutiny. We have borrowed Haraway's concept of the modest witness and we have found it very useful in interpreting the performances of contemporary bioscientists and their castings in the mass media.

Thomas Gieryn is another science studies scholar whose research has influenced our analysis. Gieryn's (1999) study of boundary making in twentieth-century science offers a useful model for understanding the public making of science. We have found his attention to the iterations and reiterations involved in this boundary work and his precise tracing of the role of the mass media in some of his case studies useful. In particular, we have employed his concept of 'second-order virtuality', which refers to the role the media play in ensuring forms of 'witnessing' in the development of new technoscientific fields.

We have also benefited from a wealth of other research. We situate this study within a now well-established and diverse tradition of feminist studies of technoscience. Indeed, feminist technoscience studies is now such a flourishing and complex field that it is difficult to fully acknowledge the multitude of ways in which it has contributed to and shaped this project. So, we merely mention here some key areas of research that we have drawn upon.

While we have already mentioned Donna Haraway's influence through the figure of 'the modest witness' (1997), her work has provided much broader inspiration for our research. We have noted her careful trackings of the circuits of socio-cultural production in her investigations of a range of technosciences, including informatics, primatology and genomics itself. We draw specifically on Haraway's mobilisation of the concepts of tropes and figures as we undertake our own tracings of modest and immodest witnesses, women's bodies and cloning technoscience (Haraway, 1997).

Feminist research on new reproductive technoscience has been crucial to this research project and we draw directly on some of this research in the following

chapters. However, we are particularly indebted to the recent work of Karen Throsby (2004) and Charis Thompson (2005) who, as part of their own original research (mainly focused on IVF), offer important conceptualisations and distinctive reviews of feminist debates on reproductive technologies.

We were also drawn towards recent feminist cultural studies research which has moved on to the terrain of technoscience. We have been mindful of Anne Balsamo's insight that: 'all technologies reproduce cultural arrangements. In this sense, all technologies can be considered *reproductive* technologies' (1999: 87). Balsamo usefully summarises a tradition of thinking through the visual in feminist approaches. This work is salient to our investigations of the intersections of genomic technologies (particularly cloning), visualising technologies and the media. Hence we follow Valerie Hartouni (1997), Rosalind Petchesky (1987), Carol Stabile (1994), Lisa Cartwright (1995), Catherine Waldby (2000), Judith Roof (1996), Donna Haraway (1997) and others who have examined the complex vectors through which vision and technology intersect. The insights of these researchers have been important since we are concerned with how cloning and genomic technologies are seen and imagined.

This brings us to a final specific sphere of feminist work: research on genetics, genomics and what Sarah Franklin has designated as 'the genetic imaginary' (Franklin 2000). We see this book as continuing a tradition of feminist investigation of the meanings and political significance of the new genetics of the late twentieth and early twenty-first centuries. This research has been particularly important in locating bio-technoscientific developments within a broad cultural frame. Evelyn Fox Keller's research is important in this regard. In addition, Jose van Dijck's (1998) *Imagination* and Franklin et al.'s *Global Nature, Global Culture* (2000) exemplify such framing. Jackie Stacey's (2003, 2005, forthcoming) more recent studies of the filmic life of the gene have continued this tradition, combining a broad cultural approach with more detailed studies of Hollywood films, the cinema's operations as a cultural form and recent developments in genetics.

The preceding feminist research is part of a larger body of work we would designate as cultural studies of genetic and genomic technoscience. Dorothy Nelkin and Susan Lindee's (1995) investigation of the iconography of modern genetics and of the impact of this new bioscience on daily life in the Western world was an early marker in such research. Jon Turney's (1998) powerful documentation of the Frankenstein myth as a key repository of twentieth-century images of technology was a touchstone for our project. We have also benefited from an extensive body of scholarship on genetics and genomics in film.¹ Research on discourse, rhetoric and policy pertaining to new reproductive technologies and genetics (Nerlich et al. 2002; Nerlich and Hellsten 2004; Nerlich 2004) also influenced our analysis. We draw particularly on Michael Mulkay's (1997) study of the debates around the regulation of new reproductive technologies and embryo experimentation in the UK.

Methods and methodology

This project was influenced by media and cultural studies conceptualisations and research that posited a complex cultural circuit, including production, texts and audience or readers (Gray 2003; Johnson et al. 2004). Our shared view was that meanings were not generated at one point of that circuit – to then radiate out. Rather, aware of the various and diverse locations for the generation of meaning at all points in the cultural circuit, we were concerned that our research should acknowledge and work with this awareness. We devised a three-stage strategy that was designed to engage us in textual analysis, followed by investigation of the production and producers of some of the key materials we had analysed. In the final stage, we wanted to undertake audience research, possibly extending this into some broader investigation of publics.

We were confronted with a wealth of diverse texts: articles in newspapers, television news items, Hollywood films, television drama documentaries and so on. It was clear that keeping track of this material would, in itself, be a major strand of our research. We evolved a strategy which combined comprehensive time-limited samples with the tracking of key issues across a broader time frame and across a wider range of media.

We already had access to a comprehensive collection of national UK newspaper and television news coverage for 2000 (collected for an earlier Wellcome Trust-funded project). We complemented this by building up a similar archive of UK news coverage for the first six months of 2004 and the first six months of 2006). As the project progressed we also collected television news and press coverage materials around key events that fell outside this time period, including, for example, international ‘breakthroughs’ in human cloning or major consultation or legislative initiatives.

A second substantial documentation component of our study was the compiling of a filmography. The appendix in this volume is the result of this work (see Appendix II). Viewing and analysing this film archive and related texts constituted a substantial part of the textual analysis of this project. In addition to contemporary films, we also viewed earlier films which were important for their representations of cloning, including *Invasion of the Body Snatchers* (1956), *The Boys from Brazil* (1978) and *Parts: The Clonus Horror* (1978).

A third substantial investigation involved tracking particular issues across a wider range of media and cultural events. We thus collected relevant television documentaries, dramas and drama-documentaries, analysed radio coverage and examined websites. We also attended scientific conferences and public engagement events, theatre and dance performances and gallery exhibitions. Our studies extended to a wide variety of other types of texts ranging from a national postage stamp to policy reports, and from consultation documents to scientists’ own accounts of their work. Attention to the multiple sites across which key products, tropes, figures and stories operate is an important part of our research journey. We are interested in how all these

cultural texts operate together, and in dialogue with one another, to constitute human cloning.

Some readers may be surprised by the way we have analysed accounts of scientific developments written by a leading scientist alongside a reading of a drama documentary, film or newspaper report. We have done this quite deliberately, in order explicitly to challenge the division between 'science' and mediation. We do not treat any particular text as essentially factual rather than fictional, objective rather than biased or 'consultative' rather than 'prescriptive'. Our interest is in how truth claims are asserted and refuted through particular processes and genres. Such an approach brings together science and technology studies' (STS) conceptions of scientific truth/practice with media/cultural studies attention to media discourses, production strategies and contexts. Our approach to the construction of fact/fiction draws on the strengths of both STS and media/cultural studies and, we hope, brings distinctive insights to both fields.

Late twentieth- and early twenty-first-century developments in the biosciences lend themselves particularly well to this approach because they are so often identified as challenging ideas about what is fact and what is fiction. Breakthroughs in this area of science are variously characterised as 'tearing up the textbooks', 'rewriting the book of life' and 'turning science fiction into fact'. Indeed, as we shall argue, in attempting to shift human cloning from science fiction to science practice, the scientific establishment has emerged as a 'dream machine' comparable in many ways to Hollywood. Moreover, this technoscientific domain has also been populated by protagonists who continually cross and re-cross any fact/fiction divide. Scientists identify themselves, or are identified by others, as pioneers, dreamers, charlatans, mavericks or fallen heroes at different times and in different places. Celebrity campaigners associated with such research similarly occupy liminal or fluctuating positions. Christopher Reeves, for example, was an actor who played Superman, who then became a frontman for stem-cell research, and then appeared (as himself) in an advert which was digitally manipulated to realise his fantasy of walking again. Another celebrity transgressing the fact/fiction divide in the cloning field is Arnold Schwarzenegger who played a clone in *The 6th Day* (2000) and also exploited his other fictional personas to become a political figure as the governor of California, a US state that has developed pro-active stem-cell policies.

Our critical approach to the fact/fiction distinction and analysis of a wide range of texts is combined with attention to the diverse processes through which they are produced. In order to explore this further we interviewed some of the key figures involved in representing human cloning. Our interviewees include scientists such as Ian Wilmut (of Dolly the sheep fame), Alison Murdoch (from the Newcastle team involved in cloning for stem-cell research) and Panos Zavos (the notorious, US-based scientist who claimed to have implanted a cloned human embryo into a woman's womb). We also interviewed campaigners such as Josephine Quintavalle (representing the UK-based

'Comment on Reproductive Ethics' – CORE) and Judy Norsigian (from the US-based Our Bodies Ourselves Collective – also known as the Boston Women's Health Collective).

We were also interested in interviewing media professionals involved in producing cultural representations of human cloning. This was harder to achieve. Overall, we have simply been pragmatically strategic in this part of our research. As we anticipated, although we tried, we were not able to make contact with the makers of Hollywood films but we did interview television producers, theatre directors, journalists and artists. We also attended panel discussions and workshops in which producers of science programmes discussed their work. While we would not claim that our examination of this dimension of cloning culture has been thoroughly systematic, we have extensively investigated this part of the cultural circuit and can map some key contours of this terrain.

Given our interest in the public making of science and the influential recent work within both media and cultural studies on audiences and readership, we were particularly keen to incorporate some audience research into our project. There were a number of components of this. We used various opportunities to undertake focus groups or engage in public forums investigating how audiences viewed cloning in films or television programmes which appeared during the period of our research. Hence, two of us participated in the Edinburgh Film Festival on the Ethics of Human Cloning in November 2005. We helped the organisers of that event, including assisting with the drawing-up of a questionnaire to which we added some of our own questions about media and cloning. At the WisCon Science Fiction Convention in May 2006, we led focus group discussions after showing the first episode (*Resurrection*) of the BBC television drama series *11th Hour* and an audience discussion after a screening of the film *Teknolust*. There was also a set of ten focus groups conducted in Cardiff and London during which research participants discussed their views on stem-cell research and were invited to write their own news bulletins using photographs taken from television news coverage. We organised workshops for school students in Lancaster in 2005 and 2006 which involved their viewing of clips from recent films which represented cloning, followed by discussions, an exercise in compiling imagined headlines for cloning news, and, in one case, art work.

Another research initiative oriented to soliciting information about how the public related to genomics and some of its recent representations in the media was undertaken in collaboration with the Mass Observation Archive at Sussex University. In its current form the Archive has a register of respondents who are contacted periodically to write briefly in response to a set of questions pertaining to contemporary issues or activities. The Archive staff set up a directive on this topic on our behalf which invited participants to write about how they learned about genes, genetics and cloning.² We received 174 responses to our directive. (These are kept in the permanent archive at the University of Sussex, and are available to researchers.)

Thinking and researching locally and globally

In undertaking this project we were all very aware of the global nature of the contemporary mass media and of the global networks that were emerging in genomic technoscience. Hence, we knew that the project would necessarily involve investigating this global casting of this burgeoning technoscientific field. At the same time it is clear that this is a field where the *national* stakes are high. In many respects the Clinton–Blair media events which marked the ‘completion’ of the Human Genome Project in 2000 were indicative of a much wider pattern. Clinton and Blair were declaring the HGP a global achievement that would have implications for the entire world, but their appearance also signalled the high national stakes (in this case, for the USA and UK) at play. We knew from the outset that we would need to be mindful of both these dimensions of the cloning story.

Our national foci were determined by practicalities and by developments in the field. We set out to make genomics and the media in the UK our prime concern. This was determined not only by our location and by resource limitations, but also by the role the UK was assuming as a leader in the field of human genomics as it emerged in the late twentieth and early twenty-first centuries. This can be signalled by reference to obvious markers in the field: the cloning of Dolly in the Roslin Institute in 1996 and the media announcements about her birth in 1997; the contribution by John Sulston’s team in the mapping of the human genome; and the Clinton–Blair press conferences of June 2000 mentioned above. Equally significant for this project was the groundswell of attention being given to human genomics and cloning, especially in the UK mass media during this period. We were also aware of institutional developments in the UK (for example, the elaboration of the responsibilities of the Human Embryo and Fertilisation Authority) which signalled that it was positioning itself to play an important role in this field and that investment in it was moving up the political agenda.

While the focus on the UK appeared an obvious choice, we thought it important to supplement this with research on other national contexts. This probably would have been required if only to give us some handle on what was actually happening in the UK. That is, if Britain was positioning itself as one of the front-runners in a race (and, indeed, this is often the term in which it has been described), we had to know something about the other runners.

In addition, the collaboration/competition of the UK and USA in the HGP made some work on US developments seem crucial. However, there were more specific and practical reasons for building in research about other national developments into the project. Hollywood films loom large in any project on mass media and biotechnology in the contemporary world. This meant that we would necessarily be engaged in researching US culture. Moreover, our networks and contacts in the USA in science, media, cultural and gender studies all pulled us in this direction.

Thus, our initial sense of the project was of one which would mainly focus on developments in genomic technoscience and the media in the UK, with

attention to related and contrasting developments in the USA. The dramatic developments which brought South Korea into the frame, particularly from 2004 onward, transformed our research. We originally identified the reported breakthrough in February 2004 as a significant news event and therefore collected all reporting related to Hwang Woo-Suk (for a brief explanation of Hwang's significance, see the last section of this chapter) in the national UK press and television news. In addition, we attended a conference in Edinburgh at which Hwang spoke and we interviewed him there. After the subsequent breakthrough announcement in 2005, further interviews were conducted in South Korea on our behalf by Choon-Key Chekar. She interviewed South Korean journalists and representatives from Korean religious and civic organisations who were challenging some of Hwang's work. These interviews included a representative from the Catholic Church in South Korea, from the feminist group, Womens Link, and from the People's Solidarity for Participatory Democracy group.

As the two breakthrough news events were followed by more extensive questioning, first of Hwang's ethics, and then of his science, we also worked closely with Choon Key Chekar on collecting and coding an extensive archive of Korean press coverage for the weeks of the breakthrough of February 2004 and May 2005, and each week around key moments in the subsequent scandal of November and December 2005. In addition Lexis–Nexis searches were conducted for the weeks of the four key news events for all the UK national press, and also for *The New York Times* and the *Washington Post*. Relevant articles in *Science* and *Nature* were also analysed. At the same time, our on-going interviews with key international stem-cell scientists and attendance at conferences allowed us to monitor reaction across the scientific community.

As the foregoing outline indicates this book is based on an intense study of developments around cloning and the media in the UK over the period between 1996/7 and 2006/7. We have also undertaken some analyses of related developments and patterns in the USA and South Korea. We would not pretend that this is a comparative study. This would not have been possible given the time, resources and scope of our project and team. However, we hope that we have been able to signal some important features of human cloning science, including key aspects of its mediation, in the USA and South Korea. We have been mindful of international dimensions and of global networks and institutions both in mass communications and in contemporary biotechnology. We have no illusions about having provided a comprehensive review of the global dimensions and structures of recent genomic technoscience, but we hope we have made some interesting suggestions about it.

Finding your way: the chapter guide

The body of this book is made up of six chapters, each addressing a different set of core issues. Chapter 2 poses the overarching question: 'What is cloning?' Posing this question at the start of the book is our way of signalling that there

have been important shifts in the meanings of this term during the past decade. We start to answer this question by critically examining a set of genealogies which have been offered in key publications that have appeared since Dolly's birth in 1996 (see Appendix I for a related chronology). Our critical readings suggest that there is no single origin story of human cloning but also that there are no neutral accounts of this field. The juxtaposing of these stories also helps us place our own investigation on a larger and more complex canvas. It establishes crucial background for the second exploratory trajectory in this chapter: our review of some of the crucial changes in the cultural imaginary of cloning during the last decade. The final component of Chapter 2 is the brief overview of the discursive terrains of cloning in the specific national settings we researched: UK, USA and South Korea. This includes a sketch of important legislation pertaining to cloning and the identification of the key discursive actors in debates on cloning and related genomic technoscience. We also incorporate an account of developments around generating international legislation in this field.

In Chapter 3 we consider the temporal dimensions of recent cloning discourses. Here we trace the particular and peculiar fixation on cures as the promise of recent cloning technoscience. We trace the discursive temporal condensations that frame and encourage these expectations. More generally we trace the changing visions of cloning futures as these have emerged over the past decade.

The next two chapters address human agency and corporeality within the recent discourses of human cloning. In Chapter 4 we analyse the figure of the cloning scientist who has been so central to this emerging area of bioscience. We alight on familiar images of the maverick and madman not only because these are such well-established tropes in Western media, but also because these types have been so strongly conjured in recent developments in cloning science (for example, in the figuring of Panos Zavos who claimed to have attempted reproductive cloning). The story of Hwang and his team, who became the standard-bearers for South Korean biotechnology and for that nation more generally, forms the focus of our investigation of a 'fallen hero'. The final element in this chapter involves the gendering of the cloning cultural imaginary, as we provide a brief review of the problems of picturing women scientists in this field.

While analysing the representations of scientists seems an obvious component for a study of the making of a public science such as genomics, the inclusion of a chapter on women's bodies may not seem such an obvious choice. However, as we make clear in Chapter 5, women's bodies have been at the centre not only of the material process of somatic cell nuclear transfer, but also of the making of cloning science more generally during the last decade. Hence, we trace the very striking patterns of women's appearance and disappearance that have been a feature of this mediated field.

In recent years, scientists have made concerted efforts to take the media seriously. While there are a few celebrity scientists and designated 'good

communicators', there is still much unease about interaction with the media. Science studies as an academic field has been even more timid and/or dismissive about addressing the media. While this whole book addresses these lacunae, Chapter 6 attempts to fill out the picture by paying much more attention to genres and media conventions. It does this while investigating the fact/fiction divide which is continually reiterated around human cloning. Here we investigate news values and their impact on the emerging field of cloning. We also undertake some case studies of what we call liminal media forms: a very unusual television drama-documentary on cloning (called *If . . . Cloning Could Cure Us*), the website of a popular film on cloning (*Godsend*) and the websites of a maverick cloner (Panos Zavos). This chapter challenges monolithic understandings of the media and, through some detailed analyses of cloning in specific media forms, interrogates the relationship between truth claims and genre.

We turn from genre to publics in Chapter 7. Here we try to specify and give substance to the understandings of how publics are figured and placed in the making of recent genomic science. There have been intense debates in the UK, the USA and South Korea about public engagement with science during the period of our research project. This chapter considers how publics have been conjured in the making of cloning technoscience during the last decade.

In our concluding chapter we offer some reflections on our analysis of human cloning and the media since 1996. Our commentary is presented as a set of responses to common clichés associated with human cloning that have circulated in the late twentieth and early twenty-first centuries. As part of this, we return to the powerful but unstable distinctions that have characterised this discursive territory: therapeutic and reproductive cloning; fact and fiction.

Having outlined some of the background and features of our research project and having provided a guide to its organisation and structure, we now invite our readers to follow our account of the making of human cloning in late twentieth- and early twenty-first-century media.

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