Biotechnology, Media and Law-Making: Lessons from the Cloning and Stem Cell Controversy in Australia 1997–2002

Kieran Tranter*

INTRODUCTION

It is a truism of law and technology studies that law must catch up with technology.¹ Behind this truism is a sense of panic. Technology threatens the social, and law must be modelled or made to meet the challenge.² Embedded in this professed rush to make law to meet the emergency of technology is a tendency to claims of uniqueness or newness. The emergent technology is cast as a novel situation which calls for law in an original sense, a need for new law to meet the radical newness of technology.³

From a more sober regulatory perspective, legal forms and legal institutions have a demonstrated history of engaging, regulating and ordering emerging technologies.⁴ While all new technologies are received in the moment as new, they soon become mundane,

* Senior Lecturer and Deputy Director, Socio-Legal Research Centre, Griffith Law School, Griffith University, Australia. I would like to thank Lyria Bennett Moses for comments on earlier drafts of this paper. I would also like to thank Narottami Emmett for her research assistance. All websites accessed 29 June 2010.

¹ Lyria Bennett Moses, 'Adapting the Law to Technological Change: A Comparison of Common Law and Legislation' (2003) 26 *University of New South Wales Law Journal* 394, 394. One of the clearest critiques of the phrase 'law must catch-up with technology' can be found in Peter Drahos, 'Law, Science and Reproductive Technology' (1985) 9 *Bulletin of the Australian Society of Legal Philosophy* 270. Another often cited image has been 'law marching with medicine but in the rear and limping a little', *per* Windeyer J in *Mount Isa Mines Ltd v Pusey* (1970) 125 CLR 383, 395 (High Court of Australia). See Zelman Cowen, 'In the Rear and Limping a Little: Some Reflections on Medicine, Biotechnology, and the Law: The Roscoe Pound Lectures' (1985) 64 *Nebraska Law Review* 549; Lyria Bennett Moses, 'Understanding Legal Responses to Technological Change: The Example of In Vitro Fertilization' (2005) 6 *Minnesota Journal of Law, Science and Technology* 505, 516.

² Kieran Tranter, 'Nomology, Ontology and Phenomenology of Law and Technology' (2007) 8 *Minnesota Journal of Law, Science and Technology* 449, 453.

³ Barton Beebe, 'Law's Empire and the Final Frontier: Legalizing the Future in the Early corpus Juris Spatialis' (1999) 108 *Yale Law Journal* 1737, 1772.

⁴ Lyria Bennett Moses, 'Recurring Dilemmas: The Law's Race to Keep Up with Technological Change' (2007) 7 *Journal of Law, Technology and Policy* 239, 248–64.

both in everyday life and in institutional responses. Legal forms and legal institutions routinely transform popular worry about a technology into law and regulatory structures. However, while there is ample literature sketching the projected challenge to law of a specific technology,⁵ there is less research on the processes through which the cultural reception of technology becomes, to adopt Laurence Tribe's phrase, 'channelled'⁶ to law.

This article focuses on how popular media frames technological change, specifically biotechnological change, and how that framing can be seen to influence both law-making and the content of resultant laws. It takes as its study the Australian media reporting on cloning and stem cell research that began on 24 February 1997 with reports of the first cloned mammal (the sheep 'Dolly') and concluded with the coming into force of the Prohibition of Human Cloning Act 2002 (Cth) and the Research Involving Human Embryos Act 2002 (Cth) in December 2002. What is argued is that the media encapsulated the legislative agenda.

In part I the background to the study is provided. In part II it is argued that the analysis of six Australian daily newspapers for the sample period reveals a framing of the biotechnologies involved according to a schema of 'anxiety', 'progress' and 'compromise'. Part III examines how these elements went on to frame the parliamentary debates that surrounded the Acts, and what lessons can be gleaned for understanding the relationship between public representations, law and biotechnology.

The technologies that are the focus of media and law-making in this article are the assemblage of techniques, research and possibilities suggested by the viability of mammalian cloning, evidenced by Dolly⁷ and the propagation and manipulation of stem cells announced in 1998.⁸ This assemblage gave rise to consideration of four applications. The first was the application of the Dolly techniques to existing methods of assisted reproduction to enable human reproductive cloning. The second application was human therapeutic cloning: the use of clone embryos in treatment. The third was techniques enabling the propagation and manipulation of human embryonic stem cells and attendant claims of the possibility of curing cancer, Parkinson's disease and other so far incurable diseases.⁹ Linked with therapeutic cloning, embryonic stem cell technology suggested the possibility of growing replacement organs and also repairing spine and

⁵ Arthur J Cockfield, 'Towards a Law and Technology Theory' (2005) 30 *Manitoba Law Journal* 382, 387.

⁶ Laurence H Tribe, *Channeling Technology through Law* (Bracton Press, 1973).

⁷ Robin McKie, 'Scientists Clone Adult Sheep' *The Observer* (London), 23 February 1997, 1; I Wilmut *et al*, 'Viable Offspring Derived from Fetal and Adult Mammalian Cells' (1997) 385 *Nature* 810.

⁸ James A Thomson and Vivienne S Marshall, 'Primate Embryonic Stem Cells' (1998) 38 *Current Topics in Developmental Biology* 133; James A Thomson *et al*, 'Embryonic Stem Cell Lines Derived from Human Blastocysts' (1998) 282 *Science* 1145; Michael J Shambloott *et al*, 'Derivation of Pluripotent Stem Cells from Cultured Human Primordial Germ Cells' (1998) 95 *Proceedings of the National Academy of Sciences* 13726.

⁹ Roger Brownsword, *Rights, Regulation and the Technological Revolution* (Oxford University Press, 2008) 48–50.

brain injuries.¹⁰ The final technology involved was adult stem cells,¹¹ which promised the same research and health potential without the contested ethics of reproduction that embryonic stem cells invoked.¹²

I. MEDIA FRAMING OF BIOTECHNOLOGY

This section sets out the background to the study. It overviews the existing literature and the methods used in undertaking the study. It then sets out a chronology of events that the media reported on during the sample period.

Past Studies, Sample and Methods

In recent years there has been significant scholarship that has focused on how the media frames biotechnology, and how that framing influences public opinion.¹³ A core finding is that media reporting does not function linearly, where experts' opinions are passed onto a passive public.¹⁴ Rather the media frames technology within cultural scripts—tropes and narratives—that relate to social dilemmas.¹⁵ It is these cultural influences that mediate between the facts of technological change and the public taking stock of that technology.

The announcement of Dolly has provided a rich vein of material for researchers concerned with the media framing of biotechnology. Patrick D Hopkins examined print and television media in the United States during 1997 and found that cloning was framed by narratives involving the loss of individuality, and 'brave new worlds'.¹⁶ His findings are supported by other studies on the media framing of cloning.¹⁷ Matthew C Nisbet,

¹⁰ Australian Health Ethics Committee, 'Scientific, Ethical and Regulatory Considerations Relevant to Cloning of Human Beings' (National Health and Medical Research Council, 1998) 17–19.

¹¹ Christopher RR Bjornson *et al.*, 'Turning Brain into Blood: A Hematopoietic Fate Adopted by Adult Neural Stem Cells in Vivo' (1999) 283 *Science* 534; Diana L Clarke *et al.*, 'Generalized Potential of Adult Neural Stem Cells' (2000) 288 *Science* 1660.

¹² House of Representatives, 'Human Cloning: Scientific, Ethical and Regulatory Aspects of Human Cloning and Stem Cell Research' (Parliament of the Commonwealth of Australia, 2001) 43–44.

¹³ William Gamson, 'Media Discourse and Public Opinion on Nuclear Power: A Constructivist Approach' (1989) 95 *American Journal of Sociology* 1; Dorothy Nelkin, *Selling Science: How the Press Covers Science and Technology* (WH Freeman, 1995).

¹⁴ Susanna Horning Priest, 'Reading Risk: Public Responses to Print Media Accounts of Technological Risk' (1993) 2 *Public Understandings of Science* 95, 97.

¹⁵ Peter Conrad, 'Public Eyes and Private Genes: Historical Frames, News Constructions, and Social Problems' (1997) 44 *Social Problems* 139, 139.

¹⁶ Patrick D Hopkins, 'Bad Copies: How Popular Media Represent Cloning as an Ethical Issue' (1998) 28 *Hastings Center Report* 6.

¹⁷ John Huxford, 'Framing the Future: Science Fiction Frames and the Press Coverage of Cloning' (2000) 14 *Continuum: Journal Media & Cultural Studies* 187; Richard Holliman, 'Media Coverage of Cloning: A Study

Dominique Brossard and Adrienne Kroepsch identified distinct phases in how stem cells were framed in United States newspaper reporting from 1975 to 2002, noticing a shift from a 'scientific/administrative frame' to a 'dramatic/political frame'.¹⁸ Further, like the cloning studies, they found reports on stem cells linked to popular tropes such as Frankenstein, Brave New World, Nazis and monsters.¹⁹ There appears to be a country-specific difference at play in the other studies on stem cells in the media. A Brazilian study, in contradiction to Nisbet, Brossard and Kroepsch, found that the media performed a positive role in communicating science facts and dissipating drama.²⁰

Alan Petersen undertook a discourse analysis of Australian newspapers' reporting of 'genetic breakthroughs' and of Dolly. Petersen found that while genetic breakthroughs were reported within a positive frame of cures and well-being,²¹ Dolly was located within a negative frame through the 'deploying [of] fictional descriptions of cloning as duplication or imitation, as mass production, and the like'.²²

This study examined a sample of reports from six Australian newspapers *The Australian*, *The Australian Financial Review*, *The Sydney Morning Herald*, *The Age*, *The Courier Mail*, *The Adelaide Advertiser*²³ and *The West Australian*²⁴ from the period 24 February 1997 to 31 December 2002. Two annotated databases of Australian newspapers²⁵ (using key words such as clone, cloning, stem cells) were used to generate an initial listing of items.²⁶ The aim was to generate a large sample that contained most items from the

of Media Content, Production and Reproduction' (2004) 13 *Public Understandings of Science* 107; Tom Wilke and Elizabeth Graham, 'Power without Responsibility: Media Portrayals of Dolly and Science' (1998) 7 *Cambridge Quarterly of Healthcare Ethics* 150; Maja Horst, 'Cloning Sensations: Mass Mediated Articulation of Social Responses to Controversial Biotechnology' (2005) 14 *Public Understandings of Science* 185; Peter Weingart, 'The Social Embedding of Biomedicine: An Analysis of German Media Debates 1995–2004' (2008) 17 *Public Understandings of Science* 381.

18 Matthew C Nisbet, Dominique Brossard and Adrienne Kroepsch, 'Framing Science: The Stem Cell Controversy in an Age of Press/Politics' (2003) 8 *Harvard International Journal of Press/Politics* 36, 38, 62.

19 *Ibid.*, 38, 62.

20 Claudia Jurberg *et al.*, 'Embryonic Stem Cells: A Climax in the Reign of the Brazilian Media' (2009) 18 *Public Understandings of Science* 719, 727. Some of the difference is that this study dealt with a more mature debate on stem cells from 2005–9, while Nisbet, Brossard and Kroepsch studied up to 2001. A further study directly comparing Brazilian and US reporting of stem cells affirms this difference: Raul Reis, 'How Brazilian and North American Newspapers Frame Stem Cell Research Debate' (2008) 29 *Science Communication* 316, 331.

21 Alan Petersen, 'Biofantasies: Genetics and Medicine in the Print News Media' (2001) 52 *Social Sciences and Medicine* 1255.

22 Alan Petersen, 'Replicating Our Bodies, Losing Our Selves: News Media Portrayals of Human Cloning in the Wake of Dolly' (2002) 8 *Body and Society* 71, 85.

23 Due to resource limitations the sample from the *Adelaide Advertiser* was from January 1998.

24 Also include were the Sunday papers from the same publisher.

25 *Mediascan*, www.informit.com.au/indexes_MEDIASCAN.html; *Factiva*, www.factiva.com/index.aspx.

26 Consistent with the approach adopted in other studies; Holliman (n 17) 111; Susanna Horning Priest, 'Cloning: A Study in News Production' (2001) 10 *Public Understandings of Science* 59, 61; William P Cheshire, 'Human Embryo Research and the Language of Moral Uncertainty' (2004) 4 *American Journal of Bioethics* 1, 2.

population of all media concerning cloning and/or stem cells. This list allowed for the identification of items for inclusion and exclusion in the sample.²⁷ The text of individual items was gathered through *Factiva* with additional items photocopied from archival sources. At the end of this process a sample of 1,269 items had been gathered. Included in the sample were news reports, short news briefs, feature articles, editorials, opinions, letters to the editor, education supplements and humour pieces.

The sample was content analysed. The key analytical concept was the notion of media ‘frames’ or ‘framing’. Robert M Entman suggests that frames

select some aspect of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation ... frames diagnose, evaluate and prescribe.²⁸

Within the literature on science in the media, identification of how a text diagnoses, evaluates and prescribes ‘perceived reality’ has become a sophisticated theoretical and methodological activity.²⁹ In this study two methods were utilised. The first was a counting task, where the frequency of key terms identified as significant in past studies, such as ‘Frankenstein’, was determined. This produced raw totals; for example, across the sample Frankenstein was mentioned 18 times. The second task involved a deeper analysis of the items and coding for content and meaning. Basic codes related to the specific technologies (for example cloning, reproductive cloning, embryonic stem cells and adult stem cells) that were the subject of the item.³⁰ The next level of codes related directly to content and captured specific tropes or ‘metaphors’³¹ and also more general ‘scripts’,³² referring to complex assemblages of metaphors, within the item. These codes were derived from the past studies and concerned how images with ‘cultural resonance’ were ‘packaged together’.³³ Some of these codes were ‘science fiction’,³⁴ ‘Nazi/Hitler’,³⁵ ‘asexual

²⁷ For example, the use of the term ‘clone’ to describe compatible computers from different manufactures meant that many items were excluded after the initial survey as related to information technology and not cloning and/or stem cells. On excluding at this stage Wilke and Graham in the UK had many false hits relating to the Gaelic football team the ‘Clones’ (pronounced ‘Clo-nass’): Wilke and Graham (n 17) 156.

²⁸ Robert M Entman, ‘Framing: Toward Clarification of a Fractured Paradigm’ (1993) 43 *Journal of Communication* 51, 52. See also Joseph N Cappella and Kathleen Hall Jamieson, *Spiral of Cynicism: The Press and the Public Good* (Oxford University Press, 1997) 46.

²⁹ See the discussion in Thomas Listerman, ‘Framing of Science Issues in Opinion-Leading News: International Comparison of Biotechnology Issue Coverage’ (2010) 19 *Public Understandings of Science* 5, 6.

³⁰ Many items concerned multiple technologies and were coded accordingly.

³¹ Miltos Liakopoulos, ‘Pandora’s Box or Panacea? Using Metaphors to Create the Public Representation of Biotechnology’ (2002) 11 *Public Understandings of Science* 5; José Julián López, ‘Notes on Metaphors, Note as Metaphors: The Genome as Musical Spectacle’ (2007) 29 *Science Communication* 7.

³² Jon Turney, *Frankenstein’s Footsteps: Science, Genetics and Popular Culture* (Yale University Press, 1998) 8; Horst (n 17) 193–4.

³³ Gamson (n 13) 3, 5.

³⁴ Huxford (n 17) 197.

³⁵ Liakopoulos (n 31) 14–15.

reproduction',³⁶ 'mad scientists',³⁷ 'curers'³⁸ and 'economy'.³⁹ This analysis differed from the frequency analysis in that synonyms and analogies could be identified. Each item was also allocated a code which related to the overall presentation of the technologies in the item. This ranged from 'positive', where the item showed clear approval or support for the technology,⁴⁰ to 'neutral', where it seemed that the item did not approve or disapprove of the technology, to 'negative'. Neutral items were straight news reports that focused on the 'facts' of a technology without examining the social impact or future possibilities,⁴¹ or items that seemed to present in equal weight arguments for and against the technology.⁴² Negative items showed a clear unfavourable stance towards the technologies.⁴³

The limitations of adopting this type of analysis have been thoroughly explored.⁴⁴ To reduce cross-researcher discrepancies the task of coding was limited to one researcher (the author), and the items were coded within a narrow timeframe. Further, accuracy of coding was checked through blind recoding of a random sample of 120 items, which returned a 4.16% discrepancy rate.

Timeline

1997 marked the arrival of cloning in the public arena, with Dolly making front-page news,⁴⁵ followed by tales of cloned monkeys⁴⁶ and cows.⁴⁷ 1997 also witnessed the first reports of regulation, namely the Clinton Administration's ban on United States government funding of cloning research.⁴⁸ 1998 saw a spike in reporting over January

³⁶ Wellcome Trust, 'Public Perceptions on Human Cloning' (1998) 2.4–2.6.

³⁷ Petersen (n 22) 82; Hopkins (n 16) 7–12.

³⁸ Emily Marden and Dorothy Nelkin, 'Cloning: A Business Without Regulation' (1999) 27 *Hofstra Law Review* 569, 577; Liakopoulos (n 31) 10.

³⁹ Susanna Horning Priest, 'Structuring Public Debate on Biotechnology' (1994) 16 *Science Communication* 166, 172.

⁴⁰ eg Lee Glendinning, 'Mixed Reaction Greet Cloning of Cow Kidney' *Sydney Morning Herald*, 4 June 2002, 3.

⁴¹ eg 'Clone Gives Birth' *Adelaide Advertiser*, 11 July 2000, 24.

⁴² eg James Murray, 'Fusion of Belief and Science is Possible' *The Australian* (Sydney), 3 March 2001, 27 where a balance of theological opinion concerning cloning was canvassed.

⁴³ eg Matt Wade, 'Boswell wants Ban on Embryo Exports' *Sydney Morning Herald*, 11 November 2002, 8.

⁴⁴ George Gaskell, Martin W Bauer and John Durant, 'The Representation of Biotechnology: Policy, Media and Public Perception' in J Durant, MW Bauer and G Gaskell (eds), *Biotechnology in the Public Sphere: A European Sourcebook* (Science Museum, 1998) 7–9; Leonie A Marks *et al*, 'Mass Media Framing of Biotechnology News' (2007) 16 *Public Understandings of Science* 183, 189.

⁴⁵ 'Cloning of Sheep Stuns Scientists' *The Age*, 24 February 1997, 1; Ronald Kotulak, 'Scientists Clone Lamb from Cell to Make History' *The Courier Mail*, 24 February 1997, 1.

⁴⁶ Rick Weiss and John Schwartz, 'US Cloning Experts Attend to Some Serious Monkey Business' *The Age*, 3 March 1997, 11.

⁴⁷ David Reed, 'Super Cattle Made to Order' *The West Australian*, 15 March 1997, 40.

⁴⁸ 'Cuts on Cloning' *The Australian*, 3 June 1997, 8.

following the first of what was to become a regular feature of the controversy: the announcement of commercial human cloning by a fringe scientist or group.⁴⁹ Seemingly in response to this announcement, on 14 January 1998 the Australian Federal Government requested that the Australian Health Ethics Committee (AHEC) review the science, ethics and law of human cloning.⁵⁰ The media in January 1998 also included belated reporting of the late-1997 adoption by the General Conference of UNESCO of the Universal Declaration on the Human Genome and Human Rights, which included a ban on reproductive cloning.⁵¹ The AHEC report was presented on 16 December 1998, noting the first reports of human embryonic stem cell research.⁵² The media sample during 1999 was characterised by an overall positive assessment of embryonic stem cells and the widespread adoption of the terms ‘therapeutic cloning’ and ‘reproductive cloning’.⁵³ Reports on cloning focused on plans to clone extinct species.⁵⁴ On 10 August 1999 the Commonwealth Government requested that the House of Representatives Standing Committee on Legal and Constitutional Affairs review the AHEC report.⁵⁵ The House Committee asked for public submission on 21 August 1999, and conducted public forums in Melbourne and Canberra during March 2000. The media sample during 2000 was similar to that of 1999, with the overwhelming number of items reporting positively on embryonic stem cells.⁵⁶

2001 saw an increase in the controversy. During 2001 a higher number of items were negative about embryonic stem cells⁵⁷ and there was a greater awareness of the differences

49 Rick Weiss and Julie Delvecchio, ‘Scientist “90% Ready” to Clone First Human’ *Sydney Morning Herald*, 8 January 1998, 3; Justine Ferrari, ‘Softly, Softly in Footsteps of Dolly’ *The Australian*, 9 January 1998, 5.

50 ‘However, I am aware of the considerable concerns raised by the public about human cloning.’ Dr Michael Wooldridge, Federal Minister for Health and Family Services, ‘Press Release—Federal Government against Human Cloning’, 14 January 1998, copy with author.

51 John Kerin and Carolyn Collins, ‘Double Take’ *The Australian*, 24 January 1998, 26.

52 Australian Health Ethics Committee (n 10) 3. This research was published on 6 November 1998 for the Wisconsin team (Thomson *et al*, ‘Embryonic Stem Cell Lines Derived from Human Blastocysts’ (n 8)) and 10 November for the Johns Hopkins team (Shamblott *et al* (n 8)). The research was first reported in Australia in Darren Gray, ‘Legalise Cloning: Scientists’ *The Age*, 10 December 1998, 5.

53 Editorial, ‘Cloning Cells Requires Consideration’ *The Australian*, 20 March 1999, 18 is a good example of the positive reception of embryonic stem cells and the use of the terms ‘therapeutic’ and ‘reproductive cloning’. The only negative item in 1999 was an opinion piece authored by a Catholic bioethicist, Nicholas Tonti-Filippini, ‘Human Organ Cloning and Other Repugnant Myths’ *The Age*, 20 October 1999, 19.

54 ‘Tasmanian Tiger may be Cloned’ *Adelaide Advertiser*, 8 October 1999, 7; Stephen Brook, ‘Mammoth Tusk Ahead to Clone Ancient Pachyderm’ *The Australian*, 23 October 1999, 3.

55 Darren Gray, ‘MPs will Review Human Cloning’ *The Age*, 20 August 1999, 8.

56 Roger Dobson and Jonathan Leake, ‘Organ Repair only a Cellular Clone Call Away’ *The Australian*, 1 May 2000, 10; Sheryle Bagwell, ‘Inhuman Condition’ *Australian Financial Review* (Melbourne), 26 August 2000, 26.

57 eg George Pell, ‘Another Lamb to Slaughter’ *The Australian*, 22 August 2001, 11; Michael Cook, ‘Cell Ethics Down the River for a Song’ *The Australian*, 15 September 2001, 50; Amin Abboud, ‘Where Strict Ethics and Good Science Intersect’ *Sydney Morning Herald*, 17 August 2001, 12.

between adult and embryonic stem cells.⁵⁸ Also, the relationship between embryonic stem cells and 'surplus' IVF embryos became clearer following the Bush Administration's announcement that federal research funding would be limited to existing embryonic stem cell lines.⁵⁹ With regard to cloning, fringe scientists made further announcements of plans for human cloning.⁶⁰ The House Committee delivered its report on 20 September 2001. The Committee recommended that Commonwealth legislation (with mirror legislation in the States) should be introduced.⁶¹ The majority recommended the banning of reproductive and therapeutic cloning, the establishment of a scheme allowing regulated access to unwanted IVF embryos for embryonic stem cell research, a mechanism to ensure that no embryos would be created for research, and a three-year review. The minority proposed a total ban on cloning and embryonic stem cell research.⁶²

2002 saw the climax of the controversy. It was reported on 25 February 2002 that the Commonwealth Cabinet favoured the minority recommendations.⁶³ This precipitated many items advocating embryonic stem cell research.⁶⁴ In response, the then Prime Minister John Howard announced that the Cabinet would make a final decision following consultation with stakeholders.⁶⁵ From 28 February 2002 to 4 April 2002, the date on which it was announced that the Commonwealth would follow the House Committee's majority recommendations,⁶⁶ there was significant media presence, including both supporters and opponents of embryonic stem cell research.⁶⁷ The Commonwealth plan was adopted by the State premiers at the Council of the Australian Governments (COAG) meeting on 5 April 2002.⁶⁸

⁵⁸ Following reporting of adult stem cell cultivation and manipulation: Deborah Smith, 'Human Brain Cells Offer Hope on Diseases' *Sydney Morning Herald*, 16 August 2001, 1.

⁵⁹ Francis Temman, 'Embryos Created for Stem Cell Tests' *The Courier Mail*, 13 June 2001, 17; Mark Metherell, Gay Alcorn and Mary-Anne Toy, 'Embryos Join the War on Disease' *Sydney Morning Herald*, 11 August 2001, 1.

⁶⁰ Reports of both the Raelian's Clonaid and the syndicate of Zanos and Antinori: Andrew Stern, 'Human Clone "Only 18 Months Away"' *Adelaide Advertiser*, 31 January 2001, 22; Gavin Simpson, 'Well Hello, Dolly!' *The West Australian*, 13 January 2001, 4.

⁶¹ House of Representatives (n 12) 224.

⁶² *Ibid.*

⁶³ 'Embryo Work Banned' *The Courier Mail*, 26 February 2002, 1.

⁶⁴ David Wroe, Tom Noble and Louise Dodson, 'Embryo Ban Shocks Premiers' *The Age*, 27 February 2002, 4; Julian Savulescu, 'An Ethical Outcome Hijacked' *Sydney Morning Herald*, 28 February 2002, 14; Martin Pera, 'Allow Research, for our Health's Sake' *Australian Financial Review*, 28 February 2002, 79.

⁶⁵ Michelle Grattan and Deborah Smith, 'Howard to Study Stem Cell Research Before Ban' *Sydney Morning Herald*, 27 February 2002, 7.

⁶⁶ Sean Parnell, 'Go-ahead on Embryos—PM Supports Cell Research' *The Courier Mail*, 4 April 2002, 1.

⁶⁷ eg Kelly Burke and Michelle Grattan, 'Let Embryos be Adopted, Archbishop Tells Howard' *Sydney Morning Herald*, 3 April 2002, 1; Paul Brock, 'Whose Life and Suffering is it Anyway?' *The Australian*, 1 April 2002, 12; John Kerin and Ian Henderson, 'Premiers Approve Stem-Cell Research: Leaders Approve Research' *The Australian*, 1 April 2002, 7.

⁶⁸ Council of Australian Governments, *Arrangements For Nationally-Consistent Bans on Human Cloning and Other Unacceptable Practices, and Use of Excess Assisted Reproductive Technology (Art) Embryos*, 5 April 2002, www.coag.gov.au/coag_meeting_outcomes/2002-04-05/docs/coag050402_cloning.pdf.

Howard introduced the Research Involving Embryos and Prohibition of Human Cloning Bill 2002 (Cth) to the House of Representatives on 27 June 2002.⁶⁹ It was debated on 27 June, 20, 21, 26, 27 and 28 August. 105 Members spoke. On 21 August the Senate referred the Bill to the Community Affairs Legislation Committee of the Senate. On 29 August 2002, due to opposition in the House concerning the Bill's joining of the prohibition of human cloning with the regulation of embryonic stem cell research, the Bill was split into the Prohibition on Human Cloning Bill 2002 (Cth) and the Research Involving Human Embryos Bill 2002 (Cth).⁷⁰ The House of Representatives passed the Prohibition on Human Cloning Bill 2002 (Cth) on 29 August 2002.⁷¹ The debate in the House during August corresponded with the most intensive period of media reporting. Over the course of the month there was detailed media coverage of an anti-embryonic stem cell forum held in Canberra,⁷² coverage of the parliamentary debates,⁷³ and a campaign by the opponents of embryonic stem cell research targeting the lead Australian researcher and chief advocate of embryonic stem cell research the then Director of the Centre for Early Human Development, Professor Alan Trounson. The most damaging attacks arose from a presentation to government members of parliament where Trounson claimed that a crippled rat had been cured using embryonic stem cells. Opponents revealed that the rat had been treated with embryonic germ cells (the successor cells to stem cells) and alleged that Trounson had misled the parliamentarians.⁷⁴

The Prohibition on Human Cloning Bill 2002 (Cth) was first read in the Senate on 18 September 2004. The House passed the Research Involving Human Embryos Bill 2002 (Cth) on 25 September 2001 and was first read in the Senate on 15 October 2002.⁷⁵ After receiving 1,851 public submissions and conducting six days of hearings, the Senate Committee reported on 24 October 2002.⁷⁶ Media reporting during the Senate debates were mostly about the debates;⁷⁷ there was not the same reporting of lobbying as there had been during the House debates. The Senate passed the Prohibition on Human Cloning Bill

⁶⁹ Commonwealth, *Parliamentary Debates*, House of Representatives, 27 June 2002, 4541 (John Howard, Prime Minister).

⁷⁰ Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 6192 (Bruce Billson); Mark Metherell, 'Split Vote Puts Stem-cell Backers in Double Jeopardy' *Sydney Morning Herald*, 30 August 2002, 4.

⁷¹ Commonwealth, *Parliamentary Debates*, House of Representatives, 29 August 2002, 6197.

⁷² Morgan Mellish, 'News—Big Names Line up for Stem Cell Debate' *Australian Financial Review*, 1 August 2002, 8.

⁷³ Sean Parnell, 'Embryo Bill Fires Rivalries' *The Courier Mail*, 22 August 2002, 2; Misha Schubert, 'Debate Livens up Canberra' *The Australian*, 21 August 2002, 4.

⁷⁴ Dennis Shanahan, 'Trounson "Rat Trick" Backfires' *The Australian*, 27 August 2002, 5; Craig Johnstone, 'Stem-Cell Rat Film Misleads MPs' *The Courier Mail*, 28 August 2002, 9.

⁷⁵ 'In the House: Stem Cells' *The Australian*, 27 September 2002, 2.

⁷⁶ Senate Community Affairs Legislation Committee, 'Provisions of the Research Involving Embryos and Prohibition of Human Cloning Bill 2002' (2002) 1; Mark Metherell, 'Senators Split over Stem Cell Research' *Sydney Morning Herald*, 25 October 2002, 5.

⁷⁷ 'Stem Cell Laws Set to Pass' *Adelaide Advertiser*, 5 December 2002, 9.

2002 (Cth) on 14 November 2002 and the Research Involving Human Embryos Bill 2002 (Cth) on 5 December, both with minor amendments. The House agreed to the Senate changes on 11 December 2002⁷⁸ and both Bills were given royal assent on 19 December 2002. The sample period ended, like it began in February 1997, with front page reports concerning cloning; this time reporting of the Raëlian's claim concerning the birth of the first human clone.⁷⁹

The return to reporting of human clones and the deployment of terms and images such as 'evil',⁸⁰ megalomaniac cloners,⁸¹ downloading personalities into new bodies,⁸² and 'made-to-order people',⁸³ points to the first element within the framing media reporting: 'anxiety'.

II. THE FRAMING OF CLONING AND STEM CELLS IN AUSTRALIAN NEWSPAPERS 1997–2002

Anxiety

The prospect of human cloning and the use of embryos in medical research were reported as worrying technological developments. Two scripts were used throughout the sample to frame the technologies as causing anxiety. The first involved a series of interlocking images and tropes derived from science fiction; the second was a more abstract script that presented the technologies as offending human 'dignity'.

(i) Science Fiction Script

In the initial reports, Dolly the cloned sheep was presented as humorously innocuous.⁸⁴ However, the animal soon became framed as something more than just cloned livestock:

⁷⁸ *Commonwealth, Parliamentary Debates*, Senate, 14 November 2002, 6342.

⁷⁹ Belinda Hickman and Patricia Karvelas, 'Cloned Human Born, Cult Claims' *The Australian*, 28 December 2002, 1; Ryan Heffernan, 'Raelians Hail Brave New World' *The Courier Mail*, 31 December 2002, 1. The Raëlian claims were subsequently exposed as a hoax. See Susan Palmer, *Aliens Adored: Raël's UFO Religion* (Rutgers University Press, 2004) 189. On the reporting of the Raëlian cloning claims in the media see Miguel Alcibar, 'Human Cloning and the Raelians' (2008) 30 *Science Communication* 236; Mary C Ingram-Waters, 'Public Fiction as Knowledge Production: The Case of the Raëlians' Cloning Claims' (2009) 18 *Public Understandings of Science* 292.

⁸⁰ 'Clone Cult Believes in Free Love, Aliens' *Sunday Times* (Perth), 29 December 2002, 7.

⁸¹ Ian Gallagher and Jonathan Oliver, 'Couple Denounces Sect after Clone Baby Failure' *The Courier Mail*, 30 December 2002, 7.

⁸² 'Secretive Aust-Raelians Celebrate the Birth of a New Era' *Sydney Morning Herald*, 30 December 2002, 3.

⁸³ Francis Temman, 'Doubts Linger over Cult's Claim of Success in First Cloning of Human' *The Courier Mail*, 28 December 2002, 3.

⁸⁴ Holliman (n 17) 118; Karen Lowe, 'Fun Starts in Two Shakes of a Lamb's Tail' *The Courier Mail*, 1 March 1997, 31. After all, Australia, while no-longer 'riding on the sheep's back', still has a lot of sheep.

she was the harbinger of human reproductive cloning, ‘a breakthrough that opens the door to the possibility of cloning humans’.⁸⁵ This aligning of Dolly with human reproductive cloning linked Dolly to the existing cultural anxiety concerning cloning. Jon Turney has observed that human reproductive cloning has been a part of the cultural horizon for at least 50 years.⁸⁶ There had been earlier media controversies concerning human reproductive cloning: the furore in 1978–9 that surrounded David M Rorvik’s hoax cloning novel *In His Image*⁸⁷ and, before Rorvik, a proto-bioethics discourse concerned with the possibility of human reproductive cloning and the ethical dilemmas that it posed.⁸⁸ Indeed, Richard M Zaner has argued that the prospect of human cloning was used by pioneering bioethicists during the recombinant DNA and IVF controversies of the 1970s and 1980s as the extreme case of an out-of-control amoral science.⁸⁹

For cultural scholars, the persistence of cloning in the public imagination is due to the clone canon in science fiction.⁹⁰ From dystopian origins with *Brave New World*,⁹¹ the clone has featured prominently. Prior to Dolly, John Clute and Peter Nicholls’s *Encyclopaedia of Science Fiction* presented a non-conclusive list of the cloning canon which ran to over 40 entries.⁹² Christine Corcos, Isabel Corcos and Brian Stockhoff suggest that while the narratives and themes within the cloning oeuvre are diverse and complex, ‘most of them are negative’.⁹³ Outside of some feminist science fiction, where critiques of heterosexuality cleared the way for more positive stories about clones,⁹⁴ the clone has generally been a figure associated with disorder, war and destruction. It has been tied to

⁸⁵ Kotulak (n 45); in a similar vein see Graeme Leech, ‘Scientists Deny Wolf in Sheep’s Cloning’ *The Australian*, 25 February 1997, 3: ‘The science that cloned a Scottish sheep is unlikely to be used to clone a human being even though it is technically possible.’

⁸⁶ Turney (n 32) 214.

⁸⁷ David M Rorvik, *In His Image* (JB Lippincott, 1978); on this book and its media image see Gina Kolata, *Clone: The Road to Dolly and the Path Ahead* (William Morrow, 1998) 93–119; Gregory Pence, *Who’s Afraid of Human Cloning?* (Rowman & Littlefield, 1997) 31.

⁸⁸ See Craig M Klugman and Thomas H Murray, ‘Cloning, Historical Ethics, and the NBAC’ in JM Humber and RF Almeder (eds), *Human Cloning* (Humana Press, 1998) 11–12, commenting on the impact of Lederberg’s 1966 article on the dilemmas of human cloning. Joshua S Lederberg, ‘Experimental Genetics and Human Evolution’ (1966) 100 *The American Naturalist* 519. Although his article is not written in the most serious tone, Lederberg stimulated a strong response from Ramsey: Paul Ramsey, *Fabricated Man: the Ethics of Genetic Control* (Yale University Press, 1970) 78–100.

⁸⁹ Richard M Zaner, ‘Surprise! You’re Just Like Me!: Reflections on Cloning, Eugenics and Other Utopias’ in Humber and Almeder, *ibid*, 116.

⁹⁰ Christine Corcos, Isabel Corcos and Brian Stockhoff, ‘Double-Take: A Second Look at Cloning, Science Fiction and Law’ (1999) 59 *Louisiana Law Review* 1041, 1045–6; Sheryl N Hamilton, ‘Traces of the Future: Biotechnology, Science Fiction, and the Media’ (2003) 30 *Science-Fiction Studies* 267, 267.

⁹¹ Aldous Huxley, *Brave New World* (Grafton Books, 1977). On *Brave New World* as a text on cloning see Peter N Poon, ‘Evolution of Clonal Man: Inventing Science Unfiction’ (2000) 21 *Journal of Medical Humanities* 159, 166.

⁹² John Clute and Peter Nicholls, *The Encyclopaedia of Science Fiction* (St Martin’s Press, 1993) 236–7.

⁹³ Corcos, Corcos and Stockhoff (n 90) 1052.

⁹⁴ Sara Wasson, ‘Love in the Time of Cloning: Science Fictions of Transgressive Kinship’ (2004) 45 *Extrapolation* 130, 141.

authoritarianism and mad scientists, as in *Boys from Brazil*.⁹⁵ The clone evokes the manufactured and unnatural, as in *Brave New World*,⁹⁶ and usually features in narratives that involve a great deal of destruction and death, such as *Jurassic Park*.⁹⁷

The clone canon in science fiction functioned as a storehouse for the framing of cloning, and of human reproductive cloning specifically. Senator Natasha Stott Despoja displayed this clearly in her opinion piece following the Dolly announcement: 'What these achievements show is that what used to be science fiction is now reality. The stuff of nightmares and horror movies has come of age.'⁹⁸

Within the sample the science fiction script operated at three levels. First, popular science fiction texts were referenced, allowing journalists to include their cultural content and authority.⁹⁹ Second, specific tropes from science fiction, for example the mad scientist, were invoked. Third, the term 'science fiction' was directly used, referencing its 'anti-science' content and its association with nightmares and horror.¹⁰⁰

According to the frequency analysis, *Brave New World* was mentioned 49 times, *Frankenstein* 18, *Boys from Brazil* 11 and *Jurassic Park* 17. Of the secondary tropes, 'Nazi/Hitler' was recorded 77 times, 'rich'/'greedy' 39, 'nuclear bomb' 31, 'mad scientist' 26, 'dictators'/'Saddam Hussein' 17, 'nightmare' 16, 'individuality (loss of)' 16 and 'armies of clones' 9 times. 'Science fiction' itself was mentioned 38 times. However, this analysis gives some misleading results. First, it suggests that these words were spread across items. However, they were more often deployed in clusters. For example:

... a mad dictator or an unscrupulous government wanting to conduct a secret experiment, or even a deranged billionaire, could, within a few years, have the capacity to gather the necessary personnel and equipment to clone a human. The frequently cited scenario contained in the movie *The Boys from Brazil*, in which Nazi fanatics plot to clone copies of Hitler, is no more than an entertaining piece of science fiction ... But the fictional idea might still hold sufficient fascination for someone to undertake the work in secrecy ... So who would deny with any confidence that someone such as Saddam Hussein might not be tempted to clone himself?¹⁰¹

The frequency analysis did not count synonyms: for example, 'there will be no gruesome half-human, half-animals emerging from laboratories in NSW, no real-life enactments

⁹⁵ Donald M McKale, 'Hitler's Children: A Study of Postwar Mythology' (1981) 15 *Journal of Popular Culture* 45.

⁹⁶ Valerie Hartouni, 'Brave New World in the Discourses of Reproductive and Genetic Technologies' in J Bennett and W Chaloupka (eds), *In the Nature of Things: Language, Politics and the Environment* (University of Minnesota Press, 1993).

⁹⁷ Novel: Michael Crichton, *Jurassic Park* (Alfred A Knopf, 1990); Film: Steven Spielberg, *Jurassic Park* (Universal Studios, 1993).

⁹⁸ Natasha Stott Despoja, 'To Clone or Not to Clone' *The Australian*, 26 February 1997, 12.

⁹⁹ Wellcome Trust (n 36) 6.2.

¹⁰⁰ Huxford (n 17).

¹⁰¹ Graeme Leech, 'The Genetic Gene' *The Australian*, 1 March 1997, 22.

of *The X Files*¹⁰² would not have been recorded. Nor did it reveal which technologies were the subject of the science fiction script, and it failed to give an insight into the nuances of meaning within the science fiction script.

The content analysis provided a richer sense of the science fiction script in the sample. First, 65% (86/132) items that framed reproductive cloning negatively involved science fiction tropes. Further, it seemed that all parties to the controversy utilised the science fiction script to present reproductive cloning negatively. It was used in opinion pieces authored by politicians,¹⁰³ and columnists,¹⁰⁴ and also in quotes credited to bioethicists¹⁰⁵ and biomedical researchers.¹⁰⁶ For the biomedical researchers significant distance was put between their research and that of ‘mad and greedy’ would-be reproductive cloners. Following the 2001 human reproductive cloning announcement, a researcher was reported as saying:

The worst aspect of this is the way in which one or two irresponsible people, whether for the sake of notoriety or for the sake of financial gain, are willing to do something that virtually everyone in the world feels definitely ... should [not] be done.¹⁰⁷

In response to the separate announcements in 2002 by Severino Antinori and the Raëlians of the imminent birth of a human clone, a feature piece observed that ‘some of the world’s most eminent scientists, including Trounson, brand reproductive cloning reckless and immoral, pointing to the high failure rate and birth defects in cloned animals’.¹⁰⁸ The broad deployment of a negative framing for reproductive cloning through association with aspects of the science fiction script enabled reproductive cloning to function as a point of commonality, demarcating for participants legitimate from illegitimate voices. For example, arguments for reproductive cloning for homosexual couples were uncommon in the sample.¹⁰⁹ Instead, the 14 items that mentioned cloning in this context were strongly negative, mixing with the science fiction script homophobia¹¹⁰ and hysterics over the demise of men.¹¹¹

However, the science fiction script was not used as heavily when it came to other technologies, especially embryonic stem cells. In this context, where the science fiction

¹⁰² Ardyn Bernoth, ‘Goodbye Dolly: NSW will be a No Clone Zone’ *Sydney Morning Herald*, 18 April 1997, 3.

¹⁰³ Stott Despoja (n 98).

¹⁰⁴ Bob Beale, ‘Forget the Elvis Scenarios, it’s Time for Sensible Debate’ *Sydney Morning Herald*, 25 February 1997, 8.

¹⁰⁵ Elizabeth Meryment, ‘“Foetus Farming” Claim Disputed’ *The Courier Mail*, 19 March 1999, 5.

¹⁰⁶ Paul Heinrichs, ‘Australian Scientist Horrified at Human Clone Plan’ *The Age*, 2 February 2001, 11; Sophie Douez, ‘Genomes Hysteria Rather than History: Professor’ *The Age*, 15 May 2001, 8.

¹⁰⁷ Stathi Paxinos, ‘Italian Scientist Prepares to Clone Humans’ *The Age*, 6 August 2001, 7.

¹⁰⁸ Natasha Bitá, ‘The Version Birth’ *The Australian*, 7 December 2002, 21.

¹⁰⁹ ‘Dad, Dad and the Children’ *The Australian*, 26 September 2000, 29.

¹¹⁰ ‘State Lacks Curb on IVF’ *The Courier Mail*, 12 June 2001, 2.

¹¹¹ Jenny Hope, ‘Men Moving Down the Road to Extinction’ *Adelaide Advertiser*, 3 November 2001, 52.

script was present it was often balanced by positive tropes. For example, in 2002, out of 67 items on embryonic stem cells that involved elements of the science fiction script, 18 (27%) were positive overall, 24 (36%) were neutral, and 25 (37%) were negative. Further, in this context the science fiction script was primarily used by opponents of embryonic stem cell research.¹¹² For example, Senator Ron Boswell, who later played a prominent role in the attacks on Trounson,¹¹³ was reported as having deployed elements of the science fiction script in criticisms of embryonic stem cell researchers:

He warned politicians ‘must not be naive’ in debating a Bill which could create ‘a select group of millionaires’ from people promoting stem-cell research ... Senator Boswell said Ingenko, another biotech company was similar to Ingen, the company in the *Jurassic Park* films.¹¹⁴

Biomedical researchers actively tried to counter the use of the science fiction script by emphasising its fictitious origin. For example, John Smeaton, Chief Executive of Bresagen, argued that:

When conversation turns to cloning, and the use of human embryos for research, some people tend to throw up their hands in horror and declare the whole subject beyond the pale. Visions of mad professors creating vast armies of freakish look-alike humans infiltrating suburban playgrounds suddenly spring to mind. All very Hollywood and very off the mark.¹¹⁵

This explains the high number of items that included elements of the science fiction script, yet were positive overall towards embryonic stem cell research.

In summary, the science fiction script was at it most potent in framing reproductive cloning negatively, but its deployment was contested concerning embryonic stem cells. However, the science fiction script was not the only anxiety-related negative frame. While the science fiction script associated an emerging technology with anxiety, the human dignity script was more abstract and relied less on images and associations.

(ii) Human Dignity Script

Notions of human dignity and the threat that cloning and stem cell technology posed to human dignity were present throughout the sample. Like the science fiction script, the dignity script was utilised by all participants in relation to reproductive cloning, while it was contested in relation to embryonic stem cell research.

John Harris has observed that the concept of human dignity is ‘the political [equivalent] of motherhood and apple pie. Like motherhood, if not apple pie, [it is]

¹¹² Bernard Lane, ‘Anderson Warns of Farms for Embryos’ *The Australian*, 12 August 2002, 3.

¹¹³ Mark Metherell, ‘Mistakes Put Stem Cell Funding at Risk’ *Sydney Morning Herald*, 29 August 2002, 4.

¹¹⁴ Matt Price, ‘Boswell Warning on Clones’ *The Australian*, 16 May 2002, 3.

¹¹⁵ John Smeaton, ‘Cloning’s Forte is to Save Life, Not Create it’ *Australian Financial Review*, 12 June 2001, 55.

comprehensively vague.¹¹⁶ ‘Human dignity’ conjures numerous relations between values and human life. The editorial in *The Courier Mail* in response to the 2001 human cloning announcements articulated many of the interrelations of the human dignity script:

There are serious ethical, philosophical and, for those who view the creation of life as a divine function, religious considerations to be taken into account. At the core of all of them is the (nearly) universal acceptance of the sanctity and uniqueness of individual human life. If this is compromised to the point where egotists are able to place orders for exact replicas of themselves or, worse, where human beings are created as living storage units for replacement body parts, how soon will it be before the value society places on human life becomes utterly debased?¹¹⁷

As such the human dignity script involved prioritising the ‘ethical’ in contrast to the rational and technical, and concerned concepts such as individual self-worth and autonomy in opposition to instrumentality. This script was not independent of the science fiction script; rather key tropes, particularly images of Nazi doctors and death camps, were common.¹¹⁸ The two scripts were interconnected and reinforcing; *Boys from Brazil* was effective because it suggested multiple denials of human dignity through that text’s referencing of the Nazi regime.

In the frequency analysis ‘dignity’ was used 62 times, ‘respect’ (for human life) 98, ‘spare part/s’ 44, ‘harvesting’ 65 and ‘individuality’ 16 times. The frequency of dignity terms indicates that it was just as common, if not more common, than the science fiction script. The content analysis provided more detail concerning the deployment of the dignity script. First, as with the science fiction script, it was at its most potent in framing reproductive cloning negatively. In the 29 articles that used the human dignity script in relation to reproductive cloning, 25 (86%) were negative overall. Also, like the science fiction script, the human dignity script was used by a wide spectrum of participants, both bioethicists and biomedical researchers, to frame reproductive cloning negatively.¹¹⁹ Second, in 68% of items (15 out of 22) the human dignity script framed therapeutic cloning negatively. This was to be expected, as therapeutic cloning invoked images of ‘headless clone’ organ banks¹²⁰ and sentiments such as ‘[i]t’s a ghoulish use of human life for a means to an end’.¹²¹ For opponents of the technologies the human dignity script allowed therapeutic cloning to be regarded as ‘the thin edge of the wedge’,¹²² opening the

¹¹⁶ John Harris, ‘Cones, Genes and Human Rights’ in J Burley (ed), *The Genetic Revolution and Human Rights* (Oxford University Press, 1999) 66.

¹¹⁷ Editorial, ‘Cloning Not the Answer to Infertility’ *The Courier Mail*, 13 March 2001, 12.

¹¹⁸ See the comments of Deputy Prime Minister John Anderson in Morgan Mellish and Laura Tingle, ‘Stem Cell Vote Likely to be Close’ *Australian Financial Review*, 12 August 2002, 4.

¹¹⁹ Deborah Smith, ‘Stem Cell Foes Mount a Final Challenge’ *Sydney Morning Herald*, 12 August 2002, 6.

¹²⁰ Carmelo Amalfi, ‘Cloning So Far’ *The West Australian*, 23 February 2000, 35.

¹²¹ Matthew Fynes-Clinton, ‘Pro-lifers Warn of Cannibalised Twins’ *The Courier Mail*, 27 November 2001, 6.

¹²² Anne Fussell, ‘Extreme Reaction’ *The Courier Mail*, 8 April 2002, 11.

way for reproductive cloning.¹²³ Third, the human dignity script framed adult stem cell technology in a positive light.¹²⁴ Stripped of the complications surrounding embryonic stem cells, adult stem cells were presented as unproblematic and desirable: 'The creation of embryos for the sole purpose of destroying them in the name of some therapeutic good to others is unethical and, in the light of adult stem cells, redundant.'¹²⁵ A final finding relates to the number of items that involved the human dignity script but were overall positive. Out of the 156 items involving the dignity script, 43 (27.5%) were positive. This suggests that supporters of therapeutic cloning and embryonic stem cell research were countering and appropriating the dignity script. For example, in an opinion piece in the *Adelaide Advertiser*, the benefits of therapeutic cloning were couched in human dignity terms:

There are thousands of patients in Australia who are subject to these ailments and placed in a hopeless and hapless situation for want of donated organs to give them a new lease of life. So are those who suffer from degenerative diseases that are considered incurable ... The new discovery will also put an end to the illicit and inhuman trade in human organs in several parts of the world.¹²⁶

Indeed, Trounson was reported as appropriated 'dignity' in the context of giving dignity to people who currently live with disabilities as a rhetorical element in his lobbying for embryonic stem cell research.¹²⁷

In summary, the human dignity script interrelated with the science fiction script to frame reproductive cloning negatively, and this framing was common in both the reporting of scientific breakthroughs and in the items setting out the opinions of participants in the controversy. The dignity script framed adult stem cell technology positively. However, like the science fiction script, the anxiety apparent in many items, generated by the threat to human dignity, was balanced by more positive narratives concerning embryonic stem cell technology. Furthermore, supporters of embryonic stem cell research co-opted the human dignity script when talking about the promise of the research in terms of medical advancement. This talk of the promises of the technologies moves the analysis to the positive framings within the sample that, instead of orientating the technologies towards anxiety, orientated them towards 'progress'.

¹²³ Gregory Pike, 'Cloning Trial is One Step Closer to the Unthinkable' *Sydney Morning Herald*, 28 November 2001, 14.

¹²⁴ eg Editorial, 'Stem Cell Row may be Avoided' *The Australian*, 20 August 2001, 12.

¹²⁵ Bill Muehlenberg, 'A Life for a Life' *The Australian*, 28 November 2001, 14.

¹²⁶ Mathu Liyange, 'Therapeutic Cloning Welcomed' *Adelaide Advertiser*, 1 September 2000, 16.

¹²⁷ Darren Gray, 'Research Offers Dignity, Says Expert' *The Age*, 23 August 2002, 4.

Progress

Numerous studies of media framing of biotechnology have identified a dominate framing that links biotechnology to progress.¹²⁸ Reporting on cloning has been considered unique due to the anxiety frames of science fiction and human dignity.¹²⁹ The progress frame involved two scripts. The first concerned cures. This script, unlike the human dignity script, did not disclose scope for creative interpretation. The second script, which involved talk of economic benefits, did offer a degree of ambiguity.

(i) Cure Script

Emily Marden and Dorothy Nelkin have observed that, soon after the announcement of Dolly, the biomedical industry in the United States began an effective public campaign to sell the benefits of cloning in its therapeutic guise. The message was that cloning was ‘not playing God [but] playing Doctor’.¹³⁰ In Australia this message—that therapeutic cloning and, after its late 1998 announcement, embryonic stem cell technology, promised cures for many debilitating and fatal diseases—was the dominant characteristic of the sample. At various times, therapeutic cloning, embryonic stem cells and/or adult stem cells were claimed to offer the possibility of curing cancer, Parkinson’s and Alzheimer’s diseases and helping paraplegics to walk. Indeed, ‘cure/s’ was mentioned 711 times; ‘cancer’ 249, ‘Parkinson’s’ 453, ‘Alzheimer’s’ 285, and even ‘walk again’ 25 times. These figures suggest that the cure script was by far the dominant frame within the sample. Compared with the highest frequency of anxiety markers—98 for ‘human dignity’ and 77 for a combination of ‘Nazi’ and ‘Hitler’—‘cure/s’ far outstrips them at 711. This suggests that, taken as a whole, the sample can be seen as favouring technologies that could be associated with medical progress. The content analysis revealed how the cure script migrated from therapeutic cloning in 1998–2000 to embryonic and adult stem cell research in 2001–2. For all the items in 1998, 12.5% framed therapeutic cloning positively using the cure script, 19% in 1999 and 25% in 2000; however, this fell to 5.5% in 2001 and to 1.7% in 2002. In 2000 34% of all items framed embryonic stem cells positively in terms of cure; this fell to 10% in 2001 and recovered to 23% in 2002. Items framing adult stem cells with the cure script remained steady at 5% of all items in both 2001 and 2002. These findings contrasted with the total number of items that deployed anxiety generating scripts. For example, in 2001 embryonic stem cell research was framed negatively through

¹²⁸ Horning Priest (n 39) 172; Liakopoulos (n 31) 29–30; Matthew C Nisbet and Bruce V Lewenstein, ‘Biotechnology and the American Mind: The Policy Process and the Elite Press’ (2002) 23 *Science Communication* 359, 384; Alison Anderson *et al*, ‘The Framing of Nanotechnologies in British Newspaper Press’ (2005) 27 *Science Communication* 200, 213.

¹²⁹ Petersen (n 21); Horning Priest (n 26) 64–65.

¹³⁰ Marden and Nelkin (n 38) 577.

the 'mad scientists' trope in less than 1% of items and in 2002 only 3.5%. Another characteristic of the cure script was that it was not as contested as the anxiety scripts: out of 187 items that used the cure script in relation to embryonic stem cells in 2002, 135 (72%) were positive, compared with 26 (14%) for both negative and neutral. This contrasts with the 47 items that associated the dignity script with embryonic stem cells in 2002, where only 17 (36%) were positive, 16 (34%) were negative and 14 (20%) were neutral. In summary, the cure script, unlike the anxiety scripts, was relatively uncontested in its framing of the technologies as progress.

An explanation for the high incidence of the cure script can be explained by the generic format of supposedly 'neutral' reports of scientific breakthroughs. For example, a report on the manipulation of cattle embryos was packaged into a story about human cures:

Scientists who reversed the ageing process in animal cells claim to have taken their work a step further by showing how such cells can be used to repair damaged organs ... The technique, known as therapeutic cloning, marks another step towards growing human replacement organs, a science that could one day revolutionise the treatment of a range of chronic and acute diseases ... Scientists at the US company Advanced Cell Technology say human cardiac patients could have their hearts repaired with patches cloned from their own cells within a few years. Treatments could follow for diabetes, liver failure, kidney disease, Alzheimer's disease and nervous disorders, including Parkinson's.¹³¹

This pattern can be identified across all the items that were reporting scientific breakthroughs.¹³² Of 338 items, there was a favourable presentation of the technology 151 times (45%), compared to 59 (37%) as negative. Out of the 151 favourable items, 109 (72%) involved the cure script. This tendency of Australian journalists to frame biomedical developments positively by emphasising cure reflects findings internationally, leading to speculation concerning the decline of independent scientific journalism in the face of increased media sophistication of research institutions.¹³³ This is a partial explanation for the frequency of the cure script. However, the cure script was not limited to the reporting of scientific breakthroughs.

Like in the United States, the Australian researchers emphasised the medical applications of the developing science. For example, Trounson's shifting support for therapeutic cloning was justified on the basis of research into cures. In 1999 he was on the record as supporting therapeutic cloning in the development of rejection-free transplant

¹³¹ Dobson and Leake (n 56).

¹³² For an example of the template and embryonic stem cells see Robyn Riley and Samantha Maiden, 'Scientists Heartbeat from the Holy Grail' *The Advertiser*, 18 June 2002, 3. For adult stem cells see Helen Tobler, 'Heart Patient Happy to be Stem-Cell "Guinea Pig"' *The Australian*, 11 April 2002, 2.

¹³³ Nelkin (n 13) 89–123; José Van Dyck, *Manufacturing Babies and Public Consent* (Macmillan, 1995) 47.

organs,¹³⁴ and in August 2001 it was reported that he considered, given the potential of the technology, that ‘the Australian Government would be “crazy” to ban therapeutic cloning’.¹³⁵ However, by November 2001 Trounson’s public position had changed as new techniques in the manipulation of embryonic stem cells became known,¹³⁶ and by July 2002 he was prepared to declare therapeutic cloning ‘obsolete already’.¹³⁷ Parallel with his retreat from therapeutic cloning was Trounson’s reversal of his stance over whether researchers needed access to surplus IVF embryos for new stem cell lines. Again the justification was presented as favouring the technology that looked the most promising for curers. In 2001 it was reported that Trounson was involved in the successful lobbying of the Bush Administration to allow research on existing embryonic stem cell lines on the basis that researchers did not require ‘new’ stem cell lines.¹³⁸ However, the new techniques in stem cell manipulation, on which Trounson based his rejection of therapeutic cloning, required ‘pure’ stem cell lines, exposing the limitations of the existing lines. Therefore it was reported that:

Professor Trounson changed his mind late last year because of advances which made old stem cells effectively obsolete. Until recently, scientists used human stem cells derived partly from mice cells. However, they now have technology to develop stem cells without using animal cells. These ‘clean’ cells are needed for clinical trials because the influential US Food & Drug Administration has ruled trials using the old cells would be classified as ‘cross-species’, making it potentially harder to get approval.¹³⁹

However, Trounson and his colleagues from the Australian biomedical research community, such as Martin Pera and Julian Savulescu, were not the only participants in the controversy that deployed the cure script. Even participants who opposed embryonic stem cell research still utilised the cure script. For example, the Catholic Archbishop of Sydney, George Pell, was reported in *The Australian* as offering church funding into adult stem cells ...

... because real advances were being made. ‘Embryonic stem-cell research has produced no human cure and I think the more sensible thing, the more productive ... is to put money into adult stem-cell research’ ... He said a recent case, where a Welsh boy with no immunity to infection was cured by using his own stem cells, showed the value of alternatives to embryonic stem-cell research.¹⁴⁰

¹³⁴ Deborah Smith, ‘Medical Research in One Nation, A Crime in Another’ *Sydney Morning Herald*, 17 March 1999, 5.

¹³⁵ Louise Milligan, ‘Stem-Cell Cures a Five-Year Prospect’ *The Australian*, 28 August 2001, 3.

¹³⁶ Nicole Strahan, ‘Technique Vital but Temporary’ *The Australian*, 27 November 2001, 13.

¹³⁷ Jim Buckell, ‘Stem-Cell Research Outpaces Cloning’ *The Australian*, 29 July 2002, 3.

¹³⁸ Mary-Anne Toy, ‘Decision Delights Local Scientists’ *The Age*, 11 August 2001, 10.

¹³⁹ Morgan Mellish and Steve Lewis, ‘Move to Ban Stem-Cell Research Blunted’ *Australian Financial Review*, 14 March 2002, 5. See also John Davidson, ‘Cells that Divide’ *Australian Financial Review*, 16 March 2002, 25.

¹⁴⁰ John Kerin, ‘Church to Fund Cell Research’ *The Australian*, 10 April 2002, 2; Pell (n 57).

This pattern of downplaying the cure possibility of embryonic stem cells in favour of adult stem cells was a central strategy of opponents of embryonic stem cell research.¹⁴¹ Adult stem cells were portrayed as better, not just because of the moral arguments, but because they seemed more likely to produce cures.

The cure script, unlike the anxiety scripts, was not open to interpretation. The development of medical cures as a universal positive—a promise of progress—was consistent across the sample. Journalists in their ‘objective’ reporting, researchers and their opponents accepted that cures were desirable. This explains the high frequency of cure tropes across the sample, and the association of cure tropes with items that presented the technologies positively. The other progress script, associated with economic benefits, was not as widely deployed and was used in a more partisan manner.

(ii) *Economic Script*

The economic script involved linking the technologies to the benefits of industry development, job growth and intellectual property. The economic script also involved a specific trope that raised the threat of negative economic consequences if Australia was left behind in the research race.

This script was not as widely deployed as the cure script. ‘Commercial/ising’ was repeated 271 times, ‘Left behind’ 10 times and ‘jobs’ (from technological development) only 5 times. It was also, unlike the other scripts identified, limited to 2002. Only 32 items from 1997 to 2001 involved elements of this script. Before 2002 the economic script was associated with reports on the application of cloning technology to animals.¹⁴² It also was a significant element in reports of the Bush Administration’s 2001 decision to allow federal funding on existing stem cell lines:

Australian stem cell researchers have been granted access to a \$480 million grant offered by US President George W Bush. The White House announced yesterday that Melbourne’s Monash University was one of 10 companies and medical institutions given the green light to receive the stem cell funds. It has not been decided how much Monash will receive. Heart failure, cancer, diabetes and spinal cord injuries are just a few of the serious illnesses researchers hope to cure by using stem cell properties.¹⁴³

¹⁴¹ Gregory Pike, ‘Some Sobering Realities on Cloning’ *Adelaide Advertiser*, 12 September 2000, 17; David van Gend, ‘As Diabetes Advances, Stem Cells Offer Hope’ *The Australian*, 4 March 2002, 12; John Anderson, ‘Embryos Must be Protected’ *The Australian*, 7 August 2002, 11.

¹⁴² For example, the South Australian company BresaGen’s announcement of the birth of a cloned pig as part of their xeno-transplant program was reported as allowing them into a market worth US \$10 billion. See Glenda Price, ‘Piggyback Ride for Biotech’ *The Australian*, 19 May 2001, 43.

¹⁴³ ‘Australia to Access US Stem Cell Funds’ *The Courier Mail*, 29 August 2001, 11; See also ‘Funding Windfall’ *Adelaide Advertiser*, 29 August 2001, 39; John Davidson, ‘Australia’s Gene Genies’ *Australian Financial Review*, 16 September 2001, 41.

This item shows how the two progress scripts often interacted, presenting double positives in terms of cures and economic growth. This was the general pattern for items in 2002 where the economic script supported the cure script. Out of the 222 items in 2002 that involved the cure script, 42 (19%) also involved the economic script. The focus of this concentration was embryonic stem cell research. Out of 112 items that involved the economic script, 54 (42%) framed embryonic stem cell research positively. For example, an early 2002 editorial advocated that Australia should follow the permissive United Kingdom approach to embryonic stem cell research: '[M]illions of pounds of funding for research is now expected to flow to British universities in the wake of the Lords report. Australia, which has up to now been at the cutting edge of stem-cell technology, could easily be left behind.'¹⁴⁴ Another editorial considered that '[r]esearchers who perfect therapies using stem cells will be sitting on a gold mine'.¹⁴⁵ The then Premiers of Queensland and New South Wales were both reported as expressing support for embryonic stem cell research in economic terms.¹⁴⁶

Researchers also emphasised economics in their public comments. For example, Trounson justified using tissue from aborted human foetuses because 'Australia would gain an important advantage in the biotechnology industry if local scientists were able to create new embryonic stem-cell lines using cultures derived from humans'.¹⁴⁷ While researchers did talk up the economic benefits, they also suggested negative economic outcomes if restrictive regulations forced research off-shore. 21% (30/143) of all items that involved the economic script featured this particular trope. For example, when the Commonwealth Cabinet was considering adopting the House Committee's minority recommendations, the front page of the *The Age* stated the following:

Associate Professor Martin Pera of the Monash Institute of Reproduction and Development, said the government's move could force Australian scientists to other nations such as Britain, where research on excess IVF embryos is permitted.¹⁴⁸

In the lead up to the COAG meeting, the secretary of the Federation of Australian Scientific and Technological Societies reported in *The Courier Mail* that there were 80 scientists in Queensland who might go overseas if research on embryonic stem cells was prohibited.¹⁴⁹ Similar warnings were given during the parliamentary debates.¹⁵⁰

¹⁴⁴ Editorial, 'Imagine Being Able to Reverse the Damage ...' *The Australian*, 23 March 2002, 18.

¹⁴⁵ Editorial, 'Stem Cells: Australia can Show the Way' *Australian Financial Review*, 9 March 2002, 50.

¹⁴⁶ Peter Morley, 'Stem Cell Support' *Sunday Mail* (Brisbane), 24 March 2002, 30; Bob Carr, 'No Time to Waste in the Search for Embryonic Stem Cells' *Sydney Morning Herald*, 4 April 2002, 11.

¹⁴⁷ Julie Robotham and Deborah Smith, 'Abortions Set to Fuel Stem Cell Research' *Sydney Morning Herald*, 5 August 2002, 1.

¹⁴⁸ Louise Dodson and Darren Gray, 'Embryo Ban Hits Research' *The Age*, 26 February 2002, 1.

¹⁴⁹ Brendan O'Malley and Siobhain Ryan, 'Scientists Warn Against Ban on Stem Cell Tests' *The Courier Mail*, 16 March 2002, 4.

¹⁵⁰ Morgan Mellish, 'Scientists Warn of Threat to Research' *Australian Financial Review*, 12 August 2002, 4; James Madden, 'Cell Veto to Drain our Brains' *The Australian*, 21 August 2002, 5; Misha Schubert and Jim Buckell, 'Discarding Embryos "Morally Wrong"' *The Australian*, 23 August 2002, 4.

However, researchers were not the only participants to utilise economic tropes. The economic script allowed a negative dimension. For example, commenting on the 2001 human cloning claims, an opinion piece in *The Australian* suggested that:

... science has always been motivated by an uneasy mix of altruistic and amoral impulses. Throw in the billions of dollars being made from reproductive and genetic technology ... and science becomes as unscrupulous as capitalism.¹⁵¹

Framing the technologies by linking them to 'unscrupulous' capitalism was a feature of opponents of embryonic stem cell research. For example, Peter Jensen, the Anglican Archbishop of Sydney, opposed embryonic stem cell research because:

... human greed leading to the desire for profit may motivate researchers and corporations in this research. It may end up with a situation in our community where we have the regular commodification of human life giving large profits.¹⁵²

These economic tropes, rather than framing technology positively, link with the greedy/mad scientist tropes to cast negative associations. This was particularly strong during the parliamentary debates where the charge of greed and profiteering was utilised by opponents of embryonic stem cell research in their attacks on Trounson.¹⁵³

While the economic script involved the corrupting influence of capitalism, a noticeable absence from the sample was critiques of the overall benefit, social distribution and cost of biomedical technologies.¹⁵⁴ Only three items expressly questioned the economic utility of exploring highly specialised and costly medial techniques. In a lengthy feature item in the *Australian Financial Review* Annemarie Jonson, suggested that '[t]hat access to the therapeutic benefits of experimentation is likely to be uneven ... [D]isabled and sick people eking out brutish lives in war-torn hell holes are unlikely to benefit.'¹⁵⁵ A second item's headline suggested: 'Cloning to Succeed while Cold Cure Waits',¹⁵⁶ and the third reported on a public lecture where the speaker asked the question, 'Are we in the business of creating a very powerful set of technologies that 99 per cent of the population won't have access to?'¹⁵⁷

¹⁵¹ Rosemary Neill, 'Elvis has Left the Beaker' *The Australian*, 16 March 2001, 13.

¹⁵² Michelle Grattan, 'PM's Shaky Path on Embryos' *Sydney Morning Herald*, 5 April 2002, 11.

¹⁵³ Price (n 114); Morgan Mellish, 'Senate Rift Over Stem-Cell Report' *Australian Financial Review*, 25 October 2002, 9; Laura Tingle, 'Trounson Admits Share Error' *Australian Financial Review*, 6 September 2002, 25.

¹⁵⁴ An example of this approach in the Australian bioethical debate can be seen in Katie Cregan and Paul James, 'Stem-Cell Alchemy' (2002) 19 *Arena Journal* 61.

¹⁵⁵ Annemarie Jonson, 'The Tiny Matter of Life and Death' *Australian Financial Review*, 6 September 2002, 6.

¹⁵⁶ Siobhain Ryan, 'Cloning to Succeed while Cold Cure Waits' *The Courier Mail*, 27 July 2002, 17.

¹⁵⁷ Jane Sullivan, 'Stem Cells and Cloning May be the Future of Medicine, but will the Public Buy It?' *The Age*, 6 July 2002, 4.

However, this questioning of the economics of the technologies was ‘curiously underrepresented in a debate’.¹⁵⁸ On the whole the economic script reinforced the cure script to frame embryonic stem cell research as progressive. The economic script was utilised primarily by researchers and their political supporters. The relationship between economic tropes and tropes from science fiction meant that opponents of the technologies also utilised elements of the economic script.

Compromise

What has emerged is that the scripts were deployed within the sample to frame the technologies as anxiety and progress. Some scripts tended to focus on specific technologies or specific orientations, for example the science fiction script and reproductive cloning, while the cure script was used the same way by all participants. The analysis also showed how the different scripts related to each other. Both the anxiety and the progress scripts provided an array of tropes which interconnected and reinforced (for example mad scientist-greed-capitalism, or cures-economic growth). It also showed that participants were active and reactive within the media: that both researchers and their opponents revised their strategies, changed their rhetoric, and rebutted or co-opted opposing arguments.

What also emerged from the analysis was a gradient in the framing of the technologies. At the negative end was reproductive cloning, which was almost universally condemned as reprehensible. At the positive end was adult stem cell research, which had broad support. In between were the more contested technologies of embryonic stem cells and therapeutic cloning. Therapeutic cloning was the more negative (24% of the total number of items dealing with therapeutic cloning were negative, compared with 14% of the total number of items dealing with embryonic stem cells). Finally, the core of the controversy was embryonic stem cell research, with 684 items focused on this technology.

However, the media reporting of the debate was not a neutral field in which perspectives and policy could be debated. This can be seen in how reporting of scientific breakthroughs were presented positively. Further, the media actively engaged in synthesis of the debate and presented a preferred ‘compromise’. This occurred in three ways.

First, in the common template for reporting on the technologies, rarely were oppositional perspectives prioritised. Instead, oppositional voices were nominal; a line or two as a gesture towards balanced media reporting. For example, in a front page report on the Australian Academy of Science’s 1999 call for therapeutic cloning, nine sentences were devoted to cure tropes, while oppositional sentiment was limited to two sentences

¹⁵⁸ Jonson (n 155).

towards the end of the item.¹⁵⁹ Susan Horning Priest has identified a similar pattern in her study of the coverage of cloning in the United States media:

[It] involved a number of features characteristic of science stories in the US media, in particular the interpretation of 'objectivity' as 'balance' between opposing points of view and the dominance of commercial and other interested sources, with a range of stakeholder institutions playing multiple roles and opposition voices simultaneously used to meet the 'balance' requirement and yet frequently delegitimized.¹⁶⁰

In Australia this template for reporting biotechnologies did suggest that the technologies involved religion and science. However, it was not presented as a clash of incommensurable rationalities. The dominance of the cure script meant that the 'science' dimension was translated into a moral argument—the provision of cures to the sick: 'On balance, the potential benefits to the sick and disabled tilt the ethical scales in favour of the research.'¹⁶¹ What this template facilitated was an understanding that the controversy involved Australia's 'leader/s' (mentioned 561 times) as having a 'choice' (mentioned 74 times) within the field of values. In doing so the media presented the controversy as involving choice and a balancing of various values.

A second feature of the template to the media reporting that organised the controversy as a choice of values was the marginalisation of extreme perspectives. The debate was framed by opposition to reproduction cloning and support for adult stem cells. We have already seen how same-sex support for reproductive cloning was marginalised and also how critiques of the economics of the technologies were mostly absent. More directly, the media actively marginalised 'fringe' voices. The extreme rhetoric of Catholic bioethicist Nicholas Tonti-Fillipini was singled out in editorials as 'overblown' and an attempt to reignite the abortion debate which the Catholic Church 'lost long ago'.¹⁶² Similarly, Trounson's attack on Catholics was rebuked by *The Australian*: 'he should debate [his opponents] calmly rather than call them names.'¹⁶³ This policing of the debate reflects Alfred Moore's recent finding that there is a tendency for what he terms 'proper talk' by bioethical decision-makers.¹⁶⁴ Moore argues that the members of public bioethics bodies are considered 'good' or appear more competent the more their statements are seen as 'moderate',¹⁶⁵ and conversely members that adhered to a 'rigorous

¹⁵⁹ Stephen Lunn and John Kerin, 'They May be Cloning Around Again ... But it Could Help Paraplegics Walk' *The Australian*, 17 March 1999, 1.

¹⁶⁰ Horning Priest (n 26) 64.

¹⁶¹ Editorial, 'Making Way For Medicine's Advance' *The Age*, 6 April 2000, 16.

¹⁶² Editorial, 'Society Supports Stem-Cell Research' *The Australian*, 2 April 2002, 8; Editorial, 'Clear Thinking on Stem Cell Research' *Sydney Morning Herald*, 12 August 2002, 16.

¹⁶³ Editorial, 'Church Voice Muffles Rights Debate on Cells' *The Australian*, 7 August 2002, 10.

¹⁶⁴ Alfred Moore, 'Public Bioethics and Public Engagement: The Politics of "Proper Talk"' (2010) 19 *Public Understandings of Science* 197, 203–4.

¹⁶⁵ *Ibid*, 205.

normative position lack the decisive key competence'.¹⁶⁶ In the sample the editorials showed a preference for proper talk. In doing so it was also revealed that the newspapers themselves had a clear commitment to the outcome.

Having presented the debate as a choice of values, and having excluded perspectives that do not fit within this conception, the editorials advocated a 'compromise', specifically the majority's recommendations in the House Committee. Out of the 53 editorials, 28 (53%) framed embryonic stem cells positively, while 13 (24.5%) framed reproductive cloning negatively. Further, 9 (17%) framed therapeutic cloning positively. Three newspapers ran editorials that supported the majority's recommendations when it seemed that the Commonwealth Cabinet would follow the minority's recommendations.¹⁶⁷ Once COAG had agreed to follow the majority's recommendations the editorials showed strong support. It was a 'sensible' decision, applauded *The Age*,¹⁶⁸ it offered 'hope for the future' declared *The Courier Mail*,¹⁶⁹ and *The West Australian* heralded it as 'a commonsense compromise'.¹⁷⁰ During 2002 the newspapers actively supported participants who shared their preferred outcome. The Premier of New South Wales was 'congratulated' by *The Australian* 'for taking a strong stand ... [and] attempting to hose down some of the hysteria surrounding the issue'.¹⁷¹ Senator Amanda Vanstone's strong support for the majority's recommendations was singled out by *The Adelaide Advertiser*.¹⁷² Similarly Kevin Andrew, the chair of the House Committee who had supported the minority's recommendation in Cabinet, was criticised as an inexperienced 'junior minister'.¹⁷³ When Trounson's rat video and allegations about his share ownership were weakening support, the newspapers ran editorials supporting the bills: 'The legislation deserves to negotiate successfully the maze of parliamentary debate without being stalled in the blind alley of the Trounson controversy,' said *The Sydney Morning Herald*.¹⁷⁴

Further, while the conscience vote was supported by the newspapers, this support was coloured by affirmation of the majority's recommendations. For example, *The Australian* suggested that '[t]he debate on stem cells reflects a healthy democracy' and immediately reminded of the House Committee: 'As the federal committee concluded:

¹⁶⁶ *Ibid.*

¹⁶⁷ Editorial, 'Tying the Hands of Researchers' *The Age*, 27 February 2002, 14; Editorial, 'Science Sidelined by Federal Cabinet' *The Courier Mail*, 28 February 2002, 18; Editorial (n 145).

¹⁶⁸ Editorial, 'Sensible Compromise on Stem-Cell Research' *The Age*, 6 April 2002, 6.

¹⁶⁹ Editorial, 'Cell Research Offers Hope for Future' *The Courier Mail*, 6 April 2002, 22.

¹⁷⁰ Editorial, 'PM Picks Fine Line on Research' *The West Australian*, 5 April 2002.

¹⁷¹ Editorial (n 144).

¹⁷² Editorial, 'Emotion Must Not Dominate Embryos Debate' *Adelaide Advertiser*, 14 November 2002, 16.

¹⁷³ Editorial, 'Science Sidelined by Federal Cabinet' (n 167); see also Editorial, 'Political Threat to Stem Cell Research' *The Courier Mail*, 20 August 2002, 10.

¹⁷⁴ Editorial, 'Leading Debate Up a Blind Alley' *Sydney Morning Herald*, 30 August 2002, 10; Editorial, 'Spare Us All from this Science Fiction' *Australian Financial Review*, 31 August 2002, 50.

“In our pluralist society there are many views on this matter.”¹⁷⁵ The newspapers were prepared to accept that others could hold alternative positions regarding embryonic stem cell research, but they were adamant that those views should not become a distraction from reaching ‘the rational, even inevitable’¹⁷⁶ compromise of regulated embryonic stem cell research on surplus IVF embryos. Indeed, an editorial urged members to

focus on what the bill allows, which is very limited use of existing IVF embryos with the consent of the donors. Slippery-slope arguments are hard to sustain, given the review processes suggested. Once the ethical status of a five- to seven-day-old embryo that is destined to be destroyed is settled, this bill takes a very small step.¹⁷⁷

This reveals that the newspapers had a clear agenda. In framing the controversy as a moral one involving choices, and policing extreme opinions, the newspapers presented the eventual Acts as the most rational and appropriate compromise. The overall message was that the anxiety of technology could be managed to ensure that there would still be progress.

Summary

In summary, the sample of newspaper reports from 1997 to 2002 were framed by three elements. The first element was anxiety concerning the technologies, particularly reproductive cloning. Through use of tropes associated with science fiction and human dignity, media reporting framed the technologies negatively. The second element conflicted with the anxiety frame: the progress frame, through the cures and economy script, presented the technologies positively. The science fiction, human dignity and economy scripts were contested. Notwithstanding a core association, both sides of the controversy appropriated the imagery. Researchers adopted both science fiction and human dignity, and embryonic stem cell research opponents utilised elements of the economy script. The cure script, however, seemed to be immune. Claims concerning cures for disease were an unalloyed positive deployed by all participants. Concerning the technologies, the sample reveals that adult stem cell research was strongly supported, while reproductive cloning was not. Embryonic stem cell research, which dominated the sample, was more contested, but a clear favouring of the technology was evident. Therapeutic cloning had less support than embryonic stem cell research, but was not universally condemned as reproductive cloning. The third element was compromise. The sample revealed a preference for conceiving of the controversy as a debate about values which could be balanced. This was most strikingly evident in editorials.

¹⁷⁵ Editorial, ‘Society Supports Stem-Cell Research’ (n 162).

¹⁷⁶ Editorial, ‘Rational Vote for Research’ *The Australian*, 7 December 2002, 18.

¹⁷⁷ Editorial, ‘Stem-Cell Bill One Small Step for Man’ *The Australian*, 24 August 2002, 20. See also Editorial (n 176).

The controversy climaxed around the passage of the Acts through Federal Parliament. Part III will trace these elements within the parliamentary debate and reflect on this cultural context for thinking about technology and law.

III. LESSONS FROM THE MEDIA ANALYSIS

This part highlights two lessons from the media analysis for not only the study of biotechnology in Australia, but also for the broader study of law and technology. The first section shows how the three elements identified in the media were manifested within the parliamentary debates that surrounded the Acts. The lesson is that the media and the debates reveal a cultural context that framed the Acts. The second section reflects on this for thinking about law and biotechnology in terms of understanding the dynamics between public understandings of technology, media and lawmaking.

Cloning and Stem Cells in Federal Parliament 2002

The debate in the Commonwealth Parliament surrounding the Bill (and in the Senate Bills) mirrored the elements identified in the media analysis. The parliamentary debate involved science fiction, human dignity, cure and economy scripts, and compromise.

The science fiction script circulated throughout the parliamentary debates. Science fiction was referred to generally:¹⁷⁸

There are sections in the bill which prohibit the sort of things that we read in sci-fi books, including some of the extreme things, such as the creation of animal-human clones or placing part of a human embryo into an animal womb.¹⁷⁹

While Frankenstein was mentioned,¹⁸⁰ the predominant trope was *Boys from Brazil/Hitler/Nazi*.¹⁸¹ This trope was used by members who opposed embryonic stem cell research. However, as we saw in the media analysis, it was contested. Several members who supported embryonic stem cell research were critical of the references: 'I can only deduce that the statements were made to solicit a response from the media, because they did little to help with the negative case.'¹⁸²

¹⁷⁸ Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 5316 (David Cox).

¹⁷⁹ Commonwealth, *Parliamentary Debates*, House of Representatives, 27 June 2002, 5256 (Nicola Roxan).

¹⁸⁰ Commonwealth, *Parliamentary Debates*, House of Representatives, 28 August 2002, 6089–90 (Robert Katter).

¹⁸¹ Commonwealth, *Parliamentary Debates*, House of Representatives, 27 June 2002, 5253 (Warren Entsch, Parliamentary Secretary to the Minister for Industry, Tourism and Leisure); Commonwealth, *Parliamentary Debates*, House of Representatives, 27 June 2002, 5465 (Patrick Secker); Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 6068 (Alexander Downer, Minister for Foreign Affairs).

¹⁸² Commonwealth, *Parliamentary Debates*, House of Representatives, 28 August 2002, 6046 (Kim Wilkie). See also Commonwealth *Parliamentary Debates*, House of Representatives, 21 August 2002, 6046 (Joe Hockey,

A similar structure can be seen in the use of the human dignity script. Reproductive cloning was often considered to threaten 'human dignity'¹⁸³ or the 'sanctity of human life'.¹⁸⁴ An example of the human dignity script was Senator Guy Barnett's concerns that human cloning threatens the continuation of the family and the stability of identity,¹⁸⁵ and that '[w]e must put on the record the reasons why and make it clear to society as a whole that each person is important and that each individual is to be honoured and respected'.¹⁸⁶ However, as in the media analysis, the human dignity script was also utilised by supporters of embryonic stem cell research. The preferred trope was to talk about constituents who suffered from debilitating diseases for whom embryonic stem cell research could allow a more dignified life. For example, Jenny Macklin writes about 'Gerry', who 'was diagnosed with motor neurone disease and the creeping muscular paralysis has robbed him of his ability to stand and work'.¹⁸⁷ Another member spoke about a quadriplegic who 'told me recently that the saddest thing he has had to endure ... was having a daughter and knowing he could never spontaneously hold and hug her'.¹⁸⁸ Indeed, many members expressed support for embryonic stem cell research according to human dignity terms: 'I have no difficulty in supporting the use of human genetic material for the noble purpose of discovering new ways to allow humans to have a better quality of life.'¹⁸⁹

This anticipates the fundamental and unquestioned place that the cure script had within the parliamentary debates. Most members gave significant weight to the possibility of cures from stem cell research. This was a major theme of John Howard's speech: that the Bill would 'maximise our chances of discoveries to cure diseases that continue to plague mankind', and that the proposed regulatory scheme 'enables the enormous potential of embryonic stem cell research to be explored for the ultimate betterment of mankind'.¹⁹⁰ Simon Crean, then Leader of the Opposition, was more expansive on the promise of stem cell research:

Minister for Small Business and Tourism); Commonwealth, *Parliamentary Debates*, Senate, 12 November 2002, 6105 (Senator Nick Sherry).

¹⁸³ Commonwealth, *Parliamentary Debates*, Senate, 18 September 2002, 4421 (Senator Richard Alston, Minister for Communications, Information Technology and the Arts).

¹⁸⁴ Commonwealth, *Parliamentary Debates*, House of Representatives, 28 August 2002, 6044 (Danna Vale, Minister for Veterans Affairs and Minister Assisting the Minister for Defence).

¹⁸⁵ Commonwealth, *Parliamentary Debates*, Senate, 11 November 2002, 5833–4 (Senator Guy Barnett).

¹⁸⁶ Commonwealth, *Parliamentary Debates*, Senate, 11 November 2002, 5834 (Senator Guy Barnett).

¹⁸⁷ Commonwealth, *Parliamentary Debates*, House of Representatives, 20 August 2002, 5262 (Jenny Macklin).

¹⁸⁸ Commonwealth, *Parliamentary Debates*, House of Representatives, 27 June 2002, 5254 (Warren Entsch, Parliamentary Secretary to the Minister for Industry, Tourism and Leisure).

¹⁸⁹ Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 5349 (Peter Lindsay).

¹⁹⁰ Commonwealth, *Parliamentary Debates*, House of Representatives, 27 June 2002, 4543–4 (John Howard, Prime Minister).

Stem cell research is the major new hope being held out for people suffering from debilitating and often fatal diseases. Just listening to the stories of those people and the optimism of our scientists, who argue the case about the possibility of finding cures and effective treatments, were the greatest arguments in favour of allowing this research.¹⁹¹

Most members accepted that stem cell research would provide redress against ‘our major killers, such as heart disease and cancer, but also diabetes ... Parkinson’s disease, spinal cord injury, stroke, even burns, rheumatoid arthritis, osteoporosis, motor neurone disease, et cetera’.¹⁹² Often the support was enthusiastic: ‘I cannot agree with the argument that, since the success of stem cell research in curing diseases is not assured, we should not try. We must try.’¹⁹³ The shared enthusiasm merged with personalised narratives of hope.¹⁹⁴ Alexander Downer informed the House that he had received a letter from a constituent whose three-year-old son had been diagnosed with juvenile diabetes, urging him to ‘vote yes for embryonic stem cell research so we and so many others can live in hope of a cure’.¹⁹⁵ More personally, Fran Bailey confided to the House: ‘In this debate I wear two hats, one being that of a legislator ... and the other being that of the mother of a daughter who was born with a disease that could be helped by stem cell research.’¹⁹⁶

Furthermore, even the members who opposed embryonic stem cell research still expressed enthusiasm for the cure potential of adult stem cells.¹⁹⁷ For example, the then Deputy Prime Minister John Anderson, a leading opponent of embryonic stem cell research, was ‘all for adult stem cell research ... Adult stem cells are already delivering benefits’.¹⁹⁸

¹⁹¹ Commonwealth, *Parliamentary Debates*, House of Representatives, 20 August 2002, 5242–3 (Simon Crean, Leader of the Opposition). Similar thoughts were expressed by Mark Latham, Crean’s successor to the ALP leadership: ‘We come to this parliament to make progress for our nation and its people. Part of this progress is to assist the work of medical scientists and scientists in solving disease.’ Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 5342 (Mark Latham).

¹⁹² Commonwealth, *Parliamentary Debates*, Senate, 11 November 2002, 5944 (Senator Meg Lees). See also David Cox, who includes HIV as a disease that might be cured through stem cell research: Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 5317 (David Cox).

¹⁹³ Commonwealth, *Parliamentary Debates*, House of Representatives, 22 August 2002, 5463 (David Emerson). In a similar vein see Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 5332–5335 (Joe Hockey, Minister for Small Business and Tourism).

¹⁹⁴ Commonwealth, *Parliamentary Debates*, House of Representatives, 27 August 2002, 5876 (Brendan Nelson, Minister for Education, Science and Training); Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 5303 (Tanya Plibersek).

¹⁹⁵ Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 6069 (Alexander Downer, Minister for Foreign Affairs).

¹⁹⁶ Commonwealth, *Parliamentary Debates*, House of Representatives, 22 August 2002, 5444 (Fran Bailey, Parliamentary Secretary to the Minister for Defence).

¹⁹⁷ Commonwealth, *Parliamentary Debates*, House of Representatives, 27 August 2002, 5842 (Alby Schultz).

¹⁹⁸ Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 5245 (John Anderson, Deputy Prime Minister and Minister for Transport and Regional Services); Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 5479–80 (Dee-Anne Kelly).

The cure script was bolstered through the economic script. For example, Simon Crean said, 'I support the legislation because it does the right thing—the right thing for people with debilitating illnesses and for the health of future generations; the right thing for our scientific community and our future as a knowledge economy.'¹⁹⁹ However, alternative economic tropes were used by opponents of embryonic stem cell research. Indeed, Tony Abbott, a conspicuous opponent, flatly rejected the economic considerations:

This brings me to the next argument which is heard: 'We must permit embryo experimentation because our scientists are good at it and, if we don't, we will miss the boat and lose the opportunities to cash in on billions of dollars worth of potential GDP'. This is one of the most demeaning arguments that I have heard. Let me again make the fundamental point that if something is wrong, it does not become right simply because there is a dollar in it.²⁰⁰

Similarly, opponents of embryonic stem cell research exploited the greed/money-making dimensions of the economic script in attacking researchers.²⁰¹ Senator Ron Boswell attacked Trounson: 'If we pass this bill we will give Trounson's commercial partner ... carte blanche to do what they like with Aussie embryo products ... We are being asked to underwrite the intellectual property of a foreign company.'²⁰² Finally, aside from the concerns of Green leader Senator Bob Brown, and the attempted amendments by Democrats and Greens in the Senate to establish a national stem cell bank, there was little discussion concerning the distribution of the benefits from stem cell research.²⁰³

However, notwithstanding the presence of senior parliamentarians opposing embryonic stem cell research, the eventual outcome of the legislative process was the Prohibition of Human Cloning Act 2002 (Cth) and the Research Involving Human Embryos Act 2002 (Cth) which enacted the COAG agreement. Like the media, the majority of members supported the proposed scheme because it provided a sensible compromise.

Not one member rose to advocate reproductive cloning. Indeed, there was little in the parliamentary debates about reproductive or therapeutic cloning.²⁰⁴ As such, when

¹⁹⁹ Commonwealth, *Parliamentary Debates*, House of Representatives, 20 August 2002, 5242 (Simon Crean, Leader of the Opposition).

²⁰⁰ Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 5305 (Anthony Abbott, Minister for Employment and Workplace Relations).

²⁰¹ *Ibid.*

²⁰² Commonwealth, *Parliamentary Debates*, Senate, 12 November 2002, 6056 (Senator Ron Boswell, Parliamentary Secretary to the Minister for Transport and Regional Services).

²⁰³ Commonwealth, *Parliamentary Debates*, Senate, 3 December 2002, 7021 (Senator Bob Brown).

²⁰⁴ An explanation for this is that, while the embryonic stem cell regime was subject to a conscience vote, opposition to cloning was official party policy to which the usual discipline applied. Commonwealth, *Parliamentary Debates*, House of Representatives, 27 June 2002, 4541 (John Howard, Prime Minister); Commonwealth, *Parliamentary Debates*, House of Representatives, 20 August 2002, 5242 (Simon Crean, Leader of the Opposition).

members turned their minds to the prohibition of cloning, it was described as ‘self evident’;²⁰⁵ ‘to the best of my knowledge there is unanimous support in the parliament in opposition to human cloning.’²⁰⁶ Similarly, adult stem cell research was universally supported: ‘the use of adult stem cells for research, which I very strongly support, is outside the scope of the legislation [meaning that] valuable research on adult stem cells will continue.’²⁰⁷ This established, as was the case in the media, two poles, leaving embryonic stem cell research to be a site of ‘compromise’. ‘Balance’ was the overriding message of Howard’s speech.²⁰⁸ Like the editorials, supporters of the bills claimed to be occupying a middle position between the ‘overblown claims on both sides of the debate’.²⁰⁹ And, as with the editors, there were criticisms of extreme positions: ‘At one extreme are those who demean critics of this new research frontier as religious fundamentalists ... At the other end are evocations of Nazi experimentation.’²¹⁰ A specific example of this was the criticism that met a speech made by Mark Latham, in which he attacked opponents of embryonic stem cell research as ‘Luddites’ and hypocrites who wanted to ‘deregulate the boardroom but regulate the bedrooms of Australia’.²¹¹ He referred to the 20 August 2002 decision by the Sydney Archbishop to stand down pending an investigation into allegations of sexual abuse, suggesting that is was ‘a bit rich for the Catholic Church to be lecturing the parliament on morality at the moment’.²¹² Latham’s comments attracted censure even from members of his party.²¹³

The compromise of values manifested in the debates in members’ repeated comments about the ‘difficult’,²¹⁴ ‘soul searching’²¹⁵ decision that lay behind their support for the Bill:

²⁰⁵ Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 5317 (David Cox).

²⁰⁶ Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 6068 (Alexander Downer, Minister for Foreign Affairs).

²⁰⁷ Commonwealth, *Parliamentary Debates*, House of Representatives, 27 June 2002, 4543 (John Howard, Prime Minister).

²⁰⁸ *Ibid.*

²⁰⁹ Commonwealth, *Parliamentary Debates*, House of Representatives, 28 August 2002, 6083 (Peter Costello, Treasurer).

²¹⁰ Commonwealth, *Parliamentary Debates*, House of Representatives, 27 August 2002, 5876 (Brendan Nelson, Minister for Education, Science and Training).

²¹¹ Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 5342–7 (Mark Latham).

²¹² *Ibid.*

²¹³ Commonwealth, *Parliamentary Debates*, House of Representatives, 27 August 2002, 5839 (Roger Price); Commonwealth, *Parliamentary Debates*, House of Representatives, 27 August 2002, 5847 (Peter Dutton); Commonwealth, *Parliamentary Debates*, House of Representatives, 28 August 2002, 6078 (Kevin Rudd).

²¹⁴ Commonwealth, *Parliamentary Debates*, House of Representatives, 20 August 2002, 5255 (Nicole Roxon); Commonwealth, *Parliamentary Debates*, House of Representatives, 20 August 2002, 5884 (Daryl Melham); Commonwealth, *Parliamentary Debates*, House of Representatives, 28 August 2002, 6087 (Bruce Scott).

²¹⁵ Commonwealth, *Parliamentary Debates*, House of Representatives, 27 August 2002, 5844 (Anna Burke); Commonwealth, *Parliamentary Debates*, House of Representatives, 27 August 2002, 5870 (Judi Moylan).

For me and, I suspect, for many of my colleagues [the Bill] has been the most difficult pieces of legislation I have had to consider ... It is difficult because of the immensity of the implications that flow from it and difficult because of the strength of the arguments on both sides.²¹⁶

Indeed, 47 members made such observations. As one member put it:

In approaching this bill I was initially envious of those who professed from day one to know this bill to be right or wrong ... Since then, however, my view has changed ... I realised this to be a complex issue beyond any I have faced previously.²¹⁷

This rhetoric of complexity and weight was the precursor to an affirmation of support for embryonic stem cell research with regulated access to surplus embryos as an acceptable compromise between various concerns.

In conclusion, the parliamentary debate reveals a similar set of foundational elements to those identified in the media analysis. This is not surprising. The media and parliamentary debates were not isolated discourses, they were interrelated. Members often quoted from the media²¹⁸ and many of the speeches were reported in the media.²¹⁹

This finding is similar to the findings of the 'public understanding of science' research. This research looks at how 'media constructions of genetics and behaviour influence how social problems appear in the public eye',²²⁰ often using focus group or survey methodology to determine the effectiveness of representations of science on 'the public'.²²¹

[How] problems are portrayed in the public eye has much to do with how we act on them. This is both in terms of public agenda-setting and in the types of attention that we bestow on a particular problem. Perhaps, more significantly, how we frame a problem often includes what range of solutions we see as possible.²²²

The public understanding of science research suggests that relations between the media and public opinion are parallel, complementary and interrelated.²²³ Together the media and public opinion belong to a common culture, sharing a common set of conceptions

²¹⁶ Commonwealth, *Parliamentary Debates*, House of Representatives, 28 August 2002, 6093 (Kerry Bartlett).

²¹⁷ Commonwealth, *Parliamentary Debates*, House of Representatives, 28 August 2002, 6050 (Steven Ciobo).

²¹⁸ eg Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 5329 (Frank Mossfield), referring to Bob Carr's opinion in the *Sydney Morning Herald*; Carr (n 146).

²¹⁹ Mark Latham *et al*, 'Question of Respect for Life' *The Australian*, 22 August 2002, 11; 'PM Takes Close Look at Cells' *Adelaide Advertiser*, 24 August 2002, 4.

²²⁰ Conrad (n 15) 149.

²²¹ Holliman (n 17) 122–5.

²²² Conrad (n 15) 140.

²²³ *Ibid*; Horning Priest (n 39) 177.

about technology and society. However, this research has rarely examined media framing and the formal legislative process.²²⁴

Similar to the public understanding of science research, this study concludes that the media and the parliamentary debates share the same set of grounding elements about cloning and stem cells. Both exhibited anxiety, articulated through science fiction and human dignity scripts. Both talked of progress, articulated through cure and economic scripts. Both presented a majority supported ‘compromise’ allowing the prohibition of cloning and the regulation of embryonic stem cell research. And both saw regulation as being located in law. What has been revealed through these two parallel analyses is a cultural context of biotechnology in Australia. Identification of this culture has repercussions for future thinking about law and biotechnology.

Future Thinking

Identification of the elements of an Australian ‘public culture of biotechnology’ has various consequences for thinking about law and biotechnology. The first is that it allows for a critical reading of the parliamentary debates. The second is that it allows us to reflect on the impact of framing scripts concerning biotechnology. The third is that it highlights inadequacies in the orthodox approach to law and technology in legal scholarship and suggests a more thorough cultural engagement as a corrective.

Reconsidering the Parliamentary Debate

While much of the parliamentary debate manifested the identified elements from the media analysis, there was a significant anomaly, namely the impact of religion within the debates.

A striking feature of the parliamentary debates was the high level of recourse that members (44 in total) had to religious tropes. Nearly all members who voted against embryonic stem cell research had recourse in their speech to their faith,²²⁵ discussed the

²²⁴ An exception is Michael Mulkay, *The Embryo Research Debate: Science and the Politics of Reproduction* (Cambridge University Press, 1997). However, Mulkay tends to keep his media and parliamentary debate analysis separate.

²²⁵ Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 5303 (Anthony Abbott, Minister for Employment and Workplace Relations); Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 5322 (Con Sciacca); Commonwealth, *Parliamentary Debates*, House of Representatives, 27 August 2002, 5840 (Alby Schultz); Commonwealth, *Parliamentary Debates*, House of Representatives, 28 August 2002, 6092 (Robert Katter); Commonwealth, *Parliamentary Debates*, Senate, 11 November 2002, 6059 (Senator Jacinta Collins); Commonwealth, *Parliamentary Debates*, Senate, 12 November 2002, 6104 (Senator Nick Sherry); Commonwealth, *Parliamentary Debates*, Senate, 11 November 2002, 6119 (Senator Ross Lightfoot).

issue with or quoted from religious leaders,²²⁶ or noted that they had prayed about the issue.²²⁷ Several members who voted for embryonic stem cell research felt compelled to justify their stance in relation to their religious beliefs or their religious upbringing.²²⁸ While religion was a feature in the media, it was managed in the editorials and in the scientific reporting template as a source of values which could be balanced against other values. In the parliamentary debates a stronger form of science versus religion was evident.

An explanation for this can be found in Marian Maddox's thesis that the Commonwealth Parliament during the Howard government (1996–2007), through the strong efforts of various religious groups, contained a high proportion of members who considered themselves 'religious'. This process also created a situation where other members were sensitive to religious considerations.²²⁹ Maddox suggests that this influence exceeds that of the general public.²³⁰ Karen Farquharson and Christine Critchley's research suggests that the Australian public were much more trusting of science²³¹ and were more accepting of embryonic stem cell research²³² than the sizable minority of members in parliament opposed to embryonic stem cell research. Farquharson and Critchley found that a large majority of Australian conceived embryonic stem cell research was a scientific and medical matter to be managed in scientific and medical terms.²³³ In

²²⁶ Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 5330 (Frank Mossfield); Commonwealth, *Parliamentary Debates*, Senate, 11 November 2002, 5832–4 (Senator Guy Barnett); Commonwealth, *Parliamentary Debates*, Senate, 11 November 2002, 5854 (Senator Steve Hutchins); Commonwealth, *Parliamentary Debates*, Senate, 11 November 2002, 5984 (Senator Geoff Buckland); Commonwealth, *Parliamentary Debates*, Senate, 11 November 2002, 6108 (Senator Jan McLucas).

²²⁷ Commonwealth, *Parliamentary Debates*, Senate, 11 November 2002, 5992 (Senator Ursula Stephens).

²²⁸ Commonwealth, *Parliamentary Debates*, House of Representatives, 22 August 2002, 5449 (Larry Anthony, Minister for Children and Youth Affairs); Commonwealth, *Parliamentary Debates*, House of Representatives, 27 June 2002, 5465 (Patrick Secker); Commonwealth, *Parliamentary Debates*, House of Representatives, 27 August 2002, 5847 (Peter Dutton); Commonwealth, *Parliamentary Debates*, House of Representatives, 27 August 2002, 5857 (Joanna Gash); Commonwealth, *Parliamentary Debates*, House of Representatives, 27 August 2002, 5887 (Susan Ley); Commonwealth, *Parliamentary Debates*, House of Representatives, 28 August 2002, 6077–9 (Kevin Rudd); Commonwealth, *Parliamentary Debates*, Senate, 11 November 2002, 5861 (Senator Amanda Vanstone); Commonwealth, *Parliamentary Debates*, Senate, 11 November 2002, 5950 (Senator Nick Minchin); Commonwealth, *Parliamentary Debates*, Senate, 11 November 2002, 5965 (Senator Susan Knowles); Commonwealth, *Parliamentary Debates*, Senate, 11 November 2002, 6135 (Senator Kay Patterson).

²²⁹ Marion Maddox, *God under Howard: The Rise of the Religious Right in Australian Politics* (Allen & Unwin, 2005) 313. See also Marion Maddox, *For God and Country: Religious Dynamics in Australian Federal Politics* (Department of the Parliamentary Library, Canberra, 2001).

²³⁰ Maddox, *God under Howard* (n 229) 314–15.

²³¹ Karen Farquharson and Christine Critchley, 'Risk, Trust and Cutting Edge Technologies: A Study of Australian Attitudes' (2004) 2 *Australian Journal of Emerging Technologies and Society* 121, 137. See also Michael Gilding and Christine Critchley, 'Technology and Trust: Public Perceptions of Technological Change in Australia' (2003) 1 *Australian Journal of Emerging Technologies and Society* 52.

²³² Farquharson and Critchley (n 231) 138.

²³³ *Ibid.*, 139. A finding mirrored in other studies; see Kristine Barlow-Stewart, Sandra Taylor and Margaret Otowski, 'Knowing your Genes' in S Wilson *et al* (eds), *Australian Social Survey: The First Report* (University of New South Wales Press, 2005).

this the media, and particularly editorials, seem closer to the public opinion than the religion-coloured debate in parliament. While heavily criticised in the House for his extreme statements, Mark Latham's comments concerning the debate as demonstrating the 'catholicisation of the liberal party' contains some substance.²³⁴

Another aspect of the parliamentary debate, the 'troubling task'²³⁵ that members had in reaching a 'balanced' decision, can also be questioned. Some members were epic in their descriptions of this task:

In the parliamentary lives of those fortunate enough to be elected to this House, there are bills that come before us that in their ethical and legislative complexity weigh heavily on the emotions and the intellectual capacity of individual members.²³⁶

However, such rhetoric, read against the identified cultural context, seems overstated. The media had articulated that the debate was about values that could be balanced, and furthermore that the resolution was the prohibition of cloning and allowing regulated research on embryonic stem cells. Claims of a 'difficult' decision can be explained as individual members feeling the weight of the decision, given their release from the strictures of party discipline,²³⁷ notwithstanding that, at the time of the House of Representatives debate, there were before the parliamentarians two, large comprehensive reports and COAG's agreement. However, it can also reflect the fact that members articulated their positions within a forum where religion-based opposition to embryonic stem cell research was higher than was represented in the media.

This could also explain the absence of therapeutic cloning from the parliamentary debates. As seen in the media analysis, therapeutic cloning lay more towards the objectionable end of the spectrum of technologies. Its contested nature meant that the compromise achieved at COAG was to allow embryonic stem cell research (which was considered less objectionable) and to defer the issue of therapeutic cloning until the three-year review. As such, unlike in the media, where by 1999 the terms 'reproductive' and 'therapeutic' had emerged with distinct and clear meanings, in the parliamentary debates therapeutic cloning was compressed into the abhorrence of reproductive cloning. For example, '[the Bill] seeks to ban cloning human beings, which is an action I very strongly support—and I do note there is a universal will to do this across the community'.²³⁸ Some members were sensitive to the distinction between the two applications, and suggested that the more positive characterisation of therapeutic cloning outside of parliament

²³⁴ Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 5343 (Mark Latham).

²³⁵ Commonwealth, *Parliamentary Debates*, House of Representatives, 27 August 2002, 5844 (Anna Burke).

²³⁶ Commonwealth, *Parliamentary Debates*, House of Representatives, 22 August 2002, 5452 (Gavan O'Connor).

²³⁷ Dean Jaensch, 'More Conscience Voting to Shake Security Blankets' *Adelaide Advertiser*, 11 April 2002, 18.

²³⁸ Commonwealth, *Parliamentary Debates*, House of Representatives, 27 August 2002, 5866 (John Forest). See also Commonwealth, *Parliamentary Debates*, House of Representatives, 27 August 2002, 5883 (Bronwyn Bishop).

meant that parliament would have to deal directly with the issue of therapeutic cloning at some stage.²³⁹ Parliament eventually caught up in 2006, when the Legislative Review of the Acts (the Lockhart Review) recommended the legalisation and regulation of therapeutic cloning,²⁴⁰ stimulating a fresh controversy in the media and within parliament.²⁴¹

The suggestion is that while the 2002 parliamentary debate registered within the identified cultural context of biotechnology, it did so with a stronger emphasis on religion. This is not to say that all members of parliament gave greater deference to religion, for there was still a clear majority of members who supported the Bill and regarded the religious coloured debate as a 'lot of talk about human values ... [which] usually comes from people who want to force their values on the whole of society'.²⁴²

Dominance of the Cure Script

Identification of cultural context reveals the ways in which the various elements combine. One of the striking features of the cloning and stem cell controversy was the fact that cure held sway. Of the four scripts that framed cloning and stem cells, the cure script was uncontested.

The other scripts, science fiction, human dignity and economy, were contested. As was seen in the media and in parliament, participants for and against embryonic stem cell research could appropriate tropes and narratives from within these scripts to justify their positions. There was flexibility in how these scripts framed the technologies that was absent with the cure script. The cure script was only ever an unalloyed positive. This suggests a difference in how cloning and stem cells were framed compared with other, earlier controversies concerning biotechnology in Australia. The controversy concerning GMOs did not possess the same positive cure script, and there seemed to be a less permissive law as the outcome.²⁴³ A message from the cultural context seems to be that

²³⁹ Commonwealth, *Parliamentary Debates*, House of Representatives, 27 August 2002, 5852 (Phillip Barresi).

²⁴⁰ Australian Government, 'Legislation Review: Prohibition of Human Cloning Act 2002 and Research Involving Human Embryos Act 2002' (2005) 172.

²⁴¹ Prime Minister of Australia, Media Release, Lockhart Review, 23 June 2006, <http://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;query=Id:%22media%2Fpressrel%2FJV1K6%22> (indicating that the government would not be introducing changes, but leaving it open for a private member's Bill); Commonwealth, *Parliamentary Debates*, Senate, 19 October 2006, 11–20 (Senator Kay Patterson) giving the secondary reading speech for a private member's Bill enacting the substantive recommendations from Lockhart—Prohibition of Human Cloning for Reproduction and the Regulation of Human Embryo Research Amendment Bill 2006 (Cth); Matthew Franklin, 'Cloning Bill Supporters Expect Close Win' *The Australian*, 6 November 2006, 4; Matthew Franklin and Leigh Dayton, 'Stem Cell Backers Discount Research' *The Australian*, 25 August 2006, 3.

²⁴² Commonwealth, *Parliamentary Debates*, House of Representatives, 21 August 2002, 5350 (Julia Irwin).

²⁴³ Heather Dietrich and Renato Schibeci, 'Beyond Public Perceptions of Gene Technology: Community Participation in Public Policy in Australia' (2003) 12 *Public Understandings of Science* 381, 389. See generally

technologies located within the realm of medicine, even if there are concerns within the scientific community regarding the possibility of cures, and concerns within conservative and religious quarters regarding the morality of the research, will be permitted.²⁴⁴ In this the cloning and stem cell controversy followed the earlier controversy in Australia and England over IVF, where curing infertility was a major trope within the media and parliament.²⁴⁵

The dominance of cures can also be seen in the Lockhart Report and the 2006 parliamentary debates that legalised therapeutic cloning with the retitled Prohibition of Human Cloning for Reproduction Act 2002 (Cth). The Lockhart Report stated in December 2005 that:

In looking for common ground, the Committee found that there is strong community support for medical research to help people who suffer from debilitating or incurable disease or conditions, through better understanding of the processes of disease and the development of new treatments.²⁴⁶

Several parliamentarians expressed surprise that they were debating a Bill permitting an activity that only four years earlier had received universal condemnation.²⁴⁷ Part of what had changed was that in 2006, unlike 2002, the distinction between reproductive and therapeutic cloning had become more widely accepted within Parliament:

... the word 'cloning' is used to describe both the replication of a whole human being or a whole being as well as the replication of single cells and genetic material. It seems to me that one of the ways in which this debate has been conducted is to conflate ... those two concepts. The replication of a whole human being is something that I do not believe anybody would contemplate as being ethical and appropriate. Unfortunately some of the conflation of these two concepts has, I fear, been utilised to try and gain the response that I think all people would

Rosemary Robins, 'Gene Technologies and its Citizen-Subjects' (2006) 4 *Australian Journal of Emerging Technologies and Society* 45; Richard Hindmarsh, *Edging Towards BioUtopia: A New Politics of Reordering Life and the Democratic Challenge* (University of Western Australia Press, 2008).

²⁴⁴ Alan Petersen, 'Public Health, the New Genetics and Subjectivity' in A Petersen *et al* (eds), *Poststructuralism, Citizenship and Social Policy* (Routledge, 1999) 114.

²⁴⁵ Van Dyck (n 133); Jeanette Edwards *et al*, *Technologies of Procreation: Kinship in the Age of Assisted Conception* (Manchester University Press, 1993).

²⁴⁶ Australian Government (n 240) v, 58 See also Senate Standing Committee on Community Affairs, 'Legislative Responses to Recommendations of the Lockhart Review' (2006) 29–34.

²⁴⁷ Commonwealth, *Parliamentary Debates*, Senate, 19 October 2006, 11 (Jan McLucas); Commonwealth, *Parliamentary Debates*, Senate, 19 October 2006, 17 (Helen Polly); Commonwealth, *Parliamentary Debates*, House of Representatives, 4 December 2006, 134 (John Anderson, Deputy Prime Minister); Commonwealth, *Parliamentary Debates*, House of Representatives, 5 December 2006, 70 (Patrick Secker); Commonwealth, *Parliamentary Debates*, House of Representatives, 5 December 2006, 116 (Steven Ciobo); Commonwealth, *Parliamentary Debates*, House of Representatives, 6 December 2006, 118 (John Howard, Prime Minister); Commonwealth, *Parliamentary Debates*, House of Representatives, 30 November 2006, 48 (Craig Emerson).

have to the prospect of cloning human beings, when what we are talking about is cloning a single cell or the replication of single cells, not a whole human being.²⁴⁸

However, this semantic divergence does not explain the law that was passed. In many respects the 2006 debates mirrored the 2002 debates. There was a similar tone to the debates. However, in 2006 it was therapeutic cloning that was considered as offering hope for cures: 'Too many lives can be saved or dramatically improved by the use of this revolutionary branch of health sciences for me as a legislature to stand in the way of its development.'²⁴⁹ For the majority of members, the 'answer to the question of what has changed is that every single day our body of scientific knowledge expands',²⁵⁰ while only a small minority questioned the possibility for cures and progresses from therapeutic cloning.²⁵¹ For Irene Nemes, the 2006 amendments represented a victorious campaign by biomedical researchers which successfully reconnected therapeutic cloning with cures.²⁵² The lesson from the 1997–2002 controversy, which was learnt by the pro-technology parties in 2006, was that biotechnology advocates need to link the potential benefits of their technology to health concerns in order to garner acceptance.

Beyond the immediate politics of emergent technology, an implication of realising the strength of the cure script registers within theoretical discourses on technology. Behind

²⁴⁸ Commonwealth, *Parliamentary Debates*, Senate, 7 November 2006, 5 (Penny Wong). See also Commonwealth, *Parliamentary Debates*, House of Representatives, 30 November 2006, 23 (Gary Nairn, Special Minister of State); Commonwealth, *Parliamentary Debates*, House of Representatives, 30 November 2006, 29 (Ian MacFarlane, Minister for Industry, Tourism and Resources); Commonwealth, *Parliamentary Debates*, House of Representatives, 4 December 2006, 152 (Sharman Stone).

²⁴⁹ Commonwealth, *Parliamentary Debates*, House of Representatives, 5 December 2006, 119 (Brendan O'Connor).

²⁵⁰ Commonwealth, *Parliamentary Debates*, House of Representatives, 5 December 2006, 89–90 (Tanya Plibersek). On the promise of medical progress see Commonwealth, *Parliamentary Debates*, House of Representatives, 30 November 2006, 16 (Julia Gillard); Commonwealth, *Parliamentary Debates*, House of Representatives, 30 November 2006, 19 (Russell Broadbent); Commonwealth, *Parliamentary Debates*, House of Representatives, 30 November 2006, 21 (Simon Crean); Commonwealth, *Parliamentary Debates*, House of Representatives, 30 November 2006, 29 (Ian MacFarlane, Minister for Industry, Tourism and Resources); Commonwealth, *Parliamentary Debates*, House of Representatives, 30 November 2006, 59 (Jenny Macklin); Commonwealth, *Parliamentary Debates*, House of Representatives, 4 December 2006, 170 (Steve Gibbons); Commonwealth, *Parliamentary Debates*, House of Representatives, 5 December 2006, 104 (Greg Hunt); Commonwealth, *Parliamentary Debates*, House of Representatives, 5 December 2006, 112 (Wayne Swan); Commonwealth, *Parliamentary Debates*, House of Representatives, 6 December 2006, 29 (Brendan Nelson, Minister for Defence).

²⁵¹ Commonwealth, *Parliamentary Debates*, House of Representatives, 4 December 2006, 158 (David Fawcett); Commonwealth, *Parliamentary Debates*, House of Representatives, 4 December 2006, 172 (Sophie Mirabella); Commonwealth, *Parliamentary Debates*, House of Representatives, 5 December 2006, 96 (Bob Baldwin); Commonwealth, *Parliamentary Debates*, House of Representatives, 6 December 2006, 35–36 (Kay Hull).

²⁵² Irene Nemes, 'Therapeutic Cloning in Australia: One Small Stem from Man, One Giant Leap for Mankind' (2008) 16 *Journal of Law and Medicine* 139, 147, 153–4.

the celebration of cures lies a culture fearful of death.²⁵³ The promise of technology lies in the potential for cheating death. Indeed, in attempting to rethink the technological subject, Rosi Braidotti, through an engagement with Martin Heidegger, identifies how the fear of death both grounds the human drive towards technology²⁵⁴ and is the impediment preventing acceptance of the human as a fundamentally technological being.²⁵⁵ Pragmatic awareness of the strength of the cure script highlights the scope of the task ahead for critical theorists of technology in overcoming the *thanatology* of technics. The challenge for such a project seemingly involves a fundamental uncoupling of the relationships between being, death and technology in the West.

Law and Technology Scholarship

A final implication is the place of law and legal scholarship within thinking about biotechnology. The Australian legal literature on cloning and stem cells from 1997 has not considered in detail the cultural context of the controversy within which they are writing. There is a common structure to much of this literature: starting with descriptions of Dolly's impact,²⁵⁶ and having justified the task at hand, there follow several descriptive sections. There is a description of the technologies involved, in more²⁵⁷ or less detail,²⁵⁸ and often a section entitled 'ethical issues' in which various bioethical positions are

²⁵³ Rosi Braidotti, *Transpositions: On Nomadic Ethics* (Polity, 2006) 247.

²⁵⁴ On death and technology see Bernard Stiegler, *Technics and Time, 1: The Fault of Epimetheus* (Stanford University Press, 1998) 185–6.

²⁵⁵ Rosi Braidotti, *Metamorphoses: Towards a Materialist Theory of Becoming* (Polity, 2002) 225.

²⁵⁶ Michael Lupton, 'Human Cloning: The Law's Response' (1997) 9 *Bond Law Review* 123, 125–8; Miles Little, 'Animal Cloning and the Possibility of Cloning Humans: Science, Law and Ethics' (1998) 4 *The Judicial Review* 57, 57; Donald Chalmers, 'The Challenges of Human Genetics' in I Freckelton and K Petersen (eds), *Controversies in Health Law* (Federation, 1999) 210; Donald Chalmers, 'Globalisation and Medical Law' (2000) 76 *Reform* 40, 41; Dean Bell, 'Human Cloning and International Human Rights Law' (1999) 21 *Sydney Law Review* 202, 202; Judith Thomson, 'Legal and Ethical Problems of Human Cloning' (2000) 8 *Journal of Law and Medicine* 31, 31–32; Ronald Chester, 'Cloning for Human Reproduction: One American Perspective' (2001) 23 *Sydney Law Review* 319, 320–1; David Ranson, 'Human Cloning: A Challenge for Legislation' (2002) 9 *Journal of Law and Medicine* 383, 383; Martin Lishexian Lee, 'The Inadequacies of Absolute Prohibition of Reproductive Cloning' (2004) 11 *Journal of Law and Medicine* 351, 351.

²⁵⁷ Dianne Nicol, Donald Chalmers and Brendan Gogarty, 'Regulating Biomedical Advances: Embryonic Stem Cell Research' (2002) 2 *Macquarie Law Journal* 31, 33–41; Melodie Slabbert, 'Cloning and Stem Cell Research: A Critical Overview of the Present Legislative Regime in Australia and the Way Forward' (2003) 10 *Journal of Law and Medicine* 514, 515–18.

²⁵⁸ Lupton (n 256) 123–4; Little (n 256) 59–60; Thomson (n 256) 31–32; Sonia Magri, 'Research on Human Embryos, Stem Cells and Cloning—One Year Since the Passing of Australian Federal Legislation: Australia, Around the World, and Back Again' (2003) 10 *E Law: Murdoch University Electronic Journal of Law* [3]–[7]; Shih-Nong Then, 'Stem Cell Technologies: Regulation, Patents and Problems' (2004) 12 *Journal of Law and Medicine* 188, 189–90; Lee (n 256) 352–4.

summarised.²⁵⁹ There are description of existing legal regimes²⁶⁰ and the invariable calling for law.²⁶¹ There are descriptions of reform processes in Australia,²⁶² internationally²⁶³ and in comparative jurisdictions.²⁶⁴

This literature, like much of the legal writing in the wake of emerging technologies, professed to be practical. Lawyers were writing within a positivist modus of law as an instrument through which policy, generally determined from elsewhere, could be implemented. As such, most of the scholarship focused on technical issues: what formula of words would adequately achieve the policy outcome of prohibiting cloning;²⁶⁵ whether 'hard law', as in detailed prescriptive legislation, should be forgone in favour of a 'soft law' of regulations able to respond quickly to a developing research field;²⁶⁶ the impact of cloning on other legal fields.²⁶⁷ The examples from the scholarship that did this legal advising were at the more sophisticated end of the spectrum. The bulk did not engage as deeply as that. Instead, the positivist commitment manifested in an educational guise. The lawyer/instructor wrote to communicate a problem, a reform process or a new law, to communities of lawyers and health professionals.²⁶⁸

²⁵⁹ Little (n 256) 60–62; Dianne Nicol, Brendan Gogarty and Donald Chalmers, 'Human Cloning and Stem Cell Research' (2001) 10 *Australian Health Law Bulletin* 25, 27–28; Nicol, Chalmers and Gogarty (n 257) 41–43; Alex Bruce, 'The Search for Truth and Freedom: Ethical Issues Surrounding Human Cloning and Stem Cell Research' (2002) 9 *Journal of Law and Medicine* 323, 324–34. Brendan Gogarty, 'What Exactly is an Exact Copy? And Why it Matters when Trying to Ban Human Reproductive Cloning in Australia' (2003) 29 *Journal of Medical Ethics* 84, 84–85; Slabbert (n 257) 518–22.

²⁶⁰ Chalmers, 'The Challenges of Human Genetics' (n 256) 211; Thomson (n 256) 40–41; Nicol, Gogarty and Chalmers (n 259) 28–31; Bruce (n 259) 323–4; Nicol, Chalmers and Gogarty (n 257) 43–49, 51–54; Magri (n 258) [9]–[50]; Lee (n 256) 366–9; Then (n 258) 190–5.

²⁶¹ Nicol, Chalmers and Gogarty (n 259) 54–59; Brendan Gogarty and Dianne Nicol, 'The UK's Cloning Laws: A View from the Antipodes' (2002) 9 *E Law: Murdoch University Electronic Journal of Law* [24]–[32]; Gogarty (n 259) 85; Then (n 258) 203–4.

²⁶² Nicol, Chalmers and Gogarty (n 257) 49–51; Gogarty (n 259) 86–87; Slabbert (n 257) 522–4; Katherine Morley, Lucy Carter and Wayne Hall, 'Regulation of Embryonic Stem Cell Research' (2003) 55 *Plaintiff* 20.

²⁶³ Bell (n 256) 218–26; Magri (n 258) [51]–[54].

²⁶⁴ Ranson (n 256) 384–5; Magri (n 258) [55]–[68]; Nemes (n 252) 142; Andrew H Sinclair and Peter Schofield, 'Human Embryonic Stem Cell Research: An Australian Perspective' (2007) 128 *Cell* 221, 221–2; Donna Cooper, 'The Lockhart Review: Where Now for Australia?' (2006) 14 *Journal of Law and Medicine* 27, 29–40; Margaret Otlowski, 'The Lockhart Report on Human Cloning and the Regulation of Research Involving Human Embryos: An Overview' (2006) 15 *Australian Health Law Bulletin* 20; John McPhee, 'Recent Developments in the Law: Lockhart Review—Legislation Review Committee' (2006) 3 *Bioethical Inquiry* 3.

²⁶⁵ Chalmers, 'The Challenges of Human Genetics' (n 256) 211; Nicol, Gogarty and Chalmers (n 259) 29; Ranson (n 256) 385; Gogarty and Nicol (n 261); Gogarty (n 259) 87.

²⁶⁶ Sonia Magri, 'Research on Human Embryos and Cloning: Difficulties of Legislating in a Changing Environment and Model Approaches to Regulation' (2005) 12 *Journal of Law and Medicine* 483, 491–2.

²⁶⁷ Matthew Rimmer, 'The Attack of the Clones: Patent Law and Stem Cell Research' (2003) 10 *Journal of Law and Medicine* 488.

²⁶⁸ See eg Andrew Taylor, 'Research Involving Embryos and Prohibition of Human Cloning Bill 2002' (2002) 1 *Biotechnology Law and Policy Reporter* 85; Sangeeta Puran, 'Cloning and Embryonic Research in Australia: A Review of the Legislative Position' (2002) 1 *Biotechnology Law and Policy Reporter* 36; Sangeeta Puran, 'Recommended Regulatory Model for Cloning and Stem Cells Research in Australia Considered Deficient

A small number of articles engaged with clones by advocating a position drawing upon bioethics. Reflecting divisions within bioethics, two types of arguments were made.²⁶⁹ One strain focused on fundamental values and the establishment of limits,²⁷⁰ and the other was concerned with balance and overall good.²⁷¹ While expanding the analysis beyond description, these articles remained narrow in focus. They emphasised that the technologies were subject to public debate and that law-making would occur in the wake of this debate.²⁷² In doing so they presented an idealised vision. By trying to engage in the debate at the level of ideas—reflecting on ethics, dignity and utility—the suggestion was that rational arguments had influence.

Absent from the Australian literature, including the more sophisticated bioethical articles, were any account of the relationships between emergent technology, public concern and the constraints and filters imposed by the forums that embody public debate.²⁷³ Sonia Magri referred to opinion polls which suggested that Australians were in favour of embryonic stem cell research.²⁷⁴ Many others referred to media reports.²⁷⁵ However, this was done in a piecemeal way to cite descriptions of the controversy.²⁷⁶ The

by UK Court' (2002) 1 *Biotechnology Law and Policy Reporter* 49; Sangeeta Puran, 'Overview of the Senate Community Affairs Legislation Committee Report "Provisions of the Research Involving Embryos and Prohibition of Human Cloning Bill 2002"' (2002) 1 *Biotechnology Law and Policy Reporter* 121; Helen Szoke, 'Embryo Research and Cloning' (2003) 15 *Legaldate* 6; Margaret Otlowski, 'Legislative Developments in Australia with Regard to Regulation of Research Involving Human Embryos and Human Cloning: Implications for Embryonic Stem Cell Research' (2004) 12 *Australian Health Law Bulletin* 57.

²⁶⁹ Paul Root Wolpe, 'The Triumph of Autonomy in American Bioethics: A Sociological View' in R DeVries and J Subedi (eds), *Bioethics and Society: Constructing the Ethical Enterprise* (Prentice Hall, 1998) 39. For examples of deontological bioethical arguments in Australia on cloning and stem cells see John I Fleming, Gregory K Pike and Selena Ewing, *Human Embryos: A Limited Scientific Resource? What the Research Involving Embryos and the Prohibition of Cloning Bill 2002 Really Allows* (Southern Cross Bioethics Institute, 2002); Bill Uren, 'The Ethics of Stem Cell Research' (2002) 12 *Eureka Street* 9. For examples of utilitarian based arguments see David Swanton, 'Human Cloning: Beyond the Hype' (1998) 47 *Australian Rationalist* 22; Julian Savulescu, 'Should We Clone Human Beings? Cloning as a Source of Tissue for Transplantation' (1999) 25 *Journal of Medical Ethics* 97; Martin Pera, 'Cloning and Embryonic Research' (1999) 50 *Australian Rationalist* 5; Russell Blackford, 'Who's Afraid of the Brave New World?' (2003) 47 *Quadrant* 9. The Australian bioethics literature reflects divisions within international scholarship. See eg John Harris, *Clones, Genes and Immortality* (Oxford University Press, 1998); Matti Häyry, 'Philosophical Arguments For and Against Human Reproductive Cloning' (2003) 17 *Bioethics* 447.

²⁷⁰ See eg Thomson (n 256); Bruce (n 259).

²⁷¹ See eg Chester (n 256); Lee (n 256).

²⁷² Thomson (n 256) 43; Bruce (n 259) 335.

²⁷³ Conrad (n 15) 140.

²⁷⁴ Magri (n 266) 484.

²⁷⁵ Bruce (n 259) 324–5 (referencing the *New York Times* and *The Australian*), Russell Blackford, 'Thinking about Human Cloning: A Reply to Judith Thomson' (2001) 9 *Journal of Law and Medicine* 238, 238 (referencing *The Age*); Lee (n 256) 353 (referencing the BBC), 364 (referencing the Australian SBS Radio), 367 (referencing CNN); Nicol, Chalmers and Gogarty (n 257) 57–58 (referencing ABC Online, *The Sydney Morning Herald* and *The Australian*).

²⁷⁶ For example, Bruce cites from media reports to establish that Christopher Reeve was a prominent campaigner for embryonic stem cell research. See Bruce (n 259) 324.

role of the media was, at times, recognised: 'It is a rare day when the news media fails to contain some coverage of an exciting development or a worrying controversy (or both) arising out of genetic research and technology.'²⁷⁷ As this study has demonstrated, cloning and stem cells became formalised in the media, parliament and eventually the law—not through rational argument *per se*, but through cultural frames that register in the aesthetic and irrational. This public cultural dimension was overlooked, and in its overlooking the Australian legal literature on cloning and stem cells reads as a shallow engagement with the realities of law and law-making in the wake of technological change. As Dorothy Nelkin and M Susan Lindee reminded us, not long after the announcement of Dolly:

But media matters. Widely disseminated images and narratives have real effects ... They shape the way people think about new technologies, assess their impacts, and develop ways to control them.²⁷⁸

While blindness to wider contexts of law has been a common and repeated criticism of Australian legal scholarship,²⁷⁹ such absences seem strange when Australian legal scholarship on cloning and stem cells did acknowledge the social impacts of the technologies. However, in limiting the field of interdisciplinarity to bioethics, the Australian scholarship shut itself off from wider appreciation of the cultural context that structures how biotechnology is discussed in public. Such gaps seem to show if not a political naivety regarding law-making then a surprising lack of consideration of how biotechnology calls forth law, and in creating this absence place the legal scholar at the margins of the response to biotechnology.

This conclusion suggests the need for more cultural studies of the public account of technology and how that account relates to law. Marilyn Strathern has recently shown how Australian legal decision-making in the contested realm of technological mediated relationships shows that '[e]mbedded in these ordinary circumstances are pointers to what is also interesting about biotechnology. It has become part of the social fabric'.²⁸⁰ Strathern, an anthropologist, was able to see the legal decisions not as rules or decisions, as orthodox legal scholars would, but as cultural texts that show how law, culture and biotechnology interrelate.²⁸¹ Such an approach is, ironically, still embryonic, though some founding studies have begun to take this wider vista to the question of Australian law's

²⁷⁷ David Weisbrot, 'Mad Science or Modern Miracles?' (2001) 79 *Reform* 5.

²⁷⁸ Dorothy Nelkin and M Susan Lindee, 'Cloning in the Popular Imagination' (1998) 7 *Cambridge Quarterly of Healthcare Ethics* 145, 148.

²⁷⁹ Marilyn Pittard and Peter Heffey, 'Ancora Impato: The Historical Role of the Law Review in University Scholarship' (2003) 29 *Monash University Law Review* 278, 289; Margaret Thornton, 'Neoliberal Melancholia: The Case of Feminist Legal Scholarship' (2004) 20 *Australian Feminist Law Journal* 7.

²⁸⁰ Marilyn Strathern, *Kinship, Law and the Unexpected* (Cambridge University Press, 2005) 23.

²⁸¹ Another example is Gaia Bernstein, 'The Socio-Legal Acceptance of New Technologies: A Close Look at Artificial Insemination' (2002) 77 *Washington Law Review* 1035.

response to cloning and stem cells.²⁸² What is hoped is that this article's excavation of a public culture of biotechnology in Australia can stimulate, to adopt a term from Peter Goodrich, a 'minor jurisprudence'²⁸³ that looks beyond the normative dictates of 'practical' legal scholarship and bioethics to patiently generate knowledge on the realities of the law, technology and culture interface.

CONCLUSION

This article, through a detailed analysis of Australian newspaper reporting of cloning and stem cells from 1997 to 2002, argued that the controversy was framed by three elements: anxiety, progress and compromise. Further, it was argued that these elements also framed the parliamentary debates that led to the enactment of the Prohibition of Human Cloning Act 2002 (Cth) and the Research Involving Human Embryos Act 2002 (Cth). It was suggested that this analysis has several implications. The first is the identification of 'religious' influence over the Howard-era Federal Parliament. The second is the dominance of cure scripts in framing biotechnologies, specifically therapeutic cloning, embryonic stem cell research and adult stem cell research. The third is the implication of that dominance for legal scholarship. Finally, this implication leads to a suggestion that legal analysis on the relationship between law and technology would benefit greatly from the adoption of cultural perspectives and methods.

²⁸² In an earlier article Bell began to articulate some wider implications of law and cloning: Bell (n 256) 227–8. More recently Tranter and Statham examined Australian cloning law and politics through a popular cultural lens: Kieran Tranter and Bronwyn Statham, 'Echo and Mirror: Clone Hysteria, Genetic Determinism and *Star Trek Nemesis*' (2007) 3 *Law, Culture and the Humanities* 361. Also recently Karpin drew upon post-Haraway feminist technology studies in her analysis of the place of the embryo in Australian law: Isabel Karpin, 'The Uncanny Embryos: Legal Limits to the Human Reproduction Without Women' (2006) 28 *Sydney Law Review* 598; Isabel Karpin and Belinda Bennett, 'Genetic Technologies and the Regulation of Reproductive Decision-making in Australia' (2006) 14 *Journal of Law and Medicine* 127.

²⁸³ Peter Goodrich, *Law in the Courts of Love: Literature and Other Minor Jurisprudences* (Routledge, 1996) 2.