

The Scope of Public Discourse Surrounding Proposition 71: Looking Beyond the Moral Status of the Embryo

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Abstract Human embryonic stem cell research has generated considerable discussion and debate in bioethics. Bioethical discourse tends to focus on the moral status of the embryo as the central issue, however, and it is unclear how much this reflects broader community values and beliefs related to stem cell research. This paper presents the results of a study which aims to identify and classify the issues and arguments that have arisen in public discourse associated with one prominent policy episode in the United States: the 2004 Californian Stem Cell Research and Cures Initiative (also known as Proposition 71). The findings show that public discourse about Proposition 71 is characterised by a broader range of issues than those usually addressed in scholarly publications and public policy documents. While attention to the moral

status of the embryo is an important issue in stem cell research, making it the main focus of public discourse has a polarising effect. This also limits opportunities to identify shared values, understand how political alliances are forged, and develop social consensus. Implications for future research and policy are discussed.

Keywords Stem cells · Public policy · Mass media · United States of America · Bioethics

Introduction

Human embryonic stem cell (hESC) research has recently generated an enormous amount of scholarly debate. This debate has typically centered on arguments concerning the moral status of the embryo. In general, those who argue against hESC research often do so on the grounds that the destruction of what they consider to be innocent human life is unconscionable, while those who argue that such research is acceptable have tended to either question the moral status of the embryo or argue that that obligations owed to the embryo are outweighed by other moral concerns such as the duty to provide care to the sick or vulnerable. It is unclear, however, whether the emphasis on the moral status of the embryo seen in scholarly publications and public policy documents is truly reflective of the range of broader community values and beliefs related to stem cell research, or whether it instead merely represents the intellectual preoccupations of

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academics and legislators [3] or the concerns of particular interest groups such as the Church.

Empirical evidence does indeed suggest that concerns regarding the moral status of the embryo have influenced the development of policy regarding stem cell research in many countries [52]. Even in the United Kingdom, where policies on stem cell research are relatively liberal, it is often claimed that debates over the moral status of the embryo have had a major impact on policy development [28, 46]. It is apparent, however, that other ethical concerns have also influenced policy development in this area. A range of social, political and economic issues have been outlined in reviews of public discourse and policy making on stem cell research in Europe [43] and Australia [20, 21, 24]. These issues include clinical utility, the value of scientific knowledge, and justice and equity. A recent quantitative media analysis in the U.S. also found that economic, epistemological and political issues are often present in the public discourse [45].

Whilst this literature points to the moral complexity of debates regarding stem cell research, the majority of this literature is not empirical. Of the limited research that is empirical, much of it is characterised by methodological flaws that limit the conclusions that can be drawn from the data. Studies using quantitative methods have limited capacity to examine axiological or epistemological assumptions that are not explicit in the discourse, particularly because they tend to use newspaper articles as the basic units of analysis, rather than the arguments within them. Further, their methods limit any possible exploration of the ways in which issues may overlap, or how ethical concepts may in fact underpin arguments that, on the surface, are not based on moral claims. We propose that what is required is direct examination of the public discourse surrounding stem cell research using qualitative methods to analyse the range of arguments used in these debates, the manner in which these arguments are used by various actors and the assumptions upon which these arguments are based.

This research focuses on a recent major policy episode, the Californian stem cell initiative (Proposition 71), as a means of exploring these issues. We aim to describe the arguments used to support or oppose policy positions by various actors participating in the public discourse surrounding Proposition 71, to categorise these arguments using thematic analysis and to provide an empirical foundation for future social and

bioethical research into public policy surrounding stem cell research and biomedical science in general.

Why Study Proposition 71?

The U.S. media coverage of the California Stem Cell Research and Cures Act of 2004 (also known as ‘Proposition 71’) was selected for analysis because it centered on a discrete episode which engaged the public directly in decision-making processes related to government support for research. In addition, it was anticipated that the debate surrounding this Act might be expected to have been broadly inclusive of the range of arguments that could be advanced to support or oppose stem cell research. Proposition 71 was an initiative placed on the November 2004 General Election Ballot in California.¹ It proposed the appropriation of US\$3 billion in General Obligation Bonds over 10 years from the General Fund to pay for stem cell research (notably that involving hESCs), the creation of the California Institute for Regenerative Medicine to administer the funding and the amendment of the California State Constitution to establish a constitutional right to conduct stem cell research [50].

Proposition 71 was directly relevant to U.S. federal policy debates on stem cell research because it arose in large part out of dissatisfaction with an executive order announced by President George W. Bush in 2001 [4].² The initiative was of national significance as an exemplar for other U.S. state governments seeking to develop funding mechanisms and policies on stem cell

¹ According to the elections and voter information provided by the California Secretary of State, the formal proponents of Proposition 71 were registered as Roberta B. Johansen and James C. Harrison. C/o Remcho, Johansen & Purcell. Initiatives are a form of ‘direct democracy’ used in several U.S. states and a small number of nations, most notably Switzerland, that allow private citizens to sponsor law proposals for ballot in the general electorate. In California, they are most commonly used to allocate public resources to infrastructure, such as roads, bridges, and schools.

² Towards the end of the Clinton administration, a distinction was drawn between the ‘use’ and ‘derivation’ of stem cell lines that would allow federal funds to become available for research on hESCs, but that would limit those funds to research using lines that had already been derived from embryos using non-federal funding sources. Prior to this decision, federal funding of hESC research was prohibited. The 2001 Bush decision still permitted federal funding for hESC research, but narrowed funding to those that had already been derived before 9 PM EST on August 9, 2001.

research. It also may be viewed as internationally relevant insofar as the United States is a major player in biomedical research, biotechnology and stem cell research, and because of the possible implications of this legislation for existing international treaties and guidelines on stem cell research and related technologies such as cloning [26, 27].

It could be argued that several aspects of this policy episode limit the degree to which it is possible to make generalizations that are applicable to debates about stem cell research in other social and political contexts. First, this type of initiative may distort the views of the general public since debates surrounding initiatives tend to highlight the concerns of special interest groups [7, 30]. Those with a particular stake in the outcomes of an initiative are more likely to participate in and even dominate the public discourse, particularly as captured in popular media coverage. Second, Proposition 71 authorised the allocation of an extremely large amount of public resources, far exceeding those likely to be at issue in policy debates elsewhere. Despite these special features, it does not follow that the public discourse surrounding Proposition 71 was atypical or unique in terms of its underlying arguments. Policy episodes within broadly similar political contexts typically share many features, and thus examination of public discourse in a particular policy episode can provide important insights into how various arguments may play out in different contexts, even if the results of such an examination are not, strictly speaking, generalisable.

Public Discourse and Media Analysis

The ‘public discourse’ has been defined as “speech or writing within the public sphere” [11, p. 5] about issues that are deemed to be of political, social and/or cultural importance [12]. While there are multiple, interrelated arenas of public discourses, our study focused on the analysis of texts published in the mass media as the largest and most accessible manifestation of the public discourse surrounding stem cell research. It is important to acknowledge the limitations of media analysis in order to avoid making unjustifiable claims about the results. First, stories in the mass media are primarily source-generated, and pre-packaged news items frequently form an integral and efficient resource for journalists [2]. However, the objectives and professional norms of the mass media are not

necessarily consistent with those of their sources [42]. There are complex power relationships that exist both within the media as an institution, and between journalists and their sources [34]. This is the case particularly in commercially operated media outlets. Journalists also will tend to seek (and be sought out by) preferred sources that are able to meet the media’s normative agendas and as such, these sources tend to have greater power and economic means than others who lack the resources to conform to the media’s self-interested objectives [6]. As a consequence, certain voices will be under-represented in the media. In addition, other commercial and political interests have the power to intentionally avoid being sourced by the media, thus further influencing the news agenda and the way in which public debates are framed [2]. Thus, the mass media does not necessarily provide a comprehensive representation of all stakeholders and publics with interests in a particular policy issue, or even of the motivations of those participating in the discourse.

Despite these limitations, media analysis remains a powerful tool for understanding public discourse. Regardless of who influences and sets the news agenda, it remains the case that mass media communication is arguably the major accessible source for tracking public discourse [29]. Indeed, media analysis is widely recognised as a useful and relatively objective means of identifying actors and elucidating themes from the public discourse [1, 31]. Print news media in particular have been used as a source of evidence in previous studies investigating both relatively manifest as well as more latent content such as themes, frames and references to actors in debates associated with biotechnology [11, 44], cloning [48], and stem cell research [45, 53].

Methods

All newspaper articles³ specifically related to Proposition 71 published between January 1, 2004 and December 31, 2004 were collected from two national

³ This mostly included only items identified as ‘news stories’, although articles written by journalistic staff as ‘commentaries’ or ‘in-house editorials’ were also included. ‘Letters to the editor’ and other ‘opinion editorials’ were excluded on the basis that these authors were not necessarily professional journalists and were less likely to cite the sources for their information.

US newspapers, *The New York Times* (The New York Times Company; daily circulation, 1,194,491) and *The Washington Post* (The Washington Post Company; daily circulation, 1,029,966), one Southern Californian newspaper, *The Los Angeles Times* (The Tribune Company; daily circulation, 1,011,732) and two Northern Californian newspapers, *The San Francisco Chronicle* (The Hearst Corporation; daily circulation, 525,369) and *The Sacramento Bee* (The McClatchy Company; daily circulation, 296,482).⁴ Keywords used to generate the data set for analysis were ‘stem cell’, ‘California’ and ‘initiative’, ‘ballot’, ‘referendum’, ‘proposition 71’ or ‘prop 71’ (in various combinations). Articles identified from this search were screened so that only items explicitly addressing Proposition 71 were included in the analysis.⁵ This search strategy resulted in a data set of 99 articles.

Thematic analysis was used to interpret the dataset. Arguments that were used in support or in opposition to the passage of Proposition 71 from the original dataset, and the actors that accompanied each statement, represented the basic units of analysis and were entered into an Excel database along with any additional information that contextualised the statements within the article. Each statement was analysed and words that described underlying themes were entered into a separate table. As the analysis progressed, categories were generated according to unifying themes underlying the arguments. Reiterative analyses of the statements allowed for progressive and cumulative categorisation of data. This process also permitted statements with content that could be considered to fall under more than one category to be coded accordingly. These categories were eventually grouped together under three major discourse domains: political discourses, ethical discourses and epistemological discourses. Because of the qualitative nature of the

analysis, statistical inferential reliability analyses were not performed.

Results: Public Discourse on Proposition 71

Political Discourses

These arguments reflected variously the political, economic and legal aspects of the proposition that were being debated in the public discourse. The key arguments that emerged in these discourses related primarily to the economic risks and benefits. Other key political arguments related to governance issues, particularly conflicts of interest and public accountability, and economic liberalism. Arguments relating to intellectual property, resource allocation, federalism and the commercialisation of scientific research also emerged.

It was argued, particularly by proponents of the proposition who later ran under a campaign banner of ‘Yes on 71’, that the initiative would yield substantial economic benefits to the state of California, both in terms of direct taxation revenues and royalty income, and indirectly by building “an enormous industry in California, creating countless new jobs and driving our economic engine” [49]. This line of argumentation was supported by political representatives, such as the Democrat State Controller Steve Westly, who was quoted arguing that the proposition would yield a “tremendous return on investment” [33]. Other claims of indirect economic and political benefits were made by analysts hired by the proposition’s proponents, who argued that the initiative would also reduce the State’s health care costs due to “savings [that] would come from treatments or cures for just six of the 70 diseases and conditions scientists believe stem cell research could help alleviate” [38].

Additional economic arguments supporting the proposition stressed the enhancement of California’s competitiveness in the national and global arena, not just in terms of the economy, but also prestige. Republican Governor Arnold Schwarzenegger was quoted supporting the proposition because “California has always been a pioneer...we daringly led the way for the high-tech industry” [32]. Another political representative, Democrat State Treasurer Phil Angelides, was quoted arguing for “the possibility of putting California in the front ranks of biotechnology” [22].

⁴ To capture the broadest possible news media coverage, newspapers were selected on the basis of geographical distribution and media ownership. *The Los Angeles Times* was selected as the largest metropolitan newspaper in California, *The Sacramento Bee* because its distribution includes the state capitol area, and *The San Francisco Chronicle* because its distribution includes the area of Northern California often described as the ‘epicenter’ of Proposition 71.

⁵ News items covering the U.S. federal policy debates that were not explicit to Proposition 71 were excluded, as were feature articles that may have been implicitly related to Proposition 71 but were deemed to be concentrating on general issues surrounding stem cell research.

The same journalist referred to various “business lobbies, medical associations and political leaders” who claimed that the proposition would boost California’s intellectual capital by “becoming the world’s stem cell capital, with all that means in new business, employment and prestige” [22], and by attracting top scientists and researchers to the state. Similar arguments were echoed in some quarters of the scientific and research community in California; for instance, Dr Evan Snyder of the Burnham Institute in San Diego stated that California “is going to be the stem cell center of the world, not just the country” [47], and Dr Claire Pomeroy of University of California Davis was quoted as endorsing the proposition as “a chance for California to be a leader again” [40]. This theme of leadership resonated strongly in supportive economic arguments and would have likely had sociocultural appeal in California.

As one might expect, groups opposing the proposition rejected the claims of economic benefits being made by proponents. Three key separately organised groups emerged to oppose the proposition: Doctors, Patients and Taxpayers for Fiscal Responsibility, No on 71 and the Pro-Choice Alliance for Responsible Stem Cell Research. The former two could be construed as representing participants opposed to abortion and the latter as representing participants not necessarily opposed to either abortion or stem cell research, but who were nonetheless in opposition to the proposition itself. Whilst some coordination between these was evident in public discourse, the nature and extent of their relationships is difficult to ascertain [35]. Nevertheless, media reports reveal alliances in opposition to the proposition on economic grounds between these and other religiously based actors, such as the Traditional Values Coalition and Focus on the Family Action group.

For example, Republican political consultant Wayne Johnson, who claimed to be a coordinator and representative of the campaign against the proposition, argued that “the state doesn’t have the money and shouldn’t be borrowing more money,” particularly to spend on “highly speculative science” [39]. Republican legislator Tom McClintock further argued: “The state’s borrowing is already completely out of control. This measure makes our future problems substantially worse” [32]. Such sentiments were reiterated by representatives from the other groups opposed to the proposition, including Marcy Darnovsky from the

Center for Genetics and Society, who was quoted saying “we don’t see any evidence to support that” [14] and “there are no guarantees that taxpayers’ investment will result in a financial return” [8].

Concerns about fiscal risks and benefits to the state of California were closely aligned to issues of governance and economic liberalism. These arguments became more prevalent post-election and continued to dominate the media coverage as focus shifted from the proposition’s proposal to its implementation. There were concerns about how the state and private investors would share in any economic benefits. These concerns persisted despite assurances from the proposition’s proponents and other political supporters, such as former US federal Secretary of State Republican George Shultz who was quoted saying that Proposition 71 was “quite well-designed from a fiscal standpoint and from a governance standpoint” [36].

These types of reassurances tended to be rejected by opponents of Proposition 71 such as Dr H Rex Greene, an oncologist from San Mateo, as an attempt to “subsidise a start-up industry out of the taxpayers’ pockets” [13], and Wayne Johnson, who criticised the proposition as allocating “billions and billions of dollars to people to really use almost any way they wish...without any real assurance that the taxpayers get any benefit from it” [25]. Co-founders of the Pro-Choice Alliance for Responsible Stem Cell Research Susan Fogeland and Francine Coeytaux further expressed concerns regarding the proposition’s “lack of transparency and lack of public accountability” [18] and an “inherent conflict of interest in the structure of the oversight committee” [15]. After the passage of the initiative, even apparent supporters of the proposition echoed these sentiments. For example, Steven Blackledge, legislative director at CalPIRG (California Public Interest Research Group), argued for the need to “make sure that private companies do not profit unfairly from public money” [23], and political representative Democrat Deborah Ortiz, a high-profile supporter of the proposition, pushed to ensure that “publicly financed stem cell findings will benefit California taxpayers and consumers” [16], notably by introducing legislative oversight of the bond’s implementation [5].

Many of these arguments were also linked to other themes that emerged in the coverage, such as resource allocation, intellectual property, the commercialisation of scientific research and federalism. The latter theme

was indicative of dissatisfaction with national science policy and long-standing tensions between state and federal legislative jurisdictions, as well as questions regarding the appropriateness of a decentralised scheme for the allocation of research priorities and the funding of scientific research. Economic arguments concerning resource allocation also reflected ethical issues regarding social justice, in as much as disputes arose regarding the commitment of substantial resources to a highly specific area of science with limited clinical relevance.

Ethical Discourses

Arguments that had already been raised in the extant bioethical literature on stem cell research and those that posed questions about values and beliefs about what *ought* to happen were identified for the purposes of this study as ethical arguments. Two key arguments emerged from the ethical discourses: those focused on potential medical and therapeutic utility of stem cell research, which dominated the ethical discourse, and those that emphasised the welfare of human embryos, but not merely in terms of the moral status of the embryo. Many other ethical issues emerged in the media coverage relating to much broader issues, such as the commodification of human tissues, informed consent, the protection of research subjects, the exploitation of women, public trust, moral imperatives, human dignity, slippery slopes and “playing god.” None of these ethical issues were covered in any great detail in the mass media, yet their presence suggests that arguments concerning the moral status of the human embryo were not the only ones of ethical import.

Strong claims were made throughout the public discourse by those who proposed Proposition 71 that pertained to the potential (or certain) utility of stem cell research in deriving therapies, and hence saving the lives of millions of patients with a range of diseases, such as cancer, type 1 diabetes, Parkinson’s disease, spinal cord injuries, degenerative diseases, heart disease, Alzheimer’s disease and about “70 other diseases” [37]. This message was endorsed by other strategic participants, including many of its political and institutional supporters, patients and their families/friends (particularly those with celebrity status) and patient advocacy groups. The potential clinical benefit created a moral imperative which supported the research: “if the

work could cure diseases, it would be unethical not to do it” [9].

The scientific and research communities tended to be more hesitant in arguing for the clinical benefits of stem cell research, with the notable exception of Nobel Prize winner Dr Paul Berg, who was quoted as saying that “stem cell research is an important scientific and medical breakthrough that can produce new cures for diseases like cancer, heart disease, diabetes and Parkinson’s” [41]. More cautious voices emerged in the discourse following the passage of Proposition 71 which expressed reservations about raising public expectations about short-term therapeutic outcomes and warned against ‘overselling’ the science. Dr Michael German from the Diabetes Center at the University of California, San Francisco was quoted expressing concerns that “Now there are expectations of us... Sometimes in the run-up to the election, those in favor of this made some strong claims” [17]. Dr Stuart Newman, from the New York Medical College, stated that “from the way that the campaign was conducted ...[it is clear that] the people who were funding the ballot initiative often didn’t have scruples in how... they were portraying the promise of the technology...You want the public to be able to trust what is being said. Scientists know that what science consists of is not only promise but limitations” [10]. Perhaps the strongest criticism of claims of medical benefits from stem cell research was provided by the communications director of the 2004 California Catholic Conference in Sacramento Carol Hogan, who was quoted as saying: “The people promoting this are manipulating victims of chronic diseases and spinal cord injury and other injuries into believing the cure is just around the corner, and that is absolutely not true” [14].

Some participants opposing the proposition, particularly those speaking from a Christian religious perspective, expressed general objections to research on human embryos. Other quotes from Hogan illustrate these objections: “you can’t take a stem cell out of an embryo without killing it, and the embryo is the earliest form of human life” [14]. This study found very few instances of explicit ethical arguments in opposition to hESC research based on the belief that human embryos have full moral and legal status as humans and that any research that destroys them is therefore unethical. Nonetheless, the moral status of the embryo was often used by journalists, who framed their reports about

opposition to Proposition 71 within the context of the ongoing political controversy at the federal level.

Whilst one would expect that arguments regarding moral status would be made by those opposing stem cell research (and rejected by those who support it), in fact both groups appear to acknowledge the moral and social value accorded to the embryo, while giving it different weight. This was manifest in expressions of the inherent dignity of the embryo, the need to respect the embryo and the need to avoid ‘wastage’ of embryos. Arguments that “the early-stage embryos involved in the research would be destroyed anyway because they are left over from in-vitro fertilization” [14] implicitly acknowledge that embryos have value, and that this value can be more appropriately recognised by using them for research rather than disposing of them.

Arguments regarding the epistemic utility of different sources of stem cells were also used to support particular ethical positions. For instance, analysis of the discourse revealed arguments suggesting that research utilising non-embryonic sources of stem cells was not only more scientifically valid but also more ethical, and undermining claims in favor of use of hESCs. According to Richard Doerflinger from the National Conference of Catholic Bishops, “the practical and scientific obstacles against embryonic stem cell treatments...are rapidly being outpaced by advances in alternatives, including adult stem cells,” and groups in opposition to the research generally claimed that “the adult-derived stem cells offer much more promise than the embryonic cells, with none of the ethical baggage” [19].

Epistemological Discourses

This analytic category included those arguments that made explicit reference to the generation and pursuit of scientific and biomedical knowledge. Few such arguments were found in our analysis of the discourse surrounding Proposition 71. The arguments present in this discourse generally related to the epistemic utility of hESC lines (particularly those approved by National Institutes of Health [NIH] for federal funding), the value of scientific knowledge and medical research and epistemological concerns relating to resource allocation.

The majority of these arguments focused on epistemic utility. It was maintained, for example, that President Bush’s 2001 policy of limiting federal

funding to existing embryonic stem cell lines provided insufficient research materials to enable a viable stem cell research program. As Dr Keith Yamamoto from the University of California, San Francisco stated, “federal policies are actually inhibiting this research” [19], as the federally approved cell lines had been contaminated by being cultured on mouse feeder cells, and thus were of limited research value.⁶ As Snyder explained: “some are unstable. Some do bizarre things. One line keeps developing chromosomal abnormalities, spontaneously, no matter what anyone does. You can’t tell if that is in the nature of embryonic stem cells, or is something about these cell lines in particular” [19]. Such arguments provided further justification for scientists and researchers seeking funding for development of new stem cell lines.

There were few dissenting voices to this line of argumentation, with the majority of scientists indicating that research with both adult and embryonic stem cells should be pursued. A leukemia patient from New York, Stephen Sprague, testifying at a legislative hearing on the initiative, reportedly called for a portion of the California bond to be dedicated to research on other sources of stem cells, such as cord blood [38]. The chairman of the proposition’s campaign, Robert Klein,⁷ responded to such concerns by suggesting that, while the proposition would give priority to research involving hESCs, funding was not exclusive to embryonic sources of stem cells and could be used for “other scientific and medical research and technologies” [51]. In short, most of the epistemic discourse was marked by debates over the appropriate sources of stem cells, rather than more general concerns about the validity and short-term payoffs of this type of research. Indeed, there was little disagreement between those who supported and those who opposed Proposition 71 that some type of stem cell research should be pursued.

⁶ Note that whilst it was known that all NIH-approved cell lines had been cultured with mouse feeder layers and that it was likely that they would be contaminated with non-human products, empirical evidence for this was not published until January 2005. Whilst this announcement received considerable media coverage, this did not occur until after the vote on Proposition 71, and thus did not influence the outcomes of the present analysis.

⁷ Robert Klein II was frequently cited in the media text as being a Palo Alto (CA) real estate developer whose son has Type I diabetes and was previously involved in an initiative campaign for affordable housing.

Discussion: Public Discourse Surrounding Stem Cell Research

In summary, arguments that might have been expected to dominate the discourse surrounding stem cell research, specifically those relating to the moral status of the embryo, in fact did not. Indeed, no single issue dominated the discourse. Nor were the issues raised confined to economic and political considerations, despite the fact that the public discourse analysed in this study centered on a fairly narrow and specific policy issue (i.e., public funding for scientific research). What is striking is that arguments based upon judgments about utility or medical benefit, rather than those focused on the status of the embryo, dominated the discourse both for and against stem cell research. Arguments against the passage of Proposition 71 often referred to the absence of utility, or the low likelihood of benefit, of hESC research, and relied on the likelihood of benefit from existing, permissible research programs (i.e., adult stem cell research) in the next decade.

The use of arguments based upon beneficence is not unusual in debates surrounding healthcare policy. What is unusual in this case is that these arguments are in fact quite speculative in terms of the actual evidence for benefit (or in the case of those opposed to the research, lack of benefit), given the current state of uncertainty with regard to this area of scientific research. The other notable feature in arguments based on utility or beneficence made in the public discourse surrounding Proposition 71 is that these arguments featured prominently in and carried significant weight not only in the ethical discourse, but also in the political and economic discourses. To argue that investment in stem cell research will yield economic benefits in terms of reductions in public health expenditure (through the generation of new industries and competitive positioning within a global marketplace) implicitly relies on the assumption that the supposed medical and therapeutic benefits will be significant and affordable to a large proportion of the population. This grounding of political, economic and in fact moral imperatives in possibly illusory promises of benefit is problematic because it provides a fragile structure for public policy and the maintenance of trust in science, medicine, government and social institutions.

This study clearly demonstrates that the public discourse surrounding Proposition 71 was characterised by diverse and interconnected arguments, the majority of which were underpinned in some way by ethical argu-

ments, even where the language was not in traditional ethical terms or the ethical arguments were not explicit. Arguments over whether stem cells sourced from human embryos have greater utility than those sourced from mature adult tissues were not merely epistemological disputes, but they also displayed underlying political and economic dimensions concerning resource allocation. The economic arguments implicitly contained ethical constructions regarding utility, beneficence, equity and justice; the political arguments regarding resource allocation implicitly (and sometimes explicitly) referred to notions of fairness, equity and justice, duty of care and opportunity costs. Epistemological arguments surrounding the utility of embryonic versus non-embryonic sources of stem cells were typically based on moral concerns regarding the status of the body generally and of the embryo specifically.

Furthermore, the re-articulation of ethical arguments in political and epistemological terms within the public discourse not only added to the complexity of the debate, but also seems to have permitted temporary alliances between religious and secular groups which enabled them to reach the broadest possible audience. Given that any one individual or group may be a member of many discourse communities, it is perhaps not unsurprising that the results of our study demonstrated that participants do form alliances with others sharing similar goals, despite fundamental differences in their views regarding issues such as the moral status of the embryo. The most obvious example of this was the apparent alliance between religious groups and women's rights advocates. Indeed, the reframing of political arguments in terms of ethical ones can be viewed as having created opportunities for various interested publics with strongly opposing views on the embryo to draw on shared values, form alliances and perhaps reach some sort of instrumental consensus, despite fundamental differences in their moral beliefs.

This study also shows that some types of arguments were not prevalent in the public discourse (and perhaps even were absent altogether). Concerns regarding the 'hype' surrounding the potential medical benefits of stem cell research and its implications for public expectations were notably absent from the public discourse prior to the passage of Proposition 71, though they were later noted by a number of scientific and institutional actors. The reasons for this phenomenon are unclear, but perhaps point to reluc-

tance on the part of the scientific and medical communities to openly question the value of this line of research or to criticise each other; fears about aligning with religious and other actors opposed to hESC research; or the influence of commercial, academic and media interests in framing and limiting crucial debate.

Implications for Future Research and Policy

The results of our research suggest that bioethics and public policy development are poorly served by ethical analysis of complex issues such as stem cell research (or other emergent biotechnologies) through unifocal lenses, through emphasis on single moral issues or in terms of a limited number of moral concerns. While attention to the moral status of the embryo is an important feature of ethical arguments surrounding stem cell research, categorisation of discourse themes solely in terms of moral status tends to polarise the debate and limits opportunities for the identification of shared values, the construction of political alliances and the development of social consensus.

Further, while the issues surrounding stem cell research share similarities with ethical debates surrounding contraception, termination of pregnancy and assisted reproductive technologies, bioethicists should not assume they can simply frame their analytic categories in terms of perceived similarities to these previous ethical debates. Not only may there be a complex range of moral concerns in play in public and professional debates on stem cell research, but there may also be complex interrelationships between economic, sociopolitical and ethical discourses, as were revealed in this study. What is required, therefore, is that bioethicists actively seek empirical inputs and participate in interdisciplinary generation of evidence. Drawing from a range of academic disciplines, including economics, political philosophy, linguistics, sociology and law, may provide important insights into the complexity and dynamism of the public discourse surrounding stem cell research. There is much to be gained for bioethics and for policy development from genuine interdisciplinary dialogue that eschews intellectual presumptions that may not have relevance for the issue at hand. Ethical critiques that fail to recognise the complexities inherent in public discourses and fail to take account of the social

and political contexts in which these discourses occur can never serve as a sound foundation for public policy making.

Author Declaration

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References

- Berelson, B. (1952). *Content analysis in communication research*. Illinois: The Free Press.
- Berkowitz, D. (1992). Who sets the media agenda? The ability of policymakers to determine news decisions. In J. D. Kennamer (Ed.), *Public opinion, the press, and public policy* (pp. 81–102). Westport, Connecticut: Praeger Publishers.
- Brannigan, M. (2004). Fixations on the moral standing of the embryo. In J. M. Humber & R. F. Almeder (Eds.), *Biomedical ethics reviews: stem cell research* (pp. 43–57). Totowa, New Jersey: Humana Press Inc.
- Bruck, C. (2004). *Should a ballot initiative determine the fate of stem-cell research?* The New Yorker (pp. 62–82), October 18.
- Cohen, J. (2005). Proposed legislation threatens to slow California stem cell rush. *Science*, 307(5717), 1857.
- Danielian, L. (1992). Interest groups in the news. In J. D. Kennamer (Ed.), *Public opinion, the press, and public policy* (pp. 63–79). Westport, Connecticut: Praeger Publishers.

7. Doubois, P. L., & Feeney, F. (1998). *Lawmaking by initiative: issues, options and comparisons*. New York: Agathon Press.
8. Garvey, M. (2004). State bets on the promise of stem cell research. *Los Angeles Times* (online) 2004 Nov 4 (cited 2005 Jan 14). Available from: <http://www.latimes.com/news/politics/2004/la-me-stemcell4nov04,1,5240788.story?coll=la-home-headlines>.
9. Garvey, M. (2004). Stem cell initiative attracts backers. *Los Angeles Times* (online) 2004 Aug 31 (cited 2005 Jan 14). Available from: <http://www.latimes.com/news/local/la-mestem31aug31,1,6466141.story?coll=la-headlines-california>.
10. Garvey, M. (2004). Stem cell post likely to go to Klein. *Los Angeles Times* (online) 2004 Dec 14 (cited 2005 Jan 14). Available from: <http://www.latimes.com/news/local/la-mestemcell14dec14,1,2535278.story>.
11. Gaskell, G., Bauer, M., & Durant, J. (1998). The representation of biotechnology: policy, media and public perception. In J. Durant & M. Bauer (Eds.), *Biotechnology in the public sphere* (pp. 3–12). London: Science Museum.
12. Habermas, J. (1996). The transformation of the public sphere's political function. In W. Outhwaite (Ed.), *The Habermas reader*. Cambridge: Polity Press.
13. Hall, C. (2004). Foes closing the gap in stem-cell measure. *San Francisco Chronicle* (online) 2004 Oct 15 (cited 2005 Jan 10). Available from: <http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2004/10/15/BAGV099P6N1.DTL>.
14. Hall, C. (2004). Long road ahead for stem cell initiative. *San Francisco Chronicle* (online) 2004 Jun 4 (cited 2005 Jan 10). Available from: <http://sfgate.com/cgi-bin/article.cgi?f=/c/a/2004/06/04/MNG1G70S381.DTL>.
15. Hall, C. (2004). Medical dean put on stem cell panel. *San Francisco Chronicle* (online) 2004 Nov 6 (cited 2005 Jan 10). Available from: <http://sfgate.com/cgi-bin/article.cgi?file=/c/a/2004/11/06/BAGHR9NB101.DTL>.
16. Hall, C. (2004). Nominee pool grows for stem-cell czar. *San Francisco Chronicle* (online) 2004 Dec 12 (cited 2005 Jan 10). Available from: <http://www.sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/2004/12/12/MNGN9AAPGR1.DTL%20>.
17. Hall, C. (2004). Prop. 71 stem cell funds bring hopes of major breakthrough. *San Francisco Chronicle* (online) 2004 Dec 8 (cited 2005 Jan 10). Available from: <http://www.sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/2004/12/08/MNGPBA8DOP1.DTL>.
18. Hall, C. (2004). Stem cell panel scrubs its agenda. *San Francisco Chronicle* (online) 2004 Dec 17 (cited 2005 Jan 10). Available from: <http://sfgate.com/cgi-bin/article.cgi?f=/c/a/2004/12/17/BAGA4AD74H19.DTL>.
19. Hall, C. (2004). Stem-cell research's creative financing. *San Francisco Chronicle* (online) 2004 Mar 15 (cited 2005 Jan 10). Available from: <http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2004/03/15/MNG5T5KMGK1.DTL&hw=creative+financing&sn=002&sc=742>.
20. Hall, W. (2004). The Australian policy debate about human embryonic stem cell research. *Health Law Review*, 12(2), 27–33.
21. Harvey, O. (2005). Regulating stem-cell research and human cloning in an Australian context: an exercise in protecting the status of the human subject. *New Genetics and Society*, 24(2), 125–136.
22. Hiltzik, M. (2004). Benefits of stem cell bond issue in question. *Los Angeles Times* (online) 2004 Aug 23 (cited 2005 Jan 14). Available from: <http://www.latimes.com/business/la-fi-golden23aug23,1,4524240.column?coll=la-headlines-business>.
23. Hiltzik, M. (2004). Stem cell initiative lacks oversight. *Los Angeles Times* (online) 2004 Dec 9 (cited 2005 Jan 14). Available from: <http://www.latimes.com/business/la-fi-golden9dec09,0,621989.column?coll=la-home-utilities>.
24. Holm, S. (2002). Going to the roots of the stem cell controversy. *Bioethics*, 16(6), 493–507.
25. Ingram, C., & Rau, J. (2004). Stem cell initiative certified for ballot. *Los Angeles Times* (online) 2004 Jun 4 (cited 2005 Jan 14). Available from: <http://www.latimes.com/news/local/la-me-stem4jun04,1,4881799.story?coll=la-home-headlines>.
26. Javitt, G. H., Suthers, K., & Hudson, K. (2005). Cloning: a policy analysis. Genetics and Public Policy Center (online) 2005 April (cited 2005 Sep 15). Available from: <http://tools-content.labvelocity.com/pdfs/8/68038.pdf>.
27. Johnson, J. A., & Williams, E. D. (2005). Congressional research service report for Congress: stem cell research. Congressional Research Service (online) 2005 July 18 (cited 2005 Sept 15). Available from: <http://www.usembassy.it/pdf/other/RL31015.pdf>.
28. Kelly, S. E. (2003). Public bioethics and publics: consensus, boundaries, and participation in biomedical science policy. *Science, Technology and Human Values*, 28(3), 339–364.
29. Kennamer, J. D. (1992). Public opinion, the press, and public policy: an introduction. In: J. D. Kennamer (Ed.), *Public opinion, the press, and public policy* (pp. 1–17). Westport, Connecticut: Praeger Publishers.
30. Key, V. O., & Crouch, W. W. (1939). *The initiative and referendum in California*. Berkeley: University of California Press.
31. Krippendorff, K. (1980). *Content analysis: an introduction to its methodology*. Beverly Hills: SAGE Publications.
32. Mathews, J., & Garvey, M. (2004). Schwarzenegger backs stem cell study. *Los Angeles Times* (online) 2004 Oct 19 (cited 2005 Jan 14). Available from: <http://www.latimes.com/news/politics/2004/la-me-stem19oct19,1,1233747.story?coll=la-home-headlines>.
33. Mathews, J. (2004). Stem-cell research initiative receives endorsement. *Los Angeles Times* (online) 2004 Jun 19 (cited 2005 Jan 14). Available from: <http://www.latimes.com/news/local/la-me-stem19jun19,1,2598641.print.story?coll=la-headlines-california>.
34. McQuail, D. (1977). The influence and effects of mass media. In: J. Curran, M. Gurevitch, J. Woollacott, J. Marriott, & C. Roberts (Eds.), *Mass communication and society* (pp. 70–93). Beverly Hills, California: SAGE Publications.
35. Mecoy, L. (2004). Clergy from Sacramento area to denounce stem-cell initiative. *Sacramento Bee* (online) 2004 Oct 26 (cited 2005 Jan 14). Available from: <http://www.sacbee.com/content/politics/story/11220120p-12135904c.html>.
36. Mecoy, L. (2004). George Schultz backs stem cell bond measure. *Sacramento Bee* (online) 2004 Sep 8 (cited 2005 Jan 14). Available from: <http://www.parkinsons-information-exchange-network-online.com/parkmail1/2004c/msg00748.html>.

37. Mecoy, L. (2004). No on stem-cell bond. Sacramento Bee (online) 2004 Aug 8 (cited 2005 Jan 14). Available from: <http://www.sacbee.com/content/politics/story/10312291p-11232418c.html>.
38. Mecoy, L. (2004). Stem cell backers cite savings. Sacramento Bee (online) 2004 Sep 15 (cited 2005 Jan 14). Available from: <http://www.sacbee.com/content/politics/story/10747352p-11665736c.html>.
39. Mecoy, L. (2004). Stem cell measure aims for the sky. Sacramento Bee (online) 2004 Oct 10 (cited 2005 Jan 14). Available from: <http://www.sacbee.com/content/politics/ca/election/story/11044253p-11961089c.html>.
40. Mecoy, L. (2004). Stem cell panel gains momentum. Sacramento Bee (online) 2004 Nov 18 (cited 2005 Jan 14). Available from: <http://www.genetics-and-society.org/newsdisp.asp?id=657>.
41. Mecoy, L. (2004). TV ad enlists Nobel winner to tout Prop. 71. Sacramento Bee (online) 2004 Sep 29 (cited 2005 Jan 14). Available from: <http://www.sacbee.com/content/politics/story/10912680p-11830241c.html>.
42. Nelkin, D. (1987). *Selling science*. New York: W.H. Freeman and Company.
43. Nippert, I. (2002). The pros and cons of human therapeutic cloning in the public debate. *Journal of Biotechnology*, 98(1), 53–60.
44. Nisbet, M. C., & Lewenstein, B. V. (2002). Biotechnology and the American media: the policy process and the elite press. *Science Communication*, 23(4), 359–391.
45. Nisbet, M. C. (2003). Framing science: the stem cell controversy in an age of press/politics. *Harvard International Journal of Press/Politics*, 8(2), 36–70.
46. Parry, S. (2003). The politics of cloning: mapping the rhetorical convergence of embryos and stem cells in parliamentary debates. *New Genetics and Society*, 22(2), 145–168.
47. Pollack, A. (2004). Measure passed, California weighs its future as a stem cell epicenter. New York Times (online) 2004 Nov 4 (cited 2005 Jan 10). Available from: <http://www.nytimes.com/2004/11/04/technology/04cell.html?ex=1257483600&en=374ccaecaaffed45&ei=5088&partner=rssnyt>.
48. Priest, S. H. (2001). Cloning: a study in news production. *Public Understanding of Science*, 10(1), 59–69.
49. Skelton, G. (2004). Is stem cell research the next big thing for California? Los Angeles Times (online) 2004 Oct 14 (cited 2005 Feb 23). Available from: <http://www.latimes.com/news/printedition/california/la-me-cap14oct14,1,7436907.column>.
50. Stevens, J. (2004). California initiative review: November 2004 initiatives—Proposition 71. Capital Centre for Government Law and Policy (online) 2004 Aug 23 (cited 2005 Jan 17). Available from: http://www.mcgeorge.edu/government_law_and_policy/california_initiative_review/november_2004/ccglp_cir_nov2004_prop_71.htm.
51. Tansey, B. (2004). Prop. 71's fine print contains surprises. San Francisco Chronicle (online) 2004 Dec 8 (cited 2005 Jan 10). Available from: <http://www.sfgate.com/cgi-bin/article.cgi?file=/c/a/2004/12/08/MNGPBA8DPN1.DTL>.
52. Walters, L. (2004). Human embryonic stem cell research: an intercultural perspective. *Kennedy Institute of Ethics Journal*, 14(1), 3–39.
53. Williams, C., Kitzinger, J., & Henderson, L. (2003). Envisaging the embryo in stem cell research: rhetorical strategies and media reporting of the ethical debates. *Sociology of Health & Illness*, 25(7), 793–814.