

Health and Biotechnology in Le Vay's *Queer Science*

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Abstract

This article is an interrogation of Le Vay's claim that in determining a biological cause of homosexuality, biotechnology offers considerable benefits for strengthening gay and lesbian identity and minimising negative societal attitudes about homosexuals. I argue that Le Vay's position relies on a desire for a determinable and material homosexual, and on the construction of a relationship that links the benefits of 'health' with the benefits of 'biotechnology'. I focus briefly on key assertions made by Le Vay in his book *Queer Science*: that research into homosexuality has been characterised by 'bad science' which can be eliminated by improving scientific methods, and that gene studies (both family and molecular studies) have had the least harmful impact of all research on the cause of homosexuality. In order to make these assertions, I argue that Le Vay constructs science, men and materiality as privileged over social constructionism, women and the social. As a foray into the genre of popular texts, *Queer Science* is unlikely to have had a significant impact on biotechnology debates, however, I argue that Le Vay's construction of a gay positive biotechnology is crucial for understanding the reinvigoration of science in what is generally considered to be a historically pathologising arena of research.

Technology is integral to the advancement of the world. Fire, the wheel, steam power, electricity, radio transmission, air and space travel, nuclear power, the microchip, DNA: the human race has ever been on the cusp of innovation. Currently, biotechnology is the new frontier. Continuation of research is critical to New Zealand's future. As in the past we should go forward but with care¹.

In New Zealand, the Royal Commission on Genetic Modification sought public and expert opinion on an aspect of biotechnology, that of Genetic Modification². Public opinion has been important to the endeavours of biology and molecular science in constructing claims that regard biotechnology as the new frontier of human innovation.

A contribution to dialogue in the debates surrounding biotechnology includes texts that aim to directly address public opinion on the topic. In this article, I critically interrogate Simon Le Vay's (1996) popular scientific text *Queer Science*, and the positive role he claims for biotechnology in determining a biological basis for homosexuality.

Simon Le Vay's *Queer Science*³ makes compelling reading. *Queer Science* (*QS*) outlines a history of various and prominent research approaches concerned with determining a basis for homosexuality, including psychoanalysis, behaviourism and genetics. *Queer Science* was published after attention had been drawn to Le Vay and his controversial study claiming differences in the brain structure between gay and heterosexual men. The interest over Le Vay was also because he is gay. In the introduction to *QS* Le Vay suggests that he was naïve to the implications of such findings, having 'conducted that piece of research fairly 'innocently' – that is, without a great deal of knowledge of or interest in its potential social implications'.⁴ With this overture, *QS* may be assumed to redress an absence of the social in research querying 'what causes a person to be gay, straight⁵, or bisexual?'⁶ This question forms one of two stated aims of the book; the second aim asks, 'who cares?'.⁷ Similar to Le Vay, I glance over these aims and question an important theme of *QS*; by potentially determining a biological cause of homosexuality, biotechnology offers considerable benefits for strengthening gay and lesbian identity and minimising negative societal attitudes about homosexuals.

Biotechnology refers to the use of technological principles and activities in the identification and analysis of biological materials, often for the stated purpose of improving human life.⁸ The discussion in *Queer Science* refers to a definition of biotechnology that is predominately associated with twin and molecular gene studies that attempt to identify, locate and associate genes with homosexuality in humans. Le Vay discusses the possible 'modification' of genes through evolutionary processes in addition to other research technology interested in locating a biological basis for homosexuality, such as brain studies and endocrinology. The biotechnologies highlighted in *QS*, however, do not encompass genetic modification or genetic engineering (GE), an aspect usually included in the scope of biotechnology. The Royal Commission on Genetic Engineering extends the activities, as discussed by Le Vay, of 'finding' and 'separating out' genes that control particular characteristics to include intervention

in the deletion, change, or moving of genes within an organism; the 'transfer' of genes between organisms and, or other modification or construction of new genes. Le Vay does refer to the destruction of whole organisms or abortion in *QS*, yet his approach to biotechnology appears to rely on partial interpretation and the absence of the concept of Genetic Engineering.

Le Vay's reach into biotechnology is moderated by his attention to social research and understandings. Le Vay is not unfamiliar with Foucault or social constructionist debates surrounding the aetiology, labelling, and categorisation of homosexuality; he draws on and outlines these debates throughout the text. *Queer Science* features discussions on cultural and historical contexts, including chapters on the social context surrounding the sexological research of Ulrichs and Hirschfeld, the labelling and identification of 'homosexuality', and the political activity surrounding its removal from the Diagnostic and Statistical Manual (*DSM*). However, I will argue that Le Vay constructs science, men and materiality⁹ as privileged over social constructionism, women and the social in his claim that biotechnology has a positive and crucial role in determining a biological basis for homosexuality.

Le Vay's Assertions

Le Vay proposes that if researchers clearly identified a material¹⁰ biological basis for homosexuality, then the understanding that homosexuality was not a choice must elicit favourable attitudes, and ultimately end oppression against gays. Rather than examine the complexities of this proposal, which Le Vay asserts by reference to attitudinal studies and anecdotal evidence, he concentrates on his concern that research into homosexuality is characterised by 'bad science'. Le Vay also maintains that in the scope of scientific research, gene studies (both family and molecular studies) have had the least harmful impact of research on the cause of homosexuality. His claim is that improving scientific research and valuing the contribution of molecular genetics offers the best prospects for understanding how diverse sexualities arise. However, Le Vay's construction of homosexuality in *QS* is a gendered account which appears to favour men over women in its ability to locate a material basis of homosexuality.

Bad science

While there is a school of thought that questions the existence of objective phenomenon, I will stay within the commonsense tradition that recognises a world ‘out there’ – a world that exists independently of our explanation of it, but to which we have access through our senses.¹¹

Similar to feminist empiricists, Le Vay characterises much of the scientific research into homosexuality as biased by poor methods.¹² ‘Bias’ may occur through individuals whose thinking has been shaped by personal experience, or the incomplete way that science has been practiced. Le Vay, for example, refers to the sexuality or ‘messianic fervour’¹³ of researchers such as Ulrichs and Hirschfeld who therefore fail in being objective and detached observers.

Le Vay’s argument also relies on evidence that in the name of research gays have lied about being straight (i.e. heterosexual). Debates over participant “bias” appear to inflect responses to research emphasising the constructed nature of sexuality, enduring in such controversies as Margaret Mead’s ethnographic study of girlhood in Samoa. Commenting that it has been almost impossible to categorise sexuality, Le Vay asserts that most people are able to decode their sexuality and that it is not desirable for gays to lie about it. His proposition is dubious. Le Vay elaborates on a ‘dark episode’ in the history of experimentation into homosexuality carried out in Nazi concentration camps where lying about one’s conversion to heterosexuality brought about possible discharge from the camp, and occurred in the face of incredible trauma and consequence.¹⁴ Le Vay’s decontextualisation of such ‘bias’ could be regarded as wholly attentive to the particularly local effect of the concentration camps (and prisons and psychiatric hospitals). However, his focus on ‘bias’ is informed by his deterministic approach, and his restatement that such studies have enabled further research in biological origins of homosexuality.

Le Vay asserts the need to follow scientific norms more rigorously. His bad science argument is focused on applying science more rigorously to research, and on retaining the ‘commonsense’ and ‘tradition’ of science by leaving its understandings intact. This emphasis is highlighted in a discussion over the validity of categorising sexual orientation. Le Vay states that ‘observation and judgement alone cannot tell us if the “sea/land” classification is the most appropriate way to divide up the world surface’. He concludes ‘but, if these definitions

are made sufficiently explicit, we can objectively assess whether and to what degree these categories are based on an objective segregation of the phenomena being considered'.¹⁵ The outcome of certainty in the scientific categorisation of homosexuality relies on a belief in the ability of science to achieve this.

Despite his familiarity with social constructionism, Le Vay does not appear to address critiques of the assumptions and assertions of science, or acknowledge any impossibility in eliminating bias.¹⁶ Le Vay writes instead of 'weak' versus 'strong' social constructionism.¹⁷ 'Strong' social constructionism in his opinion would only be able to claim a capricious sexual orientation. 'Weak' social constructionism is preferable¹⁸ because it accords individuals an 'intrinsic' sexual orientation which is far less important than the 'extrinsic' orientation that people are assigned. I would agree with developing an account of sexuality that critically engages with corporeality.¹⁹ However, Le Vay's view favours a foundationalist convergence between 'weak' social constructionism and biology in its premises, categories and presumptions.²⁰

Le Vay's Science

Le Vay consistently emphasises his interest in resolving a biological cause of homosexuality. In his description of Ulrich's theory of the sexual development of the body as concordant with the development of the mind,²¹ for example, Le Vay is concerned that Ulrich did not appear interested in *why* this concordance occurred (or did not occur in others). However, the position that Le Vay takes up here is a complex one.

Le Vay gives the appearance of balance in attending the social and the biological. The critiques of social and biological research throughout *QS* suggest that Le Vay is interested in a thorough and even-handed interrogation of all research conducted into the aetiology of homosexuality. As Stephanie Rixecker comments 'Le Vay himself does not see a distinction between the "culture versus nature" arguments attributed to the "origins" of homosexuality'.²²

A brief look at how Le Vay summarises his controversial brain studies is illuminating. Le Vay devotes a chapter to describing studies attempting to locate sexuality (and gender) differences in the brain structure. This includes describing his own research into the size of structures in the hypothalamus which he regards as correlating with same or opposite sex attraction, in men. The nucleus of the hypothalamus appeared smaller in the brains of gay men compared to brains of straight

men. Le Vay is careful to stress limitations of the study, including that he used autopsied brains from gay men who had died of AIDS, and that the brain area chosen for study was already regarded as sexually dimorphic, i.e. it was constituted as gendered.²³

Le Vay does not refer to these limitations in the concluding chapter. Rather, he offers the model of a 'package' incorporating varied 'sources' to account for sexual diversity.²⁴ What is noteworthy is that Le Vay's package includes a synergy of biological effects devoid of any of the reservations that each was subject to in their explication. This is more than concluding optimism. Le Vay does not pay the same courtesy to the other non biological accounts, and elaborates again on their weaknesses. 'Psychodynamic theories, by themselves, are grossly deficient, as explanations of why people become gay, straight, or bisexual' he writes, 'but no one can rule out some role for childhood experiences in the establishment of sexual orientation'.²⁵ His approach consistently undermines social theories. Le Vay, for example, uses the targetable John Money case²⁶ to emphasise that biology is important, not social environment. Despite arguing that he regards the notion of all effects as important to homosexuality, he considers it possible to locate the differences between homosexuals, completely in the effects of genes rather than in environmental causes. He acknowledges 'that interactionist theories [...] might have some truth to them, [but] they seem unduly complex for our present state of knowledge'.²⁷

Le Vay frequently accounts for both the need and importance of biological studies offering simple answers. In contrast, he argues that social constructionism is ill-equipped to offer such simplicity. I would agree that in the modernist account of knowledge, the critiques offered by social constructionism do appear to complicate. To assume that that is a problem is also to assume that simple solutions provide the best and most real accounts of the interactions and relationships between objects. Le Vay's own work has been subject to interpretations that have reduced it to its simplest level as the 'gay brain' theory emerged in popular thinking from legal briefs, to journalism and plays.²⁸

Relativism and genetic 'harm'

In reality, the genetic approach so far has been the less harmful of the various disciplines that have been brought to bear on the topic [biological approaches to the study of sexual orientation].²⁹

Le Vay suggests that genetic research has been the least harmful area of research into homosexuality. This is based on his argument that it has not, yet, led to attempts to convert homosexuals and that it is not considered acceptable to convert homosexuals, particularly if it can be argued that a person is 'born' gay. Psychoanalysis, endocrinology and brain studies are apparently positioned as relatively 'more harmful'. That Le Vay's own research is included with the brain studies, is redolent of a strategy for endorsing biological determinism rather than reifying science as causing damage. In a popular context in which genes are interpreted as 'the building blocks' of human development, such claims may be important to make. Le Vay reassures his readers that while screening for gender prior to birth has led to abortions of female foetuses with disability or sickness, such abortions are rare. His libertarian view is that the activity of foetal abortion should not be controlled because it would lead to a restriction of human liberties, and that other actions that might result from live unwanted births would be more unacceptable. His view that genetic research may yet have *future* potential to do harm draws on a similar account which regards individuals rather than biotechnology as responsible for such prospects. Le Vay's problematic removal of biotechnology from any discursive effects of the institutional, language, social or historical contexts enables this position.

Le Vay's perspective that genetic research has been the least harmful area of research into homosexuality is further reflected in the concomitant discourse that biologists are less biased and more 'gay friendly' than social constructivists, psychoanalysts, or behaviourists. The research from the latter, he argues, has led to gross attempts to revert homosexuals to heterosexuals. Le Vay's response to the debates over his own work produces his positionality here. He constructs himself and other biological determinists 'who think that lesbians and gays are "born gay" [as] most likely to support gay rights'.³⁰

Le Vay's construction of 'gay friendliness' will be recognisable to those familiar with gay and lesbian studies. Traditionally, 'gay friendliness' is an approach that emphasises the use of 'lay' knowledge (such as colloquialisms, anecdotes or verifications) from gay communities, or sources and publications from gay communities (Advocate). This strategy is evoked partly because of a limited amount of published academic work on gay issues.³¹ 'Gay friendliness' could be characterised as constituting an understanding of lived experiences as gay

in terms of language, politics, culture, community, or a combination of these, which is sympathetic to 'gay' subjectivities. Le Vay's 'gay friendliness' appears to be at odds with his science, but it enables Le Vay to promote himself as a concerned researcher with the interests of the gay community at heart.

Le Vay's Gender

In his account of the materiality of homosexuality, Le Vay renders gender almost completely indistinct. That is to say that in his assertion that gene research has been the most favourable to homosexuals he makes the direct claim that 'there have been few if any attempts to prevent gay people from reproducing.' On the contrary, he argues, 'there has been uniform and relentless pressure on them to marry and have children'.³² Neither the debates about fit parenting, the sanctioning of celibacy for gay men and women are raised here, nor are processes that have directly targeted women such as the historical sterilisation of lesbians and other proscriptions against 'artificial' reproduction or reproductive processes.³³

However, this is not sufficient to demonstrate Le Vay's reliance on gender in the production of his argument. Le Vay explicitly adopts a sex/gender distinction.³⁴ Gender, the reader is informed, is a social category of biological sex, in line with contemporary definitions.³⁵ Sex differences become a key area for discussion in a chapter considering potential differences in 'mental traits' between lesbians and gay men. Le Vay's demonstration of sex differentiated traits (e.g. handedness, aggressiveness, fingerprint patterns) draws on studies that have been heavily critiqued by feminist researchers.³⁶ Yet Le Vay appears to find it unproblematic that the conflicting evidence and inconclusiveness over sex differentiated traits potentially undermines the ability to determine a material basis for homosexuality without considering it as potentially gendered.

Conceptualising a 'third sex' has enabled queer (and other) theorists to discuss the intersexed body as a material object.³⁷ But where the intersexed body could be regarded as ambiguously gendered, representations of 'gay' and 'lesbian' more closely reflect a gender binary. Le Vay agrees that there is a possibility that the concept of a third sex could evolve from a 'combination of sex-typical and sex-atypical characteristics'.³⁸ This is an idea which he attributes to Ulrichs and Hirschfeld. The notion of a third sex and/or third gender

has also been favourable to some queer theorists in conceptualising a gendering of the hetero/homo binary.³⁹ However, Le Vay dismisses third sex and/or third gender perspectives on the basis that it will be hard to distinguish the 'source' of sex typical or atypical traits and to ascertain if these are primarily the effects of socialisation, prenatal brain differentiation or both. Nor can it account for the diversity within lesbians and gay men.

I concur that when the idea of a 'material' homosexuality (such as in Le Vay's work) acknowledges gender, the notion of a third sex/gender can be readily critiqued. I suggest that this is because of its amenability to being rejected in a system of categorisation that privileges the 'male', 'material' and 'physical' over the 'female' and 'social'. Discourses from gays and lesbians about the aetiology of homosexuality (and these are reproduced in *QS*) suggest a binary between being born gay or realising in later life. This binary is gendered; women are more often associated with the latter position and men with the former. Drawing on this discourse, Le Vay comments that there is 'very strong evidence that genes play a role in sexual orientation, at least in men'⁴⁰ and is of the view that homosexuality, particularly male homosexuality, is inherently biological.

The positioning of 'lesbians' with respect to materiality is helpful to expand on here. In my own research on discourses of lesbian health and sickness (which formed part of a larger, critical poststructural analysis of lesbian health and bodies), I was particularly interested in the construction of a lesbian health discourse, which appeared to refuse a biological or material imperative for locating sickness (as they were understood by the 'self-identified' lesbians that I interviewed). The historical context of lesbian health includes the construction in medicine and psychology of lesbians as sick, unhealthy and deviant, and refers to strategies such as electroshock treatments, hormonal injections and clitoral surgery for conversion to heterosexuality.⁴¹ However, I found that in the context of a 'gay positive' and liberal account of lesbian health, a reclamation of lesbian 'health' occurred through a privileging of the social.⁴² Health in lesbian terms is about overcoming the societal oppressions associated with being gay. The dominant construction of lesbian health was one of being healthier (having healthier lifestyles) than heterosexual women, or through having less stress or overcoming stress commonly associated with 'being gay'. Even in a discourse of lesbian sickness, physical health

issues such as sexually transmitted infections, ovarian or breast cancer were attributed to a social rather than a biological difference between heterosexual and gay women.

Constructing a case for the determination of a physical basis for homosexuality through biotechnology, Le Vay appears to negotiate the discourse of the social and the biological in much the same way as the women I interviewed about lesbian health. In my research, lesbian 'health' is constructed through the social, and is wary of biomedical claims. In *QS*, Le Vay argues that gay men particularly will benefit, in health terms, from biotechnology finding the material cause of homosexuality. A gendered and binary relation between these perspectives is obvious here. In a discussion of benefits for gay women and men of biomedicine and biotechnology, men and materiality appear constituted in binary relation to women and the social. Two considerations must be made here. Le Vay implies that the benefits of biotechnology for gay and lesbian identity can only occur when there is certain scientific evidence of a biological basis for homosexuality. He also does not consistently make a distinction between gay and lesbians but, as demonstrated earlier, where the similarities are tenuous his account relies on the association of women with the social.

Attempts to refute the hegemonic construction of homosexuality as a sickness, in my opinion, motivate and underlie research into the causes of homosexuality. *Queer Science* includes a specific chapter on sickness and health. Le Vay is primarily concerned here with his proposal that the removal of homosexuality from the Diagnostic and Statistical Manual in 1973 was motivated by politics and not by scientific evidence over the cause of homosexuality. This stance is not surprising to Le Vay's conception of science because it reflects a key area of debate in biotechnology – that 'lay' voices are positioned in opposition to medical science and these non-experts are devoid of the reason that science brings to a debate. His concern that political debate could have been so effective over science lends him to redrawing a distinction between medicine and science. He conceptualises medicine as requiring interpretation of human experience; a distinction which enables him to distinguish between cancer as a disease, and schizophrenia or homosexuality as not – what they have become is also not clear. Depathologising homosexuality in this way is problematic because although Le Vay is alert to the idea that research into homosexuality is infused with social, cultural and historical meanings, his strategy

for taking account of it is somewhat dubious.

Concluding comments

The Royal Commission on Genetic Modification constructs biotechnology as integral to progress in New Zealand. Such progress proposes health gains through a favouring of reductionism and biological determinism. This perspective is integral to the claims made by Le Vay, that to locate the physical cause of homosexuality would achieve an end to the oppression of gays and lesbians. The desire for health benefits, as constructed by Le Vay in *Queer Science*, presumes that the progress of science is equivalent to its good.

It could be said that debates over the harms of biotechnology inevitably position scientists as necessarily making extravagant claims, yet the 'homosexual' has been an object of study in scientific research and medicine, constructed in the main as pathological, sick, and deviant. Le Vay is mindful of the need to explore the possibilities of biotechnology for gays and lesbians, despite a general shift in gay positive research away from talking about the biological basis of homosexuality. Le Vay's investment in, and apparent desire for, the material queer, is continually reasserted in *Queer Science* in the advantages that he claims for the homosexual (man); 'he' connotes a tangible substance and stability of the category 'gay'. If science could be responsible for a revolution in the removal of stigma from gays and lesbians, in his view this could certainly be progress.

It is tempting, even to this author, to consider what might be the positive consequences of research that proposed a 'gay gene'; a 'gay brain'. Le Vay proposes that it could be possible in the future to inject cells into the brain to change the nature of sexual orientation – that is to convert from homosexuality to heterosexuality. However, Le Vay does not also make the reasonable assertion that it would be entirely possible or preferable to convert from heterosexuality to homosexuality. Yet even this ideal is unrealistic because the scientific and social constructions of the material queer not only inform but are informed by the construction of male/female, gay/lesbian, healthy/unhealthy subjectivities. This epistemology is crucial to understanding current debates on biotechnology in New Zealand.

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Notes

- ¹ Royal Commission on Genetic Modification, *Executive Summary: The Report of the Royal Commission on Genetic Modification* (New Zealand Government, Wellington, 2002) p. 3.
- ² In the Report of the Royal Commission on Genetic Modification (2002) it was noted that '[t]he Commission considers the term "genetic modification" to be equivalent to and interchangeable with "genetic engineering"' (p. 5)
- ³ Simon Le Vay, *Queer Science. The Use and Abuse of Research into Homosexuality*. (Massachusetts Institute of Technology, Massachusetts, 1996).
- ⁴ Op. cit., p. ix.
- ⁵ Le Vay assumes that heterosexuality is a given or normal state and does not expand on its 'cause'.
- ⁶ Op. cit., p. 1.
- ⁷ Ibid, p. 1.
- ⁸ New Zealand Biotechnology Association, 'Objectives of the NZBA'. 20 May 2002. Available: <http://www.biotech.org.nz/> 20th May 2002.
- ⁹ 'Materiality' refers here to the matter of the body. This is an essentialising account, distinguished from poststructural analyses that conceptualise the usual divide between body matter and discursive dimensions as impossible to sustain. Corrine Squire, 'AIDS Panic' in Jane Ussher (ed.), *Body Talk: The Material and Discursive Regulation of Sexuality, Madness and Reproduction* (Routledge, London, 1997), pp. 50–69.
- ¹⁰ Material refers to the physical of the body, and is understood in the context of poststructural analyses that designate a psychic as well as physical reality to the lived body. Corrine Squire, pp. 50–69.
- ¹¹ Le Vay, p. 42.
- ¹² Sandra Harding, 'Conclusion: Epistemological Questions', in Sandra Harding (ed.), *Feminism and Methodology* (Indiana University Press, Bloomington, 1987) pp. 181–90.
- ¹³ Le Vay, p. 18.
- ¹⁴ Op. cit., pp. 113–14.
- ¹⁵ Op. cit., p. 44.
- ¹⁶ Liz Stanley and Sue Wise (eds), *Breaking Out Again: Feminist Ontology and*

Epistemology (Routledge, London, 1993).

¹⁷ Le Vay, p. 75.

¹⁸ In Le Vay's opinion, 'weak' social constructionists are also preferable to 'strong' ones because the latter would regard scientific researchers as 'victims of crass literal-mindedness' (p. 56)

¹⁹ Corporeality refers to attempts to conceive of the body in ways other than in terms of dualisms such as mind/body, inside/outside, nature/culture. Corporeal approaches tend to deny 'the 'real'', material body on one hand, and its various cultural and historical representations on the other ... (and claim) ... that these representations and cultural inscriptions quite literally constitute bodies and help to produce them as such'. Elizabeth Grosz, *Volatile Bodies: Towards a Corporeal Feminism*. (Allen & Unwin, St Leonards, Australia, 1994), p. x.

²⁰ Joan Scott, 'The evidence of experience' in Sharlene Hesse-Biber, Christina Gilmartin, and Robin Lydenberg (eds), *Feminist Approaches to Theory and Methodology* (Oxford University Press, Oxford, 1999) pp. 79–99.

²¹ Le Vay, pp. 12–13.

²² Stephanie Rixecker, 'Exposing Queer Biotechnology Via Queer Archaeology: The Quest to (Re)construct the Human Body from the Inside Out', *World Archaeology*, 32(2), (2000) pp. 263–74; p. 267.

²³ Le Vay, pp. 144–5.

²⁴ Op. cit., p. 278.

²⁵ Op. cit., p. 279.

²⁶ Money's assertion was that gender was constructed rather than inherent. This is characterised in his classic account of 'Joan', who was sex reassigned as a girl, following a botched circumcision as a young boy. However, Joan chose to be reassigned as male ('John') in her late teens. This case has been employed in the verification of essentialist and constructionist accounts (Chris Brickell, 'The Persistence of Essentialism', unpublished paper, 2001). The amenability of this case to both positions lies in the construction of a relationship between sexuality and gender. Essentialists like Le Vay argue that 'because John was always attracted to girls and not boys [that] prenatal events specify gender and sexual orientation rigidly enough to prevail when anatomy, postnatal hormones and socialisation all conspire to produce a different result' (Le Vay, 1996, p. 104).

²⁷ Le Vay, p. 280.

²⁸ Stephanie Rixecker, 'Genetic Engineering and Queer Biotechnology: The Eugenics of the Twenty-First Century?', *Journal of Genocide Research*, 4(1), (2002) pp. 109–26.

²⁹ Le Vay, p. 171.

³⁰ Le Vay, p. 282.

³¹ MacBride-Stewart, S. 2001. Health 'In Queer Street': Constituting sickness sexualities and bodies in the spaces of lesbian health. Unpublished doctoral

thesis, Waikato University, Hamilton, NZ.

³² Le Vay, p. 171.

³³ Jane Ussher, 'Framing the sexual "Other": The regulation of lesbian and gay sexuality', in Jane Ussher (ed.), *Body Talk: The Material and Discursive Regulation of Sexuality, Madness, and Reproduction* (Routledge, London, 1997), pp. 131–58.

³⁴ Many feminist researchers have critiqued the sex/gender distinction, including Judith Butler, *Gender Trouble: Feminism and the Subversion of Identity* (Routledge, New York, 1990).

³⁵ A recent publication from the Institute of Medicine (2001) endorses this distinction between sex and gender. It suggests that *sex* should refer to classification as male or female according to reproductive organs and functions that derive from the chromosomal complement and *gender* should refer to a persons self-presentation as male or female, in terms of their social identity and role. Institute of Medicine, *Exploring the Biological Contributions to Human Health. Does Sex matter?* (National Academy Press, Washington, 2001).

³⁶ Janet Sayers, *Biological Politics: Feminist and Anti-Feminist Perspectives* (London: Tavistock, London, 1982); Ruth Bleier, *Science and Gender: A critique of biology and its theories on women*. (Pergamon Press, New York, 1984); Ruth Hubbard, *The Politics of Women's Biology* (Rutgers University Press, New Brunswick, 1990); Carol Tavris, *The Mismeasure of Woman* (Simon and Schuster, New York, 1992).

³⁷ See also Marjorie Garber, *Vested Interests: Cross-Dressing and Cultural Anxiety*. (Routledge, New York, 1992); Gilbert Herdt, 'Third Genders, third sexes' in Martin Duberman (ed.), *A Queer World: The Centre for Lesbian and Gay Studies Reader* (New York University Press, New York, 1997) pp. 100–107.

³⁸ Le Vay, p. 161.

³⁹ Garber, 1992; Herdt, 1997.

⁴⁰ Le Vay, p. 274.

⁴¹ Patricia Stevens, 'Lesbian health care research: A review of the literature from 1970 to 1990', in P. Stern (ed.), *Lesbian health: What are the issues?* (Taylor and Francis, Washington, 1993), pp. 1–30.

⁴² MacBride-Stewart, 2001.