

RESEARCH ARTICLE

## The evolution of Darwinian sexualities

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### Abstract

Charles Darwin's *Descent of Man* was suffused with questions of courtship, mating and sex. Following in his footsteps, biologists throughout the twentieth century interrogated the sexual behaviour of humans and animals. This paper charts the fate of evolutionary theories of sexuality to argue that – despite legal and social gains of the past century – when biologists used sexual selection as a tool for theorizing the evolution of homosexual behaviour (which happened only rarely), the effect of their theories was to continuously reinscribe normative heterosexuality. If, at the end of the nineteenth century, certain sex theorists viewed homosexuality as a marker of intermediate sex, by the late twentieth a new generation of evolutionary theorists idealized gay men as hyper-masculine biological males whose sexual behaviours were uncompromised by the necessity of accommodating women's sexual preferences. In both cases, normative assumptions about gender were interwoven with those about sexuality. By the twenty-first century, animal exemplars were again mobilized alongside data gathered about human sexual practices in defence of gay rights, but this time by creating the opportunity for naturalization without recourse to biological determinism.

Charles Darwin's *Descent of Man and Selection in Relation to Sex* was suffused with questions of courtship, mating and sex.<sup>1</sup> Darwin's reconstruction of animal history positioned animals as vital sources of information on the development of the sexes and the mechanisms of courtship. Sexologists easily combined Darwinian with Freudian perspectives whereby homosexual desire was often rendered a sign of sex intermediacy.<sup>2</sup> By interpreting

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1 Charles Darwin, *Descent of Man and Selection in Relation to Sex*, 2nd edn, London: John Murray, 1874; Evelleen Richards, *Darwin and the Making of Sexual Selection*, Chicago: The University of Chicago Press, 2017. See also Ross Brooks, 'Darwin's closet: the queer sides of *The Descent of Man* (1871)', *Zoological Journal of the Linnean Society* (2021) 191, pp. 323–46.

2 Sigmund Freud, 'III. The general theory of the neuroses', in Freud, *A General Introduction to Psychoanalysis*, New York: Boni and Liveright, 1920, pp. 309–402. On sexologists who would position homosexuality within gender variance (e.g. Karl Ulrichs, Richard von Krafft-Ebing, Magnus Hirschfeld) see Alice Dreger, *Hermaphrodites and the Medical Invention of Sex*, Cambridge, MA: Harvard University Press, 1998; Vernon Rosario, *Homosexuality and Science: A Guide to the Debates*, Santa Barbara, CA: ABC-CLIO, 2002; Ralph Leck, *Vita Sexualis: Karl Ulrichs and the Origins of Sexual Science*, Urbana: University of Illinois Press, 2016. More on sexologists like Adolf Brand, who resisted this association, can be found in Robert Beachy, *Gay Berlin: Birthplace of a Modern Identity*, New York: Knopf, 2014. See also Eve Kosofsky Sedgwick, *Between Men: English Literature and Male Homosexual Desire*, New York: Columbia University Press, 1985; John D'Emilio and Estelle B. Freedman, *Intimate Matters: A History of Sexuality in America*, Chicago: The University of Chicago Press,

phylogeny as analogous to ontogeny, scientific theories of sexual development reinforced the moral authority of nature as a guide to normative sexual identity and desire.<sup>3</sup>

As sexuality came under scientific and medical scrutiny, homoerotics subtended heterosexuality, rendering desire directed towards a member of the same sex a precursor to the capacity for normative gendered identity later in life. In the words of historian Jennifer Terry, 'homosexual men were imagined as embodying the worst of both savages and women; while they were insatiable in their sexual pursuits and frivolously emotional, they lacked the modesty of bourgeois women and the primal strength of savage men'.<sup>4</sup> Evolutionary theory served rarely as a hopeful intellectual resource for sex radicals at the turn of the last century and was more often invoked in concerns over civilizational degeneration.<sup>5</sup> Psychically, homoeroticism was supposed to disappear as it matured into heterosexuality; evolutionarily, homosexuals were fated for extinction.<sup>6</sup>

Over a century after *Descent of Man*, Joan Roughgarden and colleagues sparked a flash of angry letters to the editors of *Science* by claiming that Charles Darwin's theory of sexual selection could not provide an explanation for the origin of sexual differences because it assumed binary, competing sexualities in animals.<sup>7</sup> Sexual selection, they contended, was fatally flawed; their critics demurred. Roughgarden's hope of constructing a more inclusive evolutionary account of sexuality, without relying on the sexual stereotypes found in Darwin's 'second' theory, caught the attention of science studies scholars, especially those attentive to questions of sex and gender norms.<sup>8</sup>

This paper charts the fate of evolutionary theories of homosexuality from Darwin to Roughgarden, and their entanglement with gendered sexual norms as theorized through animal models of human sexuality. I argue that when evolutionary biologists in the twentieth century used sexual selection as a tool for theorizing the evolution of homosexual behaviour – which happened only rarely – the effect of their theories was to continuously reinscribe normative heterosexuality.<sup>9</sup> As literary scholar Eve Kosofsky Sedgwick

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1988; Jennifer Terry and Jacqueline Urla (eds.), *Deviant Bodies: Critical Perspectives on Difference in Science and Popular Culture*, Bloomington: Indiana University Press, 1995; Vernon A. Rosario (ed.), *Science and Homosexualities*, New York: Routledge, 1997; Edward Stein, *The Mismeasure of Desire: The Science, Theory, and Ethics of Sexual Orientation*, Oxford: Oxford University Press, 1999; Jennifer Terry, *An American Obsession: Science, Medicine, and Homosexuality in Modern Society*, Chicago: The University of Chicago Press, 1999; Joanne Meyerowitz, *How Sex Changed: A History of Transsexuality in the United States*, Cambridge, MA: Harvard University Press, 2002; Dagmar Herzog, *Sexuality in Europe: A Twentieth-Century History*, Cambridge: Cambridge University Press, 2011.

3 E.g. Lorraine Daston and Fernando Vidal (eds.), *The Moral Authority of Nature*, Chicago: The University of Chicago Press, 2004; Jeannette Eileen Jones and Patrick Sharp (eds.), *Darwin in Atlantic Cultures: Evolutionary Visions of Race, Gender, and Sexuality*, New York: Routledge, 2010.

4 Terry, op. cit. (2), p. 35.

5 I borrow the term 'sex radicals' from Anna Clark, *Desire: A History of European Sexuality*, London: Routledge, 2008. On the appropriation of sexual selection by feminists see Kimberly Hamlin, *From Eve to Evolution: Darwin, Science, and Women's Rights in Gilded Age America*, Chicago: The University of Chicago Press, 2014.

6 Jeff Nunokawa, 'In memoriam and the extinction of the homosexual', *ELH* (1991) 58, pp. 427–38.

7 Joan Roughgarden, Meeko Oishi and Erol Akçay, 'Reproductive social behaviour: cooperative genetics to replace sexual selection', *Science* (2006) 311, pp. 965–9.

8 Erika Lorraine Milam, Roberta Millstein, Angela Potochnik and Joan Roughgarden, 'Sex and sensibility: the role of social selection', *Metascience* (2011) 20, pp. 253–77. See also Anne-Fausto Sterling, 'The five sexes: why male and female are not enough', *The Sciences* (1993) 33, pp. 20–5; and Sterling, 'The five sexes, revisited', *The Sciences* (2000) 40, pp. 18–25.

9 Here I analogize homosexuality to race, following Barbara Jeanne Fields, 'Slavery, race and ideology in the United States of America', *New Left Review* (1990) 181, pp. 95–118, in which she argues that societies reuse concepts like 'race' only as long as they continue to have social power. Rather than seeing ideas about sexuality past as constraining the present, this framework urges us to see the present as a moment in which we can shape the future by refusing the politics of the past. See e.g. Jonathan Ned Katz, *The Invention of Heterosexuality*, New York: Dutton, 1995.

elegantly articulated, of the four sexual preoccupations identified by Michel Foucault as critical to understanding Victorian sensibilities (the masturbating child, the hysterical woman, sex in marriage and the medicalization of perversions), the one with real staying power turned out to be the medicalization of what came to be known as ‘sexual orientation’.<sup>10</sup> Sedgwick added that although ideas of homosexuality and heterosexuality are ontologically inseparable, they have never been understood as co-equal – heterosexuality as a category was defined by the exclusion of homosexuality. Thus, in the twentieth century, the seemingly ritualized and unending debates of nature and nurture took place against an unstable background of fantasies about both nature and nurture. Ideas about the sexual behaviour of animals constituted a crucial basis for theorizing (or, following Sedgwick, fantasizing) nature as normative, because evolutionary biologists’ arguments rested on a fundamental division of character and behaviours into female/feminine and male/masculine.<sup>11</sup> The story that follows will be familiar in that it adheres in its outlines to histories of sexuality that have highlighted the cultural assumptions wrought in medical and scientific theories that stigmatized some sexual behaviours as abnormal while lauding others as wholesome and necessary to the propagation of the human species.<sup>12</sup> Yet most histories of evolution do not wrestle with sexuality – even those that have taken questions of sex and gender within evolutionary theory as their main goal.<sup>13</sup>

A closer look at evolutionary theories of sexuality reveals how even the biologists who found homosexuality to be a good tool to think with (like altruism) often assumed that homosexual preferences should eventually go extinct (Figure 1). (Like the sexologists, evolutionary biologists also concentrated the bulk of their intellectual attention on men.<sup>14</sup>) Animal models of human sexuality – first based mostly on observations of animals in laboratories and zoological gardens, then based on animals in the wild – provided fertile ground for thinking about the normative implications for human behaviour.<sup>15</sup> Psychologists Peter Hegarty and Sean Massey have mobilized Sedgwick’s distinction between universalizing and minoritizing strategies in hopes of guaranteeing same-sex rights through science. They identify two broad phases of evolutionary theorizing about homosexuality that map onto transformations in social-psychological thought more broadly. First, through to the 1970s evolutionists imagined a homoerotic potential within all people. ‘Pathological’ behaviour in this context was assumed to manifest in adults as sexual intermediacy. Then, in the final decades of the twentieth century,

10 Eve Kosofsky Sedgwick, *Epistemology of the Closet*, Berkeley: University of California Press, 1990.

11 Jennifer Terry, “‘Unnatural acts’ in nature: the scientific fascination with queer animals”, *GLQ* (2000) 6, pp. 151–93; Helen Longino, *Studying Human Behaviour: How Scientists Investigate Aggression and Sexuality*, Chicago: The University of Chicago Press, 2013.

12 Sander Gilman, *Difference and Pathology: Stereotypes of Sexuality, Race, and Madness*, Ithaca, NY: Cornell University Press, 1985; Ann Laura Stoler, *Race and the Education of Desire: Foucault’s History of Sexuality and the Colonial Order of Things*, Durham, NC: Duke University Press, 1995; Leck, op. cit. (2); Miriam Reumann, *American Sexual Character: Sex, Gender, and National Identity in the Kinsey Reports*, Berkeley: University of California Press, 2005; David K. Johnson, *The Lavender Scare: The Cold War Persecution of Gays and Lesbians in the Federal Government*, Chicago: The University of Chicago Press, 2004; Margot Canaday, *The Straight State: Sexuality and Citizenship in Twentieth-Century America*, Princeton, NJ: Princeton University Press, 2009.

13 Cynthia Eagle Russett, *Sexual Science: The Victorian Construction of Womanhood*, Cambridge, MA: Harvard University Press, 1989; Erika Lorraine Milam, *Looking for a Few Good Males: Female Choice in Evolutionary Theory*, Baltimore: Johns Hopkins University Press, 2010; Hamlin, op. cit. (5).

14 On resisting this focus see Laura Doan, *Fashioning Sapphism: The Origins of a Modern English Lesbian Culture*, New York: Columbia University Press, 2001; Kirsten Leng, *Sexual Politics and Feminist Science: Women Sexologists in Germany, 1900–1933*, Ithaca, NY: Cornell University Press, 2018.

15 Peter Hegarty and Sean Massey, ‘Anti-homosexual prejudice ... as opposed to what? Queer theory and the social psychology of anti-homosexual attitudes’, *Journal of Homosexuality* (2006) 52, pp. 47–71.



**Figure 1.** 'If homosexuality is inherited, shouldn't it have died out by now?', George Booth, *New Yorker*, 16 August 1993, reprinted in Dean Hamer and Peter Copeland, *Science of Desire*, New York: Simon & Schuster, 1994, p. 182. © George Booth/The New Yorker Collection/The Cartoon Bank.

biologists sought to understand homosexuality as an identity associated with only a minority of the population, baking conservative notions of gender into explanations of homosexuality as biologically based, including a sexual division of labour, mental traits and desires.<sup>16</sup> In both of these phases, a variety of animal species (whether turtles, dogs or primates) served as competing models of naturalized human behaviour. In recent decades, this paper shows, scientists have mobilized the wide array sexual behaviours exhibited by animals to suggest instead that variation in human sexual behaviours, in turn, is not unnatural. The incorporation of numerous animal exemplars into Darwinian models of human sexuality opened a space between old polarities – of psychological fluidity and biological determinism – where naturalization need not require determinism.

### Resisting psychosexual pathology

Evolutionary biologists are fascinated by sexual behaviour of plants and animals. They have linked reproduction to questions of progress or degeneration within populations

<sup>16</sup> On the continuing difficulties differentiating between the effects of sex, gender and sexuality in current biological research see Anne Fausto-Sterling, *Sexing the Body: Gender Politics and the Construction of Sexuality*, New York: Basic Books, 2000; Rebecca Jordan-Young, *Brain Storm: The Flaws in the Science of Sex Differences*, Cambridge, MA: Harvard University Press, 2010.

(especially in eugenic theories of human development in the first half of the century<sup>17</sup>), speciation and extinction (in the mid-twentieth century<sup>18</sup>), and aggressive and cooperative behaviours (in subsequent decades<sup>19</sup>). As a result, attending to sexuality in evolutionary theory is not difficult. Reproduction is what makes evolution by both natural and sexual selection work – one individual survives, reproduces and passes their genetic material on to the next generation. This fascination characterizes students of animal behaviour equally well, perhaps in part because mating displays provide occasions to observe highly visible (and sometimes spectacular) species-specific courtship behaviours. Biologists themselves know this. Helen Spurway and J.B.S. Haldane wrote in 1953, ‘Animal ethology is mainly the study of complex coordinated muscular movements culminating in consummatory acts useful for the preservation of the species. Among these processes are breathing, drinking, eating, and reproduction, often in that order of priority.’ However, they added, ‘Ethologists have studied them in the opposite order of priority.’<sup>20</sup> As should be clear, however, non-procreative sexual activity mattered far less.

Within this substantial literature, the publications that refer to homosexuality in passing greatly outnumber those that took the theme as the focus of their investigations. Before the Second World War, scientists often used ‘inverted’ behaviour in animals (almost always males) as a diagnostic tool to measure the ‘naturalness’ of experimental set-ups. When comparative psychologist Gladwyn Kingsley Noble observed in the 1930s that in captivity male spotted turtles attempted to mount other males, for example, he became fascinated by documenting the behavior of the ‘ridden male’. When he observed turtles in their ‘natural habitat’ – and found no evidence of similar behaviour – he dismissed all of his laboratory observations as ‘valueless’ and filled the living quarters of the turtles in his laboratory with leaf litter to restore ‘natural’ courtship.<sup>21</sup> For experimental psychologist John B. Calhoun, his overcrowded rat cities proved a similar lesson in the 1950s and 1960s: urbanization and increased population density led causally to deviant social behaviour, including same-sex mounting behaviour, and also violence, cannibalism, social withdrawal and a loss of the maternal instinct in females.<sup>22</sup> In this context, purported homosexuality in animals reflected unnatural living conditions; it was a symptom rather than a behaviour to be studied in its own right.

Not until evolutionary biologists began to recognize same-sex sexual behaviours in animals as natural – that is to say, as occurring in wild populations and not just in potentially confounding laboratory settings – did they consider homosexual behaviour a biological

17 Gavin de Beer (ed.), *Evolution*, Oxford: Clarendon Press, 1938; Ronald A. Fisher, *The Genetical Theory of Natural Selection*, Oxford: Clarendon Press, 1930; Julian Huxley, ‘Human power and its control’, *Yale Review* (Summer 1931) 4, pp. 649–69.

18 H.G. Wells, Julian S. Huxley and G.P. Wells, *The Science of Life*, Garden City, NY: Doubleday, Doran & Company, 1931; Theodosius Dobzhansky, *Genetics and the Origin of Species*, New York: Columbia University Press, 1937; Ernst Mayr, *Systematics and the Origin of Species from the Viewpoint of a Zoologist*, New York: Columbia University Press, 1942; Julian Huxley, *Evolution: The Modern Synthesis*, London: G. Allen & Unwin, 1942.

19 Desmond Morris, *The Naked Ape: A Zoologist’s Study of the Human Animal*, New York: McGraw-Hill, 1967; Robert Ardrey, *The Territorial Imperative: A Personal Inquiry into the Animal Origins of Property and Nations*, New York: Atheneum, 1966.

20 Helen Spurway and J.B.S. Haldane, ‘The comparative ethology of vertebrate breathing. I. Breathing in newts, with a general survey’, *Behaviour* (1954) 6, pp. 8–34, 8.

21 Gladwyn Kingsley Noble, ‘Copulatory process’ and ‘Homosexuality’, Turtle Research manuscript, Gladwyn Kingsley Noble II-Research: H1-7 Spotted Turtles folder, Noble Papers, Department of Herpetology Archives, American Museum of Natural History, New York. See also Bernard Greenberg and Gladwyn Kingsley Noble, ‘Social behaviour of the American chameleon (*Anolis carolinensis* voigt)’, *Physiological Zoology* (1944) 17, pp. 393–4.

22 Michael Pettit, ‘The queer life of a lab rat’, *History of Psychology* (2012) 15, pp. 217–27; John B. Calhoun, ‘Population density and social pathology’, *Scientific American* (1962) 306, pp. 139–48; John Edwards and Alan Booth, ‘Crowding and human sexual behaviour’, *Social Forces* (1977) 55, pp. 791–808.

trait whose evolution begged explanation. This took time, data, countless observations of animal courtship and a shift in perception. Trained as a zoologist, Alfred Kinsey argued that all sexual behaviour that humans engaged in counted as 'normal' through its very existence.<sup>23</sup> Many of the researchers at the Indiana University's Institute for Sex Research (more popularly known as the Kinsey Institute) adopted this ethic, even when their disciplinary backgrounds varied considerably. People who engaged in homosexual behaviour, Kinsey wrote, ran into difficulty because judgements of abnormality were 'primarily moral evaluations' with 'little if any biologic justification'. Rather than being a result of psychopathology, he continued, 'the problem of the so-called sexual perversions ... is a matter of adjustment between an individual and the society in which he lives'.<sup>24</sup> Ethicists, sociologists, anthropologists, biologists, psychologists and theologians, Kinsey suggested, would necessarily have differing judgements of what constituted 'normal' and 'abnormal' behaviour (sometimes rendered 'natural' and 'unnatural'). In science, he held by way of contrast, questions of morality should never apply. Rather than dichotomizing humans into distinct categories of homo- and heterosexual individuals, Kinsey and his colleagues rated the range of sexual experiences from exclusively heterosexual (0 on a sliding scale) to exclusively homosexual (6), with gradations in between.

One of Kinsey's co-authors and a New York-based sex therapist, Wardell Pomeroy eagerly argued in the pages of *Playboy* that polygamy, masturbation, homosexuality, mouth-genital stimulation and face-to-face intercourse topped his list of behaviours exhibited by non-human animals. Even sexual relations with inanimate objects were more common than most people assumed. He continued, 'the difference between humans and other mammals, therefore, is one of degree and not of kind'.<sup>25</sup> Pomeroy found a simple comparison of humans to other animals insufficient to define typical sexual behaviour, because rape, incest and sadism also occur in mammalian species. So he adopted a series of criteria by which readers might define so-called normal behaviour – statistical (which behaviours are common among humans?), phylogenetic (do animals do it?), moral (according to accepted social norms, should we engage in these behaviours?), legal (what does the current law prohibit?), and social (do such behaviours hurt other people?). Given the wide variety of things people meant by 'normal', Pomeroy argued that normality was a useless metric by which to judge sexual behaviours, and suggested that people should feel free to engage in all kinds of sexual activities, as long as their actions did not interfere with anyone else's liberty.

Another (less publicly visible) scientist who remarked on the widespread occurrence of homosexual behaviour in animals was Frank Beach.<sup>26</sup> Beach worked at the American Museum of Natural History under Noble, and after Noble's death took charge of the Laboratory of Animal Behaviour at the museum for a few years before decamping to Yale University. Beach had trained with animal psychologists Karl Lashley and Harvey Carr at the University of Chicago and came to New York fascinated by animal models

23 E.g. Alfred C. Kinsey, Wardell B. Pomeroy and Clyde E. Martin, *Sexual Behaviour in the Human Male*, Philadelphia: W.B. Saunders Co., 1948; Alfred C. Kinsey, Wardell B. Pomeroy, Clyde E. Martin, Paul H. Gebhard and the Staff of the Institute for Sex Research, Indiana University, *Sexual Behaviour in the Human Female*, Philadelphia: W.B. Saunders Co., 1953.

24 Alfred C. Kinsey, Wardell B. Pomeroy, Clyde E. Martin and Paul H. Gebhard, 'Concepts of normality and abnormality in sexual behaviour', in Paul H. Hoch and Joseph Zubin (eds.), *Psychosexual Development in Health and Disease: The Proceedings of the 38th Annual Meeting of the American Psychopathological Association, Held in New York City, June 1948*, New York: Grune and Stratton, 1949, pp. 11–32, 32.

25 Wardell B. Pomeroy, 'What is normal?', *Playboy* (March 1965) 12, pp. 97, 174–6, 175; Ernest Havemann, 'The sex institute', *Playboy* (September 1965) 12, pp. 139, 152, 164, 194–200, 207.

26 Clellan S. Ford and Frank A. Beach, *Patterns of Sexual Behaviour*, New York: Harper, 1951; Frank Beach (ed.), *Sex and Behaviour*, New York: Wiley, 1965.

of human behaviour and questions about sex, sexuality and their hormonal control. In many of the species he studied, Beach noticed that animals engaged in same-sex sexual behaviour and, like Kinsey, took this as a sign of the behaviours' normalcy. A few years earlier, primatologist Solly Zuckerman had written that he had observed homosexual interactions in young and adult primates at a zoological garden, where both male–male and female–female mounting behaviour appeared to function as regular signals of social dominance.<sup>27</sup> The individual higher in social status always mounted the subordinate individual, Zuckerman suggested, and such encounters were far from uncommon. In the first English translation of André Gide's *Corydon* in 1950, Beach penned eleven brief pages of comments in which he was quite clear about the lesson to be learned from animal behaviour for humans. Gide had won the Nobel Prize in Literature three years earlier and considered *Corydon* an important, necessarily controversial defense of homosexuality.<sup>28</sup> Beach wrote, 'People who say that homosexual activities are biologically abnormal and unnatural are wrong', but also updated Gide's contentions about animal behaviour in light of recent research, including Zuckerman's.<sup>29</sup>

One of the difficulties besetting contemporary discussions of homosexuality, Beach claimed, was the profusion of definitions. To his way of thinking, 'Homosexuality refers exclusively to overt behaviour between two individuals of the same sex. The behaviour must be patently sexual, involving erotic arousal and, in most instances, at least, resulting in satisfaction of the sexual urge.'<sup>30</sup> Beach noted Gide's intimation in his second dialogue that males were more likely than females to engage in homosexual acts because their sexual drive far outpaced that of females. Beach disagreed. He noted that female animals and women were equally likely to exhibit same-sex attraction and behaviour as males and men. Beach also suggested that any biological understanding of homosexual behaviour would have to take account of the fact that 'different degrees' of behavioural 'intergradation' existed. Again following Kinsey, Beach argued that if one were to simplify the range of possible behaviours into three categories of identity – strictly heterosexual, strictly homosexual and bisexual – then the zoological evidence 'might predict that bisexual human beings would outnumber the other two groups combined'.<sup>31</sup>

Beach belonged to a group of American scientists who referred to themselves as 'psychobiologists' – a category that has largely disappeared from our current scientific vocabulary. Like Kinsey and Noble, much of his research on sex and hormones was funded by the National Research Council, Committee for Research in Problems of Sex.<sup>32</sup> As the name suggests, psychobiologists sought (and continue to seek) to understand the biological and psychological grounding of human behaviour in animal models and were

27 Solly Zuckerman, *The Social Life of Monkeys and Apes*, London: Routledge and Kegan Paul, 1981 (first published 1932), pp. 289–90, 344.

28 Gide's *Corydon* ranked fourth in the *Lambda Book Report's* '100 lesbian and gay books that changed our lives' (Jesse Monteagudo, *Lambda Book Report* (2000) 8, pp. 12–13), and the book has inspired a vast scholarship. Given Beach's scientific stature and interest in the topic, his involvement invested the discussion with authority of science. 'Publisher's note', in André Gide, *Corydon* (tr. Hugh Gibb), New York: Farrar, Strauss and Company, 1950, p. vii.

29 Frank Beach, 'Comments on the second dialogue in *Corydon*', in Gide, op. cit. (28), pp. 179–89.

30 Beach, op. cit. (29), p. 180.

31 Beach, op. cit. (29), p. 187. Beach did not detail comparisons between humans and any one species of animal but instead appealed to 'zoological evidence' in a broad sense.

32 Paul R. Abramson and Steven D. Pinkerton (eds.), *Sexual Nature and Sexual Culture*, Chicago: The University of Chicago Press, 1995; Adele Clarke, *Disciplining Reproduction: Modernity, American Life Sciences, and 'the Problems of Sex'*, Berkeley: University of California Press, 1998. On the extent of this network see Michael Pettit, D. Serykh and C.D. Green, 'Multispecies networks: visualizing the psychological research of the Committee for Research in Problems of Sex', *Isis* (2015) 106, pp. 121–49.

fascinated by the sexual behaviour of their research organisms.<sup>33</sup> Psychobiologists often referred to same-sex encounters in animals as ‘homosexual’.<sup>34</sup> When he observed an individual animal engaging in sexual encounters with both males and females, Beach concluded that these individuals might possess a ‘bisexual neuromuscular organization’. (Or such individuals might just be exhibiting synchronized breeding cycles – when fish spawned in close proximity to many other individuals, for example, it was hard to tell the difference.<sup>35</sup>) Combined, the research of psychobiologists recognized the widespread existence of same-sex sexual behaviours in the animals they studied. This opened up the possibility that comparative evidence from animals could contribute to ongoing arguments for the normalcy of same-sex desire and sexuality. This was true, at least in the case of Beach, who took on this perspective directly and in print.<sup>36</sup>

Across the Atlantic, British zoologist Desmond Morris also found these questions fascinating. Drawing from his dissertation research on ‘pseudomale’ and ‘pseudofemale’ behaviour in stickleback fish and zebra finches – that is to say, males that exhibited female-typical courtship behaviours and vice versa – as well as the research of the psychobiologists, he remarked in 1952 that the species in which pseudofemale and pseudomale behaviour had been observed were exactly those species that had been studied extensively. He believed that this indicated ‘that such behaviour is of a much wider occurrence in the animal kingdom than was previously believed, and that it is only revealed after a detailed study of the animal concerned has been carried out’.<sup>37</sup> In 1955, Morris tried to clarify the relationship between sexual inversion on the one hand (meaning pseudomale and pseudofemale behaviour) and homosexuality on the other.<sup>38</sup> Self-consciously following Kinsey, Morris sought to make his behavioural terminology comparable to Kinsey’s in discussing human behaviour – homosexual encounters, then, necessarily involved two individuals of the same sex, only one of whom behaved in a sex-inverted fashion. If a male acting like a female engaged in courtship with a female acting like a male, then biologists, he believed, should refer to that as a case of heterosexual courtship.

In his sensationally popular *The Naked Ape*, Morris further distinguished between a ‘homosexual act of pseudo-copulation’ and ‘the development of a homosexual fixation’.<sup>39</sup> The former, he noted, was far from ‘unusual ... many species indulge in this, under a variety of circumstances’. But, he continued, ‘the formation of a homosexual pair-bond is reproductively unsound, since it cannot lead to the production of offspring and wastes potential breeding adults’. Many other human behaviours, of course, fell into the same category

33 ‘Sociobiology’ came briefly into usage as a synonym for ‘psychobiology’ in the 1940s but that terminology largely disappeared as well. Anne Roe and George Gaylord Simpson (eds.), *Behaviour and Evolution*, New Haven, CT: Yale University Press, 1958.

34 John L. Hampson, ‘Determinants of psychosexual orientation’, in Beach, op. cit. (26), pp. 108–32; William Davenport, ‘Sexual patterns and their regulation in a society of the southwest Pacific’, in Beach, op. cit. (26), pp. 164–207.

35 Bernard Greenberg, ‘Spawning and parental behaviour in female pairs of the jewel fish, *Hemichromis bimaculatus* Gill’, *Behaviour* (1961) 188, pp. 44–61, 59.

36 In arguing (unsuccessfully) that Clive Boutilier should not be deported because of past homosexual activities, the defense in *Boutilier v. Immigration and Naturalization Service*, 387 U.S. 118 (1967), cited Beach’s experiments on animals documented in Ford and Beach, op. cit. (26), among other expert texts. See Marc Stein, *Sexual Injustice: Supreme Court Decisions from Griswold to Roe*, Chapel Hill: University of North Carolina Press, 2010, p. 176.

37 Desmond Morris, ‘Homosexuality in the ten-spined stickleback (*Pygosteus pungitius* L.)’, *Behaviour* (1952) 4, pp. 233–61, 258; see also Morris, ‘The reproductive behaviour of the zebra finch (*Poephila guttata*), with special reference to pseudofemale behaviour and displacement activities’, *Behaviour* (1954) 6, pp. 271–322.

38 Desmond Morris, ‘Causation of pseudofemale and pseudomale behaviour: a further comment’, *Behaviour* (1955) 8, pp. 46–56, 53–5.

39 Morris, op. cit. (19), p. 63.



and a few pages later he pointed out that '[s]uch groups as monks, nuns, long-term spinsters and bachelors and permanent homosexuals are all, in a reproductive sense, aberrant. Society has bred them, but they have failed to return the compliment'.<sup>40</sup> He implied, through association with these other cultural identities, that exclusive homosexuality was, if not a lifestyle choice, then the result of social circumstances rather than biology, even though occasional sexual encounters between two males could be expected as a part of any individual's lifetime sexual repertoire – he was silent on sex between females.<sup>41</sup>

By the end of the 1960s, public assumptions about sex and sexuality were rapidly changing.<sup>42</sup> *Playboy* magazine gained steadily in distribution, becoming a dorm room staple if not entirely respectable. With help from contraception in the form of a discrete pill, the sexual revolution was blooming.<sup>43</sup> Books on the sexual behaviour of Americans continued to generate sales and controversies, from William Masters and Virginia Johnson's *Human Sexual Response* to Alex Comfort's *The Joy of Sex* (which spent over a year on the *New York Times* bestseller list).<sup>44</sup> Morris's *Naked Ape* built on recent research in sexology to argue that humans' capacity for sexual pleasure helped unite men and women in cooperative long-term sexual unions that, in turn, formed the basis of human social structures.<sup>45</sup> In the midst of this sexual revolution and building on a decade of media attention to questions of homosexuality raised in part by the controversy over the Kinsey reports, the underground circulation of gay and lesbian magazines, guides and gossip sheets helped forge an increasingly visible gay community.<sup>46</sup>

Even among heterosexuals, countercultural stereotypes seemed to push against the previous generation's clear division between feminine and masculine forms of dress and behaviour. In June 1962, for example, a *Playboy* panel on the 'Womanization of America' asked eight men to reflect on the newfound 'dominance' of women in society and whether these new women posed a threat to traditional manhood.<sup>47</sup> Most of the scientists were psychologically trained, with the exception of one anthropologist, Ashley Montagu – author of *The Natural Superiority of Women*.<sup>48</sup> The panel concluded on

40 Morris, op. cit. (19), p. 67.

41 On the perceived singularity of 'exclusive homosexuality' in humans see also Lawrence Zelic Freedman and Anne Roe, 'Evolution and human behaviour', in Roe and Simpson, op. cit. (33), pp. 455–79, 468.

42 E.g. Beth Bailey, *Sex in the Heartland*, Cambridge, MA: Harvard University Press, 1999; Jeffrey Moran, *Teaching Sex: The Shaping of Adolescence in the 20th Century*, Cambridge, MA: Harvard University Press, 2000.

43 Lara Marks, *Sexual Chemistry: A History of the Contraceptive Pill*, New Haven, CT: Yale University Press, 2001; Hera Cook, *The Long Sexual Revolution: English Women, Sex, and Contraception, 1800–1975*, Oxford: Oxford University Press, 2005; Elaine Tyler May, *America and the Pill: A History of Promise, Peril, and Liberation*, New York: Basic Books, 2010.

44 William Masters and Virginia Johnson, *Human Sexual Response*, New York: Bantam Books, 1966; Alex Comfort (ed.), *The Joy of Sex: A Cordon Bleu Guide to Lovemaking*, New York: Crown, 1972. Even conservatives advocated sexual experimentation within the confines of marriage; e.g. Tim LaHaye and Beverly LaHaye's explicit *Act of Marriage: The Beauty of Sexual Love*, Grand Rapids, MI: Zondervan, 1976.

45 Erika Lorraine Milam, 'Science of the sexy beast: biological masculinities and the *Playboy* lifestyle', in David Kaiser and W. Patrick McCray (eds.), *Groovy Science: Knowledge, Innovation, and American Counterculture*, Chicago: The University of Chicago Press, 2016, pp. 270–302.

46 Karla Jay and Allen Young (eds.), *Out of the Closets*, New York: New York University Press, 1972; Heather Love, *Feeling Backward: Loss and the Politics of Queer History*, Cambridge, MA: Harvard University Press, 2007; Martin Meeker, *Contacts Desired: Gay and Lesbian Communications and Community, 1940s–1970s*, Chicago: The University of Chicago Press, 2006; Leila Rupp, *A Desired Past: A Short History of Same-Sex Love in America*, Chicago: The University of Chicago Press, 1999; John D'Emilio, *Making Trouble: Essays on Gay History, Politics, and the University*, New York: Routledge, 1992.

47 An article by Philip Wylie appeared under the same name in September 1958; see also Elizabeth Fraterrigo, *Playboy and the Making of the Good Life in Modern America*, Oxford: Oxford University Press, 2009, pp. 34–36, 124–6.

48 Ashley Montagu, *The Natural Superiority of Women*, New York: Macmillan, 1953, reissued by Collier Books in 1970.

a hopeful note, that ‘a new spirit on the land’ would teach American youth that ‘one can be masculine without being hairy-chested and muscular; the women, that one can be intelligent and sensitive – and witty and wise – and at the same time completely feminine’. In these new roles for boys and girls the panelists saw a greater range of gender roles, ‘an acting out at last’ that could breathe fresh air into American society.<sup>49</sup> (Future *Playboy* issues, however, reinforced precisely the ‘hairy-chested and muscular’ masculinity that the panel had scorned as too limiting.)

A more radical gay liberation movement followed – building on the successes of the homophile movements of earlier decades – in which activists successfully fought for the decriminalization of homosexual acts and an end to police harassment and other visible signs of cultural oppression. A sign of their success came in 1973 when the American Psychiatric Association (APA) removed homosexuality from the highly influential *Diagnostic and Statistical Manual of Mental Disorders*. In the debates within the APA around the (de)classification of homosexuality, Beach’s animal experiments formed an important basis of argumentation.<sup>50</sup> Over the course of the twentieth century, American psychiatrists had concentrated more intensely on ‘abnormal’ behaviour rather than ‘normal’, as homosexuality itself had been increasingly normalized in cultural and scientific perceptions. The depathologizing of homosexuality in psychiatry reflected the synergy of these trends and a disaggregating of homosexuality from associations with disability and mental illness. With respect to gender variance and ‘transsexuality’, these associations would remain in force, in part because ‘pathology’ had the pragmatic benefit of providing access to treatment in the form of gender-affirming therapies and surgeries. The disaggregation of ‘homosexuality’ from ‘transsexuality’ and gender variance took place both within psychiatry and also among homophile and later gay rights activists, avouching gender and sexuality as distinct categories of human experience.<sup>51</sup> By the mid-1970s, environmentalist explanations of homosexuality as a pathological reaction to overcrowding in cities were also disappearing.<sup>52</sup> The depathologizing of homosexuality, however, renewed it as a subject of biological fascination – as an evolutionary conundrum.<sup>53</sup> The scientific discipline through which questions of homosexuality’s normalcy would be negotiated in coming decades thus shifted from medicine to biology. At first, this took the form of fitting homosexuality into blossoming debates over determinism in evolutionary theories of human behaviour.

49 Playboy Panel, ‘The womanization of America’, *Playboy* (June 1962) 9, pp. 43–50, 133–6, 139–44; 144.

50 R.J. Stoller, ‘A symposium: should homosexuality be in the APA nomenclature?’ *American Journal of Psychiatry* (1973) 130, pp. 1207–16.

51 David Valentine, *Imagining Transgender: An Ethnography of a Category*, Durham, NC: Duke University Press, 2007; Regina Kunzel, ‘Queer history, mad history, and the politics of health’, *American Quarterly* (2017) 69, pp. 315–19.

52 John N. Edwards and Alan Booth, ‘Crowding and human sexual behavior’, *Social Forces* (1977) 55, pp. 791–808.

53 Ronald Bayer, *Homosexuality and American Psychiatry: The Politics of Diagnosis*, Princeton, NJ: Princeton University Press, 1987 (first published 1981). Bayer argues on pp. 34–5 that in the 1960s and 1970s some scientific views within psychology, like those of Charles Socarides, depicted homosexuality as a ‘profound psychopathology’ that disrupted the normal course of evolution and development, citing Charles Socarides, *The Overt Homosexual*, New York: Grune and Stratton, 1968; and Socarides, *Beyond Sexual Freedom*, New York: Quadrangle Books, 1975. Responding to this resurgent conservatism, other psychologists constituted a Task Force on Sexual Orientation under the auspices of Society for the Psychological Study of Social Issues (1978–82) and turned to sociobiology as a means of naturalizing homosexuality. Michael Pettit, ‘The SPSSI Task Force on Sexual Orientation, the nature of sex, and the contours of activist science’, *Journal of Social Issues* (2011) 67, pp. 92–105.

## Modelling heterosexuality

This shift to biology as the proving ground of natural sexuality introduced new vocabularies with which scientists located the behaviours they investigated. In the mid-1960s, professional terminology was still very much in flux, reflecting contemporary social flexibility in defining sexual orientation. Natural and social scientists in turn sought to distinguish between ‘homosexual’ and ‘homosocial’ spaces and behaviours.<sup>54</sup> Beach, for example, had used ‘homosexual’ to mean a single-sex group of individuals, regardless of their sexual predilections or practices. Morris, in *The Naked Ape*, instead referred to single-sex non-sexual groups as ‘unisexual’, to help distinguish them from ‘homosexual’, and noted that ‘the important role they play in the lives of adult males reveals the persistence of the basic, ancestral urges’.<sup>55</sup> When the terminological dust settled, ‘homosexual’ implied an individual’s preference for sexual encounters with members of the same sex, while ‘homosocial’ referred to single-sex social environments without any necessary reference to sexual activity, like an all-male boarding school. This generation of evolutionary theorists of human behaviour defended all-male homosocial groups as fundamental to the origins of human sociality and intelligence, but in doing so reproblematised exclusive homosexuality as a logical riddle in need of a solution.

As mid-career social scientists entranced by questions of evolution and human behaviour, social anthropologists Robin Fox and Lionel Tiger concurred with Morris’s conclusions, if not with his terminology. In their first of many collaborative publications, Fox and Tiger sought to imbue the social sciences with a zoological perspective – a move they believed would bring intellectual rigour to the field.<sup>56</sup> Social scientists should pay more attention to recent theories in the biological sciences, they argued, especially insights gleaned from the study of animal behaviour as an evolutionary subject. Of particular interest to Fox were questions of kinship, especially the mother–child bond as the primary basis for determining kinship patterns in both humans and non-human primates.<sup>57</sup> Tiger, for his part, was gripped by how males related to other males in human groups.<sup>58</sup> Both found inspiration in research by primatologists like Michael Chance, who first became interested in the natural behaviour of his animal subjects as a means of diagnosing humane laboratory conditions (much like Gladwyn Kingsley Noble). By the 1960s, Chance had started to argue that aggression rather than sexual relations primarily structured social relations in animals and people, and it was this research that grabbed the attention of Fox and Tiger.<sup>59</sup> Humans’ evolutionary heritage constrained our actions, they argued, shaping the social behaviour studied by sociologists and anthropologists.<sup>60</sup> Fox and Tiger wanted humans to remain the focus of the social sciences but hoped that their analyses would become more nuanced as a result of this biological lens. When we look at their research as a whole, a sexual division of labour becomes clear:

54 ‘Homosexuality’ first appears in JSTOR and books.google.com in 1927 and is invoked in only a handful of publications before the 1960s.

55 Morris, op. cit. (19), p. 188.

56 Lionel Tiger and Robin Fox, ‘The zoological perspective in social science’, *Man*, n.s. (1966) 1, pp. 75–81.

57 Robin Fox, *Kinship and Marriage: An Anthropological Perspective*, New York: Cambridge University Press, 1967.

58 Lionel Tiger, *Men in Groups*, New York: Random House, 1969.

59 Robert G.W. Kirk, ‘Between the clinic and the laboratory: ethology and pharmacology in the work of Michael Robin Alexander Chance, c.1946–1964’, *Medical History* (2009) 53, pp. 513–36; M.R.A. Chance, ‘Social structure of a colony of *Macaca mulatta*’, *British Journal of Animal Behaviour* (1956) 4, pp. 1–13; Chance, ‘What makes monkeys sociable?’ *New Scientist* (1959) 5, pp. 520–3; Chance, ‘The nature and social features of the instinctive social bond of primates’, in Sherwood Washburn (ed.), *The Social Life of Early Man*, New York: Viking Fund, 1961, pp. 17–33; M.R.A. Chance and C.J. Jolly, *Social Groups of Monkeys, Apes and Men*, London: Cape, 1970.

60 Tiger, op. cit. (58), pp. 76–7, 80; see also Ullica Segerstråle, *Defenders of the Truth: The Battle for Science in the Sociobiology Debate and Beyond*, Oxford: Oxford University Press, 2001, pp. 27–8.

competitive heterosexual men hunted and preferentially socialized in small, homosocial groups whose structure dictated the social organization of the entire community; women reproduced and occupied a heterogeneous domestic world filled with other women, children of both sexes and men returned from the hunt.<sup>61</sup>

Fox and Tiger defensively positioned themselves and the naturalness of homosocial association between adult men against both feminists and Freudians (their labels), basing their research on an ostensibly universal grammar of behaviour in primates and humans.<sup>62</sup> Challenges to their conclusions appeared almost immediately, many indeed penned by women.<sup>63</sup> Throughout the 1960s and early 1970s, women entered graduate school in greater numbers to start professional scientific careers.<sup>64</sup> From the perspective of Tiger and Fox, feminists were fighting against both social tradition and their own evolutionary heritage. For their critics, such supposedly universal biological constraints on human behaviour functioned to exclude women from professional spaces, safeguarding them as a masculine preserve. At issue were biological meanings of all-male associations: were all-male groups socially discriminatory and perhaps subversively sexualized, or were they 'natural' and therefore to be explained through evolution?

The reinscription of gendered norms of sexual behaviour was taken up by researchers in animal behaviour (independent of whether they had been trained in biology or anthropology departments). Recall that psychobiologists had known about same-sex sexual behaviour in animals<sup>65</sup> – as had at least some members of the non-science-reading public – and used their research to argue that homosexuality was biologically normal in Pomeroy's statistical and phylogenetic meanings of the word. Even Konrad Lorenz in his broadly read *On Aggression* had recorded examples of what he called 'triangular marriages' in graylag geese, between two males and a female. These sexually bonded groups, he related, were a considerable biological success and usually topped the social hierarchy of the colony. He concluded that when two male geese successfully courted each other, exhibiting a "'homosexual' triumph bond', this could not be regarded as 'pathological ... since it also occurs in wild geese in the natural state'.<sup>66</sup> Evolutionary explanations of homosexuality as a biological trait were relatively new. Not until after biologists accepted homosexuality as non-pathological did they seek to incorporate it into their primary theoretical framework for discussing the evolution of human behaviour. As soon as biologists did, however, they began to wonder how homosexuality could have originated, and once present be

61 Lionel Tiger and Robin Fox, *The Imperial Animal*, New York: Holt, Rinehart and Winston, 1971.

62 They appropriated the idea of a 'universal grammar' from Noam Chomsky, *Aspects of the Theory of Syntax*, Cambridge, MA: MIT Press, 1965.

63 In popular science see Elaine Morgan, *The Descent of Woman*, New York: Stein and Day, 1972. Professional critiques abounded too, e.g. Sally Linton, 'Woman the gatherer: male bias in anthropology', in Sue Ellen Jacobs (ed.), *Women in Cross-cultural Perspectives*, Urbana: University of Illinois Press, 1971, pp. 9–20; Michelle Rosaldo and Louise Lamphere (eds.), *Women, Culture, and Society*, Stanford, CA: Stanford University Press, 1974; Rayna Reiter (ed.), *Towards an Anthropology of Women*, New York: Monthly Review Press, 1975; Nancy Tanner and Adrienne Zihlman, 'Women in evolution. Part I: innovation and selection in human origins', *Signs* (1976) 1, pp. 585–608.

64 Margaret W. Rossiter, *Women Scientists in America: Before Affirmative Action, 1940–1972*, Baltimore: Johns Hopkins University Press, 1995.

65 In addition to the publications already mentioned see Frank Beach, 'Sex reversals in the mating pattern of the rat', *Genetics and Psychology* (1938) 53, pp. 329–34, and Beach, *Hormones and Behaviour*, New York: Hoeber, 1948.

66 Konrad Lorenz, *On Aggression* (tr. Marjorie Kerr), New York: Harcourt, Brace & World, 1966, p. 199. In an interview about the book he repeated this point and then continued, 'I once saw two boys embrace in a bathroom. The sight was slightly repulsive to me, but in moral terms, why shouldn't they kiss? In an overpopulated world it would be a good thing if there were more homosexuality.' Richard Evans, 'A conversation with Konrad Lorenz', *Psychology Today* (1974) 8, pp. 82–7.

maintained, if only human behaviours that maximized individual reproduction were favoured by natural selection.

As early as 1959, ecologist G. Evelyn Hutchinson had speculated about the evolution of non-reproductive sexual behaviours and included fetishisms along with homosexuality as behaviours likely to decrease the rate at which individuals reproduced. Hutchinson suggested that heterozygote selection might provide a solution.<sup>67</sup> He argued that like sickle-cell anaemia, fetishisms might exist because people heterozygous for the gene that coded for the trait (that is, they were ‘carriers’ of the trait but did not suffer from sickle-cell anaemia themselves) survived and reproduced at a greater rate than those who were not carriers. In the case of sickle-cell, heterozygotes were protected against malaria.<sup>68</sup> For this argument to work, Hutchinson assumed a one-gene model for homosexuality. A decade and a half later, however, evolutionary arguments usually meant interpreting homosexual behaviour itself as an adaptation, as a trait that conferred a reproductive advantage on individuals who exhibited it.<sup>69</sup>

Critics of evolutionary approaches to human nature in the 1970s crafted a new term – biological determinism – that enabled them to counter arguments for a biological basis of a wide variety of human traits, whether those were innate differences between the sexes, purported links between race and IQ, or sexual orientation.<sup>70</sup> To understand these politics, we must turn to the professional fallout from E.O. Wilson’s publication of *Sociobiology: The New Synthesis* in 1975.<sup>71</sup> Two interrelated claims proved to be major sticking points among sociobiology’s critics: that homosexual behaviours could be explained through heterosexuality and that, because homosexual encounters had been documented more frequently in male animals than in females, this demonstrated more generally that men had higher sexual drives than women.

Wilson had considered exclusive homosexuality to be an evolutionary puzzle to which evolutionary reasoning held the key. Early in *Sociobiology*, Wilson suggested that behaviours that might at first glance appear to be abnormal could prove to be adaptive upon closer inspection – including homosexuality. Biologists, he noted, had documented ‘pseudo-copulation’ in macaques, as a ritual expressing rank among males, and in South American leaf fish, where some males mimic the colouration of the females in order to slip past the notice of territorial males. He wondered, did the latter case represent ‘a case of transvestism evolved to serve heterosexuality?’<sup>72</sup> In addition, British mathematical

67 G. Evelyn Hutchinson, ‘A speculative consideration of certain possible forms of sexual selection in Man’, *American Naturalist* (1959) 93, pp. 81–91.

68 Linus Pauling’s discovery of the genetic basis for haemoglobin’s different structure in sickle cells and round blood cells had made the news earlier in 1951, with later details worked out by Vernon Ingram in 1956. Linus Pauling, Harvey A. Itano, S.J. Singer and Ibert C. Wells, ‘Sickle cell anemia: a molecular disease’, *Science* (1949) 110, pp. 543–8; Vernon M. Ingram, ‘A specific chemical difference between globins of normal and sickle-cell anemia hemoglobins’, *Nature* (1956) 178, pp. 792–4; Ingram, ‘Gene mutations in human hemoglobin: the chemical difference between normal and sickle hemoglobin’, *Nature* (1957) 180, pp. 326–8. See Bruno Strasser, ‘Linus Pauling’s “Molecular diseases”: between history and memory’, *American Journal of Medical Genetics* (2002) 115, pp. 83–93.

69 John Maynard Smith and Robin Holliday (eds.), ‘The evolution of adaptation by natural selection’, *Proceedings of the Royal Society of London B* (1979) 205, pp. 433–604.

70 Historians, too, explored these associations, e.g. Siobhan B. Somerville, *Queering the Color Line: Race and the Invention of Homosexuality in American Culture*, Durham, NC: Duke University Press, 2000; C. Riley Snorton, *Black on Both Sides: A Racial History of Trans Identity*, Minneapolis: University of Minnesota Press, 2017.

71 Edward O. Wilson, *Sociobiology: The New Synthesis*, Cambridge, MA: Belknap Press of Harvard University Press, 1975.

72 Wilson, op. cit. (71), p. 22; on ‘transvestism’ in animals see also Randy Thornhill, ‘Adaptive female-mimicking behaviour in a scorpionfly’, *Science* (1979) 205, pp. 412–14. This slippage between homosexuality, transvestism and transsexuality reflects the continued grouping of gender-nonconforming identities within

theorist George C. Williams remarked in his *Sex and Evolution* (also published in 1975) that homosexual behaviours in male animals provided evidence of the hyper-variability of male sexuality in comparison to female sexuality, drawing on long traditions of assuming that males exhibit greater variability than females in any number of traits.<sup>73</sup>

More specifically, Wilson argued that ‘the homosexual state itself, by which he meant that ten percent of the male population who scored a 6 on Kinsey’s scale, should result in ‘inferior genetic fitness’ because these men would have fewer children than the remaining 90 per cent of American males.<sup>74</sup> Citing the research of geneticist Franz Kallmann, Wilson further suggested ‘the probable existence of a genetic predisposition toward the condition’. Kallmann himself had been more circumspect, concluding merely that the accumulated research ‘throws considerable doubt upon the validity of purely psychodynamic theories of predominantly or exclusively homosexual behaviour patterns in adulthood’.<sup>75</sup> How, then, Wilson asked, did homosexuality persist in human populations – not just in the US but also around the globe? He advanced a series of hypotheses.<sup>76</sup> Following Hutchinson’s logic, he suggested there might be a yet-to-be-discovered heterozygous advantage. He found a different possibility more convincing, however: that ‘homosexual members of primitive societies may have functioned as helpers, either while hunting in company with other men or in more domestic occupations at the dwelling sites’. Through kin selection alone, he reasoned, homosexual preferences might spread in a population. ‘Freed from the special obligations of parental duties, they could have operated with special efficiency in assisting close relatives.’ (We can see in these theories an inarticulate endorsement of the venerable inversion hypothesis, where male homosexuality was associated with greater domesticity.) Wilson also left room for the action of the environment, suggesting that once genes controlling the expression of homosexuality were found, he suspected they would exhibit incomplete penetrance and be variable in expression.

Sociobiologists’ two favoured theories for explaining the evolution of all sexual behaviour in humans were sexual selection – reproductive behaviours shaped by female choice of mates and male–male competition over territory and females – and kin selection to account for non-reproductive behaviours. In Wilson’s words, the possibility of explaining the evolution of homosexuality in terms of kin selection ‘should give us pause before labelling homosexuality an illness’.<sup>77</sup> Like William D. Hamilton’s account of the evolution of altruism (another apparent conundrum, where individuals sacrifice their own potential reproduction for the survival and continued health of their relatives), Wilson reasoned that selection could favour homosexuality through advantage conferred on relatives – the cumulative reproductive success of nieces and nephews, each of whom carried (on average) a quarter of the genetic material of their parents’ siblings, provided the evolutionary fitness of the otherwise childless ultra-uncle.<sup>78</sup> (That the theory became known as the ‘avuncular hypothesis’ draws our attention to the continuing silence of

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evolutionary theory of the era. On the challenge of doing justice to these intertwined but distinctive histories see Regina Kunzel, ‘The power of queer history’, *American Historical Review* (2018) 125, pp. 1569–82.

<sup>73</sup> George C. Williams, *Sex and Evolution*, Princeton, NJ: Princeton University Press, 1975. On hyper-variability of males see Russett, op. cit. (13); Kinsey, Pomeroy and Martin, op. cit. (23); Kinsey et al., op. cit. (23).

<sup>74</sup> Wilson, op. cit. (71), pp. 555.

<sup>75</sup> Franz J. Kallmann, ‘Twin and sibship study of overt male homosexuality’, *American Journal of Human Genetics* (1952) 4, pp. 136–46, 145.

<sup>76</sup> Wilson, op. cit. (71), p. 555.

<sup>77</sup> As quoted in Janet Hopson, ‘Taking stock of sociobiology’, *Jurimetrics Journal* (1976) 16, pp. 206–9, 207.

<sup>78</sup> My terms, not Wilson’s. There is a wide evolutionary literature on ‘allo-parenting’ to which this concept is genealogically related.

evolutionary theorists regarding benevolent aunts.<sup>79</sup>) This line of thinking effectively reinforced homosexuality as an individual identity, rather than a set of behaviours, dichotomously setting apart ‘homosexuals’ from ‘heterosexuals’.

Critics of sociobiology like geneticist Richard Lewontin argued vehemently that this reductionist thinking constituted a caricature of Darwinism and could never count as politically progressive.<sup>80</sup> I quote a piece of his argument at length to illustrate both his anger and dismissal of Wilson’s logic:

First, it is supposed, on no evidence, that homosexuality is genetically based, despite the known immense variation in the frequency of homosexual and heterosexual behaviour in history and between social classes. Second it is assumed with no evidence that homosexuals leave far fewer offspring than heterosexuals. But this is a typological view of sexual behaviour. Obviously, persons who engage only in homosexual behaviour can have no offspring. But there is an immense range between complete homosexuality and complete heterosexuality. Do persons who engage in homosexual encounters, say, 14 per cent of the time, leave fewer offspring? Perhaps they have higher libido and leave more. What is the evidence? Finally we have the totally untestable story, with no ethnographic evidence, that in ‘primitive societies’ homosexuals used to be helpers. While the construction of such stories is an amusing pastime, it cannot be taken seriously as science.<sup>81</sup>

Lewontin ended his attack succinctly, ‘The naive reductionist program of sociobiology has long been understood to be a fundamental philosophical error. Meaning cannot be found in the movement of molecules.’<sup>82</sup> These arguments formed the basis of his involvement in the Sociobiology Study Group, a Boston-based organization with overlapping membership in Science for the People and the New York-based Genes and Gender group.<sup>83</sup> Lewontin’s criticisms of sociobiology found their culmination in his co-authored *Not in Our Genes: Biology, Ideology, and Human Nature*, when once again homosexuality constituted a key example demonstrating sociobiologists’ fallacious reasoning.<sup>84</sup> The authors again emphasized the lack of evidence for any of Wilson’s hypotheses – no information existed on the reproductive rates of men who had sex with other men, much less the reproductive rates of men who identified as bisexual; on the genetic basis of homosexuality; or on whether homosexuals act to increase the reproductive rates of their relatives.<sup>85</sup> In the face of such criticisms, Wilson and his defenders remained unmoved.<sup>86</sup>

The ideological polarization of arguments for the genetic, evolutionary basis of human behaviour helps account for the politics of evolutionary ideas about homosexuality in the late 1970s and early 1980s: claims that human behaviours were constrained by biological circumstance were considered socially conservative, while arguments in favour of

<sup>79</sup> This fits with mid-century views of sexuality as a more or less masculine trait, e.g. Jordan-Young, op. cit. (16).

<sup>80</sup> Richard C. Lewontin, ‘Sociobiology: a caricature of Darwinism’, *PSA Proceedings* (1976) 2, pp. 22–31.

<sup>81</sup> Lewontin, op. cit. (80), p. 28.

<sup>82</sup> Lewontin, op. cit. (80), p. 31. See also Philip Kitcher’s more even-handed dismissal of Wilson’s arguments in *Vaulting Ambition: Sociobiology and the Quest for Human Nature*, Cambridge, MA: MIT Press, 1985, pp. 243–52.

<sup>83</sup> Ethel Tobach and Betty Rosoff (eds.), *Genes and Gender*, New York: Gordian Press, 1978; Ruth Hubbard and Marion Lowe (eds.), *Genes and Gender II: Pitfalls on Research in Sex and Gender*, New York: Gordian Press, 1979.

<sup>84</sup> Richard C. Lewontin, Steven Rose and Leon J. Kamin, *Not in Our Genes*, New York: Pantheon Books, 1984, p. 260.

<sup>85</sup> Lewontin, Rose and Kamin, op. cit. (84), p. 261.

<sup>86</sup> Edward O. Wilson, ‘Biology and the social sciences’, *Daedalus* (1977) 106, pp. 127–40; Joseph Rubenstein, ‘Review: Sociobiology – three years later’, *ETC: A Review of General Semantics* (1979) 36, pp. 99–107.

environmentalist explanations of behaviour coded as politically left.<sup>87</sup> Sociobiologists proposed a number of other possibilities as well: the much older idea that homosexuals might be created as a result of genetics and social circumstances at home, this time due to a phenomenon they called ‘parental manipulation’, and a theory that homosexuality might be a by-product of selection for some other trait.<sup>88</sup> Evidence favouring any one of these suggestions over another was in short supply, which just fuelled the possibilities.<sup>89</sup>

One of the most remarkable corollaries of sociobiologists’ logic came from Donald Symons’s *Evolution of Sexuality*, published in 1979.<sup>90</sup> In Symons’s vision, homosexual behaviour became the best yardstick by which to measure normative heterosexual behaviour. If, as Wilson and others had argued, male and female heterosexual reproductive strategies fundamentally differed, then every sexual encounter between a man and a woman represented a compromise between their duelling desires and agendas. How best, then, to understand true male behavioural patterns? In sexual encounters unfettered by female reluctance. Symons wrote,

Heterosexual men would be as likely as homosexual men to have sex most often with strangers, to participate in anonymous orgies in public baths, and to stop off in public restrooms for five minutes of fellatio on the way home from work if women were interested in these activities. But women are not interested.<sup>91</sup>

He concluded that ‘available data on the sex lives of contemporary homosexuals may have far-reaching implications for understanding human sexuality. These data imply that male sexuality and female sexuality differ much more profoundly than might be inferred from observing only the heterosexual world’.<sup>92</sup> Symons’s account reinforced gendered stereotypes already inscribed in evolutionary theory – that men’s sexual drives led them to have profligate sexual interests, although they were, of course, most attracted to the young, fertile women who would allow them to produce the largest number of offspring, and that women were much less interested in sex, preferring stable relationships with older, established male mates in order to protect a smaller number of offspring.<sup>93</sup> Symons argued that the frequency of sex among male homosexuals illustrated that males possessed a greater sex drive than females, derived from the far greater evolutionary importance of male sexual pleasure. In fact, he hypothesized that ‘the human female’s capacity for orgasm is no more an adaptation than is the ability to read’.<sup>94</sup>

87 Anthony Leeds, ‘Sociobiology, anti-sociobiology, and human nature’, *Wilson Quarterly* (1977) 1, pp. 127–39; Douglas Boucher, Michael Hansen, Robert Noonan, Stephen Risch, Scott Schneider, and John Vandermeer, ‘Is our biology to blame?’ *American Biology Teacher* (1977) 39, pp. 432–7.

88 Robert Trivers, ‘Parent–offspring conflict’, *American Zoologist* (1974) 14, pp. 249–64; Michael Ruse, ‘Are there gay genes? Sociobiology & homosexuality’, *Journal of Homosexuality* (1981) 6, pp. 5–34. Additionally, Trivers’s first graduate student wrote his graduate thesis on the evolution of homosexuality in the Biology Department: James Donald Weinrich, ‘Human reproductive strategy’, PhD dissertation, Harvard University, 1976. Weinrich concluded that of all the possibilities suggested by sociobiologists, kin selection provided an explanation far more consistent with known data than models of congenital or acquired maladaptation, or heterozygous advantage. On Weinrich’s interest in introducing an evolutionary perspective to clinical psychologists see Pettit, op. cit. (53), pp. 98–101.

89 For a contemporary review of and intervention into the literature see Michael Ruse, *Sociobiology: Sense or Nonsense?*, Boston: D. Reidel Publishing Company, 1984; and Ruse, *Homosexuality: A Philosophical Inquiry*, New York: Blackwell, 1988. Val Dusek, ‘Sociobiology sanitized: evolutionary psychology and gene selectionism’, *Science as Culture* (1999) 8, pp. 129–69.

90 Donald Symons, *Evolution of Human Sexuality*, Oxford: Oxford University Press, 1979, pp. 300–12.

91 Symons, op. cit. (90), p. 300.

92 Symons, op. cit. (90), p. 300–1.

93 Richard Dawkins, *The Selfish Gene*, Oxford: Oxford University Press, 1976.

94 Symons, op. cit. (90), p. 312.



Sarah Blaffer Hrdy, a feminist sociobiologist, found Symons's characterization of female sexuality 'both more original and more controversial' than his descriptions of male sexual behaviour, countering with her own observations in primates of homosexual encounters between two females and female mounting behaviour as evidence of females' sexual nature.<sup>95</sup> In *The Woman That Never Evolved*, she sought to break down assumptions like Symons's that males were sexually motivated (and variable) and females were not.<sup>96</sup> In addition, Hrdy sought to revise evolutionary explanations of parenting. Using evidence from comparative anthropology and primatology, she convincingly argued that most offspring, whether non-human primates or human children, are raised by a fluid collection of (semi-)responsible adults. Sometimes that might involve one male and one female, both of whom served as the genetic parents of the child, but usually non-direct relatives contribute as well. In this sense, Hrdy did not need a special explanation for non-reproductive parenting behaviour because she assumed that offspring care often involves non-biological parents. Even Hrdy, so intent on revising sociobiologists' theories of sexuality in females, argued for the existence of 'homosexual behaviour in the natural world, both male-male and female-female', but added, 'What we have yet to document is a lifetime strategy of homosexual behaviour.'<sup>97</sup> In the preface to the revised version of *The Woman That Never Evolved*, she suggested that Symons's book provided the 'founding document' for the new field of evolutionary psychology based on the version of Darwinian sexual selection theory she sought to dismantle as inappropriately relying on 'ardent' males and 'coy' females.<sup>98</sup> Not surprisingly, she noted, in the years between the two versions of the book, Symons became an outspoken critic of her ideas.<sup>99</sup>

Dean Hamer read these evolutionary theories with interest and disappointment. In the body of *The Science of Desire*, he wrote that two books had inspired him to change fields and begin looking for a genetic basis of homosexuality: Darwin's *Descent of Man*, which he found while browsing through a bookstore in Oxford, and *Not in Our Genes* by

95 Sarah Blaffer Hrdy, *Mother Nature: A History of Mothers, Infants, and Natural Selection*, New York: Pantheon, 1999; Hrdy, *Mothers and Others: The Evolutionary Origins of Mutual Understanding*, Cambridge, MA: Belknap Press of Harvard University Press, 2009. In these books Hrdy also returned full-force to the issue of sexual pleasure in female primates, including humans. In Hrdy's review of Symons's book, she wrote, 'even the view that female sexuality evolved as a set of adaptations for choosing and confusing potential mates (and not just as a means to promote bonds with consorts) does not strike me as grounds for celebration. Certainly it does not mean that females have the upper hand. At best, they may occasionally have the last word'. Sarah Blaffer Hrdy, 'The Evolution of Human Sexuality: the latest word and the last', *Quarterly Review of Biology* (1979) 54, pp. 309–14.

96 Sarah Blaffer Hrdy, *The Woman That Never Evolved*, Cambridge, MA: Harvard University Press, 1981, pp. 170–2.

97 Sarah Blaffer Hrdy, 'The primate origins of human sexuality', in Robert Bellig and George Stevens (eds.), *The Evolution of Sex, Nobel Conference XXII*, San Francisco: Harper & Row, 1988, pp. 101–38, 134.

98 Sarah Blaffer Hrdy, 'On raising Darwin's consciousness', in Hrdy, *The Woman That Never Evolved*, 2nd edn, Cambridge, MA: Harvard University Press, 1999, pp. xiii–xxxii, xx. Feminist evolutionary theory of the 1990s and 2000s transformed women into creatures just as competitive and just as sexual as men. Taking an entirely different approach, in *The Case of the Female Orgasm* feminist philosopher of science Lisa Lloyd agreed with Symons's contention that female orgasms are likely by-products of strong selection for male sexual pleasure but this transformed them, she suggested, into an extraordinary bonus. Lloyd argued that females' capacity for orgasm is biological but not the result of evolutionary selection. If there is no fitness advantage to female orgasms, she contended, then women are freed from the bounds of reproductive dictates to enjoy orgasms whenever and however works best for them; Elizabeth Lloyd, *The Case of the Female Orgasm: Bias in the Science of Evolution*, Cambridge, MA: Harvard University Press, 2006. See also Lisa Diamond, *Sexual Fluidity: Understanding Women's Love and Desire*, Cambridge, MA: Harvard University Press, 2009.

99 Donald Symons, 'Another woman that never existed', *Quarterly Review of Biology* (1982) 57, pp. 297–300; Robert Wright, *The Moral Animal: The New Science of Evolutionary Psychology*, New York: Pantheon Books, 1994, p. 69; Alice Henry, 'Sex and society among the primates', *Off Our Backs* (January 1982) 12, pp. 18–19; Randy Thornhill, 'The concept of an evolved adaptation', in Ciba Foundation, *Characterizing Human Psychological Adaptations*, New York: John Wiley & Sons, 1997, pp. 4–13, 10.

'Lewontin and colleagues'.<sup>100</sup> The first he adored, especially Darwin's long passages on the evolution of sexual behaviour and the implication that sexuality 'has a significant genetic component'. (For historians, the anachronism is striking; there was no concept of the gene in 1871.) The second he hated, deeming Lewontin's analysis political rather than scientific. Why, Hamer wondered, had Darwin been so convinced that human behaviour was at least partially inherited, years before the scientific community had worked out the basics of the field that would be known as genetics, and Lewontin, although trained in genetics a century later, found this very same idea antithetical? He decided there was 'room for some real science here'.<sup>101</sup>

Then in 1991 Simon LeVay published an article in the pages of *Science* announcing that a region in the anterior hypothalamus was more than three times smaller in brains of homosexual men (and women with unknown sexual orientations) than in heterosexual men.<sup>102</sup> LeVay concluded that the variation of the INAH-3 region (or third interstitial nucleus of the anterior hypothalamus) with sexual orientation suggested a 'biological substrate' to sexuality. Hamer's research appeared in *Science*, too, a couple of years later.<sup>103</sup> He posited that a region on the tip of the long arm of the X chromosome (Xq28) likely contained genes linked to sexual orientation, although he could not yet identify which genes might be located there or their physiological effects. Their work was suggestive but both men admitted they needed more data to demonstrate a conclusive biological basis for male homosexuality – and scientific evaluations of their research agreed.<sup>104</sup> The general public missed the nuance of these qualifications, however, in part thanks to contemporaneous excitement over the Human Genome Project and the promise of genetic research as a tool for understanding a wide array of human behaviours and identities.<sup>105</sup>

In the early 1990s, 'born this way' activists in the United States had found new biological voice by engaging with Hamer's quest to find a genetic basis for homosexuality, LeVay's attempts to locate a neurological region of the human brain responsible for homosexuality, and new twin studies by J. Michael Bailey and Richard Pillard. The last of these suggested that brothers of gay men were more likely to also be gay if they were identical twins rather than fraternal twins or (biological or adoptive) brothers.<sup>106</sup> None of these men drew significantly on comparative evolutionary frameworks by citing the vast array of reproductive modes in animals. Media coverage forged links between these independent research projects, and Hamer and LeVay capitalized on this interest, co-publishing an article in *Scientific American* timed with the release of their books

100 Dean Hamer and Peter Copeland, *Science of Desire: The Search for the Gay Gene and the Biology of Behaviour*, New York: Simon & Schuster, 1994, pp. 25–6.

101 Hamer and Copeland, op. cit. (100), p. 27.

102 Simon LeVay, 'A difference in hypothalamic structure between heterosexual and homosexual men', *Science* (1991) 253, pp. 1034–7.

103 Dean H. Hamer, S. Hu, V.L. Magnuson, N. Hu, and A.M. Pattatucci, 'A linkage between DNA markers on the X chromosome and male sexual orientation', *Science* (1993) 261, pp. 321–7.

104 David Nimmons, 'Sex and the brain', *Discover* (March 1994) 5, pp. 64–71; Anne Fausto-Sterling, 'The brain and sexual behaviour', *BioScience* (1994) 44, pp. 102–4.

105 Daniel Kevles and Leroy Hood (eds.), *Code of Codes: Scientific and Social Issues in the Human Genome Project*, Cambridge, MA: Harvard University Press, 1992; Dorothy Nelkin and M. Susan Lindee, *The DNA Mystique: The Gene as a Cultural Icon*, New York: Freeman, 1995.

106 Hamer and Copeland, op. cit. (100); Simon LeVay, *The Sexual Brain*, Cambridge, MA: MIT Press, 1993; LeVay, *Queer Science: The Use and Abuse of Research into Homosexuality*, Cambridge, MA: MIT Press, 1996. The research of Bailey and Pillard on homosexuality in twins captured less of the public spotlight but scientists widely discussed their work, e.g. J. Michael Bailey and Richard C. Pillard, 'A genetic study of male sexual orientation', *Archives of General Psychiatry* (1991) 48, pp. 1089–96; John Horgan, 'Eugenics revisited', *Scientific American* (1993) 268, pp. 122–8, 130–1.

aimed at non-specialist readers.<sup>107</sup> Hamer and LeVay's genetic and neurobiological experiments, respectively, provided ready evidence that homosexuality was not a 'choice' but possessed a biological basis. Their research grabbed public attention at a moment when the nation was wrestling with more than 250,000 documented deaths due to AIDS-related health complications, without antiretrovirals to treat HIV infection, and deeply concerned with the spread of the disease from gay men and IV-drug users to the 'normal' public, including haemophiliacs and recipients of blood transfusions.<sup>108</sup> For groups like ACT UP, the gross neglect of the federal government in the face of a deadly pandemic disproportionately affecting gay men was far more important than advocating for a biological basis of homosexuality.<sup>109</sup> Within the history of the life sciences, genetics, neurobiology, and studies of animal behaviour competed for explanatory power in accounting for human behaviour.<sup>110</sup>

These scientists were hailed as heroes by some members of the LGBT movement; in their research lay proof that being gay was legal precedent for arguing that homosexuals were due protection under the law as a group of people defined by immutable identity, a long step beyond decriminalization.<sup>111</sup> The benefits of this legal line of argumentation were less clear to others.<sup>112</sup> If a biological basis for homosexuality were to be convincingly demonstrated, this could be a step towards attempts to selectively breed it out of existence or find a 'cure'.<sup>113</sup> Hamer, for example, was already defending against this possible interpretation in his original *Science* paper: 'We believe it would be fundamentally unethical to use such information to try and assess or alter a person's current or future sexual orientation'. The paper concluded, 'Rather, scientists, educators, policy-makers, and the public should work together to ensure that such research is used to benefit all members of society.'<sup>114</sup> These new studies also seemed to support the idea that men were bimodally either straight or gay, and therefore that Kinsey's model of a sliding scale of sexual orientation had been incorrect.<sup>115</sup> In this light, the persistence of evolutionary accounts of homosexuality traced a fine line between essentializing homosexuality as a biological identity in need of explanation and offering animal models as a possible source of biological liberation.<sup>116</sup>

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107 Simon LeVay and Dean H. Hamer, 'Evidence for a biological influence in male homosexuality', *Scientific American* (1994) 279, pp. 44–9.

108 Paula Treichler, *How to Have Theory in an Epidemic*, Durham, NC: Duke University Press, 1999.

109 Investigative reporter Randy Shilts documented the effects of social prejudice on the slow political response during the early years of the AIDS crisis in the United States in his book *And the Band Played On: Politics, People, and the AIDS Epidemic*, New York: St Martin's Press, 1987. See also G.S. Rousseau, 'Apologies for interdiction: the homosexual question', *Journal of the History of the Behavioural Sciences* (1990) 26, pp. 225–41.

110 Longino, op. cit. (11).

111 Daniel Kevles, 'The X factor: the battle over the ramifications of a gay gene', *New Yorker* (3 April 1995) 71, pp. 85–90; Peter Conrad and Susan Markens, 'Constructing the "gay gene" in the news: optimism and skepticism in the US and British press', *Health* (2001) 5, pp. 373–400.

112 Janet Halley, 'Sexual orientation and the politics of biology: a critique of the argument from immutability', *Stanford Law Review* (1994) 46, pp. 503–68; Chandler Burr, 'Homosexuality and biology', *Atlantic Monthly* (1993) 271, pp. 47–65.

113 Robert Finn, 'Biological determination of sexuality heating up as a research field', *The Scientist* (January 1996) 10, pp. 13–16; Aaron Greenberg and J. Michael Bailey, 'Parental selection of children's sexual orientation', *Archives of Sexual Behavior* (2001) 30, pp. 423–37.

114 Hamer and Copeland, op. cit. (100), p. 232.

115 Robert Alan Brookley, *Reinventing the Male Homosexual: The Rhetoric and Power of the Gay Gene*, Bloomington: Indiana University Press, 2002, pp. 120–37; Anne Fausto-Sterling, 'Frameworks of desire', *Daedalus* (2007) 136, pp. 47–57; Fausto-Sterling, 'The five sexes, revisited', op. cit. (8).

116 Lance Wahlert, 'The painful reunion: the remedicalization of homosexuality and the rise of the queer', *Bioethical Inquiry* (2012) 9, pp. 261–75.

By the early 1990s, legal activists were seeking to overturn state sodomy laws as violations of privacy and also to define homosexuality as a ‘suspect classification’.<sup>117</sup> That the group in question had been subject to long-standing persecution was beyond doubt; the key was providing evidence that the trait defining the group was ‘immutable’.<sup>118</sup> Biological reasoning thus proved to be as useful to breaking down this legal apparatus as medical logics had been in erecting it.<sup>119</sup> Around the same time, the sexual habits of animals began to play a role in public discussions about the biological basis of homosexuality, at first through observations of laboratory or zoo animals as one-to-one guides for modelling human sexuality, and by the end of the century with an eye towards animal behaviour in the wild.<sup>120</sup>

### Binders full of animals

What, then, is the role of biologically based arguments in defence of human rights? Is the investment of evolutionary attention to questions of sexuality a ‘good’ thing for gay rights? Or are there hidden dangers in the persuasive power of naturalistic reasoning when it comes to sexuality? Some professional biologists in the mid-twentieth century argued that homosexuality had a biological basis and therefore an evolutionary ontology. One tempting explanation for why these ideas were not more widely mobilized politically is that a common means of critiquing evolutionary arguments of human behaviour was to suggest that they presupposed a genetic basis without any evidence. Perhaps better, then, to argue for a ‘gay gene’ or ‘gay brain’ and assert the plausibility of subsequent evolutionary explanations. In this vein, scientists like Hamer, LeVay, Bailey and Pillard remained fairly agnostic as to which evolutionary explanation would prove the most robust.<sup>121</sup> When evolutionary biologists in the last quarter of the twentieth century engaged with questions of homosexuality their own explanations reinforced their understanding of normative heterosexuality – gay men exemplified hyper-masculine heterosexual norms because they never had to compromise in their sexual proclivities. This put naturalistic arguments for LGBT rights in awkward juxtaposition with arguments against the naturalization of gender, but this need not have been the case.<sup>122</sup>

In recent decades field biologists have documented hundreds and hundreds of examples of species who exhibit same-sex courtship behaviour, sex-changing behaviours, hermaphroditism, and more. Bruce Bagemihl’s *Biological Exuberance*, published in 1999,

117 Rhonda R. Rivera, ‘Sexual orientation and the law’, in John C. Gonsiorek and James D. Weinrich (eds.), *Homosexuality: Research Implications for Public Policy*, Thousand Oaks, CA: Sage, 1991, pp. 81–100.

118 Margot Canaday, *The Straight State: Sexuality and Citizenship in Twentieth-Century America*, Princeton, NJ: Princeton University Press, 2009, has powerfully demonstrated the construction of heterosexuality as a legal identity in the United States, where nonconforming citizens were subject to state intervention and surveillance.

119 Jeremiah Garretson and Elizabeth Suhay, ‘Scientific communication about biological influences on homosexuality and the politics of gay rights’, *Political Science Quarterly* (2016) 69, pp. 17–29. For a contemporary counterpoint to Hamer and LeVay’s essentialism see Anne Fausto-Sterling, *Myths of Gender: Biological Theories about Women and Men*, New York: Basic Books, 1992; more recently Jordan-Young, op. cit. (16); and Sarah Richardson, *Sex Itself: The Search for Male and Female in the Human Genome*, Chicago: The University of Chicago Press, 2013.

120 Terry, op. cit. (11).

121 In *Gay, Straight and the Reason Why: The Science of Sexual Orientation*, 2nd edn, Oxford: Oxford University Press, 2016, pp. 98–103, Simon LeVay notes that several evolutionary models could account for the persistence of gay genes, but he puts more weight on the importance of birth order and sexual antagonism than on kin selection.

122 See Stephen Epstein, ‘Gay politics, ethnic identity: the limits of social constructivism’, *Socialist Review* (1987) 17(3–4), pp. 9–54. Anne Fausto-Sterling’s publications provide a brilliant counterpoint to the essentialism of LeVay and Hamer; e.g. Fausto-Sterling, op. cit. (16); Fausto-Sterling, ‘The five sexes: why male and female are not enough’, op. cit. (8).

provided an exhaustive accounting of this ‘polysexual, polygendered world’. Rather than working from one particular animal model to humans (in a case study approach), Bagemihl instead suggested that readers should recognize that the breadth of sexual behaviours and patterns found in animals could serve as a guide for thinking about the diversity of sexualities exhibited by humans.<sup>123</sup> Joan Roughgarden entered the fray with *Evolution’s Rainbow*, in which she sought to undermine sexual selection theory by similarly mapping the non-binary, non-normative sexualities and genders of the planet’s flora and fauna.<sup>124</sup> Bagemihl, Roughgarden and others defined nature as containing a plethora of sexualities, genders and kinship structures.<sup>125</sup>

The reading public finds biological arguments documenting the occurrence of same-sex relations in animals incredibly persuasive, reflecting an endless appetite for normative explanations of human behaviour but also providing a powerful political tool.<sup>126</sup> This has been amply demonstrated with the success of legislative arguments for gay marriage in American courts.<sup>127</sup> Scientific knowledge evolves, too, of course. Historical explorations of the persistence of the naturalistic fallacy – the slide between ‘is’ and ‘ought’ when it comes to the order of nature – teach us that progressive biological arguments can be upended with time.<sup>128</sup> In 1991, biologists John Kirsch and James Weinrich expressed this concern, noting, ‘There are plenty of morally wrong things that are perfectly natural in the evolutionary sense.’ They continued, ‘our aim ... has not been to justify homosexual behaviour on biological grounds, but rather to show that the frequent condemnation of gay people because homosexual behaviour is unnatural must be rejected

123 Bruce Bagemihl, *Biological Exuberance: Animal Homosexuality and Natural Diversity*, New York: St Martin’s Press, 2000; over four hundred pages of his book encyclopedically list examples from mammals, birds and other animals.

124 Joan Roughgarden, *Evolution’s Rainbow: Diversity, Gender and Sexuality in Nature and People*, Berkeley: University of California Press, 2004; Roughgarden, *The Genial Gene*, Berkeley: University of California Press, 2009.

125 See also Aldo Poiani, *Animal Homosexuality: A Biosocial Perspective*, with a chapter on primates by Alan Dixson, New York: Cambridge University Press, 2010; Volker Sommer and Paul Vasey (eds.), *Homosexual Behaviour in Animals: An Evolutionary Perspective*, New York: Cambridge University Press, 2006; Jon Mooallem, ‘The love that dare not squawk its name’, *New York Times Magazine*, 4 April 2010, pp. 26–35, 44–6; Alan Dixson, *Primate Sexuality: Comparative Studies of the Prosimians, Monkeys, Apes, and Humans*, Oxford: Oxford University Press, 2012. Research in plants also served as a locus for scientific reckonings with sexuality, although plants have long been known to exhibit a greater diversity of sexual arrangements than animals; e.g. Banu Subramaniam, *Ghost Stories for Darwin: The Science of Variation and the Politics of Diversity*, Champaign: University of Illinois Press, 2014; Luis Campos, ‘Mutant sexuality: the private life of a plant’, in Luis Campos and Alexander von Schwerin (eds.), *Making Mutations: Objects, Practices, Contexts*, Berlin: Max-Planck-Institut für Wissenschaftsgeschichte, 2010, pp. 49–70.

126 Gregory B. Lewis, ‘Does believing homosexuality is innate increase support for gay rights?’, *Policy Studies Journal* (2009) 37, pp. 669–93; Donald P. Haider-Markel and Mark R. Joslyn, ‘Beliefs about the origins of homosexuality and support for gay rights: an empirical test of attribution theory’, *Public Opinion Quarterly* (2008) 72, pp. 291–310; Sarah A. Wilcox, ‘Cultural context and the conventions of science journalism: drama and contradiction in media coverage of biological ideas about sexuality’, *Critical Studies in Mass Communication* (2003) 20, pp. 225–47; William Gibson, ‘Searching for the “natural”: the case for the gene “for” homosexuality’, *Human Reproduction and Genetic Ethics* (2003) 9, pp. 30–5.

127 On the continued debates about the science of sexual orientation see J. Michael Bailey, Paul Vasey, Lisa Diamond, S. Marc Breedlove, Eric Vilain and Marc Epprecht, ‘Sexual orientation, controversy, and science’, *Psychological Science in the Public Interest* (2016) 17, pp. 45–101. Legal arguments for the decriminalization of sodomy, however, depended more on social-constructionist histories. Daniel Hurewitz, ‘Sexuality scholarship as a foundation for change: Lawrence v Texas and the Impact of the Historians’ Brief’, *Health and Human Rights* (2004) 7, pp. 205–16.

128 Garland Allen, ‘The double-edged sword of genetic determinism: social and political agendas in genetic studies of homosexuality, 1940–1994’, in Rosario, *Science and Homosexualities*, op. cit. (2), pp. 242–70; Erika Lorraine Milam (ed.), ‘Peculiar persistence of the naturalistic fallacy’, *Isis* (2014) 105, 564–616; Lorraine Daston, *Against Nature*, Cambridge, MA: MIT Press, 2019.

because the premise of unnaturalness is false'.<sup>129</sup> If concerns over the naturalistic fallacy make us wary of using a specific animal model as a guide to human sexuality, that should not dissuade us from the persuasive power of behavioural research to disprove claims of unnaturalness.<sup>130</sup>

In 2003, the American Psychological Association submitted an amicus curiae brief to the US Supreme Court in the case of *Lawrence v. Texas*, 539 U.S. 558 (2003), in support of overturning the Texas Penal Code, which prohibited consensual sexual activity between persons of the same sex. The APA suggested, 'Heterosexual and homosexual behaviour are both normal aspects of human activity. Both have been documented in many different human cultures and historical eras, and in a wide variety of animal species.' They cited a recent compilation of sexual behaviour in animals, Bagemihl's *Biological Exuberance*, and Clellan Ford and Frank Beach's much older *Patterns of Sexual Behaviour*, published in 1951.<sup>131</sup> In a surprising twist, given the excitement over genetics in the 1990s, the APA also noted,

Although much research has examined the possible genetic, hormonal, developmental, social, and cultural influences on sexual orientation, no findings have emerged that permit scientists to conclude that sexual orientation is determined by any particular factor or factors. The evaluation of amici is that, although some of this research may be promising in facilitating greater understanding of the development of sexual orientation, it does not permit a conclusion based in sound science at the present time as to the cause or causes of sexual orientation, whether homosexual, bisexual, or heterosexual.<sup>132</sup>

Although they sidestepped the issue of biological causation, the APA's amicus curiae brief supported the concept of immutability and pointed to Kinsey's studies of sexual behaviour in American men and women, as well as more recent work arguing 'that most gay men and most or many lesbians experience either no choice or very little choice in their sexual attraction to members of their own sex'.<sup>133</sup> In the diversity of sexual behaviours exhibited by both animals and humans lay persuasive evidence supporting the designation of homosexuality as one of several immutable sexual identities, independent of biological proof of homosexuality's origins. Animal exemplars again took their place alongside data gathered about human sexual practices as science mobilized in defence of gay rights, this time creating the opportunity for naturalization without recourse to biological determinism.

**Acknowledgements.** I have presented this work to a number of welcoming and helpful communities: Boston University's Colloquium on Diversity, Plasticity, and the Science of Sexuality, especially Alisa Bokulich; the DC History and Philosophy of Biology reading group, with particular thanks to Lindley Darden and Eric Sidel; Stockholm University's Department of Ethnology, History of Religions, and Gender Studies, especially Malin

<sup>129</sup> John Kirsch and James D. Weinrich, 'Homosexuality, nature, and biology: is homosexuality natural? Does it matter?', in John C. Gonsiorek and James D. Weinrich (eds.), *Homosexuality: Research Implications for Public Policy*, Thousand Oaks, CA: Sage, 1991, pp. 13–31; Harry Hay, 'A separate people whose time has come', in Mark Thompson (ed.), *Gay Spirit: Myth and Meaning*, Brooklyn: St Martin's Press, 1987, pp. 279–91.

<sup>130</sup> Daston, op. cit. (128).

<sup>131</sup> Bagemihl, op. cit. (123); Ford and Beach, op. cit. (26).

<sup>132</sup> Writ of Certiorari to the Court of Appeals of Texas Fourteenth District, Brief for Amici Curiae American Psychological Association, American Psychiatric Association, National Association of Social Workers, and Texas Chapter of the National Association of Social Workers, In Support of Petitioners, No. 02-102 Supreme Court of the United States (2003), p. 7, at [www.apa.org/about/offices/ogc/amicus/lawrence.pdf](http://www.apa.org/about/offices/ogc/amicus/lawrence.pdf) (accessed 9 December 2018).

<sup>133</sup> Writ of Certiorari, op. cit. (132), p. 2.

Ah King; Karin Nickelson's Historisches Oberseminar, Perspektiven der Wissenschaftsgeschichte, LMU, with additional thanks to Christian Joas and Fabian Kraemer; the graduate seminar for visiting STS speakers at Cornell, with thanks to Suman Seth; and the entire Descent of Darwin crew. I gratefully acknowledge Don Opitz, Luis Campos, Angela Creager, Michael Gordin and the anonymous referees of this paper, all of whom were extraordinarily generous with their time and expertise – this paper is much improved for their efforts and I am sincerely grateful. Simon Werrett and Trish Hatton shepherded this volume through review and publication; without them, it would not exist. Finally, collaborating with Suman on Descent of Darwin these last years has been a true delight – I thank him for both his sharp analysis and boundless generosity.

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**Cite this article:** Milam EL (2021). The evolution of Darwinian sexualities. *BJHS Themes* 6, 133–155. <https://doi.org/10.1017/bjt.2021.7>