

Evolutionary Psychology

www.epjournal.net – 2007. 5(4): 778-785

Book Review

Arousing Imaginations

A review of Michael R. Kauth, (Ed.), *Handbook of the Evolution of Human Sexuality*, Haworth Press, Binghamton, NY, 2006, 395 pp., \$50.00 (softbound), \$130.00 (hardbound)

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In the quarter century since Donald Symons (1979) wrote *The Evolution of Human Sexuality*, research in this area has flourished. Michael Kauth's edited volume *Handbook of the Evolution of Human Sexuality* (co-published as Volume 18, Numbers 2/3 and 4 2006 of the *Journal of Psychology & Human Sexuality*) is therefore a welcome addition. Kauth assembles researchers in diverse areas of human sexuality, including heterosexual mate choice, sexual arousal and olfactory preferences, but the focus is heavily upon the evolution and development of homosexuality, with five of the book's ten chapters centering on this topic. Given that only 2-3% of men and 1-2% of women report predominantly homosexual preferences, this focus may seem disproportionate. However, the volume is intended not to cover all aspects of human sexuality but to serve as a springboard for future research, a mission that it will undoubtedly accomplish. The scholarship in the *Handbook* is variable but generally good. The content is often heavy on speculation and light on evidence, which would be less concerning if authors acknowledged this more openly. Instead, the chapters of the *Handbook* often reify "facts" that are still quite theoretical—for example, Kauth's statement that "physical symmetry and extravagant sexual ornamentation are 'honest' signals of health and genetic quality" (p. 31). Without qualifying such statements, authors reinforce the perception that evolutionary psychology is an amalgam of "just-so" stories.

Kauth authors the *Handbook's* first two chapters: "The evolution of human sexuality: An introduction" and "A brief history of the theory of evolution: Context, concepts, assumption, and sexuality." In the introduction, Kauth distinguishes between ultimate (adaptive) and proximate (mechanistic and developmental) explanations for traits, and discusses the merits of making implicit assumptions explicit, which he encouraged of the contributors. The second chapter reviews the history of evolutionary theory and discusses the concepts of homosexuality and bisexuality. This is intended to bring the book's target audience, those "relatively new to recent evolutionary theories" (p. 5), in line with current evolutionary thinking and familiarize them with key concepts in human sexuality. Aside from overstating some arguments and taking apparently unnecessary tangents into Lamarckism and intelligent design, Kauth does an admirable job of covering very broad topics.

The third chapter, “The origins of human sexual culture: Sex, gender and social control”, is written by archeologist Timothy Taylor. Taylor uses archeological evidence to explain the emergence of ideas of gender and sexual identity, systems of control over fertility, and “homonegativity.” Upper Paleolithic Venus figurines and Bronze Age petroglyphs are fascinating clues to the origins of modern human sexuality. But given the paucity of such evidence, a high degree of speculation about their meaning is perhaps unavoidable, and Taylor does not shy from this. He states that the Venus of Willendorf figurine 4 “has no face because at the time that she was made the living women of whom she is a form of representation were increasingly ordered as a unitary class” (P. 95). How is it known that males began to understand females as a separate category only as recently as the Upper Paleolithic? Do non-human males not treat females as a separate group?

Taylor also attempts to resolve the paradox that large brains evolved despite birth complications from passing a large fetal head through a female biped’s narrow pelvis. The solution is that hominin infants were born with relatively less developed brains, but how would ancestral females deal with the problem of altricial offspring? Taylor’s answer: “a simple infant-carrying sling...is likely to have been the key innovation that solved the bipedalism-intelligence paradox” (p. 80). Can one state confidently that this is likely? Despite such liberal interpretations, the chapter provides an interesting consideration of what archeological artifacts imply about our ancestors’ sexual psychologies and represents a valuable complement to more psychological treatments of human sexuality in the remainder of the book.

Felicia De la Garza-Mercer authors the fourth chapter, “The evolution of sexual pleasure.” Apparently confusing ultimate and proximate levels of explanation, Garza-Mercer argues that people engage in sexual behavior in order to achieve pleasure and not, as “traditional evolutionists” suggest, because of evolved mating strategies and “the human desire to propagate one’s genes” (p. 107). Of course, evolutionary psychologists expect people to desire sex, not the propagation of their genes. Sexual pleasure is viewed as a proximate mechanism that motivates reproductive behavior. A separate question is why we evolved the tendency to find sex pleasurable. A plausible answer is that enjoyment of sex increased reproduction and so spread in ancestral populations at the expense of alternative responses to sexual behavior. Garza-Mercer seems to recognize this later in the chapter: “[T]hose who have a strong libido and engage in frequent (sometimes reproductive) sexual behavior are more robustly favored by evolution” (p. 112), but then apparently reverses herself again: “In some respects, reproduction can be viewed as a consequence of sexual pleasure” (p. 122). It becomes difficult to track whether ultimate or proximate causes of sexual pleasure are being discussed.

Garza-Mercer cites examples of non-reproductive sex, including masturbation and homosexual behavior, to contradict the idea that sexual pleasure serves the “need for reproductive sexual behavior and the propagation of the species” (p. 111). Most evolutionary psychologists would contend that sexual pleasure evolved because it increased reproductive behaviors in the individuals experiencing it, even if it sometimes led to non-

reproductive behaviors, and not for some species-level benefit. Garza-Mercer's point is probably that although humans may have evolved the capacity for sexual pleasure because it contributed to reproduction, this evolved capacity also enables us to enjoy many non-reproductive sexual behaviors, and there are additional advantages (not necessarily in the evolutionary sense) to doing so. But this is a point that hardly needs to be made.

In the *Handbook's* fifth chapter, "The evolutionary psychology of human mate choice: How ecology, genes, fertility, and fashion influence mating strategies," Jon Sefcek, Barbara Brumbach, Geneva Vasquez, and Geoffrey Miller take on the formidable task of reviewing intersexual selection in humans. The chapter begins with natural and sexual selection theories and then considers women's and men's mating preferences for investment, resources and putative markers of genetic quality and fertility.

Next, Sefcek et al. explore possible "non-adaptive benefits" of mate choice, an oxymoron referring to sensory biases that evolve in a non-mating context (e.g., food location) but that affect mate choice. An important question in this context concerns how apparently non-adaptive preferences are maintained by selection. One possibility is that natural selection for the sensory bias compensates for any fitness costs resulting from its exploitation by potential mates. The authors propose that Fisher's (1958) "runaway mate choice" hypothesis can explain how non-adaptive preferences become adaptive ones. In fact, Fisher's hypothesis explains the reverse. According to Fisher, a preference for an adaptive trait will spread because genes for the trait and preference for it end up in the same offspring. As the trait's survival advantage causes the trait and preference to spread, the preference itself becomes an important selection pressure, potentially elaborating the trait beyond having survival value.

As the authors suggest, another possibility is that the preference is actually advantageous. Supranormal stimuli often trigger the greatest sensory responses, and the ability to produce the bright, loud, large, or elaborate traits that act as supranormal stimuli is limited by the phenotypic quality of the organism. A preference for such ornaments might carry with it genetic or fertility benefits. Overall, this is a nice section on a topic that receives too little attention in evolutionary psychology.

Sefcek et al. conclude with a section on the types of mating strategies that are available to men and women and contextual influences on the degree to which these strategies are adopted. Despite some reporting errors (e.g., Thornhill, Gangestad and Comer (1995) did not in fact report more female orgasms during the fertile menstrual phase), this chapter is commendable for its ambitiousness and generally clear exposition.

The *Handbook's* sixth chapter is titled "Sexual strategies across sexual orientations: How personality traits and culture relate to sociosexuality among gays, lesbians, bisexuals, and asexuals." In this chapter, David Schmitt presents a cross-national study of sociosexuality, sexual behavior and sexual orientation. One of the proposed goals is to test whether particular human mating strategies are sex specific (in which case homosexuals and heterosexuals would resemble one another along some dimensions) or target specific (in which case homosexual men and heterosexual women would resemble

one another, and vice versa). As Bailey, Gaulin, Agyei, and Gladue (1994) point out, the results of such research can inform developmental and etiological hypotheses regarding heterosexual mating psychology. The hypothesis that fear of unwanted pregnancies reduces heterosexual women's interest in casual sex, for instance, would predict that homosexual women should be more interested than heterosexual women in casual sex.

Schmitt does not take this approach. Rather, he uses the idea that certain aspects of mating psychology are an "evolved feature of biological sex" (p. 187) to make predictions about the mating psychology of homosexual and bisexual men and women. For example, Schmitt predicts that gay men, like straight men, will be sociosexually unrestricted in attitudes and behavior, while lesbians will be more restricted. Without some clearly defined adaptive hypothesis for homosexuality, such evolutionary predictions aren't justified. Homosexual men are sex-atypical in their sex partner preferences; why predict that sociosexuality will not also be sex-atypical? On the other hand, if homosexuality is viewed as a non-adaptive consequence of natural variation in the processes of psychosexual differentiation, then one cannot predict which traits will be sex-typical in homosexual individuals until these processes are better understood.

Schmitt acknowledges the problems inherent in predicting sex typicality in people who are, in some ways, sex-atypical (p. 189). His solution is to control statistically for masculinity using self-rated questionnaire items targeting "gender orientation." This allows Schmitt to ask such questions as, *Among people of the same self-rated masculinity, are homosexual men more like heterosexual men or heterosexual women in their sociosexual attitudes?* These are still questions that cannot be answered *a priori*. Because homosexual people are not globally masculine or feminine, controlling for a global "masculinity" variable cannot predict sex-typicality in individual psychological traits. Most likely, Schmitt is able to "predict" sociosexuality in homosexual individuals because of previous research (e.g., Bailey et al., 1994). Schmitt finds that men are similar in sociosexual attitudes, regardless of self-reported sexual orientation, masculinity, or openness, but gay men report more sociosexual behavior. Self-reported straight and lesbian women scored similarly on sociosexual attitudes and behavior and lower than self-reported bisexual women, regardless of self-reported masculinity or openness.

Paul Vasey authors "Function and phylogeny: The evolution of same-sex sexual behavior in primates." This is a well-written chapter with a nice theoretical section on adaptive versus phylogenetic explanations and a useful discussion of criteria for demonstrating same-sex sexual partner preference in animals. Vasey considers evidence that same-sex sexual behavior in bonobos functions to regulate social tension, form alliances during food competition, or reconcile after aggression. One wonders, though, if such behavior might represent a byproduct of the alleviation of social tension, competition and aggression, rather than an adaptation for these functions.

Vasey convincingly argues that some same-sex behaviors in Japanese macaques are indeed sexual, and females often prefer their same-sex partner to an opposite-sex one. In the absence of evidence for adaptive function, Vasey suggests that female-female mounting

in macaques is a non-adaptive by-product of female-male mounting. Vasey posits that female-male mounting functions to solicit male copulations. This intriguing hypothesis appears to be supported currently only by Vasey's personal observation that female-male mounting often occurs as desired males move away from females.

Regarding homosexuality in men, Vasey favors the antagonistic pleiotropy hypothesis, the idea that genes predisposing some males to homosexuality decrease fitness in gay males but increase fitness in non-gay relatives. Vasey reviews support for this hypothesis, and concludes that different evolutionary explanations maybe be needed in different sexes and in different species.

The eighth chapter, entitled "The evolution of plasticity in female-female desire," is written by Lisa Diamond. Diamond's thesis is that homosexual desire in women is an adaptively neutral byproduct of the decoupling of motivation to initiate sexual activity (proceptivity) from the capacity to become sexually aroused. According to Diamond, decoupling proceptivity and arousal enabled ancestral females to confuse paternity via polyandrous mating, or to restrict sex to a single male. Diamond proposes that while proceptivity has a sexual orientation, arousal does not. Consequently, women can be aroused by either sex.

Diamond's hypothesis explains why females have less category-specific arousal patterns, but several aspects would benefit from clarification. First, according to Diamond, "as long as same-sex behavior does not supplant other-sex behavior, it incurs no significant evolutionary cost, and thus requires no functional explanation" (p. 247). However, if same-sex behavior were associated with no fitness costs, why do most people have opposite-sex preferences? Second, does female-female sexual behavior in "facultatively" homosexual women actually depend more on arousal patterns than on proceptivity, as Diamond's hypothesis stipulates? If so, why is female-female sex highest when proceptivity is highest (p. 261)? Finally, Diamond asserts that as "long as urges to initiate mating were reliably targeted toward reproductive partners in the [ancestral environment], there would be little or no selection pressure to code 'sex of partner' into arousability" (p. 256). This explanation for the generality of women's arousal patterns seems inconsistent with women's overall choosiness in regard to mates.

Diamond proposes a developmental model in which female sexuality is affected by the interaction of arousability (which is facultative) and proceptivity (which is constitutional). "Political" lesbians, for example, are high on same-sex arousability, perhaps due to meeting a lesbian woman, and low on same-sex proceptivity (i.e., their preferences are constitutionally heterosexual). In contrast, most openly-identified lesbians are high on both same-sex arousability and proceptivity. These ideas deserve further research.

Frank Muscarella authors the ninth chapter, "The evolution of male-male sexual behavior in humans: The alliance theory." As the title suggests, Muscarella hypothesizes that male-male sexual behavior evolved to strengthen male alliances. In this view, older, dominant males are attracted to individuals less dominant than themselves, including

women and young adult males; and young males engage in submissive sex with dominant males in order to win their favor. Because selection hypothetically favors a capacity in all men for interest in same-sex sexual behavior, “genes for male-male sexual behavior would be present in the entire population” (p. 302), and men with a high number of such genes express exclusive homosexual preferences.

Muscarella’s hypothesis explains the common occurrence of homosexual behavior among otherwise heterosexual males within all-male groups, such as in prisons and boys’ schools. However, it is unclear why homosexual behavior would reinforce alliances, or whether it does so in contemporary societies. The occurrence of rape in prisons certainly is not consonant with the alliance-building hypothesis, for example. Homosexual behavior in these situations also seems excessive for signaling dominance and submission. Among non-human animals, stereotyped sociosexual behaviors such as mounting and grooming are used to signal dominance and submission, but these behaviors generally do not culminate in orgasm. A reasonable competing hypothesis is that homosexual behavior in all-male human groups is a non-adaptive consequence of a strong libido and a lack of sexual alternatives. Stronger support would be required to rule out this alternative hypothesis convincingly.

James Kohl authors the *Handbook*’s final chapter, “The mind’s eyes: Human pheromones, neuroscience, and male sexual preferences.” Kohl posits innate sex differences in preferences for sexually dimorphic pheromones. These sex pheromones act as unconditioned stimuli that become associated with visual and tactile stimuli through classical conditioning. Consequently, men with innate preferences for women’s odors come to prefer the appearance and feel of women, for example. Homosexuality results from incomplete sexual differentiation of the olfactory system.

Kohl marshals supporting evidence, though it is often subject to alternative interpretation. For example, Kohl suggests that exposure to sex pheromones is “the most likely explanation for the recent finding that saliva [testosterone] levels in men increase with exposure to a young woman, but do not increase with exposure to a young man” (p. 327). Is it not likely that the young woman’s appearance raised men’s testosterone levels?

Multiple studies by independent researchers leave little doubt that odor affects human mate choice, but Kohl probably grossly overstates its importance. Why postulate that humans evolved only obligate olfactory/pheromonal preferences? Isn’t there likely to be useful information about mates that is better obtained through vision and touch than through smell? If so, selection would probably favor more reliable developmental patterns for visual and tactile preferences than classical conditioning to olfactory ones. Moreover, there is a trend among anthropoid primates, including humans, for reduced olfaction and increased reliance on vision for locating food and mates. This is witnessed in our tiny olfactory bulbs, which are relatively many times smaller than in rats; and our apparent lack of a functional vomeronasal organ, which is used by many mammals to detect pheromones.

Ironically, a seemingly fatal blow follows from a condition that Kohl presents in support of his hypothesis. Prior to treatment, people with Kallmann Syndrome (KS) lack

both a sense of smell and much of a libido. Superficially, these facts appear to support Kohl's hypothesis that olfaction is primary in sexual interest. However, the relation between olfaction and libido here is not causal. In most fetuses, some cells in the olfactory placode develop into olfactory cells while others migrate to the hypothalamus to become cells that trigger sex hormone secretion by the gonads. A mutation in one of three known genes can disrupt the development of these cells, so that a person not only lacks a sense of smell but also has gonads that do not produce sex hormones. It is the low sex hormone levels, rather than a lack of olfaction, that leads to reduced libido in adults with KS: Testosterone treatment at least partially restores libido in men with KS, but there is no known treatment for their anosmia.

In the *Handbook's* Epilogue, Kauth explains his insistence that contributors define terms and explicate assumptions to increase overall clarity and better define "the troublesome concept of sexual orientation" (p. 372). Contributors did not define sexual orientation to Kauth's expectations, and Kauth attributes this to the concept's failure to reflect the range and complexity of human sexuality. Viewing sexual orientation as a flawed concept, Kauth thus critiques a study implying that men are largely either heterosexual or homosexual in their attractions (Rieger, Chivers, and Bailey, 2005). Rieger et al. found that men, including those who reported bisexual arousal patterns, tended to become genitally aroused either to female or to male sexual stimuli, but not to both. Kauth questions the validity of the measures used by Rieger et al., but his main criticism is semantic. To Kauth, physiological arousal does not adequately capture sexual orientation, which also encompasses identity, behavior, and even feelings of love. Perhaps the concept of sexual orientation seems of limited utility to Kauth precisely because he conflates these dimensions.

In contrast, Rieger et al. accomplish what Kauth wished of his contributors: a cogent definition of sexual orientation. Rieger et al. distinguish sexual orientation from behavior and self-identification, defining it as "the degree of attraction, fantasy, and arousal that one experiences for members of the opposite sex, the same sex, or both" (p. 579). The authors make no attempt to explore the full range and complexity of human sexuality, and are clear about their focus on sexual feelings, and specifically a measure of sexual feelings that does not rely on self-report. Multiple factors besides sexual arousal influence sexual identity and behavior, as Rieger et al. acknowledge, but their results provide strong evidence that men's arousal patterns are markedly bimodal.

Kauth concludes that evolutionary psychology is a useful approach for gaining new understanding about human sexuality, and certainly evolutionary thinking has provided numerous insights. Detailed analysis of more established lines of research in these areas and a discussion of how evolutionary hypotheses are tested might help the target audience—those new to evolutionary psychology—see the benefits of an evolutionary approach. Nevertheless, *Handbook* offers interesting reviews and hypotheses and is suggested reading for students of evolution and human sexuality.

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