

Preface

In March 2013, we welcomed dozens of scholars from the USA and Europe to join us at Oakland University in Rochester, Michigan, for a day-long interdisciplinary conference on “The Evolution of Sexuality.” We invited as panelists some of the leading scholars in sexual science from many different disciplines, including psychology, criminology, biology, anthropology, archeology, law, philosophy, and medicine. Each of these scholars had conducted and published substantial work addressing sexuality from an evolutionary perspective. This volume showcases the groundbreaking empirical and theoretical work from several of these panelists and other distinguished conference guests.

Biologist Robin Baker provides a thoughtful Foreword to the volume, in many ways setting the stage for the remaining chapters. The first five chapters present summaries of research on the evolution of sexuality from several different disciplinary perspectives. In the first chapter, biologist Tracey Chapman presents a masterful review of sexual conflict. The potential for sexual conflict is pervasive, especially in outbreeding, nonmonogamous species. Sexual conflict results from divergence between the sexes over reproductive resources. Chapman’s focus is on our current understanding of sexual conflict from the perspective of evolutionary biology, and she draws skillfully upon studies across diverse species. Chapman reviews a rich literature demonstrating that sexual conflict can occur over a range of different reproductive traits and behaviors, from who to mate with, to how much parental care to give. The intensity of sexual conflict over the level of expression of a reproductive trait or behavior has been assessed by measuring its costs and benefits, in terms of reproductive output, for individuals of each sex. Chapman argues persuasively that outcomes of sexual interactions between males and females can be viewed in terms of Hamilton’s quartet of social behaviors: mutual benefit (co-operation), selfishness, altruism, and spite. Chapman showcases recent work that has focused on the mechanisms used by individuals to calibrate their responses to perceived threat levels from sexual competitors.

Literary scholar Judith Saunders presents an overview of the new field called “Darwinian literary analysis”, which she helped to create. In a wonderfully original contribution, Saunders applies an evolutionary lens to sexuality in literatures of the past and present, showcasing the value of Darwin’s insights for securing a richer

appreciation of core themes and characters in literature. Next, anthropologist Henry Harpending and polymath Gregory Cochran develop a quantitative genetic model of positive assortative mating for a neutral trait. Harpending and Cochran argue that even though a trait is selectively neutral, the mating system can mimic strong selection both for and against that trait, depending on the group membership of an individual. As a consequence, the mating system can generate large group differences rapidly, and if the system persists, arbitrary groups can be transformed into hereditary castes.

In their chapter, psychologists Yael Sela and her colleagues review recent research investigating whether oral sex might function as “mate retention.” Men and women perform mate retention behaviors to reduce the likelihood of their long-term partner’s infidelity. One mate retention strategy used by both sexes is to increase their partner’s relationship satisfaction by provisioning her or him with benefits. Sela and colleagues review recent work indicating that men who report performing more mate retention behaviors, in general, and more benefit-provisioning mate retention behaviors, in particular, also report greater interest in, and more time spent, performing oral sex on their female partner. Likewise, women who report performing more benefit-provisioning mate retention behaviors also report greater interest in, and more time spent, performing oral sex on their male partner—but this relationship is stronger for men. Sela and colleagues highlight sex similarities and differences, discuss explanations for the results, address limitations of this research, and suggest future directions for research investigating oral sex as a mate retention behavior.

Anthropologist and historian Laura Betzig opens her chapter with reference to a cold day in January of 1649 when, after 7 years of wars, the king of England was taken to Whitehall Palace and beheaded. In the months that followed, the parliament passed an Act Abolishing the Office of King, an Act Abolishing the House of Peers, and an Act Declaring England to be a Commonwealth. As Betzig recounts, arguments have been presented that the English Revolution was caused by the rise of Puritanism, the rise of the middle class, and the difficulty of fighting domestic wars on three fronts. Betzig presents a compelling argument in this chapter for another cause. Betzig argues that Charles I was executed—and his son eventually restored—because his wife was the daughter of a king of France. According to Betzig, Queens of England had always struggled on behalf of their sons. Betzig’s thesis is that this war was an effect, at least partly, of parent-offspring conflict.

The next three chapters present summaries of different areas of recent research investigating female sexual psychology and behavior. First, psychologist James Roney reviews evidence for the functional roles of hormonal signals in the regulation of women’s sexual motivation. Hormone production fluctuates over time with events leading up to and following ovulation, and evolved mechanisms can use circulating hormone concentrations as information about current reproductive states. Roney reviews work documenting that, in most mammalian females, current fecundity is positively signaled by the combination of high estrogen and low progesterone. According to Roney, given the costs of sexual behavior, we might predict that sexual motivation will be higher when fecundity is higher. And in fact, estradiol

positively predicts female sexual motivation across a wide range of mammals, whereas progesterone negatively predicts female sexual motivation. If women's sexual motivation is similarly calibrated to fluctuations in fecundity, Roney argues, we can likewise expect women's libido to be positively and negatively predicted by fluctuations in estradiol and progesterone, respectively. Roney reviews some of the fascinating results from a recent study conducted in his lab which demonstrated that estradiol concentrations were, in fact, positive predictors of within-cycle fluctuations in women's daily reports of sexual desire, whereas progesterone concentrations were strongly negative predictors. Roney concludes the chapter by arguing that these findings suggest that phylogenetically conserved brain mechanisms use hormonal signals to partially calibrate women's sexual motivation to fluctuations in fecundity.

The difficulty of inducing orgasm in women, the variability of orgasm between women, and the lack of an established relationship of orgasm with conception have led some researchers to conclude that female orgasm is a nonfunctional byproduct of male orgasm. As anthropologists John Wheatley and David Puts argue in their chapter, however, other researchers have presented evidence that orgasm is an adaptation in women. Wheatley and Puts review the evidence for these opposing hypotheses and present a convincing argument in favor of the adaptationist hypothesis. First, the authors discuss the phenomenological, anatomical, and neurological correlates of women's orgasm, which are inconsistent with the hypothesis that female orgasm is a byproduct. Wheatley and Puts then present powerful evidence that female orgasm enhances the likelihood of conception, and they summarize evidence that female orgasm functions as a mechanism for choosing mates of high genetic quality, investment potential, or both.

Biologist Randy Thornhill and psychologist Steve Gangestad address the functional design and phylogeny of women's sexuality. Thornhill and Gangestad note that in the past two decades, substantial research has documented estrus in women. Estrus in women is accompanied by a suite of sexual preferences, manifested in the fertile phase of the menstrual cycle, for partners with traits that indicate male genetic and phenotypic quality. Thornhill and Gangestad hypothesize that women's estrus is an adaptation to obtain genes, including conditionally via extra-pair copulation, that enhance the reproductive value of resulting offspring. The authors present a compelling argument that women's estrus is ancient phylogenetically, and has homology and functional similarity with estrus throughout vertebrates. Women's sexuality at infertile cycle points and other infertile times is referred to as "extended sexuality." As Thornhill and Gangestad note, extended sexuality is common in Old World primates and may also be common in pair-bonding, socially monogamous birds. According to the authors, the kinds of preferences associated with women's extended sexuality corroborate the hypothesis that its function is to obtain nongenetic material benefits and services from men in exchange for granting sexual access. Concealed estrus is present in women as evidenced by men's limited ability (compared to other male mammals) to detect estrus, women's limited behavioral changes (compared to other female mammals) during estrus, and estrous women's efforts to limit male mate guarding. The authors conclude the chapter with a superb

review and discussion of concealed estrus in women, marshalling evidence to support the hypothesis that concealed estrus functions in extra-pair copulation to cuckold a regular partner in service of better genes for offspring, while maintaining a regular partner's material benefits.

The next two chapters provide reviews of recent empirical and theoretical work on the evolution of male sexual psychology and behavior, with a focus on homosexual psychology and behavior. Psychologists Paul Vasey and Doug VanderLaan address transgendered male androphilia in the human ancestral environment. *Androphilia* refers to predominant sexual attraction and arousal to adult males, whereas *gynephilia* refers to predominant sexual attraction and arousal to adult females. According to Vasey and VanderLaan, the manner in which male androphilia is expressed varies cross-culturally. *Sex-gender congruent male androphiles* occupy the gender role typical of their sex, behave in a relatively masculine manner, and identify as "men." In contrast, *transgendered male androphiles* often behave in a highly effeminate manner and identify as neither "men," nor "women." Instead, they often identify as members of a third gender. The authors review work indicating that, despite exhibiting different gender role presentations and gender identities, both forms of male androphilia are characterized by the same biodemographic and developmental correlates, indicating that they share a common etiological basis. As discussed by Vasey and VanderLaan, male androphilia presents an evolutionary paradox because it appears to have a genetic component, yet it compromises reproduction and archaeological evidence suggests that it has persisted for many thousands of years. Vasey and VanderLaan argue that the ancestral form of male androphilia was the transgendered form. The authors review some of their own stunningly creative research on a population of transgendered male androphiles in Samoa designed to test hypotheses addressing the evolution of male androphilia. The results of this research indicate that the mothers, paternal grandmothers and maternal grandmothers of *fa'afafine* produce more offspring than those of male gynephiles, which is consistent with the Sexually Antagonistic Gene hypothesis. The results of this research also indicate that *fa'afafine* display elevated avuncular tendencies and behavior compared to women and gynephilic men, which is consistent with the Kin Selection Hypothesis. Vasey and VanderLaan also highlight the results of recent research indicating that the *fa'afafine*'s avuncular cognition displays elements of adaptive design.

All else equal, men who are less interested in having reproductive sex will produce fewer offspring and thus selection will eliminate the genes that contribute to their sexual orientation. However, according to psychologist Austin Jeffery, all else is not equal, as sexual orientation corresponds with a constellation of traits that may inform reproductive success. Jeffery presents two original hypotheses regarding the adaptive logic of reduced interest in the opposite sex. The first hypothesis addresses the tradeoff between offspring quantity and quality, proposing that men who abstain from sex with women make more effective parents. The second hypothesis invokes sperm competition and suggests that sneak copulating men can benefit from reduced arousal towards women. The question of exclusive homosexuality is addressed in the final section. Jeffery contends that self-identification as an

exclusive homosexual is the product of a culture that promotes exclusive sexualities to isolate and remove non-heterosexuals from the reproductive arena. According to Jeffery, “coming out” as a homosexual man serves to distinguish oneself as a non-competitor to local sexual rivals, alleviating the severity of one’s victimization at their hands. Jeffery argues that the modern notion of sexual identity has corrupted our understanding of sexuality as a fluid and functional product of evolved cognitive mechanisms. According to Jeffery, reliance on categorical sexual archetypes subverts our ability to characterize sexual variance, not only by limiting the depth of our measures, but also by limiting the depth of our theoretical thinking.

The final two chapters are broad in scope, addressing the evolution of both female and male sexual psychology and behavior. Psychologist David Schmitt opens his wide-ranging chapter noting that psychologists have identified myriad ways men and women differ in emotion, behavior, and cognition. Social role theorists assume that men’s and women’s psychological differences are the result exclusively of sex role socialization processes and sociopolitical power differentials. These theorists assume psychological sex differences will be smaller in cultures with more egalitarian sex role socialization and greater sociopolitical gender equity. In this chapter, Schmitt presents evidence across 21 data sources that directly challenges this assumption of social role theory. Schmitt reports that sex differences in most psychological traits—and even in many physical traits, including height, obesity, and blood pressure—are much larger in cultures with more egalitarian sex role socialization and greater sociopolitical gender equity. Schmitt argues that three alternative evolutionary perspectives on psychological sex differences—obligate sex differences, facultatively mediated sex differences, and emergently moderated sex differences—better explain the universal and culturally variable sex differences reliably observed across human cultures.

In the final chapter, psychologists Michael Pham and Todd Shackelford begin with a brief introduction to sperm competition theory. Sperm competition occurs when a female copulates with two or more males within a sufficiently brief time period, resulting in sperm of the different males competing to fertilize ova. Sperm competition has been documented or inferred to occur in many species. Pham and Shackelford review the evidence for sperm competition in humans. Specifically, the authors review literature indicating apparently convergent adaptations to sperm competition in humans and nonhumans. Pham and Shackelford discuss future research directions, and conclude that the research that documents anatomical, biological, physiological, and behavioral adaptations to human sperm competition provides compelling evidence that sperm competition has been a recurrent feature of human evolutionary history.

The Evolution of Sexuality showcases the profound and wide-ranging intellectual value of an interdisciplinary approach to human psychology and behavior. Guided by Darwin’s insights, the contributions to this volume provide a compelling case for an evolutionary analysis of sexuality.

The Evolution of Sexuality

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