BOOK REVIEW

REALITIES OF RAPE: OF SCIENCE AND POLITICS, CAUSES AND MEANINGS

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A NATURAL HISTORY OF RAPE: BIOLOGICAL BASES OF SEXUAL COERCION. By *Randy Thornhill*†† & *Craig T. Palmer*.††† Cambridge: MIT Press, 2000. Pp. xvi, 251. $28.95 (Hardcover) (Paperback, 2001. $16.95).

INTRODUCTION

Rape is bad. Science is good. But is the science of rape good? Randy Thornhill and Craig T. Palmer, the authors of *A Natural History*

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of Rape: Biological Bases of Sexual Coercion,[1] answer yes and no. It is good to have a science of rape, they argue; but the current science of rape is inadequately scientific. Thornhill and Palmer consequently offer, as partial remedy, a biologically based approach that they believe would both advance our understanding of the phenomenon of rape and aid our efforts to prevent it.

In December 1999, an advance extract from *A Natural History of Rape* appeared in *The Sciences*, the respected journal of the New York Academy of Science.[2] The extract sparked a significant and international controversy that began immediately—even before the book was published—and extended for many months after the book's expedited production and distribution.[3]

Unsurprisingly, given the book's topic and disciplinary perspective, much of the commentary was heated.[4] Surprisingly, many commentators had not even seen a manuscript of the book before expressing opinions that were—for lack of a better word—vicious.[5]

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1 RANDY THORNHILL & CRAIG T. PALMER, A NATURAL HISTORY OF RAPE: BIOLOGICAL BASES OF SEXUAL COERCION (2000).

2 Randy Thornhill & Craig T. Palmer, *Why Men Rape*, 40 SCIENCES 30 (2000).

3 A sampling of this extensive controversy—which ultimately extended to radio, television, newspapers, and magazines—can be accessed by searching the terms "thornhill," "palmer," and "rape" in the Nexis or AllNews databases of Lexis or Westlaw, respectively, using date restrictions appropriate to the January 2000 to July 2000 period. For the authors' response to a number of criticisms, see Randy Thornhill & Craig T. Palmer, *An Evolutionary Explanation of Rape*, SCRIPPS HOWARD NEWS SERVICE, Apr. 19, 2000 [hereinafter Thornhill & Palmer, *An Evolutionary Explanation of Rape*], *available at* LEXIS, Nexis Library; Randy Thornhill & Craig T. Palmer, *Rape and Evolution: A Reply to Our Critics* (2001) (new preface to THORNHILL & PALMER, *supra* note 1), *available at* http://mitpress.mit.edu/thornhill-preface.pdf.

Although the publisher reportedly scheduled the book's first release for April 1, 2000, it instead released the book sometime in January, following media attention. *See* Scott Sandlin, *Rape a Biological Act*, ALBUQUERQUE J., Jan. 22, 2000, at A1.

4 *See, e.g.*, Jerry A. Coyne, *Of Vice and Men*, NEW REPUBLIC, Apr. 3, 2000, at 27 (book review); Barbara Ehrenreich, *How "Natural" is Rape?*, TIME, Jan. 31, 2000, at 88; Michael Farris, *Study Indirectly Shows the Evils of Evolution*, WASH. TIMES, Feb. 1, 2000, at E5 (arguing that the book demonstrates why schools should not teach evolution); *Readers Speak: Their Minds About Controversial Rape Study*, DALLAS MORNING NEWS, Feb. 9, 2000, at 5C (publishing a sampling of more than two dozen reader letters); Joan Smith, *Inconceivable Conclusions*, INDEPENDENT (London), Mar. 12, 2000, at 46; *Controversial New Theory of Rape in Terms of Evolution and Nature* (NPR Talk of the Nation, Jan. 26, 2000), LEXIS, News Library, Transcripts; *Is Rape About Violence or Sex?* (CNN Talkback Live, Jan. 18, 2000), LEXIS, News Library, Transcripts. *See also* Erica Goode, *What Provokes a Rapist? Scientists Debate the Idea of Evolutionary Drive*, CHI. TRIB., Mar. 8, 2000, at 2 (describing controversy); Marina Pisano, *Book Ignites Debate on Rape*, SAN ANTONIO EXPRESS-NEWS, Feb. 6, 2000, at 1H (same); Megan Rosenfeld, *The Male Animal: Two Scientists Explain Rape as a Natural Behavior and Cause an Unnatural Uproar*, WASH. POST, Jan. 28, 2000, at C1 (same).

5 The flashpoint of public controversy clearly preceded the publication of the book, with the media often securing comments from people who simply could not yet have read it. *See, e.g.*, Pisano, *supra* note 4, at 1H (describing "torrent of controversy" based on advance excerpts and author interviews, as "most people haven't even read [the book] yet"); Michael Precker, *Rape: Violence or Sex?*, DALLAS MORNING NEWS, Feb. 10, 2000, at 1C (observ-

Indeed, many commentators seemed hand-picked for precisely the lucrative voyeurism this characteristic guarantees.

Clearly, both the commentators and the authors shared the common goal of eradicating rape. But similarities, apparently, stopped there. A thorough review of the commentary reveals that most of the critics simply hadn't any clue about how biology can influence behavior generally, or what Thornhill and Palmer were trying to say about the effects of biology on rape patterns, specifically.[6]

Now that some of the dust has settled, the question remains: Does *A Natural History of Rape* offer anything useful to legal thinkers? The short answer is yes. However, the nature of the subject, the subtleties of behavioral biology, and the form of the book's arguments, when combined, present an unusual challenge for the reader who would mine the work for useful information.

This review proceeds in five parts. Part I provides a synopsis of what this controversial book does and does not say. Parts II and III survey the book's strengths and weaknesses, respectively. Following general assessments in Part IV, Part V offers thoughts on the potential legal implications of the authors' views.

I
SYNOPSIS

Randy Thornhill is a biologist.[7] Craig Palmer is an anthropologist.[8] Both are evolutionists. In this they are in broad and mainstream company. Both believe that well-accepted principles of evolutionary

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ing that the book "has become the hottest controversy in the publishing world, even though almost nobody has actually read it"); Dan Vergano, *"Natural, Biological" Theory of Rape Creates Instant Storm*, USA TODAY, Jan. 18, 2000, at 8D. *See also Basic Instinct?* (Dateline NBC, Jan. 25, 2000) (describing "a big fight [that] has started before the book is even out"), LEXIS, News Library, Transcripts. In some cases, commentators were apparently provided with copies of the book manuscript. Even then, however, finishing the book was not a prerequisite for adamant public condemnation. Linda Fairstein, for example, acknowledged that she had not finished the manuscript before appearing on the Today Show. *Prosecutor Linda Fairstein and Author Randy Thornhill Discuss His New Book, "A Natural History of Rape"* (NBC Today Show, Jan. 24, 2000), LEXIS, News Library, Transcripts.

6 For a variety of factual and logical errors that commentators often make in evaluating biobehavioral theories of sexual aggression, see Owen D. Jones, *Sex, Culture, and the Biology of Rape: Toward Explanation and Prevention*, 87 CAL. L. REV. 827, 872-95 (1999) [hereinafter *Sex, Culture, and the Biology of Rape*]. For supplemental observations on public confusion about biobehavioral theories of sexual aggression, see Owen D. Jones, *Law and the Biology of Rape: Reflections on Transitions*, 11 HASTINGS WOMEN'S L.J. 151 (2000) [hereinafter *Law and the Biology of Rape*]; and Owen D. Jones, *Reconsidering Rape*, NAT'L L.J., Feb. 21, 2000, at A21. The identified errors surfaced, unfortunately, with all-too-predictable regularity following the publication of *A Natural History of Rape*.

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biology provide the foundation for a scientific understanding of behavior, including human behavior. Again, they are in good company.[9] For while there is inevitable interdisciplinary scrabbling over which discipline (if any) is Queen, there is simply no current and material debate, in relevant scientific communities, about whether evolutionary processes, including natural and sexual selection,[10] have affected human bodies, brains, and behaviors.

What is debatable, of course, is what *specifically* those processes have left the human brain designed to do, and what the implications, if any, are. And it is in this arena of controversy that the authors have chosen to tread. At the most basic level, *A Natural History of Rape* argues that an evolutionarily informed perspective on rape behavior and rape trauma will help provide gains in understanding rape that can translate into gains in preventing it. This is, of course, simply a specific application of the general principle: More knowledge is better than less knowledge.

Media coverage repeatedly asserted or implied that Thornhill and Palmer, in their book, propose an evolutionary perspective on

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9 For useful introductions to modern behavioral biology, written for a general audience, see TIMOTHY H. GOLDSMITH, THE BIOLOGICAL ROOTS OF HUMAN NATURE: FORGING LINKS BETWEEN EVOLUTION AND BEHAVIOR (1991); MATT RIDLEY, THE RED QUEEN: SEX AND THE EVOLUTION OF HUMAN NATURE (1994); and ROBERT WRIGHT, THE MORAL ANIMAL: EVOLUTIONARY PSYCHOLOGY AND EVERYDAY LIFE (1994).

For accessible textbooks to increase technical familiarity, see JOHN ALCOCK, ANIMAL BEHAVIOR: AN EVOLUTIONARY APPROACH (6th ed. 1998); DAVID BUSS, EVOLUTIONARY PSYCHOLOGY: THE NEW SCIENCE OF THE MIND (1999); MARTIN DALY & MARGO WILSON, SEX, EVOLUTION, AND BEHAVIOR (2d ed. 1983); SCOTT FREEMAN & JON C. HERRON, EVOLUTIONARY ANALYSIS (1998); DOUGLAS J. FUTUYMA, EVOLUTIONARY BIOLOGY (2d ed. 1986); TIMOTHY H. GOLDSMITH & WILLIAM F. ZIMMERMAN, BIOLOGY, EVOLUTION, AND HUMAN NATURE (2000); JAMES L. GOULD & CAROL GRANT GOULD, SEXUAL SELECTION (1989); J.R. KREBS & N.B. DAVIES, AN INTRODUCTION TO BEHAVIOURAL ECOLOGY (3d ed. 1993); MARK RIDLEY, EVOLUTION (1993); and ROBERT TRIVERS, SOCIAL EVOLUTION (1985).

For an introduction to law-relevant principles of behavioral biology, written specifically for legal thinkers without biology backgrounds, see Part I: A Primer in Law-Relevant Evolutionary Biology, in Owen D. Jones, *Evolutionary Analysis in Law: An Introduction and Application to Child Abuse*, 75 N.C. L. REV. 1117, 1127-57 (1997), and Timothy H. Goldsmith & Owen D. Jones, *Evolutionary Biology and Behavior: A Brief Overview and Some Important Concepts*, 39 JURIMETRICS J. 131 (1999).

Those interested in learning more about the utility of behavioral biology in various legal matters can find a useful bibliography on the "Readings" page of the web site of the Society for Evolutionary Analysis in Law (SEAL) at http://www.sealsite.org.

10 Natural selection is the inevitable result of any system combining the following three elements: (1) heredity; (2) variation; and (3) differential reproduction. Natural selection describes a process by which the proportion of a population bearing heritable anatomical and behavioral traits increases or decreases over successive generations, as a function of each trait's cumulative effect on the reproductive success of the organisms bearing it. Sexual selection, often considered a subaspect of natural selection, refers to the process by which mate choice (who mates with whom) affects differential reproduction in sexually reproducing species. *See supra* note 4.

sexual coercion for the first time.[11] That is incorrect. In fact, a large body of literature on the biology of sexual coercion already extends back more than two decades.[12] Furthermore, both authors (particularly Thornhill) have previously published works exploring the intersection of rape and biology.[13] In particular, Thornhill has published

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11 *See, e.g.*, Lawrence Spohn, *Local Biologist Asserts Rape is Innate*, ALBUQUERQUE TRIB., Jan. 8, 2000, at A1 (describing Thornhill and Palmer as having "developed a new theory"); *Controversial New Theory of Rape in Terms of Evolution and Nature*, *supra* note 4 (same); J.M. Lawrence, *Scientists Spark Debate with Controversial Rape Theory*, BOSTON HERALD, Jan. 12, 2000, at 14 (implying same); *Basic Instinct?*, *supra* note 5 (implying same).

12 The References section of *A Natural History of Rape* provides an essential window on the extent of this literature. *See* THORNHILL & PALMER, *supra* note 1, at 213-43. For selected sources on the evolutionary perspective on sexual aggression, see *Sex, Culture, and the Biology of Rape*, *supra* note 6, app. A.

13 For Thornhill's prior work see, in reverse chronological order, Randy Thornhill, *The Biology of Human Rape*, 39 JURIMETRICS J. 137 (1999) [hereinafter *The Biology of Human Rape*]; Randy Thornhill, *Rape-Victim Psychological Pain Revisited*, *in* HUMAN NATURE 239 (Laura Betzig ed., 1997) [hereinafter *Rape-Victim Psychological Pain*]; Nancy Wilmsen Thornhill, *Psychological Adaptation to Sexual Coercion in Victims and Offenders*, *in* SEX, POWER, CONFLICT: EVOLUTIONARY AND FEMINIST PERSPECTIVES 90 (David M. Buss & Neil M. Malamuth eds., 1996); Randy Thornhill, *Is There Psychological Adaptation to Rape?*, 16 ANALYSE & KRITIK 68 (1994); Randy Thornhill & Nancy Wilmsen Thornhill, *The Study of Men's Coercive Sexuality: What Course Should it Take?*, 15 BEHAV. & BRAIN SCI. 404 (1992); Randy Thornhill & Nancy Wilmsen Thornhill, *The Evolutionary Psychology of Men's Coercive Sexuality*, 15 BEHAV. & BRAIN SCI. 363 (1992) (article followed by extensive peer commentary); Randy Thornhill & Nancy Wilmsen Thornhill, *Coercive Sexuality of Men: Is There Psychological Adaptation to Rape?*, *in* SEXUAL COERCION 91 (Elizabeth Grauerholz & Mary A. Koralewski eds., 1991); Nancy Wilmsen Thornhill & Randy Thornhill, *An Evolutionary Analysis of Psychological Pain Following Human (*Homo sapiens*) Rape: IV. The Effect of the Nature of the Sexual Assault*, 105 J. COMP. PSYCHOL. 243 (1991) [hereinafter *The Effect of the Nature of the Sexual Assault*]; Nancy Wilmsen Thornhill & Randy Thornhill, *An Evolutionary Analysis of Psychological Pain Following Rape: III. Effects of Force and Violence*, 16 AGGRESSIVE BEHAV. 297 (1990) [hereinafter *Effects of Force and Violence*]; Nancy Wilmsen Thornhill & Randy Thornhill, *An Evolutionary Analysis of Psychological Pain Following Rape: II. The Effects of Stranger, Friend, and Family-Member Offenders*, 11 ETHOLOGY & SOCIOBIOLOGY 177 (1990) [hereinafter *Effects of Stranger, Friend, and Family-Member Offenders*]; Nancy Wilmsen Thornhill & Randy Thornhill, *An Evolutionary Analysis of Psychological Pain Following Rape: I. The Effects of Victim's Age and Marital Status*, 11 ETHOLOGY & SOCIOBIOLOGY 155 (1990) [hereinafter *Effects of Victim's Age*]; Randy Thornhill & Nancy Wilmsen Thornhill, *The Evolution of Psychological Pain*, *in* SOCIOBIOLOGY AND THE SOCIAL SCIENCES 73 (Robert W. Bell & Nancy J. Bell eds., 1989) [hereinafter *The Evolution of Psychological Pain*]; Randy Thornhill & Nancy Wilmsen Thornhill, *Human Rape: The Strengths of the Evolutionary Perspective*, *in* SOCIOBIOLOGY AND PSYCHOLOGY 269 (Charles Crawford et al. eds., 1987); Randy Thornhill et al., *The Biology of Rape*, *in* RAPE 102 (Sylvana Tomaselli & Roy Porter eds., 1986); Randy Thornhill & Nancy Wilmsen Thornhill, *Human Rape: An Evolutionary Analysis*, 4 ETHOLOGY & SOCIOBIOLOGY 137 (1983); Randy Thornhill, *Rape in* Panorpa *Scorpionflies and a General Rape Hypothesis*, 28 ANIMAL BEHAV. 52 (1980).

For Palmer's work, see Craig T. Palmer et al., *Is It Sex Yet? Theoretical and Practical Implications of the Debate over Rapists' Motives*, 39 JURIMETRICS J. 271 (1999); Craig T. Palmer, *The Use and Abuse of Darwinian Psychology: Its Impact on Attempts to Determine the Evolutionary Basis of Human Rape*, 13 ETHOLOGY & SOCIOBIOLOGY 289 (1992); Craig T. Palmer, *Human Rape: Adaptation or By-Product?*, 28 J. SEX RES. 365 (1991); Craig T. Palmer, *Is Rape a Cultural Universal? A Re-Examination of the Ethnographic Data*, 28 ETHNOLOGY 1 (1989); Craig T. Palmer, *Rape in Nonhuman Animal Species: Definitions, Evidence, and Implications*, 26 J. SEX RES. 355 (1989) [hereinafter *Rape in Nonhuman Animal Species*]; Craig T. Palmer, *Twelve*

widely recognized and path-breaking empirical studies on sexual coercion in insects. And there are some existing data on human rape patterns that have allowed prelimimary testing of predictions generated by evolutionarily informed hypotheses.

The two principal evolutionarily informed hypotheses that the authors explore in *A Natural History of Rape* are: (1) the Adaptation Hypothesis; and (2) the By-Product Hypothesis.

A. The Adaptation Hypothesis

The adaptation hypothesis contemplates the existence of heritable psychological features specific to rape. Here is the logic. Theoretically, a psychological, information-processing predisposition toward contingent (environmentally sensitive and context specific) rape behavior could spread to increasing percentages of males in successive generations of a sexually reproducing species if it were adaptive. Such a predisposition could spread if, across all males bearing it, it had a net positive effect on the average male reproductive success in the environment of evolutionary adaptation. The reasons it would spread trace to known and patterned effects of natural selection and sexual selection on the spread of heritable behavioral traits.

Because indiscriminate copulation is more costly, on average, to females than to males (because males, but not females, can avoid the costs of internal gestation), natural selection has generally favored copulation-partner choosiness in females of internally fertilizing species.[14] (This is because selective females essentially translate their limited number of lifetime reproductive episodes into healthier and ultimately more reproductive offspring than do females less choosy about their sexual partners.) Because males, but not females, can increase reproductive success by increasing the number of partners with whom they copulate, natural selection has generally disfavored an equivalent choosiness in males about partner quality per copulation. This means that the different average costs to males and females of copulating together have yielded, almost certainly, different male and female psychologies, on average, concerning willingness to copulate

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Reasons Why Rape is Not Sexually Motivated: A Skeptical Examination, 25 J. SEX RES. 512 (1988); Craig Tarleton Palmer, Evolutionary Explanations of Rape: Testing Adaptive and Nonadaptive Hypotheses (1988) (unpublished Ph.D. dissertation, Arizona State University) (on file with author).

14 On the subject of this paragraph, see generally sources cited *supra* note 9 (providing useful background material). Obviously, not all sexually reproducing species gestate internally. Internal gestation merely illustrates the general phenomenon. For even in those species that do not gestate internally, the production and nutrition of eggs is generally more energetically costly to females than the production and delivery of sperm is to males. Between-sex asymmetries in costs create conflicts, which under the relentless scouring of evolutionary processes creates behavioral asymmetries as well.

indiscriminately. This conclusion is both uncontroversial in biology at the level of theory, and robust empirically across known species. This is, in part, because it is so highly improbable that the cumulated economic effects of natural and sexual selection, across the roughly 600 million years of sexual reproduction on this planet, could possibly have generated male-typical and female-typical psychologies—in any species—that are identical in all material respects.

Thornhill and Palmer build on these basic principles, consider them in the context of the human animal, and reason as follows. We can expect, because of the effects of natural and sexual selection, that unmated males and females in ancestral (including pre-hominid) environments came into conflict each time a male wanted to copulate with a female who would not willingly copulate with him. Forced copulation, in such a circumstance, could in effect increase male mate number, *potentially* increasing male reproductive success. (This is particularly axiomatic—even taking into account the low probability of fertilization from a single copulation—if the male has no willing sex partners.)

As a consequence, it is at least theoretically possible that if an evolved male predisposition toward contingent rape behavior (that is, context-sensitive, rather than automatic, probability of sexual aggression) ever arose, it could spread to more and more males in each ensuing generation. For when the results of rape increased a raping male's reproductive success even marginally (compared either to not copulating at all, or to copulating only with willing females), a predisposition increasing the probability of forced copulation would appear in increasing percentages of males over many generations. Put another way, males in ensuing generations would be increasingly likely to be descended from males that themselves bore heritable psychological mechanisms prompting conditional switches among mating behaviors. For example: court when the prospects are good, and force copulations either when the benefits are high (as when willing females are not forthcoming) or, alternatively, when the costs are low (as when the likelihood of injury or reprisals is very low). These mating behaviors, among which males would switch, would obviously exist on a continuum, with substantial investments in courtship at one end, rape at the other, and gradations of psychological and physical coerciveness in between.

In addition to considering this male side of the equation, Thornhill and Palmer assess the effects of natural and sexual selection on females, in a world in which some males resort to forced copulation. They point out the opposite evolutionary effects on male and female success, noting that any possible reproductive gain to a raping male would inevitably have come at the cost to the female victim of female

mate-choice. This could potentially decrease her lifetime reproductive success, compared to reproductive success she would likely have obtained had she copulated all her life only with males of her own choosing.[15] Thus, argue Thornhill and Palmer, if forced copulation were a significant risk to ancestral females across evolutionary time, natural selection would have favored a counterstrategy (if it happened to arise) in females: acute psychological predispositions toward avoiding and resisting forced copulation.[16] Over generations, increasing proportions of females would be descended from ancestral females who happened to have psychological predispositions to avoid and resist rape. To put it another way, if female-chosen males father more reproductively successful offspring, on average, than do raping males, then any heritable indifference to rape or the risk of rape would inevitably dwindle toward disappearance in female populations, leaving future generations of females with a strong, specific, and sex-wide psychological distaste for rape.

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15 *See The Biology of Human Rape*, *supra* note 13, at 144. It is important to note that female reproductive success is not measured, biologically, simply by counting the number of offspring a female has. It necessarily takes into account the relative quality of those offspring (quality being affected by the father's, as well as the mother's, genetic contributions) and the extent to which higher-quality offspring can increase a female's reproductive success by themselves attracting high-quality mates and producing high-quality offspring in future generations. The number of other relatives, discounted by their varying degrees of consanguinity, are included in the "inclusive fitness" measurement by which reproductive success is defined. For more on the calculation of inclusive fitness, see sources cited *supra* note 9.

16 The general idea is that "human mental pain is an adaptation that is designed to guide cognition, feelings, and behavior toward solutions to personal social problems that reduced inclusive fitness in human evolutionary history, and to provide inferences for avoiding such problems later in life." *Rape-Victim Psychological Pain*, *supra* note 13, at 239. The hypothesis that psychological pain is an adaptation

> views the evolutionary significance of mental pain as analogous to the evolutionary importance of physical pain. Physical pain serves to draw an individual's attention to some aspect of anatomy that needs tending and *can be fixed* by the individual's attention. Mental pain seems to focus an individual's attention on the significant social events surrounding the pain and promotes correction of the events causing the pain and avoidance of these events in the future. . . . The hypothesis of psychological pain makes the following two *general* predictions about the kinds of environmental information that will result in psychological pain: First, it predicts that the proximate ecological causes of mental pain will be circumstances that affected inclusive fitness of individuals under social competition. Second, the hypothesis predicts that the more an event potentially or actually negatively affects the evolved social tendencies, desires, and aspirations of humans, the more psychological pain will occur surrounding the event.

Effects of Victim's Age, *supra* note 13, at 158-59.

For more on this subject, see *The Effect of the Nature of the Sexual Assault*, *supra* note 13; *Effects of Force and Violence*, *supra* note 13; *Effects of Stranger, Friend, and Family-Member Offenders*, *supra* note 13; and *The Evolution of Psychological Pain*, *supra* note 13.

B. The By-Product Hypothesis

In contrast to the adaptation hypothesis, the by-product hypothesis of evolutionary influences on rape patterns contemplates a process by which natural selection could affect patterns of forced copulation more indirectly. According to this hypothesis, rape may persist within a species not because forced copulation was itself specifically adaptive, but rather because forced copulation was a by-product of adaptations to *other* behavior. For instance, if the relentless pursuit of possible sex partners increases male reproductive success, on average, and if that pursuit occasionally results in nonconsensual sex, then population-wide patterns in rape behavior could be a by-product of an evolved psychological predisposition to pursue possible sex partners eagerly and persistently. Importantly, the female psychological aversion to rape could be a rape-specific adaptation regardless of whether the biobehavioral influences on males reflect adaptation or by-product.

C. Some Predictions

The adaptation and by-product hypotheses generate many similar predictions, as the authors readily recognize. (In fact, the authors disagree about which, in the end, is more likely.[17]) Hypotheses are tested, of course, by comparing evidence with predictions. And at the moment (due in part to obvious limitations of human experimentation), the overlap in predictions between the two hypotheses affords little empirical reason to favor one over the other. Indeed, it is possible that the two causal pathways described above could operate both independently and in concert. Nevertheless, the specificity and number of the predictions have enabled some evidentiary probing of the extent to which biobehavioral influences—whether through adaptations or by-products—may affect patterns of rape. If either of the two hypotheses summarized above accurately describes a process by which species-typical male and female brains differ—in their processing of encounters when forced copulations might occur—then the predictions below (accompanied by a brief explanation for the prediction) follow.[18]

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17 *See, e.g.*, THORNHILL & PALMER, *supra* note 1, at 61.

18 I have attempted to render these selected predictions easily accessible to a legal audience. I hasten to add that because these do not mirror Thornhill and Palmer's presentation verbatim, any shortcomings the language may reflect are my own, not the authors'.

Other useful sources that consider the predictions of evolutionary hypotheses about sexual aggression, sometimes in more technical detail than this book for a popular audience could reasonably accommodate, include the works of Thornhill and Palmer, cited *supra* note 13; Lee Ellis & Anthony Walsh, *Gene-Based Evolutionary Theories in Criminology*, 35 CRIMINOLOGY 229 (1997); and Neil M. Malamuth, *An Evolutionary-Based Model Integrating Research on the Characteristics of Sexually Coercive Men*, *in* 1 ADVANCES IN PSYCHOLOGICAL SCI-

First, females (particularly in internally gestating species) will be choosier than males about copulation partners—avoiding and resisting copulation with males they have not affirmatively selected. The rationale for this is that the cost of random copulation is greater to females than it is to males. Natural and sexual selection would favor predispositions, in females, to choose mates and to resist rape.

Second, it is unlikely that rape behavior is confined to the human species. The rationale for this is that if a predisposition toward increasingly persistent, even aggressive, sexuality ever arose, and if it afforded males bearing it even a small reproductive advantage over less persistent males, then that predisposition would spread widely throughout subsequent populations. While such a predisposition can spread only under ecological conditions enabling it to contribute to male reproductive success, it is unlikely that such ecological conditions occur only in humans.

Third, rape will rarely result either in fatal harm, or in harm sufficient to preclude conception and birth. The rationale for this is that natural selection would have disfavored rape if the costs routinely exceeded the benefits.

Fourth, the biobehavioral hypotheses predict that rape will be overwhelmingly a male, rather than female, behavior. The rationale for this is that a male's reproductive success, far more than a female's, can be increased by increasing the number of partners with whom he copulates. Natural selection would therefore favor coercive sexuality by males more than it would favor coercive sexuality by females.

Fifth, the likelihood of rape, by a given male, will be context specific and will vary with environmental contingencies in a way that reflects the relative benefits of alternative mating behaviors. The rationale for this is that evolutionary processes rarely favor indiscriminate behavior. In contrast, selection processes could favor a context-specific predisposition, if it arose, that increased the likelihood of aggression as the likelihood of willing copulation decreased.[19]

Sixth, the ages of victims of attempted and completed rape will be overwhelmingly concentrated into the part of the female lifespan that is reproductive. The rationale for this is that copulation with females outside the age range historically bounded by puberty and meno-

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ENCE: SOCIAL, PERSONAL, AND DEVELOPMENTAL ASPECTS 151 (John G. Adair et al. eds., 1998).

19 Individuals have the potential to employ different mating behaviors, sensitive to environmental circumstances. Or, as Crawford and Galdikas put it, "The members of some species exhibit conditional sexual strategies. All individuals carry genes for all strategies; the particular sexual strategy employed depends on factors such as what the individual's competitors are doing, resources available to the individual, and the individual's size and aggressiveness." Charles Crawford & Biruté M.F. Galdikas, *Rape in Non-Human Animals: An Evolutionary Perspective*, 27 CANADIAN PSYCHOL. 215, 220 (1986).

pause is unlikely to result in reproduction. Natural selection would consequently favor male predispositions to copulate, on average, with fertile-aged females.

Seventh, the probability that a female sexual assault victim will be raped penile-vaginally (as opposed to orally, anally, or with digits or objects) will be higher for females within their reproductive years than it is for those outside their reproductive years. The rationale for this is that in the environment of evolutionary adaptation, penile-vaginal assaults of reproductive-aged females were more likely to result in conception than were penile-vaginal assaults of unreproductive females. Evolutionary processes therefore would have tended to correlate the kind of sexual aggression with the age of the sexually assaulted victim. Specifically, it would tend to concentrate penile-vaginal assaults, compared to other kinds of sexual assaults, among those victims most likely to be reproductive. For this reason, we might expect the percentage of reproductive-aged victims who were raped penile-vaginally to be higher than the percentage of nonreproductive-aged victims who were raped penile-vaginally. Put another way, nonreproductive-aged victims are more likely to be sexually assaulted in ways other than penile-vaginally, compared to victims of reproductive age.

Eighth, the biobehavioral hypotheses also predict (although somewhat less forcefully) that the trauma of rape victims in the immediate post-rape period will tend to vary with age, being greatest among females of reproductive age and less, on average, among prepubescent and post-menopausal victims. The rationale for this is that the magnitude of the effect of being raped on female reproductive success is greater for fertile-aged females than it is for females incapable of conceiving and giving birth. Natural selection would therefore more strongly favor psychological resistance to rape in females of reproductive age.

Ninth, the trauma of reproductive-aged sexual assault victims in the period immediately following the rape will tend to vary with the type of sexual assault, with vaginal rape being more traumatic, on average, than anal rape, oral rape, or forced cunnilingus, when these are not also accompanied by penile-vaginal rape. The rationale for this is that vaginal rape had greater reproductive consequences for ancestral females than did other forms of sexual assault. Natural selection would favor psychological aversion to physical compulsion generally. But it would also more strongly favor psychological aversion to vaginal rape than aversion to, for example, anal or oral rape.

Tenth, a disproportionately high number of rapists will be young, sexually mature males. The rationale for this is that in their earliest years of sexual maturity young men have, on average, less ability than older males to attract willing sex partners (due, in part, to compara-

tively lesser acquisition of resources and status).[20] If comparatively lesser access to willing sex partners increases the probability of sexual aggression, young males will likely be overrepresented among rapists.

Eleventh, the biobehavioral hypotheses predict that the average age of women raped during robbery will be lower than the average age of all robbed women. The rationale for this is that if sexual desire is often a component in rapes, then the average age of female victims of rapes committed in conjunction with a robbery should be lower than the average age of female robbery victims, and skewed toward the reproductive years.

As it turns out, and as Thornhill and Palmer explain in various portions of their book, there is evidence from nonhuman and human species consistent with each of these predictions.[21] Thornhill and Palmer clearly recognize that some of the predictions generated by the evolutionary hypotheses have stronger empirical support than others. And they also clearly recognize that no single match between predictions and facts categorically proves either biobehavioral hypothesis. Nonetheless, they also believe that, taken together, the predictions, the data, and the logic of the underlying theory make a persuasive case that evolutionary processes have affected both male and female psychologies concerning rape.

Specifically, the authors argue that it is more empirically and theoretically sound to believe that evolved patterns of male sexual desire often contribute to rape than it is to believe that male sexual desire is wholly—or even often—irrelevant to rape. The authors subsequently attempt to foreshadow some of the implications of this. And the implications they tentatively explore cover wide territory, from recommending more nurturing environments for young males to affecting the debate over chemical castration of rapists, and from suggesting educational programs for youths to recommending changes in post-rape counseling and treatment.[22]

Along the way, Thornhill and Palmer argue that the existing social science explanation of rape has five flaws: (1) It makes assumptions about human nature that are incompatible with current knowledge about evolution; (2) It bases its assertion that rape is not sexually motivated on arguments that cannot withstand skeptical analysis; (3) Its predictions are not consistent with the cross-cultural data on human rape; (4) It does not account for rape occurrences in other

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20 *See* DAVID M. BUSS, THE EVOLUTION OF DESIRE (1994); David M. Buss, *Sex Differences in Human Mate Selection Criteria, An Evolutionary Perspective*, *in* SOCIOBIOLOGY AND PSYCHOLOGY, *supra* note 13, at 335; David M. Buss & David P. Schmitt, *Sexual Strategies Theory: An Evolutionary Perspective on Human Mating*, 100 PSYCHOL. REV. 204 (1993).

21 Some of this data is also summarized in *Sex, Culture, and the Biology of Rape*, *supra* note 6, at 859-71.

22 *See* THORNHILL & PALMER, *supra* note 1, at 153-88.

species; and (5) It rests on several assertions that belong more to "metaphysics" than to science.[23]

D. The Null Set

Given the unusually fast and extensive distribution of information about this book, and the remarkable amount of misinformation that has circulated, no synopsis of the authors' views would be complete without briefly clarifying what the authors *never* say. Contrary to ascription,[24] for example, the authors never say, imply, or suggest that the hypothesized biobehavioral influences on sexual aggression should either exculpate rapists, or mitigate punishment. In fact, Thornhill and Palmer explicitly and repeatedly reject that idea, displaying a preference for harsh and targeted penalties.[25] For as all good scientists are aware, and all sensible laypeople should be, one can never legitimately reason directly from a description to a prescription. Put another way, "is" does not imply "ought," and a proffered explanation should never be assumed to be coextensive with a justification.[26]

The authors also make clear that they do not believe that men rape solely for sex. Indeed, they argue that there can be multiple motives for rapes, and even multiple motives at work in an individual rape.[27] In addition, they never say rape is inevitable. In fact, they argue just the opposite.[28] And they never say men who rape have succumbed to uncontrollable or genetically determined urges. Again, they say the opposite.[29]

II
STRENGTHS

A Natural History of Rape has eight principal strengths. Its first and most important strength is that it reminds us that inaccurate assump-

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23 *Id.* at 128-52.

24 *See, e.g.*, Michael Ellison, *The Men Can't Help It*, GUARDIAN (London), Jan. 25, 2000, at 4 (quoting Susan Brownmiller as saying: "[Thornhill and Palmer] will become expert witnesses, for a fee, as part of the defen[s]e, and that's dangerous. The ones who will benefit will be high-profile rapists who can afford to hire them.").

25 *See* THORNHILL & PALMER, *supra* note 1, at 164-65.

26 To so assume is to commit the well-known "Naturalistic Fallacy" discussed in *A Natural History of Rape*. *Id.* at 107-10. The term was apparently coined by G.E. Moore in *Principia Ethica*. *See* G.E. MOORE, PRINCIPIA ETHICA 90 (Thomas Baldwin ed., rev. ed. 1993). But the concept traces back to David Hume's 1888 edition of *A Treatise of Human Nature*. *See* DAVID HUME, A TREATISE OF HUMAN NATURE 469-70 (L.A. Selby-Bigge & P.H. Nidditch eds., 2d ed. 1978).

27 THORNHILL & PALMER, *supra* note 1, at 131.

28 *Id.* at 153.

29 *See, e.g., id.* at 154. For further discussion of what the authors do not say, see Thornhill & Palmer, *An Evolutionary Explanation of Rape*, *supra* note 3.

tions about the causes of rape are costly to rape prevention efforts.[30] The authors suggest this symmetry: just as there might be costs associated with believing that there are biological influences on rape, if in fact there are none, there are potential costs to believing that there are *no* biological influences, if in fact there are. One example, perhaps, might involve the distribution and consequences of fear. If it is indeed true, as evolutionary hypotheses suggest and data appears to confirm, that rape victims are disproportionately fertile-aged women,[31] then continuing to assert that all women are equally at risk of rape would be not only wrong but irresponsible. For whatever gains such a position might advance for women as a whole, it would come at the cost of many older women living in far more palpable and constant fear than their statistical likelihood of victimization requires.

The book's second strength is its unflinching insistence that, in the end, all theories of behavior (rape or otherwise) must reconcile both with each other and with empirical reality. That is, if biologists, psychologists, sociologists, psychiatrists, and others studying rape maintain assumptions or conclusions that cannot be logically true at the same time, that presents an unacceptable circumstance that should prompt immediate investigation, further theoretical and empirical work, and necessary revision and resolution. Interdisciplinary work is simply essential to a full and accurate understanding of rape. Yet at present most rape scholarship (such as that in psychology or sociology) is largely disciplinarily inbred.

The book's third strength is that its general approach rests on bedrock. Whether or not the specific hypotheses advanced are true, they have the distinct advantage—over most social science theories of behavior—of being informed by knowledge of how evolutionary processes operate to build brains, and to affect behavior in all living species.[32] A great deal of social science literature, including that addressing rape, proceeds either agnostic to, or in ignorance of, but in

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30 *See, e.g.*, THORNHILL & PALMER, *supra* note 1, at xi.

31 The mean age of rape victims in most data sets worldwide is twenty-four years old. Studies consistently show that although women of all ages have been raped, victims of forced copulation are overwhelmingly likely to be in their peak reproductive years, between thirteen and thirty-five. *See Sex, Culture, and the Biology of Rape*, *supra* note 6, at 865-67 nn.127-32 (citing relevant sources).

32 Even the biologist critics of Thornhill and Palmer's approach do not question whether or not there are biological influences on rape. *See, e.g.*, Coyne, *supra* note 4, at 29 (observing that "[t]he sexual dimension of rape is painfully obvious," and notions to the contrary "originated not as scientific propositions but as political slogans"); Frans B.M. de Waal, *Survival of the Rapist*, N.Y. TIMES, Apr. 2, 2000, at 24 (book review) ("Rape is sexual violence," and forced copulation "is mechanically impossible in the absence of male genital arousal."). Much of the critique within biological circles centers not on whether biology influences sexual coercion, but on whether rape is an adaptation (the hypothesis preferred by one of the book's authors) or a by-product of evolved sexual desire and evolved male aggressiveness (as the book's other author prefers).

any event inconsistent with, basic and scientifically robust knowledge of evolutionary processes. True, no single discipline (including biology) explains all human behavior. Nevertheless, attempting to understand rape without any reference to biological knowledge is like trying to understand politics uninformed by economics, or trying to understand music uninformed by physics and mathematics. One can assert, without contradiction, that a discipline that fails to provide *all* the answers is nonetheless an essential part of any complete answer.

Fourth, the book is valuable for demonstrating the provocative skepticism that is essential to the search for truth. At a time when it is heresy to publicly question the forceful assertion that rape has nothing whatsoever to do with the rapist's sexual desire, Thornhill and Palmer offer refreshing (if often irreverent) skepticism toward orthodox theories of rape causation. This skepticism revitalizes scrutiny of rape theories and will remain valuable even if, in the end, the biobehavioral theories themselves were to offer no other concrete improvements.

Fifth, the book neither idly speculates, nor casually asserts that biology affects sexual aggression. Drawing on a large body of biological literature, the authors offer specific and often persuasive criticisms of orthodox views, challenging any too-complacent acceptance of popular rape theories. Particularly, the authors convincingly (if not always gracefully) demonstrate the utter implausibility of the view that rape is *never* motivated, at least in part, by sexual desire. Relatedly, they report and discuss the overwhelming evidence that rape is not *solely* learned behavior, not *solely* caused by a desire to be either violent, powerful, or humiliating, and not *solely* a product of sex role socialization. These views have simply been more often asserted than scientifically demonstrated.

Sixth, the book usefully urges us to separate, conceptually, the *motives* for rape from the *tactics* used to achieve rape. These two distinct elements are often jumbled together in discussions of why men rape. For example, scholars and other commentators frequently presume that one can discern the *causes* of rape (the motives of the attacker) from the *effects* of rape on the victim.[33] The authors remind us of this simple and unassailable logic: actual effects need not be intended effects. Thus, for example, the inherent violence of rape might sometimes be a means for achieving an end that is sought, in part, as a function of sexual desire—rather than as an end in itself, as is so often assumed.

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[33] To so presume is to commit what I have elsewhere called "The Error of the Causal Correlate." *Sex, Culture, and the Biology of Rape*, *supra* note 6, at 880-82.

Seventh, the book properly dismisses, with finality, the prevailing but odd conceit that only humans force copulation.[34] It has long been unequivocally clear, in biological circles, that the basic human patterns of rape are in no way categorically unique, despite some obvious opportunities humans have to vary the specifics of rape in ways other species cannot.[35] By arguing that cross-species studies of sexual aggression may increase our understanding of human aggression, the authors have helped at least to point out, if not yet necessarily open, a new source of potentially useful insights.

Finally, the book represents a long overdue call for a more scientific and more empirical approach to rape causation. Any broad review of the rape literature cannot avoid the conclusion that the vast bulk of rape scholarship is unscientific, in the methodological sense. In one study, for example, two researchers examined over 1610 studies of sexual coercion published between 1982 and 1992 in over 400 different journals and books, from the fields of psychology, educational psychology, anthropology, and sociology.[36] The authors found that "scientific methods are not being applied to the understanding of

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34 This wholly incorrect belief is widespread. *See, e.g.*, HARVEY WALLACE, FAMILY VIOLENCE 251 (1996) ("No zoologist has ever observed animals raping their female mates in the wild or in captivity."). And for many of the authors who dutifully repeat it, the error appears to trace back to Susan Brownmiller's oversight when she stated that "[n]o zoologist, as far as I know, has ever observed that animals rape in their natural habitat, the wild." SUSAN BROWNMILLER, AGAINST OUR WILL: MEN, WOMEN AND RAPE 12 (1975). *See, e.g.*, Linda Robayo, Note, *The Glen Ridge Trial: New Jersey's Cue to Amend Its Rape Shield Statute*, 19 SETON HALL LEGIS. J. 272, 279 (1994) (citing Brownmiller in support of proposition that animals have never been observed to rape).

Of course, whether or not the word "rape" should be used in the nonhuman context is itself a question worthy of attention. For an overview of existing debate on the subject, see *Rape in Nonhuman Animal Species*, *supra* note 13. For views that "rape" should only be used in reference to humans, see PHILIP KITCHER, VAULTING AMBITION: SOCIOBIOLOGY AND THE QUEST FOR HUMAN NATURE 184-90 (1985); Larry Baron, *Does Rape Contribute to Reproductive Success? Evaluation of Sociobiological Views of Rape*, 8 INT'L J. WOMEN'S STUD. 266 (1985); Julie Blackman, *The Language of Sexual Violence: More Than a Matter of Semantics*, *in* VIOLENCE AGAINST WOMEN: A CRITIQUE OF THE SOCIOBIOLOGY OF RAPE 115 (Suzanne R. Sunday & Ethel Tobach eds., 1985); Daniel Q. Estep & Katherine E.M. Bruce, *The Concept of Rape in Non-Humans: A Critique*, 29 ANIMAL BEHAV. 1272 (1981); Donald F.J. Hilton, *Is It Really Rape or Forced Copulation?*, 32 BIOSCIENCE 641 (1982); Ruth Hubbard, *The Political Nature of "Human Nature,"* *in* THEORETICAL PERSPECTIVES ON SEXUAL DIFFERENCE 63, 67 (Deborah L. Rhode ed., 1990). For a view that "rape" can refer to forced copulation in both humans and other animals, see Crawford & Galdikas, *supra* note 19, at 216-17. In my reading of this debate, those who elect to use the term "rape" have the advantage. Though for purposes here, it can suffice to define "rape" as simply a short synonym for forced copulation.

35 *See* sources cited *supra* note 12.

36 *See* Del Thiessen & Robert K. Young, *Investigating Sexual Coercion*, SOCIETY, Mar./Apr. 1994, at 60.

sexual coercion" because, in part, "[h]ardly ever is a specific hypothesis tested."[37]

While this conclusion accords with my own experience reading rape scholarship, it does not imply, of course, that existing rape scholarship is worthless. To the contrary, the literature has helped to bring the issue of rape to the fore, and has increased public concern, public spending, and legal reform. Nonetheless, a scientific approach to the question of why rapists rape would clearly be a welcome complement to that literature—not only aiding our pragmatic understanding of rape, but also assisting us in preventing it.

III
WEAKNESSES

Although *A Natural History of Rape* provides valuable and significant insights into the study of rape, it nonetheless displays (like most books) a variety of weaknesses. These sort loosely into two categories: matters of presentation, and matters of argument.

A. Matters of Presentation

I begin, somewhat atypically for review essays, by addressing the book's form before its substance. I do so for the simple reason that behavioral biology is so unfamiliar to so many people that the material's presentation becomes the *de facto* gatekeeper to understanding content. Moreover, in this particular case the authors' writing style, rightly or wrongly, has clearly and greatly affected how this book has been received, and how persuasive or unpersuasive readers have found its substance.

It is quite possible, perhaps even likely, that the publisher's decision to bring the book to market many months ahead of schedule truncated the editorial process, with results for which the authors do not bear sole responsibility. Nonetheless, I note three general weaknesses in writing and presentation, which have apparently obscured, for many readers, the substance of the book.

First, and most importantly, the tone can be quite off-putting, even to sympathetic readers. This is not simply a stylistic matter of salting talk of rape with technical terms like "ontogenetic" and "phylogenetic."[38] Instead, several independent elements of tone combine to offend some readers.

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37 *Id.* at 60, 62; *see also* LINDA BROOKOVER BOURQUE, DEFINING RAPE 19 (1989) (noting that, for example, "few explicit tests of hypotheses reflecting a feminist perspective have been made").

38 THORNHILL & PALMER, *supra* note 1, at 191, 55.

There is the matter of touch, for example—or rather the frequent lack of it. Little in the book evidences the authorial delicacy that many readers (particularly nonscientists) might fairly expect in the face of such a complex, sensitive, and important topic as rape. True, the authors quickly affirm their awareness of the tragic nature of the subject, and one of them (Palmer) was prompted to write on this subject by the rape and murder of an acquaintance.[39] Nonetheless, many readers will discern a needlessly consistent starkness to the discussion. For example, even deep into a discussion about rape in humans, a biologically uncontroversial concept is expressed in the most jarring and least human way: "Egg bearers are a limiting resource for the population's sperm bearers."[40] One searches without success for language that will aid the reader—at an emotional level—in understanding unpopular and seemingly threatening arguments, sensitive to the deep ambivalence readers will predictably experience at subjecting rape to scientific scrutiny in the first place.[41]

There is also the matter of scientific fervor. Not infrequently, the text sparkles with a refreshingly unbridled enthusiasm for the methods of science. Enthusiasm is understandable, of course, on its face. And in an increasingly postmodernist world, given to bouts of factual relativism, this enthusiasm should be welcomed. Yet readers can be forgiven the impression that the authors on occasion wave the science flag just a little too fervently. For example, in one place they suggest that nonbiological perspectives will often be revealed as absurd "[o]nce the true meaning of biology is grasped."[42]

There is also the matter of the authors' impatience with other disciplines. Thornhill and Palmer clearly seethe over various claims about rape that proponents have not just proffered as fact, but declared as nonnegotiable, unassailable, never-to-be-questioned fact. True, even conscientious rape scholars have sometimes said things that are patently absurd, taken at face value.[43] And Thornhill and Palmer have weathered many inappropriate personal and professional

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39 *The Origins of Rape with Craig Palmer, Ph.D.*, Washingtonpost.com: Live Online (Feb. 2, 2000, 11:00 EST) (transcript of online discussion with Palmer) (copy on file with author).

40 THORNHILL & PALMER, *supra* note 1, at 162. This is true because eggs are almost always more energetically costly than sperm, and thus fewer in number. *See* sources cited *supra* note 4.

41 Psychologist Margo Wilson suggests, in her *Foreword* to *A Natural History of Rape*, that this ambivalence about subjecting rape to scientific scrutiny is due to the fact that even thinking about rape arouses anxiety, revulsion, and anger. *See* Margo Wilson, *Foreword* to THORNHILL & PALMER, *supra* note 1, at ix.

42 THORNHILL & PALMER, *supra* note 1, at 165.

43 For a description of several examples, see *Sex, Culture, and the Biology of Rape*, *supra* note 6, at 880-82. *See also* THORNHILL & PALMER, *supra* note 1, at 121-22 (offering one example involving gross mischaracterizations of evolutionary perspectives on rape).

attacks, even before this book was published, for simply holding to their own views.[44] So they should not necessarily be condemned for their flashes of aggression, not having thrown the first stone. Nevertheless, the relentlessly combative tone leveled at prior social science approaches to rape undoubtedly alienates many readers to whom a more conciliatory approach might have appealed—even holding constant the substantive content.

Beside these important matters of tone, the remaining stylistic weakness is minor, but nonetheless unignorable. The use of the word "Natural" in the title of a book on rape is simply asking for trouble. People these days too easily, even if wrongly, assume that natural is good—in the sense that free-range chicken is supposedly better than confined chicken. And this assumption was implicit in much of the public reaction to the book.[45] True, "natural history" is a term of art that alone implies no normative value. One could easily write "A Natural History of Plagues," for instance. And calling phenomena such as tornadoes or earthquakes or death "natural" is not to call them good. Nevertheless, the book's prior working title, "Why Men Rape, Why Women Suffer: Rape, Evolution, and the Social Sciences," was probably a better and more accurate one, less likely to mislead or enflame the book's readers before they had opened it.

B. Matters of Argument

Having surveyed over 200 articles, radio transcripts, book reviews, online chat venues, and television interviews responding to the book, I find it clear that many commentators fervently believe that *A Natural History of Rape* must be absolutely riddled with logical and factual weaknesses. I can see how people, new to this subject, might think this. But it is simply untrue.

A Natural History of Rape is not, by any means, beyond potentially constructive criticism. For example, two reviewers have taken issue with the interpretation of several specific statistical conclusions,

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44 For example, in the early 1980s, it took Thornhill three hours to deliver a forty-five minute, invited lecture on evolutionary perspectives on rape. During this time he was not only picketed and heckled, but spat on. David Concar, *Opinion Interview*, NEW SCIENTIST, Feb. 19, 2000, at 44 (interviewing Randy Thornhill).

45 *See* Rosenfeld, *supra* note 4 (making similar observation). For example, an anonymous reader from Illinois, posting to the Amazon.com readers' reviews of *A Natural History of Rape*, criticized the use of the word "natural" in the title. Posting of anonymous reader to http://www.amazon.com (Apr. 1, 2000) (copy on file with author). Rape victim Laura Hartley, making a similar post to the customer reviews forum of Barnes and Noble's website, took great umbrage at the use of the word "natural," saying, "I have been there, I have looked into those eyes, and I will tell you, there is nothing natural about it." Posting of Laura Hartley, lauralea_72@yahoo.com, to http://www.barnesandnoble.com (Jan. 31, 2000) (copy on file with author).

among the many dozens that appear.[46] Time will tell if they are right. For science proceeds by such criticism, as scholars attempt to resolve their differences in ways that ultimately, sometimes through fits and starts, advance knowledge. In any work of this magnitude, it is possible, or even likely, that some of the many specific conclusions or conjectures of probability will prove enduring, while others will be proved wrong.

But they will not be proved wrong on the bases that most people apparently think. To be fair to the critics, the biology of behavior is not something one can grasp knowledgeably with only a casual acquaintance with the topic, a popular book or two, or even these authors' necessarily abbreviated introduction to the subject. Nevertheless, many commentators who rushed to condemn the book demonstrate reasoning that is either factually flawed (as when they misconstrue what the authors have claimed) or logically bankrupt (as when they assume that the actual effects of rape are necessarily the intended effects of rape). I have elsewhere, and at length, identified and discussed fourteen major errors in fact and logic in this regard.[47] Suffice it to say, here, that a great deal of published criticism is inapposite.

Yet while the book is far less vulnerable to criticism than critics tend to think, the book's argument nonetheless displays a variety of weaknesses. For instance, it is likely that most readers would have profited from additional explanation as to why other evolutionarily informed hypotheses, relating to mutation-selection balance, genetic drift, evolutionarily novel environments, and evolved male predispositions to control, are rejected in favor of either the by-product or adaptation hypotheses.[48] There are reasons. But most readers will need

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46 *See* Coyne, *supra* note 4, at 27 (contending that the data supporting predictions about victim psychological trauma are best collated and analyzed differently, and that, so reinterpreted, they lend less or no support to certain claims); Michael Seto, Book Review, 60 ANIMAL BEHAV. 705, 705 (2000) (reviewing *A Natural History of Rape: Biological Bases of Sexual Coercion* and contending that data supporting prediction that rapists are disproportionately of lower socioeconomic status were incorrectly interpreted).

47 *See Sex, Culture, and the Biology of Rape*, *supra* note 6, at 872-95. *See also* Owen D. Jones, *Evolutionary Analysis in Law: Some Objections Considered*, 67 BROOK. L. REV. (forthcoming fall 2001) (offering additional observations). These include, for example, The Argument from Modern Maladaptiveness, The Argument from Incomplete Explanation, The Argument from Inconceivable Conception, The Error of the Failed Fornicators, The Argument from Substitute Sex, and The Error of the Manifest Motive. *See Sex, Culture, and the Biology of Rape*, *supra* note 6, at 872-95. Lest there be any mistake on this point, I am not suggesting that such errors flow only from nonscientists. Coyne, for example, who is (like Thornhill) an evolutionary biologist, displayed the first four of the six errors just mentioned in his own critique of *A Natural History of Rape*. *See* Letter from John Tooby & Leda Cosmides, Center for Evolutionary Psychology, University of California, Santa Barbara, to Letters Editor, The New Republic (Apr. 3, 2000) (copy on file with author), *available at* http://www.psych.ucsb.edu/research/cep/tnr.html.

48 *See* THORNHILL & PALMER, *supra* note 1, at 56-59.

further assistance to understand them fully. And while the authors admit some disagreement over the comparative merits of the by-product and adaptation hypotheses, here, too, further explanation and discussion of the implications would have strengthened and enriched the overall argument.

The authors might also usefully have put greater emphasis on the bimodalism of rapist demographics. There is primary emphasis, in the book, on the economically and physically disenfranchised male, for whom the costs of *not* raping are (in the reproductive sense) high,[49] as a function of being comparatively undesirable and having fewer opportunities for willing sex partners. But when the costs of raping are low, as when a rapist is a particularly politically powerful or otherwise desirable male, who may have either more than average ability to deter prosecution, or whose comparative successfulness might result either in a lesser probability of reported rape or a lesser probability of conviction, rapes may also ensue. Although the authors acknowledge this as a potential explanation for high-status rapists and rapes by males with access to a large number of consenting partners, the book devotes less time than seems necessary to discussing these variations.[50]

The authors also afford insufficient credit, in my view, to rape scholarship that preceded them. True, a great deal of the scholarship provides nothing helpful when measured by its contribution to understanding rape *causation.* But a great deal of the literature provides an independently valuable tour of the meaning of rape to rape victims and the implications of rape to society.[51] The deserved attention rape garners today may not have arisen absent some of the feminist scholarship the authors frequently deride.

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49 *See, e.g, id.* at 67-70.

50 *See id.* at 69-70.

51 *See, e.g.*, BROWNMILLER, *supra* note 34; SUSAN ESTRICH, REAL RAPE (1987); DIANA E.H. RUSSELL, THE POLITICS OF RAPE: THE VICTIM'S PERSPECTIVE (1975); Susan Griffin, *Rape: The All-American Crime*, RAMPARTS, Sept. 1971, at 26. For useful overviews of how feminist perspectives on rape have influenced modern thinking, see JULIE A. ALLISON & LAWRENCE S. WRIGHTSMAN, RAPE: THE MISUNDERSTOOD CRIME ix (1993); GREGORY M. MATOESIAN, REPRODUCING RAPE: DOMINATION THROUGH TALK IN THE COURTROOM (1993); NANCY A. MATTHEWS, CONFRONTING RAPE: THE FEMINIST ANTI-RAPE MOVEMENT AND THE STATE (John Urry ed., 1994); DEBORAH L. RHODE, JUSTICE AND GENDER (1989) (discussing weaknesses of law's earlier approaches); STEPHEN J. SCHULHOFER, UNWANTED SEX: THE CULTURE OF INTIMIDATION AND THE FAILURE OF LAW (1998); DIANA SCULLY, UNDERSTANDING SEXUAL VIOLENCE (*Perspectives on Gender*, vol. 3, Kay Deaux et al. eds., 1990); COLLEEN A. WARD, ATTITUDES TOWARD RAPE: FEMINIST AND SOCIAL PSYCHOLOGICAL PERSPECTIVES (1995); Patricia L.N. Donat & John D'Emilio, *A Feminist Redefinition of Rape and Sexual Assault: Historical Foundations and Change*, 48 J. SOC. ISSUES 9 (1992); Mary Ann Largen, *The Anti-Rape Movement: Past and Present*, *in* RAPE AND SEXUAL ASSAULT: A RESEARCH HANDBOOK (Ann Wolbert Burgess ed., 1985); Vicki McNickle Rose, *Rape as a Social Problem: A Byproduct of the Feminist Movement*, 25 SOC. PROBS. 75 (1977); Rebecca M. Ryan, *The Sex Right: A Legal History of the Marital Rape Exemption*, 20 LAW & SOC. INQUIRY 941 (1995).

The book also tends to ignore the wide variety of perspectives that coexist (if sometimes uneasily) under the academic feminist umbrella.[52] While anyone familiar with that literature can be forgiven some confusion about how to characterize and address it accurately, the authors provide little evidence of any patient effort to distinguish among views that run the gamut all the way from helpfully provocative to truly kooky. Relatedly, *A Natural History of Rape* also tends, at times, to overestimate the extent to which the academic feminist perspectives on rape are representative of all relevant social science perspectives on rape.[53] For example, the authors explicitly relabel "the feminist psychosocial analysis" as "the social science explanation."[54]

The book also seems, on occasion, to take on too much—often throwing multiple-paragraph jabs at, for example, post-modernism or Stephen Jay Gould.[55] Similarly, although the authors provide a useful primer in evolutionary theory and the evolution of sex differences,[56] the authors sometimes intersperse the material useful to understanding the evolutionarily informed rape theories with seemingly inessential material, such as that on consciousness[57] and that on bilateral symmetry.[58] That material is interesting. But without more detail on the necessity of these passages to the overall argument about rape, they sometimes appear digressive and distracting.

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52 For example, some feminists argue that rape is not sex. *See* Largen, *supra* note 51, at 5 (describing how the "Rape Is Violence, Not Sex" motto characterized a number of feminist efforts). Others are of the view that rape can be sex, at least to the perpetrator, and therefore is often "just" sex to the law. *See, e.g.*, CATHARINE A. MACKINNON, FEMINISM UNMODIFIED: DISCOURSES ON LIFE AND LAW 160 (1987) ("Women and men know men find rape sexual . . . ."); CATHARINE A. MACKINNON, TOWARD A FEMINIST THEORY OF THE STATE 180 (1989); *see also* Catharine A. MacKinnon, *Feminism, Marxism, Method, and the State: Toward Feminist Jurisprudence*, 8 SIGNS 635 (1983) (discussing different feminist approaches to the subject of rape). "Some see rape as an act of violence, not sexuality, the threat of which intimidates all women. Others see rape, including its violence, as an expression of male sexuality, the social imperatives of which define all women." *Id.* at 646 (footnotes omitted). For concise descriptions of the breadth of feminist perspectives, see HILAIRE BARNETT, SOURCEBOOK ON FEMINIST JURISPRUDENCE (1997); ALLISON M. JAGGAR, FEMINIST POLITICS AND HUMAN NATURE 3-13 (1983); WARD, *supra* note 51, at 18-37; and Morrison Torrey, *Feminist Legal Scholarship on Rape: A Maturing Look at One Form of Violence Against Women*, 2 WM. & MARY J. WOMEN & L. 35, 45 (1995). On the development of feminist perspectives generally, see JOSEPHINE DONOVAN, FEMINIST THEORY (1985); JUDITH GRANT, FUNDAMENTAL FEMINISM (1993); and ROSEMARIE TONG, FEMINIST THOUGHT (1989).

53 *See* THORNHILL & PALMER, *supra* note 1, at 24, 122.

54 *Id.* at 123.

55 *See id.* at 115-17. The best exposé of Gould's sorties into discussions of human behavioral biology remains John Alcock's commentary, entitled *Unpunctuated Equilibrium in the* Natural History *Essays of Stephen Jay Gould*, 19 EVOLUTION AND HUM. BEHAV. 321 (1998), followed closely by DANIEL C. DENNETT, DARWIN'S DANGEROUS IDEA: EVOLUTION AND THE MEANINGS OF LIFE 262-312 (1995).

56 *See* THORNHILL & PALMER, *supra* note 1, chs. 1-2.

57 *See id.* at 29-30.

58 *See id.* at 48-50.

While the authors have also ambitiously undertaken two different tasks at once, one is left with the lingering impression that they may have ended up doing neither one quite as well as they undoubtedly hoped. That is, the book seems divided between a quite general argument for why the social sciences should incorporate evolutionary perspectives on human behavior,[59] on one hand, and a quite specific argument that rape theorists should incorporate evolutionary perspectives,[60] on the other. These purposes, though related, are not sufficiently integrated to avoid the perception that the authors maintain multiple goals, which might usefully have been severed.

The authors suggest, at times, that the evolutionary approach is not only the fastest way to a sound understanding of rape phenomena, but also the only (or perhaps primary) perspective of importance.[61] Although I am generally among the more sympathetic to the claim that evolutionary perspectives can be quite useful, many specific claims struck me as somewhat overstated. For example, the authors assert that "[t]he reason the movement to reform rape laws has met with only limited success is that the reformers are trying to change attitudes toward rape in the absence of an understanding of the evolved psychological mechanisms that produce those attitudes."[62] This may indeed be *one* of the reasons reforms have had little effect on the incidence of rape. I am inclined to think that it is. But there are undoubtedly numerous other reasons as well.

The book would also have been strengthened by inclusion of a more detailed research agenda. The authors do explore, in places, how further research could test for the existence of hypothetical adaptations specific to rape. However, a more systematic and comprehensive approach would have enriched the entire discussion. Where do we need more data? How should it be collected? What sorts of studies could we do to further test the hypotheses the authors advance? The authors are quite aware that it is extremely difficult to get funding for human rape studies informed by evolutionary perspectives. And they have clearly worked as best they can to analyze pre-existing data sets developed by others, despite the fact that the data in those sets were often collected or collated in ways rendering them imperfect for testing evolutionary hypotheses. Nonetheless, including a proposed research agenda in the book would have been quite useful. And it would have gone a long way toward anticipating the frequent criticism that there is too little data on humans in the book.

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59 *See id.* ch. 5.

60 *See id.* chs. 3-4, 6.

61 *See, e.g., id.* at 171.

62 *Id.* at 156.

Finally, the book is simply far stronger on theory and data than on suggested implications. When the book reaches the latter, there is a palpable sense of stretch—an uncomfortable reaching beyond the authors' areas of expertise. To be fair to Thornhill and Palmer, society has often insisted on dividing labor, such that scientists are supposedly to work to discover truths, while others are to consider and develop the implications of them. So for current policymakers to fault scientists, from moral high ground, for insufficiently developed policy suggestions is no more coherent than it would be for scientists to smugly fault policymakers for insufficiently scientific social experiments. Nonetheless, because *A Natural History of Rape* does tread into discussions of legal implications and educational programs,[63] it is perhaps both understandable and unavoidable that the results are not fully satisfying.

IV
ASSESSMENT: SOME PRELIMINARIES

None of these weaknesses, nor all of them combined, outweigh the book's strengths. Rape is simply too important a phenomenon, and the fundamental principles of behavioral biology are too robust, to ignore entirely possible lessons from the authors' approach. But to put this book in context, I think it is useful to consider a variety of reasons why many people might prefer to ignore or reject evolutionary perspectives on rape.

First, and at the most general level, political history has left many people wary of any attempt to invoke human biology beyond strictly medical contexts. That history weighs heavy, despite the fact that biology prompts no misuse by itself. Second, and more specifically, antifeminists have historically invoked biology to support repressive policies.[64] And annexation of biology by those with pre-existing political agendas could increase tensions, rather than reduce them, and thereby offset possible gains in reducing the incidence of rape. Third, exploring the biology of rape behavior might undesirably shift the focus of social and legal concern from the victim to the perpetrator. This risks de-emphasizing harmfulness and suggesting that the victim somehow precipitated her attack. Fourth, if rape is "naturalized," women may be presumed the all-too-natural victims of rape. Such a view might undercut prevention efforts, as people resign themselves (incorrectly) to supposed inevitability. Fifth, the theories of biobehavioral influences on sexual aggression are technical and subtle, neither

63 *See id.* at 153-67, 179-83.

64 During the early years of the women's movement, antifeminist ideology was rooted in "biology, the experience of evolution, and the will of the Creator." RHODE, *supra* note 51, at 14.

straightforward nor easy. As a consequence, even those persuaded of their usefulness may be more likely to misunderstand, mis-cite, and misapply them than to get them right. Sixth, the larger the perceived sexual component to rape, the harder it may be to encourage society to focus on underlying systemic problems of male power and dominance. For some people, combating those problems generally may be a more pressing concern than reducing the incidence of rape, specifically. Seventh, the existence of biobehavioral influences may lead to claims that rapists are not meaningfully responsible for their behavior. Such claims are not supported by the biology, but that does not mean they will not be raised. Finally, excluding discussion of biology, and emphasizing the violent aspects of rape, has in prior contexts actually facilitated a number of positive changes in rape law. Substantive changes include, for example, the elimination of demonstrated nonconsent as an element of the offense. Procedural and evidentiary changes include, for example, shielding the victim's prior sexual history.[65]

But there are also many reasons that suggest that we should study biobehavioral influences on sexual aggression if we are serious about understanding it enough to better prevent it. First, it is increasingly evident that law is fundamentally about regulating behavior. And all behavior is a combination of gene-environment interactions, played through a body and brain shaped by the forces of evolution, about which biologists know a great deal. A firm grounding in biology is, therefore, a necessary foundation for and complement to a sophisticated understanding of human behavior. Biobehavioral perspectives on behaviors like rape, which have proved difficult for law to regulate, may help to increase law's effectiveness.

Second, because of the well-documented existence of forced copulation in many other species, researchers should explore the possibility of similar origins (in common ancestors or in response to a history of similar environmental challenges). Such comparative research is common for other cross-species similarities in anatomy, biochemistry, or behavior, and the significance and horror of rape suggest that researchers should make no exception here.

Third, forced copulation in many other species parallels, in a number of precise and important ways, the patterns of forced copulation and resistance to forced copulation in humans. The existence of similar *patterns*, beyond the simple existence of forced copulations in

65 On the subjects of this final point, see generally KEITH BURGESS-JACKSON, RAPE: A PHILOSOPHICAL INVESTIGATION 67-86 (1996) (providing a sketch of rape law from the Code of Hammurabi to the present); and CASSIA SPOHN & JULIE HORNEY, RAPE LAW REFORM: A GRASSROOTS REVOLUTION AND ITS IMPACT 41-46 (1992).

other species, further buttresses the possibility that the behaviors can be understood in light of uniform evolutionary processes.

Fourth, these patterns, in humans and other species, can be parsimoniously reconciled through the lens of modern behavioral biology, which offers plausible theoretical foundations that are both mutually consistent and consistent with other well-recognized theories.

Having previously spent several years studying many of the primary sources on which *A Natural History of Rape* relies, I find it probable that future gains in preventing rape will require attention to biobehavioral perspectives. Given the current climate of opinion, however, significant opposition to such research is likely. What might assist?

The most significant thing we could do to further our efforts to reduce the incidence of rape is to fight disciplinary turfism and foster interdisciplinary cooperation. Practitioners of different rape-relevant disciplines waste a great deal of precious energy accusing their perceived competitors of oversimplifying, and of missing essential truths about rape that only their own disciplines are equipped to reveal. Legal policymakers have unwittingly contributed to this adversarial model by periodically bestowing most-favored-theory status on only one perspective at a time.[66] This creates a zero-sum game, in which theorists interested in legal applications perceive the need to knock another theory out of favor before they can garner attention for their own theory—and then resist the incursion of other disciplinary perspectives in order to maintain the status of their own.

Behavioral phenomena simply have no respect for the artificial disciplinary boundaries that universities produce. There is simply no reason whatsoever to think that rape can be best understood from a single psychiatric, psychological, feminist, neuroanatomical, evolutionary, or sociological perspective. Progress, if any, will come from interdisciplinary synthesis. Disciplines like law, more suited to consuming and applying knowledge from other disciplines than to generating knowledge itself, can help to encourage such synthesis.

To facilitate this synthesis we must first recognize—far more explicitly than we now do—that rape scholarship reflects many different and useful goals. Relatedly, we must be sure that we know, at each moment, which one (or more) of these goals we are talking about. This sounds too obvious to mention. But the fact is that the frequent failure to articulate for others what one's own goal is, and the consequent misattribution by others of what one's goals may be, is a princi-

66 *See Sex, Culture, and the Biology of Rape*, *supra* note 6, at 838-41 (offering a short history of psychiatric, feminist, and sociological rape theories and their seriatim influence in law).

pal reason interdisciplinary (and sometimes intradisciplinary) discussions of rape often yield more heat than light.

For example, Thornhill and Palmer articulated a goal of increasing the ability to prevent rape by increasing our understanding of rape causation. I think it is fair to say that they assumed, when confronting a large body of rape literature, that most scholars were principally motivated to pursue that goal as well. This is not necessarily true. While everyone may share that goal, in the abstract, other goals—narrower, broader, preliminary, or consequent—may predominate. Some scholarship focuses on increasing public awareness about the extent of rape in society. Other scholarship seeks to expand definitions of what constitutes rape. Still other scholarship may have, as a principal goal, increased reporting by victims, increased female "voice" in public matters, increased public funding for victim services, increased understanding of rape victim trauma, or reduction of perceived patriarchal oppression in general.

The problem is that making claims about what causes men to rape can be very effective components of achieving some of these goals, regardless of the scientific truth of the claims. That many of such claims are not held to scientific standards of proof does not, for those who advance them, make such claims unhelpful. But that claims born of different purposes often cross swords in a waste of misunderstood intention affords us no help at all. Working to see how different disciplinary pieces can fit together is a more constructive exercise than seeking to displace one with another.

Ultimately, *A Natural History of Rape* may be most valuable for reminding us of two things. First, if we are serious about reducing the incidence of rape, we need to get more serious about understanding its actual causes, which are not necessarily the same as the commonly asserted causes. Second, causation is fundamentally a scientific matter.

By any measure, rape is insufficiently understood to be effectively prevented. The process of increasing our understanding of rape causation consequently requires an organizational overhaul in the way we think about rape. Specifically, and at the very least, it requires sharply distinguishing some things that have long been presumptively lumped together. Below are some specific suggestions.

A. Distinguishing Among Rapes and Among Sexual Assaults

There is absolutely no reason to assume that rape is a unitary phenomenon, always traceable to common causes. Just as there can be a variety of reasons to commit arson (revenge, insurance fraud, insanity, murder, intimidation), there can be a variety of reasons to

rape. Moreover, those reasons multiply quickly as we continue to expand the types of activities we consider rape to include.

Once limited to forced insertion of a penis into a vagina, the operative definition of rape has been broadly expanded, often into super-categories of sexual assault. Depending on context and jurisdiction, it appears that rape can include a variety of possible perpetrator-victim sex combinations, a variety of possible objects or body parts forcibly inserted, and a variety of different orifices violated. Thus, for example, there is male-male, male-female, female-male, and female-female rape. Victims can be raped not only by penises, but also, among other things, by objects, tongues, and fingers. The act of rape may violate vaginas, anuses, mouths, or any combination. The matrix of possible combinations has become enormous, highlighting the folly of thinking that rape, as it may be expansively defined, has single or always common causes.[67]

My point here is not a technical one, about whether rape should be a separate offense or a category of sexual assault. My point is that we are increasingly coming to view all these various combinations as so similar that any credible rape theory should explain each of them. This is silly. To avoid what I call "The Argument from Incomplete Explanation"[68]—which illogically faults an explanation of one kind of rape for failing to explain all kinds of rape—we should both ensure that we understand the particular kind of rape being addressed, and allow for the fact that even accurate, perfectly predicting explanations for some kinds of rape need not explain all. We have overlumped sexual assaults together, and we need to subdivide them, at least for the purposes of studying causation, in order to more efficiently and narrowly target our legal weaponry against them.

B. Meanings and Causes; Victims and Perpetrators

One useful and systematic way to divide rape theories is to recognize the distinction between what we might call the realm of meaning and the realm of cause. I propose this not because meanings and causes are mutually exclusive, but because even when perspectives on them overlap, they nonetheless represent fundamentally different kinds of inquiries. This view is surprisingly absent from rape scholarship. It is both too common and illogical for scholars to assume that actual effects of rape are intended effects of rape, and that detailing the social meanings of rape accurately divines the actual motives of rape. Because correlation is not causation, however, there need be no

67 I elaborate on this point in *Law and the Biology of Rape*, *supra* note 6, at 166, on which some portions of what follows draw.

68 *Sex, Culture, and the Biology of Rape*, *supra* note 6, at 892.

automatic connection between the effect of an act and the reason for doing it.

Dividing theories of meanings from theories of causes has two advantages. First, it affords researchers more freedom to pursue the subject of one domain, unharassed by critics from the other. Second, it more closely matches the product of different rape scholars with the aspect of legal process in greatest need of that product. Scholars detailing the social meaning and victim impact of rape can help prompt public concern about rape and mobilize legal interventions. Scholars researching the causes of rape can help direct legal interventions in as many useful ways as possible.

Consider rape and the realm of meaning. Typically, law receives direction and social goals from the realm of meaning. It is in the normative and interpretive arena that one answers such questions as: What does it mean to live in a society in which rape occurs? Is rape a good thing or a bad thing, and why? How important is it that we act to prevent rape? Law would be agnostic on the causes of rape, were it not for the meanings of its effects, and the effects of its meanings.

There are historical, political, social, feminist, and moral dimensions to rape, among others. Each offers important contributions to public and private understandings and reactions to the phenomenon. Consequently, it is in the realm of meaning that society perceives, processes, and assesses the significance of rape and the extent of its harms.

Next, consider rape and the realm of cause. For some disciplines, it is sufficient to study only the meanings of rape. Law is not one of these. Meanings may affect law's goals, but optimally effective paths toward reaching those goals typically require an accurate understanding of the things that influence the probability of the behavior in question. Consequently, law must attend as closely to cause as it does to meaning.

C. Explanations and Justifications

Another conceptual division that needs sharpening is the logical distinction between explanations and justifications. Too often, critics have supposed that the effort to explore biological influences on patterns of rape will yield support for rapists fighting conviction.[69] There

69 Reportedly, "[s]ome [critics] fear the hypothesis could be used in a sort of 'Darwin made me do it' legal defense for rapists." Martin Miller, *Rape*, L.A. TIMES, Feb. 20, 2000, at E1. *See also Not-Yet Published Book on Rape Criticized*, FL. TIMES-UNION, Feb. 13, 2000, at A9 (reporting same); Juliet Wittman, *Origin of the Specious*, DENVER WESTWORD, Feb. 10, 2000 (reporting same), *available at* http://www.westword.com/issues/2000-02-10/feature.html (last visited July 9, 2001). For example, Gill Mezey, a rape psychologist at London's St. George's Hospital, is quoted in a separate source as stating that the Thornhill and Palmer book "appears to provide sexual offenders with a ready-made and very convenient excuse,

are two glaring problems with this criticism. First, explanation by itself is not justification. Ever. Explaining a disease, for example, does not imply that it should exist, or that it should not be eradicated.

Second, assuming too quickly that biological influences yield exculpation often reflects wholly incorrect and misplaced assumptions of genetic determinism[70]—as if biology can ouly influence behavior by some sort of inevitable genetic preprogramming. No serious biologists, and certainly neither Thornhill nor Palmer, believe such a thing.

D. Proximate and Ultimate Causes

Another often unnoticed distinction that bears extreme, explicit, and repeated emphasis is that there are two fundamentally different kinds of causes: proximate and ultimate.[71] These causes simply do not compete on the same plane of analysis, despite the heated arguments between those who consider biological influences on rape and those who do not.

Biologically speaking, proximate causes are the immediate causes, described in terms of, for example, stimuli, organismic physiology, and biochemistry. The perhaps too-grandly-named ultimate causes are those reflecting the effects of evolutionary processes, operating across long periods of evolutionary time. For example, suppose you raid the refrigerator because you feel hungry, after a noon-time interruption made you skip lunch. The biochemical signals sent to your corporeal brain, which you perceive as hunger, and the noon-time interruption itself, are proximate causes of your visit to the fridge. But the ultimate cause of your visit is that evolutionary processes operated to favor those acutely calibrated organisms that associate food-seeking behavior with imminent nutritional needs over less well-calibrated organisms. The former left more offspring than the latter, the offspring share the trait, and the trait, because of its very importance, becomes typical of the entire species.

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which allows them to escape responsibility for their actions because there is a biological pre-determinism." Richard Ingham, *Rape? It's in Men's Genes, Says Controversial New Book*, AGENCE FRANCE PRESSE, Mar. 7, 2000, LEXIS, Nexis Library, Agence France Presse File. A number of reviewers on the Amazon.com website interpreted the book as justifying rape. *See, e.g.*, Posting of Dixie from California to http://www.amazon.com (Apr. 28, 2000) (copy on file with author); Posting of Reader from Kirkland to http://www.amazon.com (Apr. 28, 2000) (copy of file with author); *see also* Ellison, *supra* note 24 (quoting Susan Brownmiller).

70 *See Sex, Culture, and the Biology of Rape*, *supra* note 6, at 877-80 (discussing "The Error of the Damning Determinism").

71 *See, e.g.*, John Alcock & Paul Sherman, *The Utility of the Proximate-Ultimate Dichotomy in Ethology*, 96 ETHOLOGY 58, 59 (1994) (arguing that the "vast majority of behavioral hypotheses and questions can be assigned unambiguously to either the proximate or ultimate category").

Proximate (immediate) causation can be understood in light of ultimate (evolutionary and historical) causation. Similarly, the fact that sex drive is not generally inspired by a conscious desire to create an offspring in no way undercuts the obvious conclusion that evolutionary process importantly "caused" sex drive because of its effects on reproductive success. In the context of rape, therefore, proximate and ultimate causes certainly can coexist without competing with each other, as most commentators seem to think they do.[72]

V

ASSESSMENT: LEGAL IMPLICATIONS

If Thornhill and Palmer are correct that both rape patterns and rape-victim revulsion reflect the influence of evolutionary processes on the human brain, what legal implications might ensue? In symmetry with the legal readers untrained in biology, Thornhill and Palmer are not trained in law. Therefore, it is neither surprising nor particularly troubling that *A Natural History of Rape* offers neither concrete analysis of existing rape laws, nor specific suggestions for legal thinkers to implement. However, consistent with the authors' efforts to reach a broad audience, they make some effort to convince legal thinkers that such analysis may be worth the effort.

First, they underscore the importance of environmental and developmental influences on males to any propensity toward sexual aggression. Thus, the more that legal policies can help to aid research on how male brains process these factors, and to reduce or diminish the existence of these factors in our society, the better.

Second, Thornhill and Palmer very much believe in punishment, as both a general and a specific deterrent. They suggest, in effect, that increasing the costs of rape will, at least in some cases, help to reduce its incidence. They believe that males will be at least somewhat sensitive, consciously or not, to the costs of raping behavior.[73] As Thornhill and Palmer state: "We do not propose a specific program for increasing the costs associated with rape; we simply suggest that social engineers who wish to get realistic about rape pursue a program of punishment that is informed by what is known about evolution."[74]

Third, Thornhill and Palmer suggest that the debate over the legality and wisdom of chemical castration (libido suppression by drug) should be informed by knowledge of biobehavioral influences on patterns of sexual aggression.[75] Specifically, an informed biological approach can help answer questions concerning the extent to which

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72 *See supra* note 3 and accompanying text.

73 *See* THORNHILL & PALMER, *supra* note 1, at 164-65.

74 *Id.* at 165.

75 *See id.* at 165-67.

male sexual desire affects rape, and thus, the extent to which chemical castration is likely to reduce recidivism.

Fourth, Thornhill and Palmer suggest that knowledge of evolutionary influences on sexual aggression, and acute female revulsion to forced sex, could help make people generally more aware of the existence and horror of rape.[76] This might, they think, help those arguing for legal reform to be more persuasive, and it might help those in a position to effect legal reform to be more receptive. Relatedly, they suggest that getting more women into more legally powerful positions would represent and foster progress as well.[77]

Finally, Thornhill and Palmer suggest that an evolutionarily informed examination of existing rape laws will have several advantages.[78] It may help explain why rape has been punished in the patterns it has, all over the world. It may help us to understand why statutory rape prohibitions are written as they are.[79] And it may help us to recognize and explain—and counteract through greater awareness—the fact that rape laws have historically focused on protecting parties other than the victims.[80]

Although these suggestions are somewhat vague and perhaps overly optimistic, they are nonetheless pointed in precisely the right direction. The debate over the potential effectiveness and legal permissibility of chemical castration—which has been active for years[81]—

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76 *See id.* at 154-61.

77 *See id.* at 159.

78 *See id.* at 154-61.

79 *See id.* at 162-64.

80 *See id.* at 164.

81 *See* William Green, *Depo-Provera, Castration, and the Probation of Rape Offenders: Statutory and Constitutional Issues*, 12 U. DAYTON L. REV. 1 (1986); Daniel L. Icenogle, *Sentencing Male Sex Offenders to the Use of Biological Treatments*, 15 J. LEGAL MED. 279, 286 (1994); John S. Murray, *California's Chemical Castration Law: A Model for Massachusetts?*, 24 NEW ENG. J. ON CRIM. & CIV. CONFINEMENT 731 (1998); Karen J. Rebish, *Nipping the Problem in the Bud: The Constitutionality of California's Castration Law*, 14 N.Y.L. SCH. J. HUM. RTS. 507, 516-17 (1998); Larry Helm Spalding, *Florida's 1997 Chemical Castration Law: A Return to the Dark Ages*, 25 FLA. ST. U. L. REV. 117 (1998); William L. Baker, Comment, *Castration of the Male Sex Offender: A Legally Impermissible Alternative*, 30 LOY. L. REV. 377 (1984); Jodi Berlin, Note, *Chemical Castration of Sex Offenders: "A Shot in the Arm" Towards Rehabilitation*, 19 WHITTIER L. REV. 169 (1997); Jennifer M. Bund, Comment, *Did You Say Chemical Castration?*, 59 U. PITT. L. REV. 157 (1997); Alison G. Carpenter, Comment, *Belgium, Germany, England, Denmark and the United States: The Implementation of Registration and Castration Laws as Protection Against Habitual Sex Offenders*, 16 DICK. J. INT'L L. 435, 439-41 (1998); Kenneth B. Fromson, Note, *Beyond an Eye for an Eye: Castration as an Alternative Sentencing Measure*, 11 N.Y.L. SCH. J. HUM. RTS. 311 (1994); Pamela K. Hicks, Comment, *Castration of Sexual Offenders: Legal and Ethical Issues*, 14 J. LEGAL MED. 641 (1993); Bryan Keene, Note, *Chemical Castration: An Analysis of Florida's New "Cutting-Edge" Policy Towards Sex Criminals*, 49 FLA. L. REV. 803 (1997); Kimberly A. Peters, Comment, *Chemical Castration: An Alternative to Incarceration*, 31 DUQ. L. REV. 307 (1993); Kari A. Vanderzyl, Comment, *Castration as an Alternative to Incarceration: An Impotent Approach to the Punishment of Sex Offenders*, 15 N. ILL. U. L. REV. 107 (1994).

probably serves as the most obvious and concrete application in the legal context.[82] Currently, many commentators and legal thinkers subscribe to this view:

> [B]ecause [rapists'] conduct is often motivated by anger and hatred rather than sexual desire, a treatment that merely curbs sexual desire bears no reasonable relationship to the offender's criminal behavior.... Moreover, because [rapists] are motivated not by sexual drive, but by intense feelings of hatred and hostility, the procedure may cause an increase in the occurrences of this type of sexual battery.[83]

First, there is little question that chemical castration reduces male sex drive. The legally relevant question is whether male sex drive is an important factor in convicted rapists' recidivism. If it is, chemical castration is more likely to be a useful and constitutionally permissible condition of parole, for example. Second, if chemical castration is an aspect of state punishment, it can run afoul of the constitution if it is either unnecessary or applied arbitrarily.[84] Again, whether chemical castration is sufficiently necessary and nonarbitrary depends, in part, on the extent to which rape is in fact typically influenced by sexual desire.[85]

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82 Chemical castration involves regular chemical injections of, for example, medroxyprogesterone acetate (commonly known as Depo-Provera). These injections shrink the testicles, inhibit the release of testosterone and other hormones that affect the brain's ability to sexually fantasize, and reduce sex drive in men. The effects are thought to be reversible. *See* Icenogle, *supra* note 81, at 286; Rebish, *supra* note 81, at 516-17. For further discussion of the relevance of evolutionary analysis to the chemical castration debate, see JOHN H. BECKSTROM, DARWINISM APPLIED: EVOLUTIONARY PATHS TO SOCIAL GOALS 53-65 (1993); and *Sex, Culture, and the Biology of Rape*, *supra* note 6, at 912-16.

83 Spalding, *supra* note 81, at 132-33 (footnotes omitted); *see also* Green, *supra* note 81, at 8 (reporting views of other commentators that reducing a rapist's sexual drive will only result in his exercising deviance in other ways); Bund, *supra* note 81, at 189 (noting that chemical castration "does not help violent sexual predators"); Hicks, *supra* note 81, at 647 (noting that "[m]any experts say that castration will not work because rape is not a crime about sex, but rather a crime about power and violence").

84 For a discussion (in a different context) of the commonly used constitutional tests regarding punishments, see *Furman v. Georgia*, 408 U.S. 238, 281-306 (1972) (Brennan, J., concurring); and Bund, *supra* note 81 (discussing a number of constitutional challenges to chemical castration).

85 Of course, there are other values at work here. We are generally hesitant (in a fashion undoubtedly susceptible of evolutionary analysis) to have our legal system interfere with procreative liberties. *See, e.g.*, Planned Parenthood v. Casey, 505 U.S. 833, 849, 851 (1992) ("[T]he Constitution places limits on a State's right to interfere with a person's most basic decisions about family and parenthood," such as "personal decisions relating to marriage, procreation, contraception, family relationships, child rearing, and education."); Eisenstadt v. Baird, 405 U.S. 438, 454-55 (1972) (holding state statute impairing access to contraceptives unconstitutional); Griswold v. Connecticut, 381 U.S. 479, 485-86 (1965) (same); Skinner v. Oklahoma, 316 U.S. 535, 541 (1942) (holding state statute requiring sterilization of certain habitual criminals unconstitutional). And to the extent that chemical castration may do so, we are properly cautioned. Nevertheless, the effects of chemical castration are apparently reversible. Therefore they likely have, at worst, no more effect on

An evolutionary analysis might also provide a valuable window into the legal history of rape law.[86] There is little doubt that evolutionary analysis of human emotions and behavioral predispositions may provide a richer understanding of some features of the legal system.[87] Rape law is likely one of the most promising examples to pursue. From the evolutionary perspective, the widespread proscription and harsh penalties for rape were probable. They can be understood to be, in part, the product of deeply visceral male and female psychologies about reproductive matters. Natural selection likely swept away any psychological tendencies in female ancestors to be indifferent to being raped, and similarly swept away any psychological tendencies, in males and females alike, to be indifferent to daughters, sisters, and female mates being raped. The legal history of rape and the patterns of punishments that have unfolded therefore can be illuminated significantly, perhaps even largely explained, by tracing the way evolutionary processes have influenced the psychology of the human brain. That is, to the extent that our human laws will tend to reflect what humans care about, evolutionary psychology will enable us to explain, in part, why certain things were deemed sufficiently important to warrant collective sanctions, and why certain things tend to be encouraged more, or punished more, than others.

Beyond the chemical castration and legal history contexts, there are possible legal applications that may involve, depending on precisely what values are given voice: (a) the greater contextualization of victim trauma; (b) a better understanding of whether rape is sufficiently like a hate crime for legislation modeled on hate crimes (such as the Violence Against Women Act of 1994[88]) to prove useful; (c) reconsideration of whether the move to classify rape alongside other sexual assaults is more or less likely to yield an effective deterrent or punishment; and (d) more focused cost-benefit analyses of some policies (like antiprostitution policies) that may trade, in their successes, against anti-rape policies.[89]

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a rapist's future reproduction than does a similar period of incarceration. This makes chemical castration a more appealing alternative than surgical castration.

86 *See Sex, Culture, and the Biology of Rape*, *supra* note 6, at 930-33.

87 *See* Owen D. Jones, *On the Nature of Norms: Biology, Morality, and the Disruption of Order*, 98 MICH. L. REV. 2072 (2000) (reviewing FRANCIS FUKUYAMA, THE GREAT DISRUPTION: HUMAN NATURE AND THE RECONSTITUTION OF SOCIAL ORDER (1999)).

88 Violence Against Women Act of 1994, Pub. L. No. 103-322, §§ 40001-40703, 108 Stat. 1796, 1902-55 (codified as amended in scattered sections of 8, 18, 28, and 42 U.S.C.). The Supreme Court recently invalidated the Act's civil remedy provision, 42 U.S.C. § 13981, as unconstitutional. United States v. Morrison, 529 U.S. 598, 601-02 (2000), *aff'g* Brzonkala v. Va. Polytechnic Inst. & State Univ., 169 F.3d 820 (4th Cir. 1999).

89 Some of these potential legal applications are addressed in *Sex, Culture, and the Biology of Rape*, *supra* note 6, at 909-33. Others are addressed in articles compiled in the Winter and Spring 1999 special issues of *Jurimetrics: The Journal of Law, Science, and Technology*, following the *Colloquium on Biology and Sexual Aggression: Investigating Theories, Data, and*

Are we likely to see successful defenses of accused rapists that turn on evolutionary biology? I sincerely doubt it. Properly understood, the science is simply not moving in directions that materially affect any third-party assessment of individual responsibility. True, every courtroom context risks the possibility that lawyers will intentionally or unintentionally misrepresent the content or significance of science. And nothing except the rigors of the adversarial system, and the gatekeeping role of the judge, is stopping a defense attorney from raising a science-of-rape defense at trial. But the important question is: will it work? I predict it will not. First, explanation and justification are severable, and science attends only to the former, as mentioned earlier.[90] Second, the evolutionary theories address population-based probabilities and predictions—and do not address either individual predictions or individual, post-act explanations. They cannot purport to explain with particularity why a single individual, in a single circumstance, did what he did. This is not to say that the theories shall never, categorically, have any role in the courtroom.[91] But it is to say that neither exculpation nor mitigation should properly be thought to be one.

CONCLUSION

Nothing truly important is ever simple. And the subject of rape is clearly no exception. For although we are daily reminded that rape is about violence, not sex, we are also daily reminded that rape is still happening, not fully deterred.

Modern reforms of rape law have scored more points for symbolism than for prevention. And the fact is that the multiple causes of rape remain insufficiently understood for law to deter it effectively. Ironically, the very slogans used successfully to draw attention to the problem of rape can, if taken too literally (as they often are), help to obscure potentially constructive research into the multiple causes of rape.

Implications for Law, held pursuant to a grant from the National Science Foundation to Owen Jones and Dan Strouse. *See Symposium on Biology and Sexual Aggression*, 39 JURIMETRICS J. 113, 113-226, 233-71 (1999).

90 *See supra* discussion Part IV.C.

91 Evolutionary theories might be constructively introduced to rebut the lingering presumption, in some judicial minds, that an otherwise "normal" defendant who raped a woman must have been either insane or temporarily so. For example, a forensic psychiatrist I know, J. Anderson Thomson, was recently asked by a judge to provide an insanity evaluation of a rape defendant. Given the circumstances of the case, the explicit statements of the defendant's attorney, the characteristics of the defendant, and the request from the judge, Thomson believes that the basis for requesting the psychiatric evaluation was simply the assumption that seemingly normal men only rape if they are insane or at least temporarily so.

It is unlikely that we will ever see a study that, by itself, convincingly demonstrates a clear cause of rape behavior. All human rape data have—and always will have—weaknesses. For one simply cannot run nicely controlled rape studies in humans (the way one can in orangutans, for example[92]) that measure how likely it is that a woman will be raped in this context rather than that, or by a male exposed to these environmental factors rather than those. The very nature of the crime renders it both practically and morally unobservable in the usual scientific sense. Consequently, this means that evaluating the plausibility of rape causation theories will likely always be a matter of assessing probabilities and attempting to triangulate from everything we know.

Based on what we currently know, there is little doubt that there is more to understanding rape than biology. But there is equally little doubt that no purportedly comprehensive understanding of rape can wholly exclude behavioral biology. Sexual coercion is too widespread in the animal kingdom, too eerily similar in its patterns, too consistent with evolutionarily informed predictions, too logically coherent with everything else we know about behavioral biology, and ultimately too consistent with human patterns of sexual aggression for the phenomena to be wholly socially constructed.

The strengths of *A Natural History of Rape* significantly outweigh its weaknesses. The central perspective advanced by this book—that biological insights about rape are important to understanding causation and furthering prevention—is essential to rape scholars and legal thinkers alike. This will remain true, whether or not the specific hypotheses for biobehavioral influences these authors suggest are exactly right. And this will remain true, even though many people will find parts of the book—and indeed the general subjection of rape to scientifically rigorous scrutiny—unpersuasive, or even offensive.

Despite the fact that a great deal has been said about rape—much of it useful—for many, many years little new has been shown. This book is an important step toward showing us something new. The fact that new insights may be unpleasant, complicating, incomplete, difficult to follow, potentially misused, or even frightening, is never sufficient reason to discard them as false.

For this reason, as well as for fidelity to the cause of fighting rape in the fields and trenches, the evolutionary perspective on sexual ag-

92 *See* Ronald D. Nadler, *Laboratory Research on Sexual Behavior of the Great Apes*, *in* REPRODUCTIVE BIOLOGY OF THE GREAT APES: COMPARATIVE AND BIOMEDICAL PERSPECTIVES 191 (Charles E. Graham ed., 1981); Ronald D. Nadler, *Sexual Aggression in the Great Apes*, *in* 528 ANNALS N.Y. ACAD. SCI. 154 (Robert A. Prentky & Vernon L. Quinsey eds., 1988); Ronald D. Nadler, *Sexual Aggression in the Great Apes: Implications for Human Law*, 39 JURIMETRICS J. 149 (1999); Ronald D. Nadler, *Sexual Behavior of Orangutans* (Pongo pygmaeus)*: Basic and Applied Implications*, *in* THE NEGLECTED APE 223 (Ronald D. Nadler et al. eds., 1995).

gression warrants careful consideration, neither overzealously championed nor smugly ignored. We should not let our condemnation of rape retard the scientific study of the phenomenon. For if the phenomenon of rape is as horrible as we perceive it to be, we should look for information that is accurate and useful, from whatever source derived. Following these long years of comparative stagnation in our quest to understand and prevent rape, efforts to integrate the life science perspectives on rape with the social science perspectives on rape may eventually provide some much needed progress.