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# Sex, Culture, and the Biology of Rape: Toward Explanation and Prevention

Owen D. Jones†

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# Sex, Culture, and the Biology of Rape: Toward Explanation and Prevention

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*For all that has been written about rape, its multiple causes remain insufficiently understood for law to deter it effectively. This follows, Professor Jones argues, from inadequately interdisciplinary study of rape causation. Specifically, integrating life science and social science perspectives on sexual aggression can improve law's model of rape behavior, and further our efforts to reduce its incidence. This Article first explains biobehavioral theories of sexual aggression, and offers a guide to common but avoidable errors in assessing them. It then compares a number of those theories' predictions with existing data and demonstrates how knowledge of the effects of evolutionary processes on human behavioral predispositions may help us better understand—without justifying or excusing—psychological mechanisms that contribute to patterns of rape. Because increased knowledge of causal influences may afford law increased effectiveness in deterring rape, the author then explores ways in which biobehavioral theories could affect analysis of several current legal issues, from the debate over chemical castration to the meaning of motive in rape-relevant legislation.*

[T]heories of causation are important because they beget strategies for prevention.<sup>1</sup>

## INTRODUCTION

Rape is a serious and too-frequent crime, worthy of our most concerted efforts to curb its incidence. Not only does it harm the subordinated victim, those who care about her, and those whose fear of rape is increased by her rape, but it also injures society, which loses the full participation of those women who alter their behavior as a function of fear.<sup>2</sup> Rape

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1. DIANA SCULLY, UNDERSTANDING SEXUAL VIOLENCE: A STUDY OF CONVICTED RAPISTS 53 (1990).

2. While rape has many other important manifestations, such as male-male, female-male, and female-female violations, in this Article I am concerned primarily with rape involving male-female penile-vaginal penetration. For a careful analysis of the effects and costs of female fear of rape, see MARGARET T. GORDON & STEPHANIE RIGER, THE FEMALE FEAR (1989). See also Robin L. West, *The Difference in Women's Hedonic Lives: A Phenomenological Critique of Feminist Legal Theory*, 3 Wis.

contributes to a social, emotional, and political environment in which women's bodies, lives, experiences, and realities are improperly restrained. It has meanings at the deepest level of human symbolism, and serves as an excruciating reminder of how a culture that disinhibits the aggressive exercise of power fosters callous oppression at the cost of female autonomy.

The long history of the law's treatment of rape is a well-chronicled embarrassment, even tragedy.<sup>3</sup> Against this, feminist writings have argued successfully for a plethora of improvements in the substance and procedure of rape law.<sup>4</sup> And yet for all the volumes written about rape, and all the claims that have been made to have captured, categorized, and extracted its very essences, rape reforms have had far less impact than hoped.<sup>5</sup> Rape

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WOMEN'S L.J. 81, 94 (1987) (exploring how women reconstitute themselves in response to the fear of male violence).

3. See, e.g., SUSAN ESTRICH, *REAL RAPE* (1987) (providing a detailed examination of rape law); DEBORAH L. RHODE, *JUSTICE AND GENDER* 244-53 (1989) (discussing weaknesses of law's earlier approaches); STEPHEN J. SCHULHOFER, *UNWANTED SEX: THE CULTURE OF INTIMIDATION AND THE FAILURE OF LAW* (1998).

4. 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. See Donald A. Dripps, *Beyond Rape: An Essay on the Difference Between the Presence of Force and the Absence of Consent*, 92 COLUM. L. REV. 1780, 1780-85 (1992) (discussing transformation of rape law). See generally KEITH BURGESS-JACKSON, *RAPE: A PHILOSOPHICAL INVESTIGATION* 67-86 (1996); CASSIA C. SPOHN & JULIE HORNEY, *RAPE LAW REFORM: A GRASSROOTS REVOLUTION AND ITS IMPACT* (1992); Cassia C. Spohn, *The Rape Reform Movement: The Traditional Common Law and Rape Law Reforms*, 39 JURIMETRICS J. 119, 120-29 (1999).

5. Reformers expected that rape reports, arrests, convictions, and imprisonment would all increase. See Ronet Bachman & Raymond Paternoster, *A Contemporary Look at the Effects of Rape Law Reform: How Far Have We Really Come?*, 84 J. CRIM. L. & CRIMINOLOGY 554, 555 (1993); Cassia C. Spohn & Julie Horney, *Criminology: The Impact of Rape Law Reform on the Processing of Simple and Aggravated Rape Cases*, 86 J. CRIM. L. & CRIMINOLOGY 861, 862 (1996). But although reforms are generally credited with prompting significant changes in the public attention to, and discussion of, legal issues surrounding rape, see, e.g., Leigh Bienen, *Rape Reform Legislation in the United States: A Look at Some Practical Effects*, 8 VICTIMOLOGY: INT'L J. 139, 148 (1983), researchers have generally concluded that, except in a handful of jurisdictions, legal reforms have not significantly increased either rape reporting or the probabilities of arrests and convictions for rape. See, e.g., SCHULHOFER, *supra* note 3, at ix ("Our laws against rape . . . still fail to protect women."); Bachman & Paternoster, *supra*, at 556, 573 (claiming rape statute reform "has not had a very substantial effect on either victim behavior or actual practices in the criminal justice system"); Julie Horney & Cassia C. Spohn, *Rape Law Reform and Instrumental Change in Six Urban Jurisdictions*, 25 L. & SOC'Y REV. 117, 149-50 (1991) ("[There is an] overall lack of impact of rape law reforms . . . We have shown that the ability of rape reform legislation to produce instrumental change is limited."). For a recent discussion of aspects of reform aimed at redefining the elements and crime of rape, see David P. Bryden, *Redefining Rape*, BUFF. CRIM. L. REV. (forthcoming 1999). See also Bienen, *supra*, at 148 (discussing effects of New Jersey rape reforms on incarceration rates as insignificant); Carol Bohmer, *Acquaintance Rape and the Law*, in *ACQUAINTANCE RAPE: THE HIDDEN CRIME* 317, 326 (Andrea Parrot & Laurie Bechhofer eds., 1991) ("[M]any of these reforms have had limited effect on the experience of the victim or the likelihood [of] conviction."); David P. Bryden & Sonja Lengnick, *Rape in the Criminal Justice System*, 87 J. CRIM. L. & CRIMINOLOGY 1194, 1283-94 (1997) (discussing disjunction between hopes of reformers and effects of reforms); 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) ("[W]e now know that legislative changes have not made

remains a mystery—insufficiently understood to be effectively prevented.<sup>6</sup> For every claim that rape is surely about violence, and not about sex, we hear a claim that rape is surely about sex, even if it is also about violence. For every argument that rapists are imbalanced and mentally infirm, there is an argument that the true rapist is an Everyman, an omnipresent threat.

In recent years, law's model of rape behavior—its theory of where rape comes from—has increasingly and heavily favored pure social science theories of causation, uninformed by theories that would integrate social science and life science perspectives.<sup>7</sup> I suspect three causes: (1) few of today's legal thinkers have studied life science (so the social science theories seem more accessible); (2) the standard social science theories are assumed to align more comfortably with the political preferences of our time; and (3) most people incorrectly assume that life science and social science theories are incompatible, and that they must choose between one and the other.

Yet excluding life science perspectives on rape behavior from the legal literature may be ill-advised. For exclusion often follows from insufficient or outdated understanding of what the life science theories of rape causation actually say, insufficient analysis of whether those theories are plausible, and often incorrect assumptions about how the descriptive

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any difference in the arrest, prosecution and conviction of rapists.”). Several researchers estimate that fewer than 5% of rapists are ever convicted. See JULIE A. ALLISON & LAWRENCE S. WRIGHTSMAN, *RAPE: THE MISUNDERSTOOD CRIME* ix (1993); GORDON & RIGER, *supra* note 2, at 45.

6. See ALLISON & WRIGHTSMAN, *supra* note 5, at 3 (reported rapes increased 59% between 1990 and 1991); Katherine K. Baker, *What Rape Is and What It Ought Not Be*, 39 *JURIMETRICS* J. 233 (1999) (rape remains “massively under deterred”); Judith V. Becker & Meg S. Kaplan, *Rape Victims: Issues, Theories, and Treatment*, 2 *ANN. REV. SEX RES.* 267, 267 (1991) (“[I]n spite of all the attention and special programs, it does not appear that rape rates have declined significantly in this society.”). There is some evidence, however, that rape rates may be declining somewhat. See BUREAU OF JUSTICE STATISTICS, U.S. DEPARTMENT OF JUSTICE, *SEX OFFENSES AND OFFENDERS: AN ANALYSIS OF DATA ON RAPE AND SEXUAL ASSAULT* v (1997) [hereinafter DOJ STATISTICS] (reporting decrease in the rape rates between 1992 and 1995). But rape rate statistics are notoriously difficult to interpret, since rapes appear to be significantly underreported. See, e.g., PRACTICAL ASPECTS OF RAPE INVESTIGATION: A MULTIDISCIPLINARY APPROACH xiii (Robert R. Hazelwood & Ann Wolbert Burgess eds., 2d ed. 1995) (estimating that less than half of all rapes are reported to police); Mary P. Koss, *The Hidden Rape Victim: Personality, Attitudinal, and Situational Characteristics*, 9 *PSYCHOL. WOMEN Q.* 193, 194-95 (1985) (estimating that 10 to 50 percent of rapes are reported). Comparison of rates is further complicated by recent redesign of an important survey tool. See MICHAEL R. RAND ET AL., *CRIMINAL VICTIMIZATION, 1973-95*, U.S. DEP'T OF JUSTICE, BUREAU OF JUSTICE STATISTICS: NATIONAL CRIME VICTIMIZATION SURVEY 3 (1997) (advising “extreme caution” in comparing survey results).

7. For an overview of some of the social science research on rape, see Barry Burkhardt & Mary Ellen Fromuth, *Individual Psychological and Social Psychological Understandings of Sexual Coercion*, in *SEXUAL COERCION: A SOURCEBOOK ON ITS NATURE, CAUSES, AND PREVENTION* (Elizabeth Grauerholz & Mary A. Koralewski eds., 1991). Even editors claiming to have compiled “interdisciplinary” perspectives on sexual aggression routinely (often without self-reflection) omit life science perspectives *in toto*. See, e.g., Mary E. Odem & Jody Clay-Warner, *Introduction to CONFRONTING RAPE AND SEXUAL ASSAULT* xi, xi (Mary E. Odem & Jody Clay-Warner eds., 1998) (reflecting assumption that interdisciplinary rape work need only attend to social science literature).

theories from life science, even if true, would play out in the normative arenas in which people process descriptions.<sup>8</sup> Most often, life science perspectives on the multiple causes of sexual aggression are either ignored entirely, caricatured (as “irresistible impulse” arguments, for example), or simply rejected as improper for polite discourse.<sup>9</sup>

Given the frequent misuse of biology by governments and lawyers alike and the notorious attempts by some rape apologists to hide behind misarticulations of biology, ignoring biology is understandable. The potential for harm demands caution and care. Nevertheless, overcaution also costs. Wholesale exclusion of life science perspectives may very well come at the cost of inaccuracy—and the impediments to rape prevention that inaccurate or incomplete theories of causation might occasion. For it is unclear that the costs of believing something to be true, when it is not, necessarily exceed the costs of believing something not to be true, when it is. It is concern for the magnitude of these latter costs, in the context of rape, that prompts this writing. More specifically, the costs in human misery that might otherwise have been prevented, of mistakenly believing that the life sciences offer *no* constructive perspectives on rape, if in fact they *do*, might well exceed the costs of mistakenly believing there *are* biological influences on patterns of rape, if in fact there are none.

To be clear: I do not intend to champion biological theories of rape causation over social ones. For one thing, I am persuaded, for reasons made clear hereafter, that it is meaningless and misleading to argue about whether biological *or* sociocultural theories of rape are correct, for they are rarely mutually exclusive. For another, data in support of the biological theories are, on some important points, still inconclusive, though often no more so than data in support of sociocultural theories. There are, however, several important reasons—in view of recent rape-relevant developments in law and in science—why legal thinkers should carefully consider the possibility that the life sciences can make significant contributions to understanding rape and speeding its elimination.

First, behavioral models matter. And models that do not integrate social and life sciences into a seamless web of interconnected knowledge are

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8. This is not to suggest that there is no room for informed disagreement about the usefulness of life science perspectives in the rape context. There is. Nor am I suggesting that legal scholars skeptical of using biobehavioral insights in other, more general, legal contexts have failed to address the issue with some care. Professor Deborah Rhode and Dean Herma Hill Kay, for example, have each offered constructive warnings against unreflective, improperly selective, or simplistic invocations of biology (particularly those that may rely on passing familiarity or exaggerated media reports to justify discriminatory treatment). *See, e.g.*, DEBORAH L. RHODE, *SPEAKING OF SEX: THE DENIAL OF GENDER INEQUALITY* 21-42 (1997); Herma Hill Kay, *Perspectives on Sociobiology, Feminism, and the Law*, in *THEORETICAL PERSPECTIVES ON SEXUAL DIFFERENCE* 74 (Deborah L. Rhode ed., 1990).

9. *See infra* Part III.

rapidly obsolescing.<sup>10</sup> The challenge for legal thinkers, as much with rape as with other law-relevant behaviors, is to assess the competing claims, from different disciplines, about causes and significance. For while law has no truly independent theory of rape behavior, its very ability to reduce the incidence of rape can be no more effective than the behavioral model—the theory of causation—against which its efforts must lever.<sup>11</sup> Incomplete or flawed models of rape behavior, unintegrated with or inconsistent with what is known about the evolution of the human brain's information-processing patterns, portend in this legal context what incomplete or flawed behavioral models portend in every other: that all efforts based upon them are less likely to be successful than would be efforts based on less incomplete or flawed behavioral models. Consequently, the effectiveness of policies and programs for punishing and deterring rape will necessarily reflect the choices legal thinkers make, as consumers of behavioral models offered up by others. Integrative efforts can bring disparate pieces of knowledge about rape together, to synthesize from the best aspects of different life science and social science disciplines an organic whole that is greater than the sum of its parts. This whole would be boundariless in its applicability, internally consistent, and potentially practical in its applications for legal thinking.

Second, human behavior is now known to reflect evolved behavioral predispositions that influence the probabilities of various kinds of behavior. Rape behavior may be one of them. It is increasingly evident to science that members of the human species, like members of all other animal and plant species, exhibit a wide variety of behavioral predispositions. In our case, these are highly contingent, and powerfully affected by environmental conditions and abstract reasoning. These predispositions, as explored below, tend to reflect the accumulated effects of natural selection, operating not only on the external form of our distant ancestors, but also on the brain's neural architecture and information processing pathways. Through their effects on our perceptions, emotions, and preferences, these predispositions influence the probability that we will respond to certain kinds of stimuli with certain kinds of behavior. In sum, the more directly and substantially a behavior affected the reproductive success of our ancestors, human and nonhuman, the greater the likely effect of evolutionary processes on the current patterns of its incidence. Because rape was

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10. See John Tooby & Leda Cosmides, *The Psychological Foundations of Culture*, in *THE ADAPTED MIND: EVOLUTIONARY PSYCHOLOGY AND THE GENERATION OF CULTURE* 19, 23 (Jerome H. Barkow et al. eds., 1992).

11. See Owen D. Jones, *Evolutionary Analysis in Law: An Introduction and Application to Child Abuse*, 75 N.C. L. REV. 1117 (1997) [hereinafter Jones, *Evolutionary Analysis in Law*] (proposing method by which law's models can be supplemented with life science theories); Owen D. Jones, *Law and Biology: Toward an Integrated Model of Human Behavior*, 8 J. CONTEMP. LEGAL ISSUES 167, 167-73 (1997) (exploring the relationship between behavioral models and law).

historically more likely to result in reproduction than any number of alternative behaviors, such as voluntary abstinence, it is plausible that behavioral biology has *something* to contribute to an understanding of rape's complexities.

Third, rape researchers can now point to several notable, and in some cases startling, patterns of human rape data that seem patently inconsistent with social science theories unsupplemented by recent life science advances. These patterns are instead consistent with testable predictions of the biological theories, as well as with precise patterns of forced copulation in a number of other species—including some of our closest primate relatives. At the very least, the inability of popular theories to explain these patterns parsimoniously is puzzling. At most, that inability may highlight potentially serious weaknesses in conventional theories about the causes of rape.

Fourth, the scholarly literature exploring the biology of rape in both nonhuman and human animals has grown dramatically in the last twenty years.<sup>12</sup> And new works, both in biology and in law, are recently published<sup>13</sup> or forthcoming.<sup>14</sup> Given the remarkably common and commonly perfunctory dismissals of biological theories, the law is now notably unprepared to assess this literature, lacking any thorough examination of what the biological theories of sexual aggression really are.<sup>15</sup>

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12. See *infra* Appendix A (collecting selected sources).

13. Following a recent *Colloquium on Biology and Sexual Aggression: Investigating Theories, Data, and Implications for Law* (sponsored by the National Science Foundation, The Center for the Study of Law, Science, and Technology, and the Society for Evolutionary Analysis in Law), *Jurimetrics: The Journal of Law, Science, and Technology* published Colloquium papers in two special issues, Winter and Spring 1999. Those papers include: Katharine K. Baker, *What Rape Is and What It Ought Not to Be*; Charles Crawford & Marc A. Johnston, *An Evolutionary Model of Courtship and Mating as Social Exchange*; Deborah W. Denno, *Evolutionary Biology and Rape*; Steven Goldberg, *Statistics, Law, and Justice*; Cheryl Hanna, *Sometimes Sex Matters*; Timothy H. Goldsmith & Owen D. Jones, *Evolutionary Biology and Behavior: A Brief Overview and Some Important Concepts*; Martin L. Lalumière & Vernon L. Quinsey, *A Darwinian Interpretation of Individual Differences in Male Propensity for Sexual Aggression*; Neil M. Malamuth & Eldad Z. Malamuth, *Integrating Multiple Levels of Scientific Analysis and the Confluence Model of Sexual Coercers*; Linda Mealey, *The Multiplicity of Rape: From Life History Strategies to Prevention Strategies*; Ronald D. Nadler, *Sexual Aggression in the Great Apes: Implications for Human Law*; Craig T. Palmer et al., *Is It Sex Yet? Theoretical and Practical Implications of the Debate Over Rapists' Motives*; Cassia C. Spohn, *The Rape Reform Movement: The Traditional Common Law and Rape Law Reforms*; Randy Thornhill, *The Biology of Human Rape*.

14. See RANDY THORNHILL & CRAIG PALMER, *WHY MEN RAPE, WHY WOMEN SUFFER: RAPE, EVOLUTION, AND THE SOCIAL SCIENCES* (forthcoming 1999) (on file with author).

15. For several useful attempts to begin incorporating these theories into law, see JOHN H. BECKSTROM, *DARWINISM APPLIED: EVOLUTIONARY PATHS TO SOCIAL GOALS* 53-65 (1993); RICHARD POSNER, *SEX AND REASON* 106-08, 383-404 (1992); and Brian Kennan, *Evolutionary Biology and Strict Liability for Rape*, 22 L. & PSYCHOL. REV. 131 (1998).

Fifth, the motive for rape has recently attained greater legal significance.<sup>16</sup> For example, the federal Violence Against Women Act of 1994<sup>17</sup> (VAWA) created a new civil rights cause of action for “crimes of violence motivated by gender.”<sup>18</sup> To be “motivated by gender,” violent crimes must be: (a) “committed because of gender or on the basis of gender”; and (b) “due, at least in part, to an animus based on the victim’s gender.”<sup>19</sup> Legislative history makes clear that Congress did not, in the end, intend courts to assume that all rapes were “motivated by gender,” and thus at least partly animated by animus.<sup>20</sup> It left to the courts (informed by legal reasoning in other civil rights contexts)<sup>21</sup> the task of applying these tests on a case-by-case basis. Understanding why people rape is surely important in this endeavor.

As scholars predicted,<sup>22</sup> litigants are hotly disputing the meaning of “motivated by gender,” and the scope of the civil rights remedy.<sup>23</sup> To date, at least one federal court has opined that cases in which rape would *not* have been “motivated by gender,” with sufficient and prerequisite animus, “would appear to this Court to be few and far between.”<sup>24</sup> And another court, in the context of an unwanted fondling, has employed a standard for animus so low that all rapes would seem to qualify.<sup>25</sup> Moreover, a number

16. See, e.g., Katharine K. Baker, *Once A Rapist? Motivational Evidence and Relevancy in Rape Law*, 110 HARV. L. REV. 563 (1997).

17. Pub. L. No. 103-322, §§ 40111(a)-40611, 108 Stat. 1796, 1903-53 (codified as amended in scattered sections of 8, 18, 28, and 42 U.S.C.).

18. 42 U.S.C. § 13981(a) (1994). VAWA defines “crime of violence” as “an act or series of acts that would constitute a felony against the person . . . and that would come within the meaning of State or Federal offenses described in section 16 of title 18 . . .” *Id.* § 13981(d)(2)(A).

19. *Id.* § 13981(d)(1).

20. See, e.g., S. REP. NO. 103-138, at 51 (1993) (“Title III does not create a general Federal law for all . . . rapes against women.”); see also *Anisimov v. Lake*, 982 F. Supp. 531, 541 (N.D. Ill. 1997) (so finding).

21. See, e.g., S. REP. NO. 103-138, at 52 (1993) (“Proof of ‘gender motivation’ . . . should proceed in the same ways proof of race or sex discrimination proceeds under other civil rights laws. Judges and juries will determine ‘motivation’ from the ‘totality of the circumstances’ surrounding the event.”).

22. See, e.g., Reva B. Siegel, “*The Rule of Love*”: *Wife Beating as Prerogative and Privacy*, 105 YALE L.J. 2117, 2200 (1996) (“[T]here will be a struggle over the scope of the civil rights remedy . . .”); see also David Frazee, *An Imperfect Remedy for Imperfect Violence: The Construction of Civil Rights in the Violence Against Women Act*, 1 MICH. J. GENDER & L. 163, 182-83, 256 (1993) (observing that the meaning of “animus” is unclear, and that courts may severely limit VAWA’s scope).

23. See, e.g., *Brzonkala v. Virginia Polytechnic Inst. and State Univ.*, No. 96-2316, 96-1814, 1999 WL 111891 (4th Cir. Mar. 5, 1999) (holding that Congress lacks constitutional authority to enact the VAWA section relevant here); *Doe v. Hartz*, 134 F.3d 1339 (8th Cir. 1998), *rev’g in part, vacating in part* *Doe v. Hartz*, 970 F. Supp. 1375 (N.D. Iowa 1997); *Braden v. Piggly Wiggly*, 4 F. Supp. 2d 1357 (M.D. Ala. 1998); *Anisimov*, 982 F. Supp. 531; *Mattison v. Click Corp.*, No. Civ.A.97-CV-2736, 1998 WL 32597 (E.D. Pa. Jan. 27, 1998).

24. *Anisimov*, 982 F. Supp. at 541.

25. See *Doe*, 970 F. Supp. at 1375, *rev’d on other grounds, Doe*, 134 F.3d at 1339. The lower court concluded that “because unwanted or unwelcome sexual advances may be demeaning and

of legal commentators have started arguing for a rebuttable presumption of animus in rape cases,<sup>26</sup> asserting that “gender animus is an underlying factor in almost all rapes.”<sup>27</sup> Making motive an element of the civil rights action therefore necessarily raises empirical questions about causation on which science has much to say.

My goals in exploring the life science perspectives on rape are several. Because it is evident that one of the things clouding scholarly discourse about the extent of biological influences on rape is widespread misperception of the biological theories themselves, my first purpose is to clarify for a legal audience what the main theories positing biological influences on the patterns of rape do and do not say. That is the task of Part I.<sup>28</sup> Part II briefly surveys some of the predictions that these biobehavioral theories generate, as well as some of the quite provocative evidence that tests those predictions. My purpose is not to compile all the evidence, for and against, as if I were attempting here to prove or falsify the theories. Rather, I provide a short overview of predictions and evidence, exploring general plausibility. This is to help legal thinkers assess whether they should bother to study the theories separately—and then, if inclined, critique them—in greater detail.

In Part III, I offer some recommendations about how legal scholars can process the emerging information about biobehavioral theories of sexual aggression. Specifically, I explore surprisingly common, but avoidable, analytic errors. In Part IV, I offer several observations on the vitality of rape theories without life science perspectives, consider how the life science theories, if true, might affect several rape myths, and discuss the possibility of integrating biobehavioral theories with social science theories.

In Part V, I speculate on concrete legal applications where biobehavioral theories, if true, might make a difference. This latter foray is necessarily conjectural, since one can never legitimately reason from the explanations of biology to any normative conclusion, without importing

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belittling, and may reasonably be inferred to be intended to have that purpose or to relegate another to an inferior status, even if the advances were also intended to satisfy the actor's sexual desires, the allegations of the ‘animus’ element here are sufficient.” *Doe*, 970 F. Supp. at 1408.

26. See, e.g., Jennifer Gaffney, Note, *Amending the Violence Against Women Act: Creating a Rebuttable Presumption of Gender Animus in Rape Cases*, 6 J.L. & POL'Y 247 (1997); see also Sally Goldfarb, *The Civil Rights Remedy of the Violence Against Women Act: Legislative History, Policy Implications, and Litigation Strategy*, 4 J.L. & POL'Y 391, 398-99 (1996) (claiming that “the burden on the plaintiff to show gender-based animus is not as onerous as some have argued,” and citing authors who would prefer that the legislation presume that rape is always gender-motivated). One commentator has argued that the statute should be amended to strike the animus requirement altogether, and to make rape *per se* actionable under VAWA. See Frazee, *supra* note 22, at 242-43, 245-47.

27. Gaffney, *supra* note 26, at 264.

28. This Article largely follows the method for conducting evolutionary analysis in law articulated in Jones, *Evolutionary Analysis in Law*, *supra* note 11.

other values.<sup>29</sup> No recommendations in law can follow automatically from theories of biological influence on rape patterns, even if we were persuaded that any one of those theories were likely accurate. On the other hand, given a number of social concerns our legal system already manifests, and the underlying values those concerns reflect, the biobehavioral theories of rape may soon have legal effects in the contexts of policy choices, legislative strategies, rape trials and sentencing, and the legal history of rape law. The better we can understand rape, the better we might be able, through law, to prevent and deter it.

Of course, the potential for volatile controversy when discussing either rape or human behavioral biology, let alone the two combined, recommends several important caveats. For surely some may suspect that I am about to defend rapists as mere instruments of biological imperatives, or to excuse (and thereby somehow to demean the significance of) acts of sexual aggression, or to argue for mitigation of sentences because "genes made him do it."

In truth, I intend none of these things. There is no known or anticipated theory of rape behavior, biological or otherwise, that excuses or justifies rape, exculpates its perpetrators, mitigates appropriate punishments, or requires us to tolerate its existence. So that it may be clear, my purpose is to explore ways to understand rape that may lead to more effective ways to prevent it. If the life sciences can help to achieve that goal, then we should explore them further. If they cannot, we may disregard them. But I am persuaded that we cannot conclude whether exploration or disregard is more appropriate without further examination of the life science perspectives themselves.

## I

### PATTERNS OF RAPE: THEORIES OF BIOLOGICAL INFLUENCE

This Part provides necessary context for careful consideration of modern life science theories about sexual aggression and forced copulation. Section I.A offers a brief overview of academic research on rape, to provide both historical perspective and a sense of where rape scholarship is today. Section I.B describes the conceptual superstructure of behavioral biology. It provides the essential foundation for understanding the biobehavioral theories of rape, which are the subject of Section I.C. In my view, much of the confusion over biobehavioral theories of sexual aggression traces to an incomplete grasp of these biology basics and their constituent terms of art.

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29. To do so is to commit the well-known Naturalistic Fallacy—reasoning from an "is" to an "ought to be." See *infra* Section III.M.

### A. *Theories of Rape: A Short History*

Because numerous scholars have more than adequately chronicled the history of most rape theories and rape law, I can limit my comments to those that provide context.<sup>30</sup> In the beginning, few people really cared. Rape was considered rare and, in the eyes of many, either excusable or insignificant.<sup>31</sup> Most of the few early rape theorists, in the 1950s and 1960s, were psychiatrists.<sup>32</sup> In their view, rapists were sick individuals (different from men in general) whose behavior reflected mental illness and “irresistible impulses” as a function of personality, adjustment, or biochemical abnormalities.<sup>33</sup> The law dutifully adopted this perspective, and

30. For sources providing useful overviews, see ALLISON & WRIGHTSMAN, *supra* note 5; LARRY BARON & MURRAY A. STRAUS, *FOUR THEORIES OF RAPE IN AMERICAN SOCIETY* (1989); BURGESS-JACKSON, *supra* note 4; LEE ELLIS, *THEORIES OF RAPE: INQUIRIES INTO THE CAUSES OF SEXUAL AGGRESSION* (1989); ESTRICH, *supra* note 3; GREGORY M. MATOESIAN, *REPRODUCING RAPE: DOMINATION THROUGH TALK IN THE COURTROOM* (1993); RAPE (Sylvana Tomaselli & Roy Porter eds., 1986); RAPE AND SEXUAL ASSAULT: A RESEARCH HANDBOOK (Ann Wolbert Burgess cd., 1985); RAPE AND SOCIETY: READINGS ON THE PROBLEM OF SEXUAL ASSAULT (Patricia Searles & Ronald J. Berger eds., 1995); RAPE AND THE CRIMINAL JUSTICE SYSTEM (Jennifer Temkin ed., 1995); SCHULHOFER, *supra* note 3; SEX, POWER, CONFLICT: EVOLUTIONARY AND FEMINIST PERSPECTIVES (David M. Buss & Neil M. Malamuth eds., 1996); SCULLY, *supra* note 1; SEXUAL COERCION, *supra* note 7; SPOHN & HORNEY, *supra* note 4; COLLEEN A. WARD, *ATTITUDES TOWARD RAPE: FEMINIST AND SOCIAL PSYCHOLOGICAL PERSPECTIVES* (1995); Ronald J. Berger et al., *The Dimensions of Rape Reform Legislation*, 22 L. & Soc’y Rev. 329 (1988); Bienen, *supra* note 5; Joan Nordquist, *Rape: A Bibliography*, 19 CONTEMP. SOC. ISSUES: A BIBLIOGRAPHIC SERIES 5 (1990).

31. See generally ESTRICH, *supra* note 3 (providing an overview of developments in rape law); Camille E. LeGrand, *Rape and Rape Laws: Sexism in Society and Law*, 61 CALIF. L. REV. 919 (1973) (same). There was little scholarship on rape before 1965. See ELIZABETH JANE KEMMER, *RAPE AND RAPE-RELATED ISSUES: AN ANNOTATED BIBLIOGRAPHY* xii (1977). Kemmer notes that

[f]rom approximately 1965 to 1968, rape literature focused on the offender and the unjust system that convicted the falsely accused male of so heinous a crime. The sympathy of the public was with the offender, thus making the victim the guilty party in a rape situation. . . . Rape was still a fairly silent, secret crime—a crime whose victims were the most silent of all.

*Id.*

32. For a short history of early psychiatric approaches to rape, see Richard T. Rada, *Sexual Psychopathology: Historical Survey and Basic Concepts*, in *CLINICAL ASPECTS OF THE RAPIST* 1, 3-10 (Richard T. Rada ed., 1978). See also RON LANGEVIN, *SEXUAL STRANDS: UNDERSTANDING AND TREATING SEXUAL ANOMALIES IN MEN* 413, 414-22 (1983) (describing psychiatric theories and treatments for rapists).

33. See generally Diana Scully & Joseph Marolla, *Rape and Vocabularies of Motive: Alternative Perspectives*, in *RAPE AND SEXUAL ASSAULT*, *supra* note 30 (discussing vocabulary of motives in psychiatric, psychopathological models of rape). Rapists were at the time considered to be (like homosexuals, voyeurs, exhibitionists, and pedophiles) sexual deviants. See Samuel David Smithyman, *The Undetected Rapist* 9 (1978) (unpublished Ph.D. dissertation, Claremont Graduate School); see also MATOESIAN, *supra* note 30, at 6-10. For example, Groth, a clinical psychologist and proponent of the psychiatric perspective on rape, claimed that “[r]ape is always a symptom of some psychological dysfunction, either temporary and transient or chronic and repetitive . . . . The rapist is, in fact, a person who has serious psychological difficulties which handicap him in his relationships to other people and which he discharges, when under stress, through sexual acting out.” A. NICHOLAS GROTH, *MEN WHO RAPE: THE PSYCHOLOGY OF THE OFFENDER* 5-6 (1979). Consistent with its medical model of rape, early psychiatric treatments were oriented toward diagnosis, treatment, and rehabilitation, and included

by 1965 thirty states had enacted sexual psychopath laws that generally defined a rapist as “a person unable to control his sexual impulse or having to commit sex crimes.”<sup>34</sup>

As an outgrowth of commentary in the 1970s that brought women’s experiences to the fore, rape received increased scholarly attention outside psychiatric circles. Susan Brownmiller’s *Against Our Will* is widely credited as a principal catalyst in making rape an important topic—socially, legally, and academically.<sup>35</sup> It also helped to initiate a branching and diverse collection of perspectives on rape, loosely termed the feminist perspectives.<sup>36</sup>

Any attempt to attribute common elements to feminist perspectives is difficult, of course, because of differences both large and subtle among them.<sup>37</sup> The majority of these perspectives, however, grow from the central idea that rape is the consequence of: (a) social traditions that reflect male power and dominance, on one hand, and female powerlessness and

such methods as “castration, psychosurgery, electric shock, and hormonal and mind-control drug therapy, [and] psychotherapy. . . .” SCULLY, *supra* note 1, at 36.

34. SCULLY, *supra* note 1, at 35 (citing Karl M. Bowman & Bernice Engle, *Sexual Psychopath Laws*, in *SEXUAL BEHAVIOR AND THE LAW 757* (Ralph Slovenko ed., 1965)).

35. SUSAN BROWNMILLER, *AGAINST OUR WILL: MEN, WOMEN AND RAPE* (1975). Other works of major import included Susan Griffin, *Rape: The All-American Crime*, in *RAMPARTS 26* (1971) and DIANA E.H. RUSSELL, *THE POLITICS OF RAPE: THE VICTIM’S PERSPECTIVE* (1975). See also Craig Palmer, *Twelve Reasons Why Rape Is Not Sexually Motivated: A Skeptical Examination*, 25 J. SEX RES. 512, 513 (1988) (surveying literature). For a view of how feminism drew attention to rape, see Vicki McNickle Rose, *Rape as a Social Problem: A Byproduct of the Feminist Movement*, 25 SOC. PROBS. 75 (1977).

36. On the development of feminist perspectives generally, see JOSEPHINE DONOVAN, *FEMINIST THEORY* (1985); JUDITH GRANT, *FUNDAMENTAL FEMINISM: CONTESTING THE CORE CONCEPTS OF FEMINIST THEORY* (1993); and ROSEMARIE TONG, *FEMINIST THOUGHT: A COMPREHENSIVE INTRODUCTION* (1989). Overviews of feminist perspectives on rape include MATOESIAN, *supra* note 30, at 5-22; NANCY A. MATTHEWS, *CONFRONTING RAPE: THE FEMINIST ANTI-RAPE MOVEMENT AND THE STATE* (1994); RHODE, *supra* note 3; SCULLY, *supra* note 1, at 33-61; WARD, *supra* note 30, at 18-37; 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 Largent, *The Anti-Rape Movement: Past and Present*, in *RAPE AND SEXUAL ASSAULT*, *supra* note 30; and Rebecca M. Ryan, *The Sex Right: A Legal History of the Marital Rape Exemption*, 20 L. & SOC. INQUIRY 941, 968-92 (1995).

37. For example, some feminists argue that rape is not sex. See Largent, *supra* note 36, 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. For concise descriptions of the breadth of feminist perspectives, see ALLISON M. JAGGAR, *FEMINIST POLITICS AND HUMAN NATURE 3-13* (1983), and WARD, *supra* note 30, at 18-37. See also SOURCEBOOK ON FEMINIST JURISPRUDENCE (Hilare Barnett ed., 1997); Torrey, *supra* note 5.

exploitation, on the other; (b) socially stratified and unequal gender roles; and (c) cultural attitudes and assumptions about men, women, and rape.<sup>38</sup> In this view, patriarchal culture socializes males to be potential rapists.<sup>39</sup> And because rape reflects systemic political and power imbalances between men and women, rape is largely reconceptualized from a “sex” crime (motivated by sexual desire) to a “violent” crime (motivated by misogyny).<sup>40</sup>

Sociologists, for their part, generally concurred with feminists. As feminists were attempting to shift attention from individuals to sexist practices, sociologists were attempting to refocus rape research from rapist motivations to the contexts in which rape occurs.<sup>41</sup> From the sociological perspectives, rape is typically a product not of individual pathology, but of collective cultural determination.<sup>42</sup> That is, social conditions, such as cultural norms, rules, and prevailing attitudes about sex, mold and structure the behavior of the rapist within the context of the broader social system, fostering rape-prone environments and, in effect, teaching men to rape.<sup>43</sup> As the feminist and sociologist literature has grown, the psychopathology model of rapists as sick people needing psychiatric treatment has suffered a gradual decline.<sup>44</sup>

This much is widely known. Less known is that efforts to understand rape in humans as a phenomenon unique to human culture have long been paralleled by the efforts of biologists and animal behaviorists to understand

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38. See WARD, *supra* note 30, at 10 (citing Rose, *supra* note 35; and Pamela Lakes Wood, *The Victim in a Forcible Rape Case: A Feminist View*, 11 AM. CRIM. L. REV. 335 (1973)); see also LINDA BROOKOVER BOURQUE, *DEFINING RAPE* 14-58 (1989).

39. See, e.g., WARD, *supra* note 30, at 6; Odem & Clay-Warner, *Introduction to CONFRONTING RAPE AND SEXUAL ASSAULT*, *supra* note 7, at xi; Patricia Searles & Ronald J. Berger, *Why Men Rape*, in *RAPE & SOCIETY*, *supra* note 30, at 1, 51. For a useful summary, see MATOESIAN, *supra* note 30, at 10-18.

40. See, e.g., WILLIAM B. SANDERS, *RAPE AND WOMAN'S IDENTITY* 22 (1980).

41. The classic early sociological text is MENACHEM AMIR, *PATTERNS IN FORCIBLE RAPE* (1971). See also ELAINE HILBERMAN, *THE RAPE VICTIM* 28 (1976) (emphasizing the sociocultural context of rape); SANDERS, *supra* note 40, at 28 (1980) (“As a focal point and perspective, sociology has taken over the place of psychiatry in the study of rape.”); Mary Beard Deming & Ali Eppy, *The Sociology of Rape*, 65 SOC. & SOC. RES. 357 (1981) (same); Lorne Gibson et al., *A Situational Theory of Rape*, 22 CAN. J. CRIMINOLOGY 51 (1980) (sociologists distinguishing sociological perspectives on rape from prior ones); Kurt Weis & Sandra S. Borges, *Victimology and Rape: The Case of the Legitimate Victim*, 8 ISSUES IN CRIMINOLOGY 71 (1973).

42. See AMIR, *supra* note 41.

43. See, e.g., SANDERS, *supra* note 40. There are, of course, a number of different approaches within the sociological tradition, including cultural approaches (focusing on a society's belief and value systems); institutional approaches (focusing on medical and justice institutions' reactions to rape); and situational approaches (collating situational elements in rape). See *id.*

44. While psychopathology remains today a viable explanation for the behavior of some rapists in special cases, see *infra* note 177, it has been unpopular as an explanation for rape behavior generally since roughly the late 1970s. See MATOESIAN, *supra* note 30, at 6. For a recent review of psychiatric perspectives, see Elizabeth Janssen, *Understanding the Rapist's Mind*, PERSP. PSYCHIATRIC CARE, Oct.-Dec. 1995, at 9.

widespread male-female sexual aggression among many other species. The literature on animal sexual aggression has grown steadily over the last thirty years as a subset of the massive literature on aggression generally. Only rarely have researchers on either side of the social science and life science divide attempted to engage each other directly. And many attempts have been famously unproductive.<sup>45</sup>

Much of this failure to integrate social and life sciences perspectives on rape traces back to culture and vocabulary, as each of the relevant disciplines sports its own goals, traditions, and essential terms of art. Some of the failure traces to disciplinary xenophobia, with each tribe suspicious of the motives and meanings of the other. But more important than the early causes and actual history of this interdisciplinary miscommunication, for present purposes, is the simple fact that the legal academy faces seemingly competing claims about the causes of a behavior it must help to stop. Evaluating these claims requires some scholarly facility in their underlying logic.

The claims and logic of social science theories of rape are today sufficiently distributed and well-known within the legal community that I will assume some general familiarity.<sup>46</sup> I now turn to examine current thinking in biology about possible influences of evolutionary processes and history on human patterns of behavior generally, and on sexually aggressive behavior in particular.

### B. Core Principles of Behavioral Biology

Theories of possible biobehavioral influences on rape patterns in humans are not free-standing. They rest on, and derive logical support from, several core principles of modern biology that are uncontroversial within

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45. For example, in 1983 psychology Professor Delbert D. Thiessen was invited to give a "Fellow's Address" at the meeting of the Division for Comparative and Physiological Psychology at the annual convention of the American Psychological Association. He entitled his talk "Rape as a Reproductive Strategy: Our Evolutionary Legacy." In advance of the talk, several critics charged that the title, as publicized, was offensive—in that it suggested that rape was an acceptable method for procreating. Hostile reaction inspired a small book from the critics: *VIOLENCE AGAINST WOMEN: A CRITIQUE OF THE SOCIOBIOLOGY OF RAPE* (Suzanne R. Sunday & Ethel Tobach eds., 1985) [hereinafter SUNDAY & TOBACH], in which some history of this episode is recounted. In my view, this unfortunate incident is traceable, in large part, to the cross-disciplinary ambiguity of the term of art "reproductive strategy"—which has a normative implication in lay minds, and no such implication to evolutionists. See, e.g., Julie Blackman, *The Language of Sexual Violence: More Than a Matter of Semantics*, in SUNDAY & TOBACH, *supra*, at 115, 126 ("Strategies and legacies are connotatively positive . . .").

There are signs, however, that dialogue bridging the life science and social science perspectives on rape is successfully re-emerging. For example, the Arizona State University Center for the Study of Law, Science, and Technology, together with the National Science Foundation and the Society for Evolutionary Analysis in Law, sponsored an interdisciplinary *Colloquium on Biology and Sexual Aggression: Investigating Theories, Data, and Implications for Law*. The Colloquium brought together academics in law, biology, primatology, sociology, anthropology, psychology, and several other disciplines. For published papers, see *supra* note 13.

46. See, for example, sources cited *supra* notes 3 & 30.

relevant scientific communities, and without which these theories might appear simply incomprehensible.<sup>47</sup> We look first to the relationship between brain biology and behavior (which subjects some behaviors to evolutionary processes), then to the principles of natural and sexual selection (processes that strongly affect the distribution, within a population, of behavioral predispositions), and thereafter to the evolution of “species-typical” or “evolved” psychologies, which biologists tell us are widely shared within each living animal species, including humans.

### 1. *From Brains to Behavior*

At the most general level, the architecture and function of the brain is as much a product of evolution as the architecture and function of the hand, heart, or stomach. The brain is an organ adapted to performing certain kinds of tasks, and certain kinds of tasks better than others. Like all aspects of animal morphology, it is best at performing those tasks that contributed to solving problems faced by evolutionary ancestors in various ancestral environments (commonly termed, for each adaptation, the Environment of Evolutionary Adaptation, or “EEA”).<sup>48</sup> It solved these problems in part by causing different states of the nervous system (which, like hunger, increase the probability of certain kinds of behaviors) to follow from perception of different environmental stimuli (which, like locating a high-calorie food, render some of the many possible responsive behaviors more appropriate than others). To the extent that ensuing populations of a species encountered similar environmental challenges, over generations, increasing proportions of the population in each generation tended to share the best

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47. A more thorough treatment of this subject is beyond the scope of this Article, of course, and anything more than an introductory familiarity with behavioral biology principles requires separate study. A more comprehensive introduction to law-relevant principles of behavioral biology, written specifically for legal thinkers without biology backgrounds, appears in *Part I: A Primer in Law-Relevant Evolutionary Biology*, of Jones, *Evolutionary Analysis in Law*, *supra* note 11, at 1127-57, on which some portions of the ensuing material draw. See also Goldsmith & Jones, *supra* note 13. More thorough treatments of modern behavioral biology for the general audience include: 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); ROBERT WRIGHT, *THE MORAL ANIMAL: EVOLUTIONARY PSYCHOLOGY AND EVERYDAY LIFE* 55-107 (1994). Accessible textbooks, for gaining more technical familiarity, include: JOHN ALCOCK, *ANIMAL BEHAVIOR: AN EVOLUTIONARY APPROACH* (6th ed. 1998); 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* (forthcoming 1999); J.R. KREBS & N.B. DAVIES, *AN INTRODUCTION TO BEHAVIOURAL ECOLOGY* (3d ed. 1993); MARK RIDLEY, *EVOLUTION* (1993); ROBERT TRIVERS, *SOCIAL EVOLUTION* (1985).

48. “The mind is a system of organs of computation, designed by natural selection to solve the kinds of problems our ancestors faced in their foraging way of life, in particular understanding and outmaneuvering objects, animals, plants, and other people.” STEVEN PINKER, *HOW THE MIND WORKS* 21 (1997).

available problem-solving, behavior-biasing brain characteristics inherited from successful ancestors.

It is difficult to see how evolutionary processes shaped the human brain, increment by increment, without first appreciating evolutionary time.<sup>49</sup> The human species, like every other living species, is the product of roughly 3.9 billion years of evolution. Our ancestors had evolved into mammals only 200 million years ago, and into what we think of as primates only 70 million years ago.<sup>50</sup> Roughly 6 million years ago (following 64 million years of shared primate history) our earliest hominid ancestors parted biological ways with the direct ancestors of today's chimpanzees and bonobos, our closest primate relatives. And yet it was still not until merely 35,000 years ago that our own subspecies of *Homo sapiens* (which we imagine when we think of ourselves) had apparently displaced our competing subspecies, *Homo sapiens neanderthalensis*, causing the latter's extinction.<sup>51</sup>

During all this time the precursors to our current human brains continued to evolve. To the extent variation in brain structures affected behavior, behavioral outcomes affected changes in brain form and function across generations. More specifically, to the extent that patterns of information processing led to general psychologies that tended, in turn, to increase the probability of useful behaviors, and to decrease the probability of reproductively unhelpful or harmful behaviors, heritable patterns in the way human brains process information evolved. During all of evolutionary time leading to the present, the behavioral predispositions of our ancestors were sifted according to specific and relentless principles, the details of which provide a window to the modern human mind.

To see this, remember that every organism alive today is descended from first life on this planet in an unbroken chain of "reproductively successful" parents.<sup>52</sup> That is, none of our individual ancestors, unlike

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49. See generally RICHARD DAWKINS, CLIMBING MOUNT IMPROBABLE (1996) (addressing often counter-intuitive processes by which complexity can emerge by increments).

50. See RICHARD COWEN, HISTORY OF LIFE 33, 284, 390 (2d ed. 1995).

51. See *id.* at 419-21; see also IAN TATTERSALL, THE FOSSIL TRAIL: HOW WE KNOW WHAT WE THINK WE KNOW ABOUT HUMAN EVOLUTION 229-46 (1995); IAN TATTERSALL, THE LAST NEANDERTHAL: THE RISE, SUCCESS, AND MYSTERIOUS EXTINCTION OF OUR CLOSEST RELATIVES 174-99 (1995).

52. The term "reproductive success" has very specific meanings. It is often used in the narrow sense of "direct fitness" (which includes genes replicated only in direct descendants) and is often distinguished from "indirect fitness" (which includes the genes replicated indirectly by increasing the reproduction of non-descendent kin). See ALCOCK, *supra* note 47, at 566-69, G2, G5; see also *infra* note 53 (discussing "inclusive fitness"). To avoid confusion, reproductive success is used here in the broader sense also common in ethological literature. See, e.g., Paul Turke & L.L. Betzig, *Those Who Can Do: Wealth, Status, and Reproductive Success on Ifaluk*, 6 ETHOLOGY & SOCIOBIOLOGY 79, 79 (1985) ("Modern Darwinian theory predicts that human behavior will be adaptive, that is, designed to promote maximum reproductive success (RS) through available *descendent and nondescendent relatives.*") (emphasis added).

many of their contemporaries, died without offspring that themselves had offspring. The heritable physical and behavioral characteristics of individuals that are reproductively successful are simply far more likely to appear in any later generation than are heritable characteristics of the myriad individuals that were not reproductively successful. Consequently, heritable traits that persist within species for any substantial length of evolutionary time, including traits within brain function that affect the probability of different behaviors, generally can be understood in relation to their average effects on the reproductive success of organisms that bear them.<sup>53</sup>

## 2. *Natural Selection*

Because unchecked reproduction tends to yield geometric increases in a species' population size at the same time that exploitable resources of the world are ultimately finite, evolutionary processes are inherently competitive.<sup>54</sup> The *de facto* competition for genetic representation in each successive generation is powerfully influenced by the process known as natural selection.<sup>55</sup> Natural selection effectively punishes characteristics that do not contribute to their own replication at least as well as do other contemporaneously existing characteristics, by diminishing their proportional representation in future populations.

The essential key to understanding the effects of natural selection's incessant sifting of physical and behavioral characteristics, over long

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53. We know for certain that every creature, at every moment, is the product of ancestors traceable back in time, generation by generation. Yet not every creature will itself become an ancestor. Only the heritable physical and behavioral characteristics of ancestors stand a chance of being replicated into successive generations and of traveling down through time to that slice of time we happen to be studying. See generally RICHARD DAWKINS, *RIVER OUT OF EDEN: A DARWINIAN VIEW OF LIFE* 1-29 (1995) (highlighting evolutionary significance of ancestors with metaphor comparing genetically influenced traits to a digital river, flowing through time).

Reproductive success is not measured in offspring alone, however, for offspring are not the only genetic relatives an individual has. Since other relatives also share genes with an individual, *their* reproductive success *also* contributes to the individual's reproductive success, and one needs to take account of the extent to which an individual has increased the reproductive success of its relatives (discounted by their degree of relatedness). This cumulated, additive calculation of reproductive success is known as "inclusive fitness." See ALCOCK, *supra* note 47, at 561-69. Consequently, an organism can be reproductively successful by increasing its inclusive fitness, even if it does not itself have offspring.

54. As economist Jack Hirshleifer has observed, Darwin's ideas are consistent with universal economic laws: The patterns of social organization "are the product of scarcity of resources, of the limited availabilities of materials and energy in the face of the unlimited expansive tendency of life." J. Hirshleifer, *Natural Economy Versus Political Economy*, 1 *J. SOC. & BIOLOGICAL STRUCTURES* 319, 337 (1978).

55. Technically, natural selection is one of four factors influencing gene frequencies. See GOLDSMITH, *supra* note 47, at 29-31. The other three are: (1) mutation, involving replication errors in genetic codes; (2) gene flow, referring to migration of genes between populations due to the movement of organisms carrying them; and (3) random drift, which describes effects of chance events, such as accident or disease, on reproductive success. Of these four, natural selection has by far the most powerful influence. See *id.*

periods of time, lies in recognizing the inevitable result of combining three fundamental features of life on our planet:

(1) *Heredity*—Genetically influenced physical and behavioral traits sometimes pass from parent to offspring (in which case they are called “heritable”).<sup>56</sup>

(2) *Variation*—Individuals of a species may differ in their physical and behavioral traits.<sup>57</sup>

(3) *Differential Reproduction*—Some inherited traits will enable some individuals possessing them to leave more offspring and reproductive relatives than other individuals.<sup>58</sup>

Organisms that are not genetically identical often will differ in their physical and behavioral traits (resulting in within-species “variation”). Each genetically influenced (and thus “heritable”) trait will prove “adaptive” (that is, advantageous), “maladaptive” (that is, disadvantageous), or “neutral” with respect to its effect on the reproductive success of the organism bearing it.<sup>59</sup> When a heritable trait is adaptive, and increases an individual’s reproductive success relative to the reproductive success of the individual’s contemporaries (resulting in “differential reproduction”), then that trait will correspondingly increase in prevalence in successive generations of a population, reflecting the awesome power of exponential growth.<sup>60</sup> For example, even a heritable trait providing its possessor with a mere 1% reproductive advantage over its contemporaries will swell (all else being equal) from 1% representation in a population to 99% in a mere

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56. See ALCOCK, *supra* note 47, at 14-16.

57. See *id.* Variations are the things that prevent us from calling parent and offspring “identical.” Variations relevant to the discussion at this point are those that are genetically heritable. These are ultimately caused by mutation, and later augmented (in many species) by recombination. See GOLDSMITH, *supra* note 47, at 29-30.

58. See ALCOCK, *supra* note 47, at 14-16.

59. In other words, the trait might (1) promote reproductive success (as through improved detection of predators); (2) impede reproductive success (as through an urge to run toward, rather than away from, a predator); or (3) have no effect whatsoever on reproductive success (as through introduction of genes that never activate, and therefore have no significance for the organism bearing them). In reality, very few variations are adaptive as there are more ways to worsen something than to improve it. However, because even infrequently occurring adaptive variations tend, on average, to supplant less adaptive alternatives over successive generations, physical structures and behavioral tendencies that most efficiently contribute to individual reproductive success become increasingly prominent. By this process, “behavioral tendencies which are optimal for maximizing an individual’s reproduction become characteristic of the population.” Martin Daly & Margo Wilson, *Discriminative Parental Solicitude: A Biological Perspective*, 42 J. MARRIAGE & FAM. 277, 278 (1980).

60. As Martin Daly and Margo Wilson explain, “Random variation is ceaselessly generated in populations of reproducing organisms and is then winnowed by nonrandom differential survival and reproduction, with the result that the more successful forms proliferate while their alternatives perish, and adaptive complexity is cumulative over generations.” Martin Daly & Margo Wilson, *Evolutionary Psychology and Marital Conflict: The Relevance of Stepchildren*, in BUSS & MALAMUTH, *supra* note 30, at 9, 10.

265 generations.<sup>61</sup> Conversely, when a heritable trait is maladaptive, and decreases the reproductive success of the organism bearing it relative to the reproductive success of the organism's contemporaries, then that trait, on average, will decrease in prevalence in successive generations. This phenomenon, which the term "natural selection" captures, therefore can be understood as one of the principal processes governing the relative proportions of the various physical and behavioral traits that are observable in any particular generation of a species.<sup>62</sup> Although rapid changes in environmental conditions can render historically adaptive traits maladaptive, species-typical traits will tend to reflect long-prevailing environmental conditions in that species' ancestry.

For present purposes it is important to underscore that natural selection affects species-typical *behavioral* characteristics, as well as *physical* ones, because behavior has material causes that lie in the structural properties of the physical brain.<sup>63</sup> Every behavior has consequences, and natural selection therefore operates inexorably upon those genetically influenced behaviors that serve to differentiate individual organisms in ways that affect reproductive success.<sup>64</sup> The significance of this, for the evaluation of the biobehavioral theories of sexual aggression in the next Section, is that evolutionary processes inevitably create species-typical, or in some cases sex-typical or age-typical, "evolved psychologies." These are physical, widely shared, information-processing pathways that have probabilistic effects on behavior, or effects that tend to yield some behaviors (in given circumstances) more than others.<sup>65</sup>

61. See TRIVERS, *supra* note 47, at 28-29; see also PINKER, *supra* note 48, at 164 ("If a mutant produces just 1 percent more offspring than its rivals, it can increase its representation in a population from 0.1 percent to 99.9 percent in just over four thousand generations.").

62. See Jones, *Evolutionary Analysis in Law*, *supra* note 11, at 1137-39, for a useful exercise that helps to clarify this concept.

63. See ALCOCK, *supra* note 47, at 57-88; MICHAEL S. GAZZANIGA, *NATURE'S MIND: THE BIOLOGICAL ROOTS OF THINKING, EMOTIONS, SEXUALITY, LANGUAGE, AND INTELLIGENCE* (1992); *QUANTITATIVE GENETIC STUDIES OF BEHAVIORAL EVOLUTION* (Christine R.B. Boake ed., 1994); TRIVERS, *supra* note 47; Ralph J. Greenspan, *Understanding the Genetic Construction of Behavior*, *SCI. AM.*, Apr. 1995, at 72, 72-78; *A Special Report: Genes and Behavior*, 264 *SCI.* 1686, 1686-1739 (1994) (collection of articles).

64. See ROBERT A. HINDE, *ETHOLOGY* 102 (1982).

65. Randy and Nancy Thornhill describe it this way:

Psychological adaptations are information-processing mechanisms that provided solutions to information-processing problems that influenced reproductive fitness during human evolution. As a result of selection during long-term human evolution, human psychological adaptations are specially engineered for processing nonarbitrary environmental information and thereby guiding behavior toward adaptive ends.

Randy Thornhill & Nancy Wilmsen Thornhill, *Coercive Sexuality of Men: Is There a Psychological Adaptation to Rape?*, in *SEXUAL COERCION*, *supra* note 7, at 91, 93.

These pathways can be extremely context-sensitive. As Tim Goldsmith describes the "Garcia Effect," rats made ill by x-ray doses delivered after eating will associate their delayed distress with the taste but not with the shape or color of the food. Conversely, if given a shock while eating, rats remember visual or auditory cues, but not taste cues. As a function of natural selection, eating-related

Nonetheless, heritable and ultimately species-typical psychologies should not be considered genetically “determined.” Because circumstances vary significantly, an ability to shift among a variety of potential behaviors in response to endlessly shifting environmental conditions is *itself* adaptive.<sup>66</sup> For example, genetically influenced behavioral algorithms rendering an organism’s aggressiveness particularly sensitive to the relative value of the territory it defends (say in food quality and abundance), and to the relative size of any challenger for that territory, tend to increase in frequency over successive generations compared to similar algorithms that cause fleeing or fighting behavior insensitive to the value of guarded territory. Many creatures therefore exhibit relatively simple condition-sensitive or “conditional” strategies that are continuously honed by natural selection.<sup>67</sup> Additionally, in species that have evolved advanced cognitive capacities, behavioral plasticity is further increased by an ability to analyze a very large number of variables, to assess probable outcomes as a consequence of given behaviors, and to choose among them. Our own species is clearly the best example of precisely how adaptive evolved behavioral flexibility can be. It is important to recognize that the existence of such flexibility not only fails to eclipse the influence of condition-dependent predispositions, but is in fact a manifestation and extension of the same evolutionary forces that gave rise to them.

Natural selection, then, is a nondirected yet nonrandom process of differential reproduction. Natural selection leads to evolution when there is genetic variation. Evolution by natural selection tends to make members of existing species look as if they were designed, both physically and behaviorally, to survive and reproduce in the ecological niche in which they have long existed.<sup>68</sup> To understand the “units” of selection on which natural selection operates, it is important to recognize that typically only those traits that at a minimum help *individuals* to improve their reproductive success can proliferate. Heritable traits that might help the group or species to survive, *at the expense of individual gains to reproductive success*, would

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cues are far more readily associated with subsequent internal distress than auditory or visual cues. See GOLDSMITH, *supra* note 47, at 97-98.

66. A species’ increasing behavioral plasticity inevitably carries its own costs, however, in terms of increased brain size (required by increased computational power), delayed reaction time, and the like.

67. See, e.g., ALCOCK, *supra* note 47, at 404-06, 411-20, 446-47, 622-24. Game theory helps to illuminate the content of these strategies. See, e.g., GAME THEORY AND ANIMAL BEHAVIOUR (Lee Alan Dugatkin & Hudson Kern Reeve eds., 1998).

68. Richard Dawkins calls evolution by natural selection the “blind watchmaker,” as an implicit refutation of the creationist argument that such design implies a conscious designer, in the same way that a watch supposedly implies a watchmaker. See DAWKINS, *supra* note 49, at 4-5. Though its influence surrounds us, we know natural selection only by silhouette, as it incessantly eliminates traits carried by organisms that reproduce less successfully than their contemporaries.

generally diminish toward disappearance.<sup>69</sup> This means that under most circumstances natural selection operates primarily at the level of the individual or gene and not at the level of the group.<sup>70</sup> In other words, it is unlikely that traits will arise and persist in individuals if they benefit the group at the *expense* of an individual's own reproductive success.<sup>71</sup>

### 3. Sexual Selection

Natural selection's relentless sweeping away of individuals with relatively low reproductive success inevitably exposes, like rocks at low tide, a variety of more successful "reproductive strategies" for generating relatives.<sup>72</sup> These are simply the different successful combinations of physiological and behavioral pathways to becoming an ancestor that natural selection has not swept from existence. These include, for example, not only a wide variety of strategies exhibiting different amounts of offspring produced and parental effort invested, but also, importantly, the evolved phenomenon of sexual reproduction itself.<sup>73</sup> For species that reproduce sexually, the process by which evolutionary pressures tend to yield anatomical and behavioral differences between male and female is termed "sexual selection."<sup>74</sup>

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69. Think, for example, of a heritable trait in deer predisposing its possessors to raise, during times of overpopulation, far fewer offspring than they are physically capable of raising, or of a heritable trait in trees predisposing its possessors to grow less tall—on the chance that all members of the species would benefit by collecting the same amount of sunlight as they do now if they halted their competitive, intraspecies height race. Such traits would be at an extreme disadvantage relative, respectively, to a trait prompting unrestrained reproductive effort, or unrestricted competition for more sunlight.

70. See RICHARD DAWKINS, *THE SELFISH GENE* (1976); FUTUYMA, *supra* note 47, at 114-31; HINDE, *supra* note 64, at 142-53; TRIVERS, *supra* note 47, at 67-85. See also GEORGE C. WILLIAMS, *ADAPTATION AND NATURAL SELECTION: A CRITIQUE OF SOME CURRENT EVOLUTIONARY THOUGHT* (1966), which is considered to have eviscerated "naive" group selectionism as espoused by V. C. Wynne-Edwards in *ANIMAL DISPERSION IN RELATION TO SOCIAL BEHAVIOUR* (1962). But see ELLIOTT SOBER & DAVID SLOAN WILSON, *UNTO OTHERS: THE EVOLUTION AND PSYCHOLOGY OF UNSELFISH BEHAVIOR* (1998), and David Sloan Wilson & Elliott Sober, *Reintroducing Group Selection to the Human Behavioral Sciences*, 17 *BEHAV. & BRAIN SCI.* 585 (1994), which argue for limited reintroduction of group selectionism.

71. The questions this raises with respect to the evolution of cooperation and altruism are addressed briefly in Jones, *Evolutionary Analysis in Law*, *supra* note 11, at 1146-51, and sources there cited.

72. "Reproductive strategies" is plural here because, while natural selection favors physical structures and behavioral predispositions that together function successfully to transfer genes to subsequent generations, there are many different successful combinations. These vary according to the number of offspring one produces, the extent to which each offspring is cared for after birth, whether reproduction is asexual or sexual, and so forth. See generally sources cited *supra* note 47.

73. See generally Jones, *Evolutionary Analysis in Law*, *supra* note 11, at 1142-44.

74. Darwin first described sexual selection in Chapter IV of *On the Origin of Species by Means of Natural Selection* (1859), and later elaborated on the concept at length in *The Descent of Man and Selection in Relation to Sex* (1871). For modern elaboration, see GOLDSMITH, *supra* note 47, at 43-45, 49-67; JAMES L. GOULD & CAROL GRANT GOULD, *SEXUAL SELECTION* (1989); ANDERS PAPE MØLLER, *SEXUAL SELECTION AND THE BARN SWALLOW* 1-17 (1994); MATT RIDLEY, *supra* note 47, at 131-69;

Sexual selection is one of the most critical and empirically robust principles in all of biology, and it is impossible to grasp the logical structure of the biological theories of sexual aggression without understanding it. The phenomenon of sexual selection arises from the simple facts that sexual reproduction requires mating, and mating requires mates. The competition to attract mates and to exclude rivals necessarily imposes evolutionary pressures. These pressures often bring individuals within a species into direct conflict, and often expose areas of conflict even between individuals, such as mated males and females, that have clearly overlapping interests.

We can explore this phenomenon by example. In any species that has evolved to reproduce sexually, to fertilize internally, and to produce live young, one sex typically must invest more in the creation of a viable offspring than must the other sex. Make no mistake, it is possible (and often preferable from the standpoint of both male and female) for each of the two parents to invest heavily. But the critical aspect here is that there is a concrete difference between the sexes in the *minimum* investment necessary to an offspring's birth.

In addition to mating time and energy, for example, the minimum (sometimes sole) male investment is typically sperm itself. On the other hand, if copulation yields conception, the female must continue to invest in the organism growing within her, frequently for long periods.<sup>75</sup> And, in many species, vulnerable young offspring cannot survive without some significant postbirth maternal investment, such as nursing. Following conception in such a species, the male investment, although useful, is neither necessary nor alone sufficient for birth and adequate infant care.

This stark disparity in minimum investment between males and females in such a species produces a corresponding disparity in potential cost-benefit payoffs for every act of copulation. From a single act of copulation, and no more, a male might gain an offspring that carries his genes into future generations. And he is immediately capable of conceiving another, with another female. For the female, in contrast, a single act of copulation might also yield an offspring, but only after it is grown within her, and later nourished (with or without paternal investment). The minimum necessary investment per offspring by females is vast compared to

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TRIVERS, *supra* note 47, at 203-70; Douglas T. Kenrick & Melanie Trost, *The Evolutionary Perspective*, in *THE PSYCHOLOGY OF GENDER* (Anne E. Beall & Robert J. Sternberg eds., 1993); Robert L. Trivers, *Parental Investment and Sexual Selection*, in *SEXUAL SELECTION AND THE DESCENT OF MAN* 136 (B. Campbell ed., 1972). Sexual selection is commonly considered to be a sub-aspect of natural selection, rather than something entirely different. *See, e.g.*, HELENA CRONIN, *THE ANT AND THE PEACOCK: ALTRUISM AND SEXUAL SELECTION FROM DARWIN TO TODAY* 234 (1991).

75. The modern availability of abortion in the human context has no bearing on this point, since only in recent human evolutionary history have females become technologically capable of safely aborting a fetus.

that by males. Internally gestating females are thus bound by the limits of their own bodies. The theoretical maximum number of children a female human could mother, for example, even assuming that each pregnancy brought multiple births, likely hovers near one hundred, with a practical limit probably in the vicinity of thirty. The maximum number of young a male could father, on the other hand, is limited only by the number of females he can inseminate. The theoretical maximum number of children a male human could father might number in the thousands.

In all species reflecting this disparity in reproductive maxima, the variation in lifetime reproductive success among males is far greater than that among females. Indeed in many mammalian species, such as sea lions, an average male may die without offspring, while the same is virtually never true of the average female. Natural selection therefore inevitably favors behavioral differences between males and females in some reproductive arenas.<sup>76</sup> Because maximum male reproductive success is most limited by access to fertile females (rather than production of sperm), while maximum female reproductive success is most limited by less frequent, lengthier, and more energetically costly reproductive episodes (rather than by sexual access to willing males), two critical features of sexual selection typically emerge: (1) greater male-male than female-female competition for mates; and (2) greater female than male choice, on average over a population, regarding who one's mate will be.<sup>77</sup>

#### 4. *The Evolution of Species-Typical Human Behavior*

Thus far, it should be clear that persistent patterns in physical and behavioral traits of living things vary as a function of reproductive success.<sup>78</sup> Reproductive success is then, in turn, mediated by the force of natural selection, the pressure of which yields reproductive strategies. Some of these

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76. See generally ALCOCK, *supra* note 47; FUTUYMA, *supra* note 47; GOLDSMITH, *supra* note 47; GOLDSMITH & ZIMMERMAN, *supra* note 47; KREBS & DAVIES, *supra* note 47; MARK RIDLEY, *supra* note 47; TRIVERS, *supra* note 47; Daly & Wilson, *Discriminative Parental Solicitude*, *supra* note 59; Bobbi S. Low, *Human Sex Differences in Behavioral Ecological Perspective*, 16 ANALYSE & KRITIK 38 (1994); Felicia Pratto, *Sexual Politics: The Gender Gap in the Bedroom, the Cupboard, and the Cabinet*, in BUSS & MALAMUTH, *supra* note 30, at 179, 202-03. For additional explanations, see MATT RIDLEY, *supra* note 47; WRIGHT, *supra* note 47; Kingsley R. Browne, *Sex and Temperament in Modern Society: A Darwinian View of the Glass Ceiling and the Gender Gap*, 37 ARIZ. L. REV. 971, 985-1016 (1995).

77. See MØLLER, *supra* note 74, at 3. Exceptions prove the rule. In seahorses, for example, in which female seahorses inject eggs into the male's body where they develop, the females are the more active sex in courtship. See MATT RIDLEY, *supra* note 47, at 180-81. Also, predictably larger and more brightly colored female phalaropes, such as sea snipes, display and fight for males, who, in these bird species, provide the larger share of egg-tending. See ALCOCK, *supra* note 47, at 499-500; TRIVERS, *supra* note 47, at 215-19; WRIGHT, *supra* note 47, at 48. The principle remains the same: the sex that can invest less in offspring competes for access to members of the sex that must invest more.

78. Recall that "reproductive success" is measured not in offspring, but in copies of genes appearing in relatives. See *supra* notes 52-53.

strategies are sexual, resulting in sexual selection, and all involve delicate trade-offs regarding the amount and kind of parental investment. The important point is that these trade-offs introduce into the evolutionary game varying degrees of intraspecies conflict and cooperation, the varieties and combinations of which describe much of the vast diversity of animal behavior. But how do these concepts affect humans?

To a biologist, all the foregoing is of great significance to the understanding of human behavior.<sup>79</sup> The general, evolutionary processes ordering the existence and persistence of heritable traits, and the increasing or decreasing prominence of these traits among successive populations, are not materially controversial topics within the scientific community. Because all available evidence indicates that these various evolutionary processes have affected all species that ever lived, and because *Homo sapiens sapiens* is descended from pre-existing species, it is at least clear that these evolutionary processes affected the physical form and behavior of human ancestors at some time.<sup>80</sup> The logic of parsimony mandates a rebuttable presumption that they still do, even if to a lesser degree.

For legal thinkers, who are charged in part with designing legal mechanisms to effect specific changes in human behavior, the evolution of distinctly human psychology and behavior means several things. First and foremost, it means that it is pointless to conceptualize any law-relevant behavior as the product of nature *or* of nurture. Asking whether a particular behavior is the product of nature (genetic influences) *or* of nurture (environmental influences) is like asking whether the area of a field is determined by its length *or* by its width.<sup>81</sup> It is necessarily a product of both. Neither nature nor nurture has any meaning, for any organism, except in concert with the other. Similarly, behavior, including human behavior, not only can have but always does have simultaneous proximate (immediate) *and* ultimate (evolutionary) causes.<sup>82</sup>

Second, understanding the evolutionary processes affecting human behaviors clarifies that combinations of genes may "predispose" without rigidly "determining." This has consequences for law because we tend to divide people into those "responsible" for their behaviors and those who are not, as if responsibility is dichotomous, rather than continuous, in the

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79. For further background, see sources cited *supra* note 47.

80. See Jones, *Evolutionary Analysis in Law*, *supra* note 11, at 1152-55.

81. For cogent attacks on the meaninglessness of the nature versus nurture dichotomy, see MATT RIDLEY, *supra* note 47, at 175, 316-20; and Paul R. Abramson & Steven D. Pinkerton, *Introduction: Nature, Nurture, and In-Between*, in *SEXUAL NATURE, SEXUAL CULTURE* (Paul R. Abramson & Steven D. Pinkerton eds., 1995).

82. "Proximate" and "ultimate" are terms of art in biology. For more on their importance, see *infra* text accompanying notes 162-170. On proximate and ultimate causation generally, see ALCOCK, *supra* note 47, at 2-6; GOLDSMITH, *supra* note 47, at 3-11, 46-69; John Alcock & Paul Sherman, *The Utility of the Proximate-Ultimate Dichotomy in Ethology*, 96 *ETHOLOGY* 58 (1994); Low, *supra* note 76, at 40-42.

presence of biological influences. It is precisely because evolutionary processes favored behavioral plasticity that (with the exception of reflexes and the like) genes do not generally determine our behavior as if we were "hard-wired" to respond inevitably to a certain stimulus with a single, corresponding act. The species-typical analytic abilities of our human brains evolved as surely as did the cranial capacity of the skull that shields them. Gene combinations can provide behavioral *propensities* that simply affect the *probability* that an organism bearing them will behave in some way. Stated differently, evolutionary processes leave all organisms with many predispositions to respond to environmental stimuli in various fashions—but how strongly the predispositions affect behavior can vary widely among species, individuals, and circumstances.<sup>83</sup>

Third, some behavioral predispositions, including some human ones, are inherited according to definite rules. Because resources are finite at the same time that populations can grow exponentially, the relative proportions within a population of alternative heritable predispositions are inevitably governed by a process of natural selection. That process tends to favor over time those among contemporaneously existing predispositions that more efficiently translate resources into reproduction. That is, when different heritable predispositions unequally influence the reproductive success of the organisms bearing them (including the reproduction of genetic relatives), those predispositions tending to increase it by the greatest amount will tend to appear in increasing proportions of successive populations. Over many generations, alternative predispositions will tend to dwindle and disappear. We can use this knowledge in making law because it helps us understand the patterned relationships between behaviors that we use the law to change and environmental conditions that law sometimes can control.

Fourth, the economic nature of such competition tends to yield heritable predispositions toward condition-dependent patterns of cooperation and conflict (as well as, incidentally, toward condition-dependent deception, self-deception, and counter-deception). At any given time, most organisms within a species will share certain evolved psychological mechanisms, with predictable variations as a function of such things as age and sex, that will predispose them toward behaviors that were, on average, adaptive for similarly situated organisms during the environment of evolutionary adaptation.

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83. Moreover, the influence of genes on behavior, though often manifest, is rarely quantifiable with precision, like force, mass, or energy. Because there is no single gene "for" any complex human behavior, even the presence of genes that increase the likelihood of a behavior never guarantees that it will or will not occur. There is no more a single gene for "altruism," for example, than there is for a hand or face.

Consequently, understanding the evolutionary processes by which species-typical patterns of information processing came to be as they are today is relevant to the legal system. This relevance turns on the extent to which modern environmental circumstances affect brain operation in ways that tend to increase or decrease the probability of law-relevant behaviors in generally predictable ways. Of course, this contextualized and systemic understanding of human behavior affords law little predictive power about the behavior of a single, identified human individual. (In like fashion, even useful meteorology affords little predictive power about the movement of a single cloud.)<sup>84</sup> Instead, an understanding of evolved, species-typical human psychology affords very powerful predictions about the patterns that will tend to emerge from the aggregated behaviors of individuals of our species, numbered in the many millions. And, in turn, such an understanding can facilitate social and legal changes to a population's environment in ways intended to effect changes in the incidence of those behaviors.

### C. *Biobehavioral Theories of Rape*

This review of the history of rape theories and the basic principles of behavioral biology leads us to the matter at hand, the biobehavioral theories of rape. Alert readers will question whether the word "rape," with its many nuanced manifestations and meanings, can and should be used in nonhuman contexts. This is a good question. In the end, I have elected to use "rape" for reasons best explored in the footnote below.<sup>85</sup> Generally, I

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84. I am grateful to David Faigman for this metaphor. See David L. Faigman, *To Have and Have Not: Assessing the Value of Social Science to the Law as Science and Policy*, 38 EMORY L.J. 1005, 1047 (1989) ("[M]eteorology is [another] example of the value of even uncertain predictions.").

85. Scholars have debated this issue at length. For an overview, see Craig T. Palmer, *Rape in Nonhuman Animal Species: Definitions, Evidence, and Implications*, 26 J. SEX RESEARCH 355 (1989). For the view that "rape" should only be used in reference to humans, see, for example, PHILIP KITCHER, *VAULTING AMBITION: SOCIOBIOLOGY AND THE QUEST FOR HUMAN NATURE* 184-89 (1985); Larry Baron, *Does Rape Contribute to Reproductive Success? Evaluation of Sociobiological Views of Rape*, 8 INT'L J. WOMEN'S STUD. 266 (1985); Blackman, *supra* note 45, at 115; Daniel Q. Estep and 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 BIOSCI. 641 (1982); Ruth Hubbard, *The Political Nature of "Human Nature"*, in *THEORETICAL PERSPECTIVES ON SEXUAL DIFFERENCE* 63, 67 (Deborah L. Rhode ed., 1990); and sources cited in THORNHILL & PALMER, *supra* note 14, at ch. 1. For the view that "rape" can refer to forced copulation in both humans and other animals, see, for example, Charles Crawford & Birutė M.F. Galdikas, *Rape in Non-Human Animals: An Evolutionary Perspective*, 27 CAN. PSYCHOL. 215 (1986).

"Forced copulation" and "sexual coercion" are among the suggested alternatives, and neither they nor "rape" have found universal acceptance. I take no independent position in this debate. I use "rape," however, for four reasons. First, it is shorter and less unwieldy than "forced copulation," and more specific than "sexual coercion." Second, lawyers are accustomed to seeing words defined to mean precisely what the drafter wants them to mean, and little more, in different contexts. So I trust that if I define my term adequately, its meaning can be limited and understood. Although I need some word to refer to the behavior itself, I do not intend to diminish the obviously unique meaning and political significance that rape has in the human context. Third, while I recognize (as all do) the sin of anthropomorphizing nonhuman behavior, I am persuaded that the inverse—what Frans de Waal terms

shall use the word "rape" to refer only to male behavior that forces an unwilling female to engage in copulation.

Randy Thornhill, the leading rape researcher in biology, has explained that there are conceivably four very different kinds of biological theories about how evolutionary processes might influence rape.<sup>86</sup> Because he and other biologists consider three of these four highly unlikely, I do not explore those at any length here.<sup>87</sup> The fourth of the four general kinds discussed below reflects the logic of natural and sexual selection introduced in the prior Section, particularly the effects of between-sex variance in copulation costs and benefits, and is itself susceptible of two alternative forms. Specifically, selection for rape-influencing psychological characteristics could theoretically arise: (1) by direct selection (the so-called "adaptation" hypothesis); and (2) by indirect selection (the so-called "by-product" or "incidental effect" hypothesis).<sup>88</sup> We consider these in sequence, and postpone brief evaluation of them to Part II.

### 1. *The Adaptation Hypothesis*

Theoretically, a psychological, information-processing predisposition toward contingent (context-specific) rape behavior could spread by natural selection if it were adaptive. That is, it could spread *if*, across all males bearing the predisposition, it had a net positive effect on the average male reproductive success in the environment of evolutionary adaptation.<sup>89</sup> The reasons for this trace to natural and sexual selection. 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. Selective females make better use of a limited number of lifetime reproductive episodes. Because males, but not females, can increase reproductive success by increasing the number of partners with whom they copulate, natural selection has generally

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"anthropodenial" (the overzealous rejection of likely commonalities in behavioral processes between humans and other animals)—is an equally insidious danger, equally likely to flaw analysis. See Frans de Waal, *Are We in Anthropodenial?*, DISCOVER, July 1997, at 50. Fourth and finally, I consider it persuasive that noted evolutionary biologist and feminist Sarah Blaffer Hrdy also uses the term "rape" in both human and nonhuman contexts. See SARAH BLAFFER HRDY, *THE WOMAN THAT NEVER EVOLVED* 18 (1981) (referring to orangutan rape). For a brief description of the criteria by which a female's unwillingness to mate may be inferred, see *infra* text accompanying note 103.

86. See Randy Thornhill, *The Biology of Human Rape*, 39 JURIMETRICS J. 137 (1999).

87. These three involve mutation-selection balance, evolutionarily novel environments, and genetic drift. They are each summarized *infra* Appendix B.

88. Useful discussion of the distinctions between adaptations and by-products of other adaptations appears in THORNHILL & PALMER, *supra* note 14, at ch. 1. Useful discussion of the same in the context of the evolutionary theories of rape appears in Craig T. Palmer, *Human Rape: Adaptation or By-Product*, 28 J. SEX RES. 365 (1991).

89. See each of the Thornhill citations appearing *infra* Appendix A.

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 different male and female psychologies, on average, concerning *willingness* to copulate indiscriminately (particularly with strangers).<sup>90</sup> To biologists, this is not just speculation. It is extremely unlikely that the cumulated economic effects of natural and sexual selection, across at least 600 million years of sexual reproduction in our ancestry, could have generated male-typical and female-typical psychologies that happen to be identical in all respects.<sup>91</sup>

We can therefore expect that unmated males and females in ancestral environments came into conflict when, for example, a male wanted to copulate with a female who did not want to copulate with him. In such a circumstance, a forced copulation could in effect increase male mate number, potentially increasing male reproductive success. But this gain would have come *at the cost to the female* of female mate-choice, potentially decreasing 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.<sup>92</sup>

The mindless and thoroughly amoral effects of natural and sexual selection are therefore such that our here-hypothesized evolved male predisposition toward contingent rape behavior 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 in certain contexts could appear in more and more males in successive generations.<sup>93</sup> Put another way, males in ensuing generations would be increasingly likely to be

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90. The existence of differences between male and female psychologies does not, of course, suggest that either is superior or inferior. See, e.g., David M. Buss, *Sexual Conflict: Evolutionary Insights into Feminism and the "Battle of the Sexes"*, in BUSS & MALAMUTH, *supra* note 30, at 296, 305. For example, this does *not* suggest that there will be important differences between men and women "in intelligence, initiative, or administrative and political capabilities." HRDY, *supra* note 85, at 190.

91. See Buss, *supra* note 90, at 301.

92. See Thornhill, *supra* note 86, at 144. To see this, remember that reproductive success is not measured simply by how many 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 her reproductive success by themselves attracting high-quality mates and producing high-quality offspring. See *supra* notes 52-53.

93. A variant on this hypothesis suggests that rape may be an evolved male mechanism unrelated to fertilizations in the present, but facilitating control over a female to increase the chances of fertilization in the future. See RICHARD WRANGHAM & DALE PETERSON, *DEMONIC MALES: APES AND THE ORIGINS OF HUMAN VIOLENCE* 141 (1996); Barbara B. Smuts & Robert W. Smuts, *Male Aggression and Sexual Coercion of Females in Nonhuman Primates and Other Mammals*, 22 *ADVANCES STUDY BEHAV.* 1 (1993).

descended from males that had heritable psychological mechanisms prompting conditional switches among mating behaviors: court when the prospects are good, and force copulations either when the benefits are high (as when willing females are not forthcoming) or when the costs are low (as when the likelihood of injury or reprisals is very low).<sup>94</sup> Obviously, these mating behaviors, among which males would switch, would exist on a continuum, bounded by great investments in courtship at one end and varying across infinite gradations of increasing psychological and physical coerciveness toward the other end, bounded by rape.

A significant corollary to this reasoning is that because of the disparity in costs to males and females of forced copulation, *if* forced copulation were a significant risk to ancestral females across evolutionary time, natural selection would have favored a counterstrategy in females: acute psychological predispositions toward avoiding and resisting forced copulation.<sup>95</sup> In succeeding generations within any internally fertilizing

94. For yet another variation on this hypothesis, see LINDA MEALEY, *SEX DIFFERENCES: DEVELOPMENTAL AND EVOLUTIONARY STRATEGIES* (forthcoming 1999); THORNHILL & PALMER, *supra* note 14, at ch. 2; Linda Mealey, *Alternative Adaptive Models of Rape*, 15 *BEHAV. & BRAIN SCI.* 397 (1992).

95. 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." Randy Thornhill, *Rape-Victim Psychological Pain Revisited*, in *HUMAN NATURE* 239, 239 (Laura Betzig ed., 1997) [hereinafter Randy Thornhill, *Rape-Victim Psychological Pain*].

This hypothesis 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.

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, 158-59 (1990) [hereinafter Thornhill & Thornhill, *Psychological Pain I*]. See generally 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 Thornhill & Thornhill, *Psychological Pain IV*]; 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 Thornhill & Thornhill, *Psychological Pain III*]; Nancy Wilmsen Thornhill & Randy Thornhill, *An Evolutionary Analysis of Psychological Pain Following Rape: II. Effects of Stranger, Friend, and Family-Member Offenders*, 11 *ETHOLOGY & SOCIOBIOLOGY* 177 (1990); Thornhill & Thornhill, *Psychological Pain I, supra*; 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). The potential reduction in female reproductive success following rape is concisely summarized in THORNHILL & PALMER, *supra* note 14, at ch. 4.

species, an increasing proportion of females would be descended from females who happened to have psychological predispositions to avoid and resist rape. That is, to the extent that female-chosen males sired more reproductively successful offspring, on average, than did raping males, any heritable indifference to rape risk would inevitably dwindle toward disappearance, leaving future generations of females with an extremely strong, extremely specific, and sex-wide psychological distaste for rape.

## 2. *The By-Product Hypothesis*

The by-product (or “incidental effect”) hypothesis can be stated more succinctly. Whereas the adaptation hypothesis contemplates the existence of heritable psychological features specific to rape, the by-product hypothesis contemplates a process by which natural selection could affect patterns of forced copulation indirectly. Specifically, this model’s proponents argue that 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* generalized behavior that is, on average, adaptive for the organisms bearing them.<sup>96</sup> For example, if eager pursuit of possible sex partners on average increases reproductive success, and if such pursuit occasionally results in nonconsensual sex (even at some cost to the raping male) then rape behavior could be a by-product of a psychology evolved by direct selection to pursue eagerly, and persist in obtaining, possible sex partners.<sup>97</sup> It is worth noting that female psychological aversion to rape could be a rape-specific adaptation at the same time that biobehavioral contributions to rape itself are by-products of other adaptations.

## II

### BIOBEHAVIORAL PERSPECTIVES ON RAPE: PREDICTIONS AND DATA

The relevance, if any, of these theories to legal thinkers must depend on the extent to which they are robust. Scientific method requires that theories offer explanations consistent with relevant and already observed phenomena, as well as testable forecasts of patterns in data not yet observed (together, herein, the “predictions”).<sup>98</sup> One then gathers data by observation

96. See Thornhill, *supra* note 86, at 144.

97. See *id.* This hypothesis seems to have been posed first in DONALD SYMONS, *THE EVOLUTION OF HUMAN SEXUALITY* 284 (1979).

98. See KARL R. POPPER, *CONJECTURES AND REFUTATIONS: THE GROWTH OF SCIENTIFIC KNOWLEDGE* 37 (5th ed. rev. 1992) (“The criterion of the scientific status of a theory is its falsifiability, or refutability, or testability.”), *quoted with approval in* *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 593 (1993). In select contexts, the word “predictions” carries a strictly chronological meaning, referring *only* to statements about observations not yet made. I here invoke the more common meaning of *predictions*—of general statements, logically derived from the premises of the theories, about the likelihood that specified circumstances will obtain, whether or not such circumstances have been observed previously.

and also, where possible, by experimentation. Robust theories, to be accorded in some measure at least temporary status as “true,”<sup>99</sup> are those for which the data fit the predictions, and which are consistent with theories previously judged to be very robust. Where the data are judged to fit predictions of two or more theories equally well, scientific method mandates that one both generally prefer the simpler (more parsimonious) of the two theories,<sup>100</sup> and meanwhile attempt to derive even more discriminating testable predictions as to which the candidate theories differ.

The biobehavioral theories of rape articulated above generate a series of narrow, testable predictions. Those theories will be worth considering in future legal scholarship in direct proportion to the number of predictions supported by the data and the closeness of the “fit” between the predictions and the data. My purpose at present is not to compile *all* the predictions and *all* the data, as if to prove definitively or disprove the biobehavioral theories. Not every prediction in the literature is strongly supported, and further research is advisable. Rather, this Part summarizes some of the most intriguing and important findings testing the biobehavioral predictions, in an effort to permit a preliminary assessment of the plausibility of the theory that natural and sexual selection have influenced patterns of rape behavior in humans. For if they did, our knowledge of this biobehavioral “truth” may afford law more leverage against rape behavior.

Because the adaptation and by-product hypotheses generate many of the same predictions, they currently afford little empirical reason to favor one over the other (indeed, it is possible that the two causal pathways can operate both independently and in concert).<sup>101</sup> However, the specificity and number of the predictions nonetheless probe the extents to which biobehavioral influences affect patterns of rape. If either selection theory accurately describes a process by which male and female brains may differ, on

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99. Technically, one never proves that anything is always true (because no number of white swans can prove that there are no black swans). Whereas one can, with a single example to the contrary, prove that something is not always true (a single black swan proves that not all swans are white). For classic articulations of this principle, see generally POPPER, *supra* note 98. See also KARL R. POPPER, *THE LOGIC OF SCIENTIFIC DISCOVERY* (1959).

100. See generally CARL HEMPEL, *PHILOSOPHY OF NATURAL SCIENCE* 40-45 (1966).

101. See Thornhill & Thornhill, *supra* note 65, at 91 (“Current knowledge of the coercive sexuality of men is *consistent* with this hypothesis [that the sexual psychology of men contains psychological design for the purpose of rape] but cannot *demonstrate* adaptation to rape.”) (emphases added); Nancy Wilmsen Thornhill, *Psychological Adaptation to Sexual Coercion in Victims and Offenders*, in BUSS & MALAMUTH, *supra* note 30, at 90, 101-02 (“[C]urrent knowledge of men’s sexual behavior does not provide evidence of psychological adaptation to rape itself. It seems likely that the occurrence of coercive sexual behavior by men could as easily be the combined effect of species-typical adaptation to coerce desired rewards and sex-specific adaptation for sexual behavior.”); see also DAVID M. BUSS, *THE EVOLUTION OF DESIRE* 162-63 (1994); Palmer, *supra* note 88, at 379.

average, in their processing of encounters when forced copulations might occur, then these testable hypotheses, among numerous others, follow.<sup>102</sup>

#### A. Predictions and Data

**Prediction 1:** *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.*

**Rationale:** The cost to females of random copulation is greater than that to males, so natural and sexual selection will favor predispositions, in females, to choose mates and to resist rape.

**Data:** This prediction is overwhelmingly supported.<sup>103</sup> In all species, including humans, in which forced male-female copulation has been observed to date, there is a marked distinction between willing and unwilling female behavior. Unwillingness, obviously, must be inferred; researchers describe the female as unwilling if the precopulatory and copulatory behavior is statistically rare and involves, for example, a female’s avoiding particular males, attempting to flee, struggling when caught, and attempting to prevent intromission.

**Prediction 2:** *It is unlikely that rape behavior is confined to the human species.*

**Rationale:** 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, 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.

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102. I have attempted to render these selected predictions easily accessible to a legal audience. Most of them summarize more technical language appearing in various primary sources, such as the works of Randy Thornhill, Nancy Thornhill, and Craig Palmer, listed *infra* Appendix A, as well as Lee Ellis, *Gene-Based Evolutionary Theories in Criminology*, 35 *CRIMINOLOGY* 229, 234-38 (1997), and Neil M. Malamuth, *An Evolutionary-Based Model Integrating Research on the Characteristics of Sexually Coercive Men*, in 1 *ADVANCES IN PSYCHOLOGICAL SCIENCE: SOCIAL, PERSONAL, AND DEVELOPMENTAL ASPECTS* 151 (John G. Adair et al. eds., 1998).

103. For overviews of sexual selection, see MALTE ANDERSSON, *SEXUAL SELECTION* (1994); CRONIN, *supra* note 74; DALY & WILSON, *supra* note 47. For human studies, see, for example, David M. Buss, *Sex Differences in Human Mate Preferences: Evolutionary Hypotheses Tested in 37 Cultures*, 12 *BEHAV. & BRAIN SCI.* 1 (1989); Low, *supra* note 76.

*Data:* Biologists have long studied examples of unequivocally forced copulations across the animal kingdom.<sup>104</sup> Thus far, the behavior is already widely observable, in both natural and laboratory conditions, in species ranging from our closest primate relatives<sup>105</sup> (including orangutans,<sup>106</sup> chimpanzees,<sup>107</sup> and gorillas<sup>108</sup>) to more distant primates,<sup>109</sup> other mammals,<sup>110</sup> birds,<sup>111</sup> and insects.<sup>112</sup>

104. See generally THORNHILL & PALMER, *supra* note 14, at ch. 6 (reviewing literature); Crawford & Galdikas, *supra* note 85 (concluding there is considerable evidence for the existence of rape in other species); Palmer, *supra* note 85 (reviewing studies of insects; birds; fish; frogs, toads, and lizards; a worm species; plants; elephant seals; and several nonhuman primates; and concluding that rape appears to take place in all but the worms and plants).

105. See, e.g., WRANGHAM & PETERSON, *supra* note 93, at 138 (discussing rape in apes); Lee Ellis, *Neodarwinian Theories of Violent Criminality and Antisocial Behavior: Photographic Evidence from Nonhuman Animals and a Review of the Literature*, 3 *AGGRESSION & VIOLENT BEHAV.* 61, 67 (1998) (citing studies); Nadler, *supra* note 13; Ronald D. Nadler, *Sexual Aggression in the Great Apes*, 528 *ANNALS N.Y. ACAD. SCI.* 154 (1988) (finding sexual aggression among chimpanzees, orangutans, and gorillas in both natural and laboratory conditions). To date, no one has observed rape among the bonobos. See Frans de Waal, Keynote Address to the Human Behavior and Evolution Society in Tucson, Arizona (June 6, 1996); Personal Communication with Prof. Richard Wrangham (Nov. 12, 1998).

106. See WRANGHAM & PETERSON, *supra* note 93, at 132-43 (summarizing data on orangutan rapes). Among wild orangutan populations, rape accounts for one-third to one-half or more of all copulations. See *id.* at 142. Among the important primary sources are H.D. RIJKSEN, *A FIELDSTUDY OF SUMATRAN ORANGUTANS* (1978); Biruté M.F. Galdikas, *Adult Male Sociality and Reproductive Tactics Among Orangutans at Tanjung Puting* 45 *FOLIA PRIMATOLOGICA* (1985) (finding that smaller males are less attractive to females and more likely to attempt rape); Biruté M.F. Galdikas, *Orangutan Adaptation at Tanjung Puting Reserve: Mating and Ecology*, in *THE GREAT APES* 195 (David A. Hamburg & Elizabeth R. McCown eds., 1979); John MacKinnon, *Reproductive Behavior in Wild Orangutan Population*, in *THE GREAT APES*, *supra*, at 257; John C. Mitani, *Mating Behaviour of Male Orangutans in the Kutai Game Reserve, Indonesia*, 33 *ANIMAL BEHAV.* 293, 396 (1985); Ronald D. Nadler, *Laboratory Research on Sexual Behavior of the Great Apes*, in *REPRODUCTIVE BIOLOGY OF THE GREAT APES* 191 (Charles E. Graham ed., 1981); 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) [hereinafter Nadler, *Sexual Behavior of Orangutans*].

107. See Nadler, *supra* note 105, at 154; see also WRANGHAM & PETERSON, *supra* note 93, at 7, 138, 142, 151. "Even among chimpanzees, where rape is a good deal rarer, it probably still happens as often as among many human populations." *Id.* at 142.

108. See Nadler, *supra* note 105; WRANGHAM & PETERSON, *supra* note 93, at 138.

109. See ROBERT JAY RUSSELL, *THE LEMURS' LEGACY: THE EVOLUTION OF POWER, SEX, AND LOVE* 138 (1993) (reporting that rape is not uncommon among lemurs); WRANGHAM & PETERSON, *supra* note 93, at 138 (reporting observation of rape in wild howler monkeys).

110. See, e.g., Ellis, *supra* note 105, at 67 (citing studies); Palmer, *supra* note 85, at 365-66 (elephant seals).

111. See, e.g., T.R. BIRKHEAD & A.P. MØLLER, *SPERM COMPETITION IN BIRDS: EVOLUTIONARY CAUSES AND CONSEQUENCES* (1992); Alan D. Afton, *Forced Copulation as a Reproductive Strategy of Male Lesser Scaup*, 92 *BEHAV.* 146 (1985); Stephen T. Emlen & Peter H. Wrege, *Forced Copulations and Intra-Specific Parasitism: Two Costs of Social Living in the White-Fronted Bee-Eater*, 71 *ETHOLOGY* 2 (1986) (white-fronted bee-eaters); *id.* at 20 (citing studies of forced copulations in albatrosses, cormorants, herons and egrets, gulls, swallows, and purple martins); Douglas E. Gladstone, *Promiscuity in Monogamous Colonial Birds*, 114 *AM. NATURALIST* 545 (1979) (cataloguing a number of species in which forced copulation occurs outside the pairbond); Pierre Mineau & Fred Cooke, *Rape in the Lesser Snow Goose*, 70 *BEHAV.* 280 (1979).

*Prediction 3: Rape will rarely result in fatal harm, or harm sufficient to preclude conception and birth.*

*Rationale:* The more heritable rape behavior precluded birth, the more natural selection would have disfavored it.

*Data:* In both nonhuman and human animals, it is extremely rare for raped females to be killed, and quite rare for them to be injured in ways that prevent possible conception and birth. In humans, rape-murders are exceedingly rare<sup>113</sup> (for example, occurring in only 7 rapes out of 1223 in one study, and 1 of 646 in another study).<sup>114</sup> According to a recent report by the National Victim Center, over two-thirds of rape victims report no physical injuries, 24% report minor physical injuries, and only 4% sustain serious physical injuries.<sup>115</sup>

*Prediction 4: Rape will be overwhelmingly a male, rather than female, behavior.*

*Rationale:* 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 forced copulation by males more than it would favor forced copulation by females.

*Data:* In all species in which forced male-female copulation has been observed, the behavior is almost without exception committed by males upon females, rather than vice versa.<sup>116</sup> For example, female physical sexual coerciveness

112. See Randy Thornhill, *Rape in *Panorpa* Scorpionflies and a General Rape Hypothesis*, 28 ANIMAL BEHAV. 52 (1980); see also WRANGHAM & PETERSON, *supra* note 93, at 138-39. Indeed, some insects, such as scorpionflies and some water-striders, have physical organs used only during attempts at forced copulation. See THORNHILL & PALMER, *supra* note 14, at ch. 3, ch. 6.

113. Statistics, of course, vary. But all agree that the proportion of rape-murders to all rapes is extremely low. See, e.g., BROWNMILLER, *supra* note 35, at 198 (noting that only about 0.2%—or 1 in 500—rape victims are murdered); DOJ STATISTICS, *supra* note 6, at 12 (noting that only about 1% of all murders involve rape; and that only 5% of victims “suffered a major injury such as severe lacerations, fractures, internal injuries, or unconsciousness”); GORDON & RIGER, *supra* note 2, at 9 (noting that only 3% of rape victims are murdered); Richard T. Rada, *Psychological Factors in Rapist Behavior*, in CLINICAL ASPECTS OF THE RAPIST, *supra* note 32, at 51 (“Rapists rarely murder . . .”). Professor Katherine Baker has pointed out that it would be useful to know how the proportion of rape-murders to all rapes compares to the proportion of robbery-murders to all robberies, and mugging-murders to all muggings. Personal Communication with Katherine Baker (Sept. 3, 1998).

114. See SEDELLE KATZ & MARY ANN MAZUR, UNDERSTANDING THE RAPE VICTIM 163-64 (1979).

115. See NATIONAL VICTIM CENTER, FORCIBLE RAPES, RAPE IN AMERICA: A REPORT TO THE NATION (1992).

116. See Crawford & Galdikas, *supra* note 85, at 227 (“[A]ll known cases of forced matings are by males.”); GOLDSMITH, *supra* note 47, at 61. On the overwhelming predominance of males among

(of any kind) of unwilling males in human societies is virtually unknown. It may be tempting to attribute the strong sex bias among perpetrators to anatomical differences alone. However, the same bias is present even in species lacking larger and stronger males. And the bias similarly obtains not only among species such as mammals in which an aroused penis is generally necessary for copulation, but also among species such as birds in which males have no penises. Moreover, the pan-species sex differences in anatomical capacity to rape themselves require evolutionary explanation.

*Prediction 5:* *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.*

*Rationale:* Copulation with willing partners will generally be less costly to males than forced copulations. Selection would therefore favor a context-specific predisposition, if it arose, that increased the likelihood of aggression as the likelihood of willing copulation decreased.<sup>117</sup>

*Data:* To demonstrate that an evolved predisposition toward aggressive sexuality or rape can be highly contingent, one compelling example would suffice. As it turns out, there are many. Discussed below are two, selected to illuminate opposite extremes of cognitive capacity. The scorpionfly (an insect species) demonstrates how little brainpower it takes to harbor a sophisticated, environmentally sensitive, decisional algorithm. The orangutan (one of the planet's smartest species) demonstrates how a similar algorithm is likely present among near-relatives of humans.<sup>118</sup>

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human rapists, see, for example, JAMES T. TEDESCHI & RICHARD B. FELSON, VIOLENCE, AGGRESSION, & COERCIVE ACTIONS 310 (1994) ("We can think of no other type of coercive behavior, and few other noncoercive behaviors, in which the sex difference is so strong."); Ellen G. Cohn, *The Prediction of Police Calls for Service: The Influence of Weather and Temporal Variables on Rape and Domestic Violence*, 13 J. ENVTL. PSYCHOL. 71 (1993).

117. In some species, individuals employ a single mating behaviour throughout their lives. Individuals in other species 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." Crawford & Galdikas, *supra* note 85, at 220 (citing KREBS & DAVIES, *supra* note 47).

118. See generally Thornhill, *supra* note 112; Randy Thornhill et al., *The Biology of Rape*, in TOMASELLI & PORTER, *supra* note 30, at 102, 108-09; ALCOCK, *supra* note 47, at 446-47.

*Rape in Scorpionflies*

In the scorpionfly, females generally flee from males who do not offer resources, such as a dead insect (the female preference) or a salivary mass (an acceptable second-best created by the male).<sup>119</sup> Males can therefore copulate in three ways: (1) guarding a dead insect, which attracts a female, who mates willingly; (2) creating and guarding a salivary mass, which attracts a female, who mates willingly; and (3) grabbing a female and attempting to force copulation.<sup>120</sup> All three techniques have been observed.

In a significant experimental study, Randy Thornhill demonstrated that these three mating strategies *are part of one conditional strategy*, not three alternative strategies reflecting three mutually exclusive genetic predispositions. That is, a given male will predictably adopt one of these three strategies, depending on circumstances, and switch among them as circumstances change.<sup>121</sup> Typically, the number of females with whom a male scorpionfly can copulate decreases from insect offering, to saliva offering, to rape, in parallel with decreasing male size and concomitant decreased ability to best other males in contests for food offerings. When the large males defending the few insect offerings were experimentally removed, the medium-sized males that had previously offered saliva switched over to defend the insects, and the smallest males, which had previously raped, promptly took over the salivary masses thus abandoned, subsequently copulating with willing females.<sup>122</sup>

The significance of this study for present purposes, notwithstanding the obvious differences between humans and insects, is two-fold. It conclusively demonstrates the

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119. See Thornhill, *supra* note 112, at 53.

120. See *id.* at 53 ("If grasped by such a male's genital claspers, females fight vigorously to escape. When the female's wings are secured, the male attempts to grasp the genitalia of the female with his genital claspers. The female attempts to keep her abdominal tip away from the male's probing claspers.").

121. See *id.*; see also ALCOCK, *supra* note 47, at 446-47.

122. A useful summary of the experiment appears in JOHN ALCOCK, *ANIMAL BEHAVIOR: AN EVOLUTIONARY APPROACH* 418-19 (5th ed. 1993). Alcock writes,

In competing for [dead insects], the larger males won, and as a result, averaged nearly six copulations each. Medium-sized males generally attempted to lure mates with salivary gifts, but were much less successful (gaining about two copulations per male). Small males were unable to claim [dead insects] and appeared incapable of generating sufficient saliva to attract females. They employed the forced copulation route but were the least successful of all (averaging only about one copulation per male).

*Id.*

existence of a highly specialized rape contingency behavior. It also demonstrates that large brains are not required for sophisticated, algorithmic predispositions such as: "If in possession of a dead insect, court; if no insect, spit and court; if no success, attempt rape; repeat." That is, within a very tiny, nonsentient brain, *conditional* mating predispositions can evolve, and "male [scorpionflies] are able to adopt whichever of the three tactics returns the highest possible rate of copulations, given the nature of the competition they face at that moment."<sup>123</sup>

### *Rape in Orangutans*

Male orangutans also appear to vary their sexual behavior, from solicitous to forceful, according to circumstances. Although a great deal of orangutan mating in the wild appears to be consensual, it is also well-documented that male orangutans (particularly those small enough to pursue the typically smaller females onto slender tree branches) often rape females.<sup>124</sup> In addition, when the female orangutan's ability to flee an approaching male is experimentally manipulated in captivity, the very same male orangutan who will be extremely unaggressive and solicitous of a female who *can* physically escape him, will generally grab and rape a struggling female if she *cannot* escape him.<sup>125</sup> Although one of course must be careful

123. *Id.* at 419.

124. *See supra* note 106. One orangutan even raped a human female, while her friend looked on, powerless to stop him. *See WRANGHAM & PETERSON, supra* note 93, at 137-38.

125. *See, e.g.,* Nadler, *supra* note 105. Nadler found that "[a]lthough sexual aggression is relatively rare among mature great apes in their natural habitats, it does occur to some degree." *Id.* at 158. His lab work revealed extremely context-specific rape behavior. In "Free Access Tests" (FATs) males and females were housed together. In "Restricted Access Tests" (RATs), each female, but no males, could control when male and female would mingle. In lab conditions, subjects mated more than in the wild. But the interesting finding is that

[i]n all three species . . . the increased copulation appears to result from increased male sexual initiative (aggression), male dominance over females, and the inability of the female to avoid or escape from the male within the limited spatial conditions of the free-access test. This interpretation is supported by studies using restricted-access tests in which females control sexual access. These data suggest that male sexual aggression in our closest biological affiliates commonly occurs when females are rendered vulnerable to the male by the absence of the normal social constraints and spatial prerogatives typical of the natural habitat.

*Id.* at 161.

The data on these species of great apes are similar in revealing that (1) sexual aggression is carried out to some extent by males of all these species under natural conditions, albeit relatively infrequently; and (2) sexual aggression occurs at increased frequencies in FATs conducted in the laboratory as a consequence of test conditions that compromise the females' options for regulating sexual interactions. These data support the interpretation that sexual aggression to some degree is an inherent characteristic of the behavioral repertoires of our

when attempting to generalize from the behavior of captive animals, these experiments strongly suggest that psychological mechanisms mediating conditional, context-specific mating tactics may have evolved among species with advanced cognitive capacities, as well as among less cognitively advanced species.

*Prediction 6:* *The ages of victims of attempted and completed rape will be overwhelmingly concentrated into the part of the female lifespan that is reproductive.*

*Rationale:* Copulation with females outside the age range historically bounded by puberty and menopause is unlikely to result in reproduction and is therefore more costly. Natural selection would consequently favor male predispositions to copulate, on average, with fertile-aged females.

*Data:* This prediction is overwhelmingly supported, in both non-human and human species.<sup>126</sup> In humans, the consistency of the data with the prediction is particularly striking. The mean age of rape victims in most data sets is twenty-four years old.<sup>127</sup> 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.<sup>128</sup>

closest biological affiliates and that conditions that render the females vulnerable to such aggression lead to its increased occurrence.

*Id.* at 160; *see also* Nadler, *Sexual Behavior of Orangutans*, *supra* note 106. Female-controlled laboratory tests quickly “revealed that fully adult males that had never displayed nonaggressive form of sexual solicitation, quickly began to display this behavior when they were prevented from pursuing the females as they had always done.” This suggests this form of behavior is “highly responsive to environmental conditions.” *Id.* at 234 (emphasis added).

John Mitani witnessed 179 matings; 88% were “forced” and “involved protracted struggles between females and males,” in which “females whimper, cry, squeal and grunt” while males “had to grab, bite or slap females before they could copulate. While thrusting, males continued to restrain struggling females by grasping their arms, legs and bodies.” Mitani, *supra* note 106, at 396.

126. In nonhumans, *see*, for example, Emlen & Wrege, *supra* note 111, at 9 (examining nonrandom patterns of forced copulations, and finding that copulation attempts “increase[] dramatically on the day that a female lays her first egg, but drop[] just as precipitously when she completes her cluteh”).

127. *See* Thornhill & Thornhill, *Psychological Pain IV*, *supra* note 95, at 246.

128. The 1991 National Crime Victimization Survey found that women between the ages of 16 and 19 were at greatest risk of rape, followed by women of 20 to 24 and 12 to 15. *See* ROB HALL, *RAPE IN AMERICA: A REFERENCE HANDBOOK 90-91* (1995); *see also* ELLIS, *supra* note 30, at 50 (citing studies); UNDERSTANDING VIOLENCE AGAINST WOMEN 72 (Naney A. Crowell & Ann W. Burgess eds., 1996) (reporting statistics from 1993 showing highest rates of rape and sexual assault among women 16 to 24 years of age); PATRICK A. LANGAN & CAROLINE WOLF HARLOW, *CHILD RAPE VICTIMS*, 1992, U.S. DEP’T OF JUSTICE, BUREAU OF JUSTICE STATISTICS: CRIME DATA BRIEF (1994) (35% of all victims between 12 and 18); NATIONAL VICTIM CENTER, *RAPE IN AMERICA: A REPORT TO THE NATION 3* (1992) (84% of female victims were under age 25; only 6% older than 29); Arthur Frederick

(And the data collected on "child" victims, often defined as girls under the age of sixteen, typically shows a heavy concentration toward the early puberty years, with a median age of fourteen.)<sup>129</sup> For example, in a 1983 study by Randy and Nancy Thornhill of 10,315 rape victims, *eighty-five percent* were less than thirty-six years old,<sup>130</sup> in sharp contrast to the female population at large. Women between the ages of sixteen and thirty-five were dramatically overrepresented.<sup>131</sup> As one scholar notes,

By way of comparison, victims of other crimes, such as aggravated assault and murder, show a radically different age distribution. . . . Indeed the age distribution of rape victims corresponds almost

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Schiff, *Rape*, 6 MED. ASPECTS HUM. SEXUALITY 76, 82 (1972) (finding in one study, the ages of raped females ranged from 1 to 88, with the mode at 14; in another study, the range was 6 to 57, with a mode at 14 and an average at 23). "Without exception, studies throughout the world have found that, while rape victims can be of any age, their ages are heavily concentrated between 13 and 35." ELLIS, *supra* note 30, at 50. In a 25-year study in India, the peak victim age was in the 13 to 17 year old age bracket, and only 4% of rape victims were older than 35 (despite an age range of 3 years old to 71 years old). See VIMALA VEERARAGHAVAN, *RAPE AND VICTIMS OF RAPE: A SOCIO-PSYCHOLOGICAL ANALYSIS* 21, 94-95 (1987). In a study of sexual assaults in London between 1978 and 1986, the majority of victims were in their 20s. See S.M. Keating et al., *Sexual Assault Patterns*, 30 J. FORENSIC SCI. SOC'Y 71, 82 (1990). Fully 53% of the victims were between 18 and 30 years old. Less than 5% were over 50. See *id.* at 74; CAROLYN J. HURSCHE, *THE TROUBLE WITH RAPE* 21-22 (1977) ("The average age of adult rape victims [i.e., excluding those under 16] was 24 years. . . . most of the victims were between the ages of 16 and 34. Only 5% of the adult rape victims were between 45 and 74 years old; 23% of the rapes were of girls 15 or younger."); THOMAS W. MCCAHERN ET AL., *THE AFTERMATH OF RAPE* 7 (1979) ("Using census figures for comparison, victims who report rape to the authorities are disproportionately likely to be 20 to 24 years old and much less likely to be 45 or more years old.").

This study of rape in Denver is typical. Of all the 5-year age groups, those at highest risk of rape were 15 to 19, followed by 20 to 24. Over 80% of victims were under 35 years of age, with the median victim age of 21. See DOJ STATISTICS, *supra* note 6, at 2 (1997) ("Per capita rates of rape/sexual assault were found to be highest among residents age 16 to 19. . . ."). Data from three states using the new National Incident-Based Reporting System, for the year 1991, indicated that about 80% of rape victims were under age 30; while roughly half were under age 18, only 15% were under 12, with roughly 30% between 12 and 17. See *id.* at 11.

129. See, e.g., HURSCHE, *supra* note 128, at 25 (reporting an age range of 70 child victims from 3 to 15 years of age, but with the frequency distribution dramatically skewed toward girls 14 and 15, with roughly 75% in the 12 to 15 range). The median age of raped children was roughly 14. See *id.* at 24.

130. See Randy Thornhill & Nancy Wilmsen Thornhill, *Human Rape: An Evolutionary Analysis*, 4 ETHOLOGY & SOCIOBIOLOGY 137 (1983); see also Richard B. Felson & Marvin Krohn, *Motives for Rape*, 27 J. RES. CRIME & DELINQ. 222, 231 (Aug. 1990) (92% of rape victims, in this study, were under 41 years old).

131. Of course, it is always possible to construct alternative hypotheses to explain data such as these. For example, it may be that rapists target females strictly according to "vulnerability," and that reproductive-aged females just happen, for sociocultural reasons unrelated to the biology of sexual desire to be out and about, unaccompanied, single, or dating more than other women. When a pattern of human behavior matches the patterns in other species, however, and when those patterns reflect context-specific behavior predictably favored by evolutionary processes, proponents of hypotheses that are thoroughly divorced from biology (and that are necessarily less parsimonious) bear the burden of persuasion. For more on this subject, see *infra* Section IV.A.

perfectly to the age distribution of women's reproductive value, in marked contrast to the age distribution of victims of other violent crimes.<sup>132</sup>

*Prediction 7:* *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.*

*Rationale:* In the environment of evolutionary adaptation, penile-vaginal assaults of reproductive-aged females were more likely to result in conception than penile-vaginal assaults of unproductive 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. We therefore may expect the percentage of reproductive-aged victims who were raped penile-vaginally to be higher than the percentage of non-reproductive-aged victims who were raped penile-vaginally. Put another way, victims not of reproductive age are more likely to be sexually assaulted in ways *other* than penile-vaginal rape, compared to victims of reproductive age.

*Data:* This prediction has received some support. The Thornhills found that "[r]eproductive-age victims [of sexual assault] were overwhelmingly more often victims of penile-vaginal intercourse than were victims in the other age categories."<sup>133</sup> Moreover, the likelihood of penile-vaginal intercourse during sexual assault exceeded 90% when the victim was of potentially reproductive age (twelve to forty-four), while the likelihood of penile-vaginal intercourse during sexual assault was only 46% when the victim was nonreproductive-aged.<sup>134</sup> The disparity was

132. Buss, *supra* note 101, at 164.

133. Nancy Wilmsen Thornhill, *supra* note 101, at 96 (citing Thornhill & Thornhill, *Psychological Pain IV, supra* note 95).

134. See Thornhill & Thornhill, *supra* note 65, at 103-04; Thornhill & Thornhill, *Psychological Pain IV, supra* note 95, at 247. "Only 9% of reproductive-aged victims were victims of sexual assault other than penile-vaginal intercourse, including fellatio, cunnilingus, or rectal intercourse." *Id.* at 249. Reproductive-aged victims were significantly more likely to be subjects of repeated intercourse than were nonreproductive-aged women and girls. See *id.* at 250. Reliable data on anal penetration during rape are rare. In one British study, anal intercourse was reported in 8% of rapes, but most of these were accompanied by vaginal rape as well. See Keating, *supra* note 128, at 80 tbl.7.

greatest between reproductive-aged women who were raped and prereproductive-aged girls who were raped, the latter of whom were more likely *not* to have experienced penile-vaginal intercourse than to have experienced it.<sup>135</sup> The difference between reproductive and postreproductive-aged victims in this study, however, was not statistically significant.<sup>136</sup>

*Prediction 8:* *The trauma of rape victims in the immediate postrape period will tend to vary with age, being greatest among females of reproductive age and less, on average, among prepubescent and postmenopausal victims.*

*Rationale:* The magnitude of the effect of being raped on female reproductive success is greater for fertile-aged females than for females incapable of conceiving and giving birth. Natural selection would therefore more strongly favor psychological resistance to rape in females of reproductive age.<sup>137</sup>

*Data:* In a study examining a large and previously compiled data set of statistics on 790 rape victims in Philadelphia, “[r]eproductive-age victims were significantly more psychologically traumatized by rape than were pre-reproductive-age girls (0-11) or post-reproductive-age women (45+) . . . .”<sup>138</sup> This study measured trauma by

135. The likelihood that prereproductive-aged girls in this study were not penile-vaginally raped was 66%. See Thornhill & Thornhill, *Psychological Pain IV*, *supra* note 95, at 247.

136. See *id.* at 246 tbl.1, 247. The authors note that this may be due to the small number of postreproductive-aged women in the sample. While there were 585 reproductive-aged victims, there were only 36 postreproductive-aged victims. See *id.*

137. According to Nancy Wilmsen Thornhill,

[t]he expectation that victim’s age should be an important predictor of psychological trauma following rape stems from the hypothesized fitness consequences of rape for our female ancestors. The consequences were likely to have been most severe for women of reproductive age because these women have an increased probability that any sexual interaction will result in conception.

Nancy Wilmsen Thornhill, *supra* note 101, at 94. For more on the evolution of psychological pain, see MICHAEL MCGUIRE & ALFONSO TROISI, *DARWINIAN PSYCHIATRY* (1998).

138. Nancy Wilmsen Thornhill, *Psychological Adaptation to Sexual Coercion*, *supra* note 101, at 94; Randy Thornhill, *Rape-Victim Psychological Pain*, *supra* note 95, at 239 (offering retrospective on Thornhill & Thornhill, *Evolutionary Analysis of Psychological Pain I*, *supra* note 95). The data set had 265 variables, 13 of which were considered relevant to the measurement of psychological pain:

[F]ear of being out on the street alone, fear of being home alone, change in social activities, change in eating habits, change in sleeping habits, frequency of nightmares, change in heterosexual relationships (i.e. nonsexual relations with men), change in negative feelings toward known men, change in negative feelings toward unknown men, change in relations with husband or boyfriend, change in sexual relations with partner, insecurities concerning sexual attractiveness, and change in relations with family (other than husband).

Thornhill & Thornhill, *Psychological Pain I*, *supra* note 95, at 161. For a complete description of the data set, and its inherent limitations, see *id.* at 160-62.

using self-reports about factors including difficulty sleeping, suffering nightmares, being afraid of unknown men, and having a fear of being home alone.<sup>139</sup> By contrast, when psychological trauma experienced by female victims of robbery is analyzed by victim's age, older victims are more traumatized than younger victims.<sup>140</sup>

The difficulty in assessing the reliability of the underlying data on the psychological trauma of some of the prepubescent rape victims, particularly the youngest ones, is clearly worth mentioning.<sup>141</sup> Yet this finding was statistically significant, and other studies have apparently also suggested that prereproductive girls are less traumatized, on average, by sexual assault.<sup>142</sup>

*Prediction 9:* *The trauma of reproductive-aged sexual assault victims in the immediate postrape period 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.*

*Rationale:* Vaginal rape had greater reproductive consequences for ancestral females than other forms of sexual assault. Although natural selection would favor psychological aversion to physical compulsion generally, it also would favor more strongly psychological aversion to vaginal rape than to, for example, anal or oral rape.

*Data:* This seems to be the case. As early as 1979, several researchers noted that penile-vaginal intercourse is associated with adjustment problems in female rape victims more frequently than is any other variable relating to sexual acts, such as forced sexual contact without penetration,

139. This finding is not confounded by either the kind of rapist (stranger or acquaintance) or the degree of violence used. Across the various combinations, victim age remains a statistically significant predictor of relative trauma. See Thornhill & Thornhill, *Psychological Pain III*, *supra* note 95, at 304-19 (1990). Moreover, there is some evidence to suggest that younger women are more fearful of sexual assault than are older women. See Eric Pawson & Glenn Banks, *Rape and Fear in a New Zealand City*, 25 *AREA* 55 (1993).

140. See Nancy Wilmsen Thornhill, *supra* note 101, at 97.

141. For instance, some of the 13 psychological variables (such as "change in sexual relations with partner") did not apply to the youngest victims. See Thornhill & Thornhill, *Psychological Pain I*, *supra* note 95, at 164. As the Thornhills also note, "the child's caretaker sometimes helped the child respond to interview questions [and] with very young victims, the caretaker gave the responses to the questions based on his/her perception of the effect of the sexual assault on the child." *Id.* at 161.

142. See *id.* at 166 (citing DAVID FINKELHOR, *CHILD SEXUAL ABUSE: NEW THEORY AND RESEARCH* (1984); A.P. Mannarino & J. Cohen, *Psychological Symptoms of Sexually Abused Children* (paper presentation) (1987)).

fellatio, cunnilingus, rectal intercourse, fondling and caressing, length of assault, or repeated intercourse.<sup>143</sup> More recently, evolutionists found that the greatest psychological trauma was seen in those reproductive-aged female rape victims who experienced penile-vaginal intercourse, compared with similar victims who experienced only other forms of sexual assault (including forced fellatio, anal intercourse, etc.).<sup>144</sup> Moreover, there is evidence to suggest that non-reproductive-aged females are, in contrast, more equally traumatized by penile-vaginal intercourse and other forms of sexual assault.<sup>145</sup>

*Prediction 10: A disproportionately high number of rapists will be young, sexually mature males.*

*Rationale:* 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 comparatively lesser acquisition of resources and status).<sup>146</sup> If comparatively lesser access to willing sex partners increases the probability of sexual aggression, young males will likely be overrepresented among rapists.

*Data:* Rapists are disproportionately young, postpubescent males.<sup>147</sup> Studies often show a median age of twenty-five,<sup>148</sup> with only a small percentage of rapists over thirty.<sup>149</sup> Note that this has remained true, over time, even

143. See MCCAHERN ET AL., *supra* note 128, at 67.

144. See Thornhill & Thornhill, *Psychological Pain IV*, *supra* note 95; see also Nancy Thornhill, *supra* note 101, at 96; Randy Thornhill, *Rape-Victim Psychological Pain*, *supra* note 95, at 239.

145. See Thornhill & Thornhill, *Psychological Pain IV*, *supra* note 95. It also appears that reproductive-aged rape victims are more likely to have sperm present in their reproductive tracts than are non-reproductive-aged victims, and that, among reproductive-aged victims, those with sperm in their reproductive tracts may be more traumatized than those without. See *id.* at 249-50.

146. See generally sources on sexual selection cited *supra* notes 74, 76, & 77; Buss, *supra* note 101; David M. Buss, *Sex Differences in Human Mate Selection Criteria, An Evolutionary Perspective*, in *PSYCHOLOGY AND SOCIOBIOLOGY* 335 (Charles Crawford et al. eds., 1987); David M. Buss & David P. Schmitt, *Sexual Strategies Theory: An Evolutionary Perspective on Human Mating*, 100 *PSYCHOL. REV.* 204 (1993).

147. See, e.g., Buss, *supra* note 101, at 205; HALL, *supra* note 128, at 16-17, 38, 74; VEERARAGHAVAN, *supra* note 128, at 57 (median age of rapists in 25-year study was 21 years old); Thornhill & Thornhill, *supra* note 130. Raping males in other great apes also tend to be young. See Nadler, *supra* note 13.

148. See, e.g., JOHN M. MACDONALD, *RAPE OFFENDERS AND THEIR VICTIMS* 77 (1975).

149. Although it is rarely explained in social science terms alone, the sharp contrast between the age distribution of men across the population, and the age distribution of rapists, has long been known. See, e.g., *id.*; AMIR, *supra* note 41, at 52-53 (the majority of offenders fall into the 15 to 24 age group; only 14% of all offenders are 30 years of age or older; median age for offenders is 23); *id.* at 57 ("The literature on rape describing age distributions of offenders, reveals results similar to those found in the present study."); BROWNMILLER, *supra* note 35, at 174-76 (typical rapist is about 19 years of age; 61%

as different male cohorts age.

*Prediction 11: The average age of women raped during robbery will be lower than the average age of all robbed women.*

*Rationale:* 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.

*Data:* This seems to be the case. In one study of 887 incidents of robbery, the age of female victims in robbery-rapes was compared with the age of victims in robberies where rape was not involved.<sup>150</sup> While the average age of female robbery victims was thirty-five years old, the average age of rape-robbery victims was significantly lower: less than twenty-eight years old.<sup>151</sup> The significance can be explained as follows: "When a robber has the opportunity to rape, he is more likely to do so if the victim is young."<sup>152</sup> This suggests that the overrepresentation of young women among rape victims is not likely to be simply a function of greater opportunity to rape young women. Controlling for opportunity, in the robbery context, reproductive-aged females are still overrepresented.

### B. Discussion

The evolutionary theories generate other predictions as well, and for these, too, researchers have generally found support.<sup>153</sup> But no simple

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of rapists are under the age of 25; largest concentration of offenders is in the 16 to 24 year age range); LORENNE M.G. CLARK & DEBRA J. LEWIS, *RAPE: THE PRICE OF COERCIVE SEXUALITY* 96 (1977) (nearly 40% between the ages of 25 and 29); DOJ STATISTICS, *supra* note 6, at 4 (1997) (nearly 40% of rape offenders are between ages of 18 and 29, with an additional 11% under the age of 18); GORDON & RIGER, *supra* note 2, at 34 ("Of the men arrested for rape in 1986 . . . [f]orty-five percent were under twenty-five years of age and a third were between eighteen and twenty-four years of age. These patterns also are similar to those in previous years."); Joan Petersilia, *Violent Crime and Violent Criminals: The Response of the Justice System*, in *VIOLENCE AND THE LAW* 226, 237 (Mark Costanzo & Stuart Oskamp, eds., 1994) ("Rape offenders . . . tend to be young, usually under 25."). While not all rapists are caught, there appears to be no study in which the age distribution of even suspected rapists is evenly distributed across the male population, or skewed toward either older men or prepubescent males.

150. See Felson & Krohn, *supra* note 130.

151. See *id.* at 232.

152. *Id.* at 235.

153. These include, for example, predictions about variations in rape victim trauma according to mateship (e.g., marital) status. See, e.g., THORNHILL & PALMER, *supra* note 14, at ch. 4; Thornhill & Thornhill, *Psychological Pain I*, *supra* note 95. For discussion of these and other predictions, see, for example, ELLIS, *supra* note 30, at 53; Randy Thornhill, *Rape-Victim Psychological Pain*, *supra* note 95, at 239.

measure exists, of course, to quantify precisely the vitality of a behavioral theory.<sup>154</sup> In the dynamic context of investigating complex evolutionary influences on behavior, for example, it is typically not essential that all predictions be simultaneously supported. Rather, the greater the number of predictions supported, the narrower the predictions themselves, and the more relevant species in which data are consistent, the greater the likelihood that a given biobehavioral theory has actual explanatory power. It is quite possible, for example, that the psychological trauma associated with rape victimization in females is rape-specific adaptation, at the same time that rape behavior in males is a by-product of psychological adaptation for less specific purposes.

From this brief survey, we know the following about the biobehavioral theories of rape causation rooted in natural and sexual selection. We know that natural selection will favor, over time, any heritable predisposition in animals that tends, on average, to increase an individual's reproductive success, compared to the reproductive success of its contemporaries. We know—because the potential costs and benefits of each copulatory act differ so dramatically—that sexual selection will favor different predispositions in males and females toward copulating with the opposite sex. We know that if evolutionary selection pressures have widely affected the patterns of forced copulation in those animals in which forced copulation appears, they will generate narrow and falsifiable predictions (by age, sex, and other variables) of specific circumstances that will be nonrandomly represented among incidents of forced copulation. We also know that in a great many species, including primates, males and females generally behave in ways consistent with these predictions. Moreover, there is evidence that the primate *Homo sapiens sapiens* also exhibits a number of patterns apparently consistent with these predictions.

### III

#### OBJECTIONS CONSIDERED: A GUIDE TO SOME AVOIDABLE ERRORS

If biobehavioral theories are ever to be afforded relevance in the legal machinery that confronts rape, they must first survive scrutiny of both predictions and data with a skeptical eye. Ordinarily, one would proceed directly from the predictions and data to such evaluation. But in this case making that move too quickly, without pausing to consider objections to this entire line of reasoning, would be premature. For while the information just surveyed may be familiar to behavioral biologists and others comfortable with current evolutionary biology, it will likely sound implausible, perhaps even heretical, to others. After all, a thoughtful skeptic might argue:

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154. See Jones, *Evolutionary Analysis in Law*, *supra* note 11, at 1208-11.

Any claim that rape is biological, rather than cultural, in origin—the function of “rape genes” rather than environmental conditioning—must certainly be wrong. We already know that men rape to inspire fear, preserve male privilege, and resist female empowerment. Moreover, the claim that rape evolved because it is good for the species is patently absurd. Well-documented rapes of very young girls and very old women, neither of whom could possibly conceive, render the biological theories purely fanciful. In addition, there are societies in which rape is unknown. Many rapes are planned, not products of spontaneous passion. Many rapists are married, with presumably willing sex partners at home. And not only are many rapists sexually dysfunctional during the attack, but raping itself is unlikely to be adaptive. For even those rapes in which ejaculation occurs inside the victim’s vagina are highly unlikely to result in pregnancy, particularly in an era of widespread contraception and access to abortion. And given the low likelihood of fathering a child, the possible penalties for raping make it simply too risky for procreative purposes. We should therefore resist evolutionary perspectives on sexual aggression. Accepting those perspectives will lead to rapists being excused for otherwise properly punishable transgressions.

This Part addresses each of these objections.<sup>155</sup> I want to make clear, in the most emphatic terms, that the biobehavioral theories and studies are not beyond criticism. Nevertheless, these *particular* objections, common to many works dismissive of biobehavioral reasoning on which future legal thinkers may vulnerably rely, typically trace to often-understandable but nonetheless fundamental misunderstandings about what the biobehavioral theories do and do not say, and do and do not import, even if true.<sup>156</sup> These objections are likely to cloud accurate assessment, probing critique, and constructive law-relevant interdisciplinary synthesis. I categorize these misunderstandings as:

- A. The Error of the False Dichotomy;
- B. The Error of the Damning Determinism;

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155. Some of these objections, as well as several objections not covered here, are raised and considered in Palmer, *supra* note 35; Randy Thornhill & Nancy Wilmsen Thornhill, *The Evolutionary Psychology of Men’s Coercive Sexuality*, 15 BEHAV. & BRAIN SCI. 363 (1992) [hereinafter Thornhill & Thornhill, *Evolutionary Psychology of Men’s Coercive Sexuality*]; Randy Thornhill & Nancy Wilmsen Thornhill, *The Study of Men’s Coercive Sexuality: What Course Should It Take?*, 15 BEHAV. & BRAIN SCI. 404 (1992). See also Kingsley R. Browne, *An Evolutionary Perspective on Sexual Harassment: Seeking Roots in Biology Rather Than Ideology*, 8 J. CONTEMP. LEGAL ISSUES 5, 47-65 (1997); Browne, *supra* note 76, at 1083-1101; Neil M. Malamuth, *Sexually Explicit Media, Gender Differences, and Evolutionary Theory*, 46 J. COMM. 8, 8-10 (1996) (discussing several regrettable misunderstandings about evolutionary theory that have caused some researchers to resist it).

156. Whether these sorts of misunderstandings result from widespread unfamiliarity with the basics of behavioral biology, the failure of biologists to make their theories adequately clear to laypeople, the sometimes overly reductionist language a biologist may at times employ, or something else is largely irrelevant for present purposes.

- C. The Error of the Causal Correlate;
- D. The Error of the Manifest Motive;
- E. The Error of the Sponsoring Species;
- F. The Error of the Single Society;
- G. The Error of the Failed Fornicators;
- H. The Argument from Specious Spontaneity;
- I. The Argument from Substitute Sex;
- J. The Argument from Inconceivable Conception;
- K. The Argument from Modern Maladaptiveness;
- L. The Argument from Incomplete Explanation; and
- M. "Ought-Is" Errors.

#### A. *The Error of the False Dichotomy*

Most commentators who have addressed the biobehavioral theories of sexual aggression explicitly or implicitly frame them as inevitably competitive with the social-cultural-environmental theories, as if only one set can be right. "Nature versus nurture," "biological versus cultural," and the like are popular manifestations of this tendency.<sup>157</sup> As one critic innocently but wholly erroneously understood it, for example, "[Some biologists] term rape a 'biological phenomenon,' that is, an evolutionary or genetic phenomenon *rather than* a phenomenon derived from psychological, societal and cultural factors."<sup>158</sup> Another critic rejected "the biologization of rape" on the ground that it required "the dismissal of social or 'moral' factors."<sup>159</sup>

It is simply erroneous to assume that either biology causes rape or sociocultural environment causes rape.<sup>160</sup> This fabricates a dilemma, and a

157. See, e.g., CLARK & LEWIS, *supra* note 149, at 28 (considering biological and social explanations as mutually exclusive); Barbara Findlay, *The Cultural Context of Rape*, 60 WOMEN LAW. J. 199, 199 (1974) (same); Julia Siegel Schwendinger & Herman Schwendinger, *Homo Economicus as the Rapist in Sociobiology*, in SUNDAY & TOBACH, *supra* note 45, at 85 (same). Even the most thoughtful legal commentators can inadvertently reinforce dichotomous thinking in readers. See, e.g., ROBIN WEST, *CARING FOR JUSTICE* 118 (1997) (referring to "[n]ecessity—whether biological or cultural"); Dripps, *supra* note 4, at 1781 (expressing disinterest in "[w]hether [rape] originates from social or biological causes") (emphasis added).

158. Ethel Tobach & Suzanne Sunday, *Epilogue* to SUNDAY & TOBACH *supra* note 45, at 132 (emphasis added). This assertion appears without citation and is, of course, an extension of the popular (and equally misframed) debate, overviewed in DONOVAN, *supra* note 36, at 60, concerning the origins of sex differences in behavior: Are they "biologically based, or culturally constructed?"

159. John Dupré, *Blinded by "Science": How Not to Think About Social Problems*, 15 BEHAV. & BRAIN SCI. 382, 382-83 (critiquing Thornhill & Thornhill, *The Evolutionary Psychology of Men's Coercive Sexuality*, *supra* note 155).

160. As the Thornhills put it,

The question of whether rape is a sexual act, a violent act, or an act of male domination of a woman is a central theme in a large literature that has grown out of the important place of rape in the feminist movement. The major error in this debate is that the motive behind rape is viewed as either sexual or violence and domination.

contest for disciplinary hegemony, where none need exist. To biologists, sociality, culture, and learning are all reflections of the human brain and its abilities, and they are consequently a reflection of our biology and evolutionary heritage.<sup>161</sup> Biology and environment are indivisible, for nothing lives, grows, or behaves, except within an environment. Biology and culture are therefore likewise indivisible, since culture can only be perceived, analyzed, transmitted, and effected through biological (and therefore principally evolved) neurological pathways.

False dichotomies, pitting biological explanation against another kind, typically reflect an often underrecognized confusion about the mechanisms of causation in living things. "Causation" itself has different meanings in law and in biology.<sup>162</sup> And it is critical that legal scholars evaluating biobehavioral theories of rape keep these distinctions in mind. While lawyers parse distinctions between proximate causes, remote causes, concurrent causes, contributory causes, intervening causes, superseding causes, and "but for" causes of phenomena,<sup>163</sup> behavioral biologists draw a single but crucial distinction between "proximate" causes and "ultimate" causes.<sup>164</sup> These are terms of art that have meanings in biology quite different from any that lawyers might impute to them.<sup>165</sup>

In biology, the term "proximate cause" refers only to the "how" of behavior. It peacefully coexists with the term "ultimate cause," which describes the larger "why" of behavior. More precisely, "proximate causes" describe *immediate causes*, related to the internal mechanisms and development that cause an organism to manifest a particular behavior. They may be defined in terms of physiology and biochemistry, for example, as well as, at times, an organism's unique developmental-environmental history.<sup>166</sup> Most existing sociological and psychological studies of rape, for example, focus exclusively on the proximate, environmental causes.<sup>167</sup>

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Thornhill & Thornhill, *supra* note 65, at 103; see also THORNHILL & PALMER, *supra* note 14, at ch. 1 (noting that "it is not even valid to talk about a trait as being 'primarily' genetic or environmental").

161. "Most evolutionary works on humans . . . include an extended discussion of the *inseparable* and *equally important* influences of genes and environment in the development (ontogeny) and inheritance of all traits of individuals, including cultural or socially-learned behavior." THORNHILL & PALMER, *supra* note 14, at ch. 5 (emphasis added).

162. Parts of this discussion rely on Jones, *Evolutionary Analysis in Law*, *supra* note 11, at 1127-28. See also Owen D. Jones, *Genes, Behavior, and Law*, 15 POL. & LIFE SCI. 101 (1996) [hereinafter Jones, *Genes, Behavior, and Law*].

163. See, e.g., H.L.A. HART & TONY HONORÉ, CAUSATION IN THE LAW (2d ed. 1985).

164. On proximate and ultimate causation generally, see ALCOCK, *supra* note 47, at 2-6; GOLDSMITH, *supra* note 47, at 3-11, 46-69; Alcock & Sherman, *supra* note 82; Low, *supra* note 76, at 40-42.

165. See Jones, *Genes, Behavior, and Law*, *supra* note 162, at 101.

166. See GOLDSMITH, *supra* note 47, at 6-11.

167. See *id.* at 64-65.

“Ultimate causes,” on the other hand, describe *evolutionary processes* by which the same behavior came to be commonly observable.<sup>168</sup> They help to explain why given environmental stimuli tend to yield certain kinds of behaviors, rather than certain alternative behaviors, or indeed randomly responsive behaviors. Ultimate causes may be defined in terms of the history and reproductive consequences of behavior. Proximate and ultimate causes operate together, with all behavior depending on *ultimately* shaped *proximate* mechanisms.<sup>169</sup> Hence biologists studying sexual aggression understand the proximate causes in light of the evolutionary causes. They believe that proximate causes are simply acontextual without consideration of the way ultimate causation shapes the human brain, with the result that certain kinds of proximate causes are more likely to give rise to certain kinds of behaviors than to others.

The importance of this distinction warrants a further clarification. Suppose one were to ask why a male robin sings. One answer would be, “Because hormonal changes triggered by the lengthening of successive days cause the robin to force air over appropriately shaped vocal chords.” But this answer, using terms of *proximate* causation, leaves many questions unanswered. It does not explain, for instance, why it came to pass that lengthening days instead of shortening ones spark these hormonal changes instead of others, or why it came to be that these particular hormonal

168. See ALCOCK, *supra* note 47, at 2-6; GOLDSMITH, *supra* note 47, at 6-11.

169. Indeed, as Goldsmith puts it: “Nothing of importance in biology can be said to have but a single cause.” GOLDSMITH, *supra* note 47, at 8. As Nancy Thornhill states,

Proximate explanations for the existence of adaptations focus on genetic, biochemical, physiological, developmental, social, and all other immediate causes leading to the expression of adaptations. Ultimate explanations of adaptation have their theoretical foundation in causes that operated during evolutionary history to lead to adaptation. . . . Proximate and evolutionary explanations of causation do not conflict. Both proximate and ultimate explanations are needed for complete understanding of adaptations. By understanding the evolutionary purpose of an adaptation, one should be able successfully to predict and understand the proximate causes that affect the expression of the adaptation.

Nancy Wilmsen Thornhill, *supra* note 101, at 90. As Martin Daly and Margo Wilson write,

Also impeding an infusion of evolutionary sophistication among social scientists is the false dichotomy of “social” versus “biological” explanations. Subscribers to this dichotomy equate biology with its meehamistic subdisciplines such as genetics and endocrinology and think of biological influences as intrinsic and irremediable, to be contrasted with extrinsic and remediable social influences. Moreover, since putative biological influences are invariant and constraining, those who propose their existence (the so-called nature crowd) are unmasked as pessimists and reactionaries, while the advocates of “alternative” social influences (the so-called nurture crowd) are optimists and progressives. This ideology, predicated on a profound incomprehension of evolutionary biology, pervades the social sciences, in which it is often accepted by nature advocates as thoroughly and thoughtlessly as by their nurture foes. A presumption of this prevalent worldview is that biology (falsely defined as the study of the invariant innate) is mute about aspects of sociality and behavior manifesting developmentally, experientially, and circumstantially contingent variations. The very demonstration of any such contingency is seen as an exercise in the alternative, antibiological mode of explanation. The irony is that developmentally, experientially, and circumstantially contingent variation is precisely what evolutionary biological theories of social phenomena are about.

Daly & Wilson, *Evolutionary Psychology and Marital Conflict*, *supra* note 60, at 24.

changes cause singing rather than, say, one-legged hopping. These latter questions concern the historical origins of currently manifested gene combinations, and thus require an inquiry into ultimate causation. The *ultimate* cause of singing behavior, evolutionary analysis reveals, reflects the fact that the remote ancestors of today's singing males, through their singing, claimed territory, attracted mates, and left more offspring than did contemporaries not predisposed to sing. To the extent the ability to sing and the urge to sing in response to certain environmental cues were influenced by heritable predispositions, the proportion of male robins in successive generations that sang inevitably increased over time until the trait became typical of males of the species.

In the same fashion, virtually all behavior—including many human behaviors—is most completely understood in terms of complementary proximate *and* ultimate causes.<sup>170</sup> That is, when people exhibit law-relevant behaviors, there are often two very different kinds of causes operating simultaneously. If rape is significantly correlated with attitudes dismissive of female autonomy, for example, an evolutionary perspective suggests why such attitudes are likely to manifest, in part, in forced *copulation*, rather than in any of a whole host of other nonsexual activities (say, forced tattoos, forced sushi, or forced motorcycle-washing).

Consequently, it is thoroughly consistent with biological theories of causation that variations in the environment, such as cultural attitudes, affect the incidence of rape. That point cannot be overemphasized, because of common assumptions to the contrary. Biologists do not dispute that many correlations to rape identified by social scientists indeed contribute to rape behavior. They do dispute, much more narrowly, that rape can be *fully* understood or explained absent supplementation with biologically informed perspectives.<sup>171</sup>

### B. *The Error of the Damning Determinism*

Legal scholars writing on rape encounter social science claims that biobehavioral theories generally, and rape theories in particular, at least in

170. See Thornhill et al., *supra* note 118, at 103.

171. Such a view is making increasing headway in the context of gender differences. Pratto, for example, argues,

[C]ulture is part of our nature. It is thus pointless to build theories that refuse to examine either nature or culture as having influence on the gender gap. . . . [B]ecause we are still a sexually reproducing organism and exhibit a species-specific psychology . . . biological factors cannot be relegated to ancient history. The view I take is that nature and culture cannot be meaningfully separated: they are mutually influential on each other and jointly influential on the nature of the gender gap. . . . Evolutionary theories are not alternative explanations to "situational" (e.g., cultural, social psychological, historical, structural) theories—in fact, they might be considered the grandparent of situational theories in that they predict that organisms will change their behavior and their features in different environments.

See, Pratto, *supra* note 76, at 181-82, 200.

the human context, are “genetically deterministic.”<sup>172</sup> Some authors have understood the theories to suggest that male sexuality is “uncontrollable,”<sup>173</sup> and assume that they inexorably lead people to think in terms of the old and properly discredited “irresistible impulse” theories.<sup>174</sup> Rarely has so much been said about subjects that have not been raised. For in properly rejecting genetic determinism, social scientists would find few more zealous allies than evolutionary biologists and theorists of biobehavioral influences on rape patterns.

We can trace the confusion about genetic determinism to at least two sources. The first, like *The Error of the False Dichotomy*, is a failure to appreciate the complementariness of proximate and ultimate causation. Evolved predispositions operate probabilistically and are observable in species-typical, environment-sensitive patterns. Because probability is not inevitability, predispositions simply do not guarantee any behavior from any individual. And even high probabilities about patterns likely to emerge from some small subset of a population tell us little reliable about how a single individual is likely to behave.

The second source of confusion traces to the all-too-common failure to distinguish between two very different aspects of behavioral biology: (1) behavioral genetics; and (2) evolved or “species-typical” psychology.<sup>175</sup> Behavioral genetics involves efforts to trace the different behaviors of different individuals to different versions (alleles) of genes. For some behaviors this is an appropriate approach, occasionally law-relevant. By contrast, the evolutionary psychology aspect of behavioral

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172. See, e.g., ALLISON & WRIGHTSMAN, *supra* note 5, at 36 (commenting on “the biological deterministic theory”); Ethel Tobach & Betty Rosoff, *Preface* to SUNDAY & TOBACH, *supra* note 45, at v (describing the volume as “the first in a series exposing the application of genetic determinism to justify racist and sexist theories and activities”); Ethel Tobach & Suzanne R. Sunday, *Prologue* to SUNDAY & TOBACH, *supra* note 45, at xi (“[G]enetic determinism is the basic concept of sociobiology.”). Often, such assumptions come packaged in the language of “programming.” See, e.g., TIMOTHY BENEKE, *MEN ON RAPE* (1982) (quoting Sanday as saying: “It’s important to understand that violence is socially and not biologically programmed”); Sarah Lenington, *Sociobiological Theory and the Violent Abuse of Women*, in SUNDAY & TOBACH, *supra* note 45, at 13, 15-16 (claiming that evolutionary psychologists “assume . . . that these behaviors are ‘genetically programmed’”). For a popular media account describing biobehavioral theories as about genetic programming, see Mary Batten, *Why Men Rape*, 90 SCI. DIGEST, July 1982, at 64.

173. See, e.g., SUE LEES, *RULING PASSIONS: SEXUAL VIOLENCE, REPUTATION AND THE LAW* 6 (1997) (characterizing the theories as “the idea of male sexuality as natural and therefore uncontrollable”); Andrew Futterman & Sabrina Zirkel, *Men Are Not Born to Rape*, 15 BEHAV. & BRAIN SCI. 385, 385 (critiquing Thornhill & Thornhill, *The Evolutionary Psychology of Men’s Coercive Sexuality*, *supra* note 155) (“[The Thornhills’ article] is yet another attempt to attribute the cause of a complex human social behavior, in this case rape, to uncontrollable biological forces.”).

174. On the origins of the irresistible impulse concept, see Scully & Marolla, *supra* note 33, at 294, 295-96.

175. An example of this confusion appears in Susan B. Sorenson & Jacquelyn W. White, *Adult Sexual Assault: Overview of Research*, 48 J. SOC. ISSUES 3 (1992) (“If [biological processes influenced rape], the many ‘normal’ men who perpetrate dating violence would be expected to harbor . . . defective genetic structures, imbalanced endocrine systems, or brain dysfunctions.”).

biology, instead of investigating differences between individuals, investigates the sameness of individuals across a species in order to predict and discover which behavioral patterns are most likely to emerge and why. That is, it is an effort to trace the different behaviors of different individuals not to different genes, but rather to different *environmental* stimuli encountered by neurologically similar brains, sporting similar, evolved, contingent, and highly conditional decisional algorithms.<sup>176</sup> Evolutionary psychology predicts species-wide (in some cases sex-wide) physical, information-processing commonalities that have evolved to yield predispositions toward certain behaviors, in the face of certain categories and confluences of stimuli.

The tendency to assume that all biobehavioral theories trace sexual aggression to genetic differences between males tends, in turn, to increase apprehension of genetic determinism. This is unfortunate for two reasons. First, while it may be the case that some differences between rapists in propensity to rape can trace to genetic differences (such as a generalized heritable psychopathy), such differences are unlikely to account for any but a small percentage of rapes.<sup>177</sup> Second, neither this explanation, nor the not incompatible one that traces the larger percentage of rapes to male-typical evolved psychology, is genetically deterministic.<sup>178</sup>

But as feminist evolutionary biologist Barbara Smuts put it,

[Saying that] male aggression against women reflects selection pressures operating during our species' evolutionary history . . . in no way implies that male domination of women is genetically determined, or that frequent male aggression toward women is an immutable feature of human nature. . . . [F]ar from being an immutable feature of human nature, male aggression toward women varies dramatically depending on circumstances.<sup>179</sup>

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176. An excellent discussion of the differences between behavioral genetics and evolutionary psychology appears in Linda Mealey, *Kinship: The Tie That Binds (Disciplines)* (1999) (unpublished manuscript, on file with author).

177. Selection for heritable psychopathy would be frequency-dependent. Thus, heritable psychopathy would likely be adaptive and maintained in a population only so long as it remained rare (i.e., only so long as it appears at low frequencies, such as 1% to 3%). See, e.g., Linda Mealey, *The Sociobiology of Sociopathy: An Integrated Evolutionary Model*, 18 *BEHAV. & BRAIN SCI.* 523 (1995); see also THORNHILL & PALMER, *supra* note 14, at ch. 3. Because heritable psychopathy would be polygenic, breeding would yield genetic variation even among psychopaths, which may in turn lead to heritable variances in rape propensities. Personal Communication with Randy Thornhill (Dec. 16, 1998).

178. See THORNHILL & PALMER, *supra* note 14, at ch. 3.

179. Barbara Smuts, *Male Aggression Against Women: An Evolutionary Perspective*, 3 *HUM. NATURE* 1, 2, 24 (1992) (citations omitted); see also Pratto, *supra* note 76, at 179, 220 ("Thus, a biological view does not need to lead to deterministic predictions, but it suggests that the extreme version of cultural determinism—that absolutely any cultural arrangement is possible—may be wrong.")

Genetic determinism, as it is popularly understood and feared, is a social construct, a mythical state of mind attributed to behavioral biologists (typically without citation)<sup>180</sup> and then cathartically demolished.

### C. *The Error of the Causal Correlate*

One of the most significant hindrances to integrating proximate and ultimate explanations of rape behavior, in pursuit of a more robust model on which to base legally facilitated deterrence, is that many scholars claim that the important questions have already been satisfactorily answered. They already know why men rape.

Perhaps. On close scrutiny, however, many supposed explanations for why men rape overdeduce cause and intent from effect, function, and correlation. These several aspects of rape, all important and related, are nonetheless logically distinct. Mixing them together unreflectively can therefore obscure the systematic discovery of causation in fact.

Brownmiller's often-imitated mistake serves as an example of reasoning that inadvertently conflates function and intent: "From prehistoric times to the present, I believe, rape has played a critical function. It is nothing more or less than a conscious process of intimidation by which *all men keep all women* in a state of fear."<sup>181</sup> It is a simple matter to quote such a passage without full context. And, in fairness, Brownmiller offers much detail in attempting to bolster this bold claim. But my narrow point here is that consumers of rape scholarship, such as legal thinkers, should not mistake claims about the *meanings* of rape to be facts about the *causes* of rape.

180. See, e.g., JAGGAR, *supra* note 37, at 106-13. Many of the points Jaggar makes, in her intelligent rejection of determinism, are certainly shared by the large majority of credible behavioral biologists. Indeed, I am aware of no biologists today that would significantly disagree with her conclusions that biology and culture are inextricably intertwined as explanatory mechanisms for producing complex human behavior.

181. BROWNMILLER, *supra* note 35, at 15; see also ODEM & CLAY-WARNER, *Introduction to CONFRONTING RAPE AND SEXUAL ASSAULT*, *supra* note 7, at xi (asserting that "rape is a *means* of inducing fear in women, limiting their movements, and reinforcing their dependence on men") (emphasis added); WENDY E. STOCK, *Feminist Explanations: Male Power, Hostility, and Sexual Coercion*, in *SEXUAL COERCION*, *supra* note 7, at 61, 72 (arguing that sexual coercion by men serves the function of creating a state of sexual terrorism for women, with the intent and effect of maintaining social control of women). Brownmiller's message has not changed. See, e.g., SUSAN BROWNMILLER, *Making Female Bodies the Battlefield*, *NEWSWEEK*, Jan. 4, 1993, at 37 (describing rape as, in part, caused by the rapist's need "to give vent to his submerged rage against all women *who belong to other men*"). A resolution of the U.N. Security Council proclaims, "Rape is an abuse of power and control in which the rapist seeks to humiliate, shame, embarrass, degrade, and terrify the victim. The primary objective is to exercise power and control over another person." *The Situation of Human Rights in the Territory of the Former Yugoslavia: Note by the Secretary-General*, U.N. General Assembly Security Council, 48th Sess., Agenda Item 115(c), U.N. Doc. A/48/92, S/25341 (1993) cited in BEVERLY ALLEN, *RAPE WARFARE: THE HIDDEN GENOCIDE IN BOSNIA-HERZEGOVINA AND CROATIA* 119 (1996). In a chapter entitled "Why Do Men Rape Women?" two co-authors build conclusions about why men rape upon "women's experiences." ANDREA MEDEA & KATHLEEN THOMPSON, *AGAINST RAPE* (1974). There is of course a possible link between victim experiences and perpetrator intent, but not a properly presumptive one.

Meaning is a construct created by the analyst and offered in hope that its characterization of an act is somehow insightful. Causation is a scientific concept describing a particular relationship between a behavior and its antecedents.

Rape scholarship does not always make it easy to disentangle meaning and causation. Consider, for example, the following passage from a study of wartime rapes in the former Yugoslavia:

A rape *is* an aggressive and humiliating act, as even a soldier knows, or at least suspects. He rapes *because* he wants to engage in violence. He rapes *because* he wants to demonstrate his power. He rapes *because* he is the victor. He rapes *because* the woman is the enemy's woman, and he wants to humiliate and annihilate the enemy. He rapes *because* the woman is herself the enemy whom he wishes to humiliate and annihilate. He rapes *because* he despises women. He rapes *to* prove his virility. He rapes *because* the acquisition of the female body means a piece of territory conquered. He rapes *to* take out on someone else the humiliation he has suffered in the war. He rapes *to* work off his fears. He rapes *because* it's really only some "fun" with the guys. He rapes *because* war, a man's business, has awakened his aggressiveness, and he directs it at those who play a subordinate role in the world of war.<sup>182</sup>

The passage has great moral force, but readers may take very different things from it. By explaining why rape is wrong, the words properly provoke outrage at rape, and they help readers to understand what rape means to women and soldiers, and possibly to other men. At the same time, the unqualified language of "is," "because," and "to" seems to make statements of fact about *why* men rape. (The very etymology of "be-cause" suggests a claim about causation.)<sup>183</sup> And it is all too easy to slide from social meaning to causation, without realizing the leagues one has crossed in doing so.

Nevertheless, functional effect is not necessarily intended effect. Evidence proffered in support of these conclusions about motivation typically extrapolates from a small number of individual (and admittedly powerful) rape episodes without convincingly demonstrating, or often even attempting to demonstrate, that the parts are truly *representative* of the whole—that what was correlated with some rapes is correlated, generally, with most or all rapes. Committing The Error of the Causal Correlate would be

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182. Alexandra Stiglmayer, *The Rapes in Bosnia-Herzegovina*, in *MASS RAPE: THE WAR AGAINST WOMEN IN BOSNIA HERZEGOVINA* 82, 84 (Alexandra Stiglmayer ed. & Marion Faber trans., 1994) (emphasis added); see also Rhonda Copelon, *Surfacing Gender: Reconceptualizing Crimes Against Women in Time of War*, in *MASS RAPE*, *supra*, at 197, 198 ("Rape is sexualized violence that seeks to humiliate, terrorize, and destroy a woman based on her identity as a woman.").

183. 1 THE OXFORD ENGLISH DICTIONARY 746 (1961).

more easily dismissible as journalistic license were it not for the frequency with which it resurfaces in legal scholarship,<sup>184</sup> often in support of concrete legal implications.<sup>185</sup> If claims about causation underlie behavioral models, upon which legal strategies will be built, we should be more careful, early on, in examining those claims.

Moreover, correlation is not causation. Consider, for example, the correlation in many contexts between aggression and sex. As a logical matter, sex could be a vehicle for aggression, as commonly assumed and asserted, or aggression could be a vehicle for sex. Only scientific method and rigorous hypothesis-testing can establish which causes what. Similarly, it could be that rape is an epiphenomenon of sociocultural messages that devalue women. But it could also be the case that devaluing women is simply a precondition for rape. That is, respect may be an inhibiting factor that suppresses otherwise more persistent sexuality, and where society insufficiently fosters respect, rape is a result. That does not automatically mean that rape is primarily a vehicle for expressing lack of respect, any more than eating is primarily a vehicle for expressing chewing. Legal thinkers should be skeptical of all conclusions that reason, without substantially more, from correlate to cause.

#### D. *The Error of the Manifest Motive*

Just as it is easy to confuse correlation with causation, it is easy to overentwine causation with motivation. This can lead to the assumption that identifying motives for rape will alone provide sufficient insight into the causes of rape.<sup>186</sup> For example, that assumption may lead one to

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184. An example often invoked as evidence of why men rape, rather than why some men, or this man raped, concerns the infamous My Lai Massacre, after which a dead and presumably raped woman was left spread-eagled—with an 11th Brigade patch between her legs. (As Baker notes in her article, *supra* note 16, at 570 n.35, this incident is recounted in BROWNMILLER, *supra* note 35, at 103-05). Compare what this might imply with this passage, from DREW WESTEN, *PSYCHOLOGY: MIND, BRAIN, & CULTURE* 717 (1996):

The most common and least violent of rapists are usually solitary, socially inadequate men with low self-esteem, whose primary aim is to reassure themselves of their sexual adequacy and masculinity by exercising power over their victim. When interviewed months or years later, they typically report the fantasy that the women they rape will fall in love with them, and their behavior during the rape reflects this fantasy: They tend to kiss and fondle their victims, to compliment them on their beauty, to avoid violence, and to become distressed if the woman becomes too manifestly upset or struggles too much.

Clearly, if one is going to make generalizable inferences about why men rape, the behavior of the many, rather than the few, is more significant. Of course, identifying the relative frequencies of different rape behaviors is likely to remain a difficult empirical issue.

185. See, for example, the Violence Against Women Act of 1994, Pub. L. No. 103-322, §§ 40111(a)-40611, 108 Stat. 1796, 1903-53 (codified as amended in scattered sections of 8, 18, 28, and 42 U.S.C.), which is discussed *infra* text accompanying notes 323-340.

186. This can also lead to debates, some more useful than others, over what is the "primary" or "dominant" motive for rape. See, e.g., GROTH, *supra* note 33, at 2 ("Forcible sexual assault is motivated more by retaliatory and compensatory motives than by sexual ones."); Murray L. Cohen et al., *The Psychology of Rapists*, 3 *SEMINARS IN PSYCHIATRY* 307, 311 (1971) (discussing "primary"

conclude that if a rapist is not consciously motivated by a desire to father a child through the victim then theories of biobehavioral influences on rape that build on the potential reproductive significance of rape must be wrong. It is then a short step to the seemingly related conclusion that if a rapist himself manifests a motive for rape other than sexual desire (such as a desire to humiliate) then sexual desire is also unrelated to rape.<sup>187</sup>

The problem with this reasoning is that it overestimates the importance of conscious motivation in biobehavioral theories and reflects a deep misunderstanding of the process by which evolution affects behavior.<sup>188</sup> Natural selection affects behavior by having favored, over time, those brains that increased the probability of certain kinds of behaviors in response to certain kinds of environmental stimuli, whenever those behaviors, on average, increased reproductive success (however indirectly). For example, those organisms whose brains gradually increased the urgency of food acquisition in response to neural stimuli signaling an empty stomach tended to leave more descendants than those organisms whose brains did not, or whose brains, in response, increased the probability of other kinds of behavior unlikely to provide nutrition gains. Brains have a variety of mechanisms by which to increase the likelihood of certain behaviors; inspiring a conscious motive to achieve the adaptive result is merely one of them, often unnecessary.<sup>189</sup> The urge to eat can exist quite independently of

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aims and "dominating" motives); Janssen, *supra* note 44, at 12 ("The primary motive is to control the victim . . ."); Ken Plummer, *The Social Uses of Sexuality: Symbolic Interaction, Power and Rape*, in PERSPECTIVES ON RAPE AND SEXUAL ASSAULT 37, 42 (June Hopkins ed., 1984) ("In single rape, in group rape and in wartime rape, it seems that sex per se is rarely (probably never) the dominant factor; rather domination, anger and male camaraderie seem to be the central concerns."); Richard T. Rada, *Psychological Factors in Rapist Behavior*, in ALAN SOBLE, THE PHILOSOPHY OF SEX: CONTEMPORARY READINGS 21, 24 (2d ed. 1991) ("The primary motive in the rapist is the desire to control the victim in the specific instance of rape and, by extension, all women."); Tamara L. Tompkins, *Prosecuting Rape as a War Crime: Speaking the Unspeakable*, 70 NOTRE DAME L. REV. 845, 855 (1994/95) ("The primary goal of the typical rapist is not achieving sexual satisfaction, but rather fulfilling a need to exercise control over a woman and thereby dominate her."). Some authors have developed systems to classify rapists, according to the proportions of sexual and aggressive motives for the act. See, e.g., GROTH, *supra* note 33; see also Mary Koss & Kenneth E. Leonard, *Sexually Aggressive Men: Empirical Findings and Theoretical Implications*, in NEIL M. MALAMUTH & EDWARD DONNERSTEIN, PORNOGRAPHY AND SEXUAL AGGRESSION 213, 232 (1984) (citing, as examples, Cohen et al., *supra*; A. Nicholas Groth et al., *Rape: Power, Anger, and Sexuality*, 134 AM. J. PSYCHIATRY 1239 (1977)). For an overview, see Raymond A. Knight et al., *Classification of Sexual Offenders: Perspectives, Methods, and Validation*, in RAPE AND SEXUAL ASSAULT, *supra* note 30, at 222.

187. See Florence L. Denmark & Susan B. Friedman, *Social Psychological Aspects of Rape*, in SUNDAY & TOBACH, *supra* note 45, at 59, 61.

188. See, e.g., Neil M. Malamuth, *The Confluence Model of Sexual Aggression: Feminist and Evolutionary Perspectives*, in BUSS & MALAMUTH, *supra* note 30, at 269, 272 (explaining how sound evolutionary theories of behavior simply do not require conscious motivation).

189. Indeed, evolutionists have frequently gone to great lengths to clarify that conscious motivation toward adaptive ends is unnecessary for adaptation. Daly and Wilson, for example, write:

[E]volutionists are misunderstood to claim that fitness itself is what people and other animals strive for. In actuality, fitness consequences are properly invoked not as direct objectives or

any conscious motive to acquire nutrition, and the urge to have sex can exist quite independently of any conscious motive to reproduce. The absence of the conscious motive to achieve a biologically useful result does not make either eating or sex incapable of being understood in biological terms. And the closer the nexus between the behavior at issue and behavior that was adaptive during the environment of evolutionary adaptation, the more powerfully human evolved psychology likely affects the patterns of that behavior, regardless of subjective awareness that it does so.

Proximate and ultimate causation operate simultaneously, and a variety of proximate desires can also operate simultaneously. Consequently, the hypothesis that rape is motivated by hostility or a desire to humiliate is not necessarily incompatible with the hypothesis that evolutionary influences on sexual behavior contribute to rape patterns. Not all causes are manifested in motives.

### *E. The Error of the Sponsoring Species*

Legal thinkers are apt to encounter commentators who frequently (if unintentionally) caricature the view that evolutionary processes affect the incidence of rape by saying that “[t]his [biological] view argues that rape is a male instinctive reaction that is a drive to perpetuate the species.”<sup>190</sup> The view so characterized—that rape exists because it is good for the species—must be incorrect, one could quickly conclude, for two reasons. First, all experience makes clear that humans are not mindless automata, governed by instinct. Second, if behavior did evolve to perpetuate the species (as the author quoted above thinks biologists think), then women should have the same drive as men and would willingly copulate whenever reproduction was possible. Since they do not . . . Q.E.D. Authors who advance such arguments adduce evidence “inconsistent with the proposition that rape is the

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motivators, but as explanations of why certain proximal objectives and motivators have evolved to play their particular roles in the causal control of behavior. Selection designs organisms to cope with particular adaptive problems that have been sufficiently persistent across generations, both in their essential forms and in their significance, to have favored particular solutions. These evolved solutions necessarily entail contingent responsiveness to environmental features that were statistical predictors of the average fitness consequences of alternative courses of action in the past. Adaptation is not prospective; adaptive performance in contemporary environments depends on the persistence of essential features of past environments.

Daly & Wilson, *supra* note 60, at 23-24.

190. HARVEY WALLACE, FAMILY VIOLENCE, LEGAL, MEDICAL, AND SOCIAL PERSPECTIVES 256 (1996) (offering this characterization in his discussion of “Women and Sexual Violence”). The error is not limited to critics, however, as even the sympathetic or agnostic often innocently misunderstand the biological theories, as well. *See, e.g.*, W.L. Marshall & H.E. Barbaree, *A Behavioral View of Rape*, 7 INT’L J. L. & PSYCHOL. 51 (1984) (“There is some evidence to suggest that the potential to engage in forced heterosexual acts (rape), may serve to enhance species-survival . . .”).

result of a need to perpetuate the species," assuming that they are then done with the matter.<sup>191</sup>

This often-encountered summary of the evolutionary perspective suffers from two distinct fatal flaws. First, characterizing psychological predispositions as "instinctive reaction" implies a mindless reflexiveness and inevitability in human behavior that biologists simply do not believe exists in the context of such complex behavior as sexual aggression. Second, and more significantly, it is inconsistent with the most fundamental principles of evolutionary biology to say that a trait evolves "to perpetuate the species."<sup>192</sup> Modern biologists do not make this claim.

The key mistake here is as destructive to discourse as it is easy to make. Mainstream biology abandoned this particular brand of "group-selection" thinking some time ago (in 1966) in favor of the more theoretically and empirically robust model of selection operating at the level of the smallest heritable traits (generally genes).<sup>193</sup> What this means (as foreshadowed earlier) is that heritable behavioral predispositions persist and spread for any significant length of time only if they increase, on average, the reproductive success of the *individuals* bearing them.<sup>194</sup> Observable traits are therefore the product of *de facto* competition between individuals of a species, rather than the product of individual contributions to the success of the species that may come at significant costs to the individual. Nothing in contemporary behavioral biology suggests that rape (or any other trait) evolved to perpetuate the species, because when species persist it is only as an epiphenomenon of the aggregated success of individuals' traits that are effective at replicating themselves. Whether rape is good for the species is irrelevant to critical assessment of the life science theories of rape.

#### F. *The Error of the Single Society*

Some early rape scholars reasoned that biobehavioral theories about evolutionary influences on patterns of sexual aggression are disproved by the existence of even a single human society in which rape does not exist.<sup>195</sup> This line of reasoning continues to surface in modern rape literature.<sup>196</sup> Such a claim makes sense if two things are true: (1) biological

191. Allison and Wrightsman make this error, after noting that sometimes rape victims are men. See ALLISON & WRIGHTSMAN, *supra* note 5, at 36-37.

192. See, e.g., *id.* at 17 (misascribing to biologists the contention that "[s]ocial behavior evolves because it is adaptive to propagating the species"); Blackman, *supra* note 45, at 118 (claiming that those "who advance biological explanations for social characteristics [argue that these] are adaptive for the species").

193. See *supra* notes 69-71 and accompanying text.

194. See *supra* note 53.

195. See, e.g., Griffin, *supra* note 35, at 27 (purporting to refute theories of biological influence with the claim: "But in truth rape is not universal to the human species."). Nothing in biobehavioral theories of behavior suggests that the incidence of rape will be constant across all human societies.

196. For example, Sanday writes,

theory predicts complete universality across the human species; and (2) a society without rape exists. Both conditions are necessary, but neither is true.

First, biobehavioral theories are probabilistic. Because they are not about "always," they cannot be disproved by a "sometimes." This is not evasiveness, but rather a necessary by-product of the fact that behavior is plastic and can be influenced by predispositions (not predeterminations) that are environmentally sensitive.<sup>197</sup> While the absence of rape from societies encompassing a large percentage of the human population would make more difficult the case for evolutionary influences specific to sexual aggression, the existence of evolutionary influences would not be significantly undermined by the absence of universality alone. Second, and despite continued popular belief that Margaret Mead and Peggy Reeves Sanday discovered societies where rape was unknown,<sup>198</sup> it has been demonstrated convincingly that this is untrue.<sup>199</sup>

### G. *The Error of the Failed Fornicators*

Some authors claim that the theory that sexual desire influences patterns of rape "has been discredited . . . [because] high levels of sexual dysfunction have been reported."<sup>200</sup> The argument is that the high number

Cross-culturally the incidence of rape varies considerably. . . . To explain such variation in the incidence of rape we cannot fall back on ethnocentric assumptions about the 'animal' or rape-prone nature of men. Innate tendencies do not explain the incidence of rape. Whatever the biological basis for sexuality may be (and I do not deny a biological component), the variation in the incidence of rape cross-culturally demonstrates that culture is a powerful force in channelling the human sex drive.

Peggy Reeves Sanday, *Rape and the Silencing of the Feminine*, in TOMASELLI & PORTER, *supra* note 30, at 84, 84-85. Sanday then goes on in the balance of her chapter to suggest that variation between cultures that can be correlated to sociocultural contexts and ideology of male dominance renders biological arguments incorrect. See also Ruth Seifert, *War and Rape: A Preliminary Analysis*, in MASS RAPE, *supra* note 182, at 56 ("Ethnological research offers a further argument against considering rape in any biologicistic or 'naturalizing' way, for some societies have a high incidence of rape and others a low one.").

197. See *supra* Section I.B.

198. For the continued influence of Sanday's study, see, for example, its republication, to favorable comments, in CONFRONTING RAPE AND SEXUAL ASSAULT, *supra* note 7, at 93.

199. See, e.g., DEREK FREEMAN, MARGARET MEAD AND SAMOA: THE MAKING AND UNMAKING OF AN ANTHROPOLOGICAL MYTH 849 (1983) (estimating that the rape rate in Samoa is actually higher than that in the U.S.); see also ELLIS, *supra* note 30, at 6 ("In West Sumatra, one of the reputed 'rape-free' societies . . . Sanday . . . found the actual rape rate was about 19 per 1 million females, low by most Western standards, but not entirely 'rape-free.'"); Craig Palmer, *Is Rape a Cultural Universal? A Re-Examination of the Ethnographic Data*, 28 ETHNOLOGY 1 (1989). Samoa, which Margaret Mead reported in the 1930s to be essentially rape free, has since been shown to have an official rape rate twice as high as that for the United States. See WRANGHAM & PETERSON, *supra* note 93, at 282-83; Palmer, *supra*, at 6; Patricia D. Rozée, *Forbidden or Forgiven? Rape in Cross-Cultural Perspective*, 17 PSYCHOL. WOMEN Q. 499, 512 (1993) (concluding, after cross-society random sample of 35 societies, that "[t]he notion of a rape-free culture was not supported by this study").

200. Adrian Furnham & Natalie Boston, *Theories of Rape and the Just World*, 2 PSYCHOL., CRIME & L. 211, 214 (1996) (citing A. Nicholas Groth & Ann Wolbert Burgess, *Rape: A Sexual Deviation*,

of failed fornicators suggests that sex is not a significant motive in rape. By some reports, thirty-four percent of assailants fail to ejaculate in the victim.<sup>201</sup> Certainly, there is some percentage of dysfunction high enough to present a significant challenge to the evolutionary theories. But this is not it. Theories of evolutionary influence do not require that every assailant successfully ejaculate. That the majority of rapists apparently do ejaculate is amply sufficient. It is necessary only that in the environment of evolutionary adaptation the reproductive success benefits of accumulated rape attempts exceeded the costs of those attempts (on average, across all individuals bearing psychological, context-specific predispositions affecting the likelihood of rape). Dysfunction during individual assaults, even consistent dysfunction of some rapists during sequential assaults, in no way falsifies the theories.

#### H. *The Argument from Specious Spontaneity*

Legal thinkers should be aware that many scholars misattribute to the biological theories of sexual aggression the necessity of spontaneity in rapes.<sup>202</sup> A premeditated rape is thought to be conclusive proof that the biology of sexual desire is irrelevant. The logic, apparently, is that any planned sex would be non-sex, since sexual desire is impulsive.<sup>203</sup> As others have pointed out, however, we have no trouble accepting that many consensual liaisons are sexual in function and purpose, even when one or both of the participants planned the preliminaries.<sup>204</sup> In dating, for example, one party's planning for sex does not make subsequent consensual sex nonsexual. The biological theories of evolutionary contributions to rape causation require only that males, as a function of evolutionary processes, be highly motivated to pursue or create opportunities for copulation—not that they do so on sudden impulse.

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47 AM. J. ORTHOPSYCHIATRY 400 (1977)); see also ALLISON & WRIGHTSMAN, *supra* note 5, at 36 (suggesting theory undercut by evidence that "some [rapists] were unable to achieve erections, or do not ejaculate during the rape"); TEDESCHI & FELSON, *supra* note 116, at 313 (noting that the fact that some rapists experience sexual dysfunction has been cited as evidence against sexual motivation).

201. See HALL, *supra* note 128, at 76.

202. See, for example, BROWNMILLER, *supra* note 35, at 183, who in commenting on AMIR, *supra* note 41, notes, "Far from being a spontaneous explosion by an individual with pent-up emotions and uncontrollable lusts, [Amir] discovered the act was usually planned in advance and elaborately arranged by a single rapist or a group of buddies."

203. Richard T. Rada writes,

Rape is a crime of control, power, and dominance. The primary motive in the rapist is the desire to control the victim in the specific instance of rape and, by extension, all women. In this sense, the aggressive component appears to be more dominant in rape than the sexual component. In fact, for many rapists the sexual act itself appears to be less important than the ritual of the rape event, which is more often carefully planned than impulsive.

Rada, *supra* note 32, at 24.

204. For further discussion of this point, see Palmer, *supra* note 35, at 516.

### I. *The Argument from Substitute Sex*

Legal thinkers should also avoid the commonly observed presumption that biological theories of sexual aggression are disproved by evidence that many rapists have consensual sex partners available.<sup>205</sup> Some commentators that rape scholars may encounter have gone so far as to claim that the ready availability of masturbation, as a substitute for sex, exposes a weakness in the biobehavioral theories.<sup>206</sup>

It is a mistake to understand those theories to be about sexual *release*—as if any release will do—rather than sexual *desire*.<sup>207</sup> At the same time that natural selection might have favored a general predisposition toward increasingly aggressive sexuality, in the face of unsuccessful mating efforts, natural selection certainly favored a general predisposition to increase the number of sex partners, not just the number of sex acts *per* partner. (Recall that male reproductive success, in contrast to female reproductive success, tends to increase as the number of sex partners increases.) Biobehavioral theory suggests that males without consensual mating opportunities might be most likely to rape, but it does not suggest that available sex with one female will necessarily preclude rape of other females. In the white-fronted bee-eater bird, for example, raping males (who narrowly target females during the fertile part of their individual cycle) often have contemporaneously willing and reproductive mates.<sup>208</sup> This is consistent with the hypothesis that “forced copulation is an additional mating tactic rather than a substitute.”<sup>209</sup>

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205. See, e.g., AMIR, *supra* note 41, at 321 (“If it is ‘sexual hunger,’ we already alluded that lower-class boys are not deprived of sexual outlet.”); GORDON & RIGER, *supra* note 2, at 45 (asserting that sex drive is not an important constituent of rape causation, since “[r]esearch on rapists in prison indicates that about a third are married and were sexually active with their wives at the time of the assault [and] [o]f those not married, the majority were involved in consenting relationships”); LANGEVIN, *supra* note 32, at 393 (“About 6-in-10 rapists are married at the time of the offence and some writers assume that sexual deprivation is not a factor in the commission of the act.”); Richard T. Rada, *Psychological Factors in Rapist Behavior*, in CLINICAL ASPECTS OF THE RAPIST, *supra* note 32, at 21-22 (arguing that rape cannot be only sexual, since rapists have other sexual outlets); Stock, *supra* note 181, at 62 (“[S]exual coercion is motivated by power, not lust” because in a clinical study of 500 identified offenders, “one-third of the offenders were married and sexually active with their wives at the time of their assaults; the majority of the nonmarried sample were actively involved in a variety of consensual sexual relations with others at the time of their offenses.”). *But see* Palmer, *supra* note 35, at 516 (critiquing this line of reasoning).

206. For example, Stock writes, “When this [feminist approach] is applied to rape . . . it becomes evident that rape is not only the result of uncontrolled lust . . . [because that does] not sufficiently explain why rape occurs when alternative sexual outlets are always available, including masturbation . . .” Stock, *supra* note 181, at 62.

207. As one evolutionist noted, “[m]ost patrons of prostitutes, adult bookstores, and adult movie theatres are married men, but this is not considered evidence for lack of sexual motivation.” Palmer, *supra* note 35, at 516 (quoting DONALD SYMONS, *THE EVOLUTION OF HUMAN SEXUALITY* 280 (1979)).

208. See Emlen & Wrege, *supra* note 111, at 10-11.

209. R. ROBIN BAKER & MARK A. BELLIS, *HUMAN SPERM COMPETITION: COPULATION, MASTURBATION, AND INFIDELITY* 37 (1995) (citing ELLIS, *supra* note 30).

J. *The Argument from Inconceivable Conception*

It is not uncommon to encounter, during research on rape causation, the claim that the low likelihood of pregnancy from individual rapes disproves evolutionary arguments.<sup>210</sup> The following statement is typical of such criticisms: “[The biological theories are] improbable because rapes rarely lead to the birth of a viable child.”<sup>211</sup> Such a view is intuitively appealing. And rapes rarely do lead to conception and birth. But the conclusion that rare benefits are insufficient to have widespread evolutionary significance is, though understandable, biologically naive.

Over evolutionary time, even small increases in reproductive success can have powerful effects.<sup>212</sup> As mentioned earlier, a trait offering a meager 1% reproductive advantage over an alternative trait can swell from 1% representation in a population to 99% representation in 265 generations.<sup>213</sup> The truth of this point, demonstrable in computer simulations as well as in laboratory demonstrations with simple organisms, is essential to the evolution of complex morphology and behavior. Pregnancy rates from rape are estimated at roughly 1% to 5% across all victims, and roughly 5% for females of reproductive age.<sup>214</sup> For comparative purposes, the chances of pregnancy resulting from an individual act of intercourse with a *willing* partner in her twenties is typically estimated at only 2% to 4%.<sup>215</sup> These figures not only fail to falsify the biobehavioral theories, but are amply consistent with them. In the United States, among adult females alone, there are more than 32,000 rape-related pregnancies each year.<sup>216</sup> Given the probability that a number of raped women were using contraception at the time, the percentage of rapes that resulted in conception and birth was likely higher in nontechnological ancestral environments, providing ample differences in reproductive success for natural selection to operate.<sup>217</sup>

210. See, e.g., Baron, *supra* note 85, at 271; see also THORNHILL & PALMER, *supra* note 14, at ch. 5 (collecting and critiquing additional sources using this line of reasoning).

211. Eckart Voland, *Selection for Rape or Selection for Sexual Opportunism?*, 15 BEHAV. & BRAIN SCI. 402, 402 (critiquing Thornhill & Thornhill, *Evolutionary Psychology of Men's Coercive Sexuality*, *supra* note 155); see also Travis Langley, *Empirical Criteria for Evaluating Rape as an Evolutionary Phenomenon*, 15 BEHAV. & BRAIN SCI. 393, 393 (same; also noting that “[c]osts . . . could well outweigh benefits because rape is highly unlikely to produce offspring”).

212. For a book devoted entirely to making this point clear, see DAWKINS, CLIMBING MOUNT IMPROBABLE, *supra* note 49.

213. See *supra* note 61 and accompanying text; see also TRIVERS, *supra* note 47, at 28-29.

214. See, e.g., ELLIS, *supra* note 30, at 47 (1% to 3%) (citing studies); UNDERSTANDING VIOLENCE AGAINST WOMEN, *supra* note 128, at 76 (5%) (citing studies); Melisa M. Holmes et al., *Rape-Related Pregnancy: Estimates and Descriptive Characteristics from a National Sample of Women*, 175 AM. J. OBSTETRICS & GYNECOLOGY 320, 320 (1996) (less than 1% to 5%) (citing studies); *id.* at 322 tbl.2 (pregnancy rates for rape victims in their reproductive years found to be 5%).

215. See ELLIS, *supra* note 30, at 47.

216. See Holmes et al., *supra* note 214, at 322. Roughly 40% of the rape-related pregnancies resulted from multiple assaults rather than from a single attack. See *id.* at 323.

217. As one set of authors put it, “In considering this evolutionary view of rape, it is important to keep in mind that very small consistent differences in fitness among individuals may have large

Moreover, commentators commonly mistake the statistically relevant reference group. The key question is not whether rapes result in a large number of pregnancies, but whether rapes result in a larger number of pregnancies than do alternative forms of sex behavior available to the rapist. Brownmiller and Mehrhof argued, as recently as 1992, that evolutionary theories of rape were “fanciful” because “[i]n terms of successful reproductive strategy, the hit or miss ejaculations of a single-strike rapist are a form of Russian roulette compared to ongoing consensual mating.”<sup>218</sup> But this misses the point entirely. Ongoing consensual mating is not an option for every male, at all times. Compared to unwanted abstinence, even conditional predispositions that provide rare reproductive benefits would provide an evolutionary advantage.<sup>219</sup> Even a male with a willing sex partner who also raped other females could increase total pregnancies compared to males who copulated only with one partner at a time. Consequently, it is at least plausible that natural selection would have favored a context-contingent predisposition to use increased force in furtherance of copulation when the alternative was likely to yield smaller increases in reproductive success.<sup>220</sup> A hypothetically contemporaneous predisposition simply to accept one’s current reproductive lot, successful or not, would appear in a decreasing proportion of individuals in subsequent generations.

### K. *The Argument from Modern Maladaptiveness*

Another common error is the assumption that if today’s rapists gain no reproductive advantage over nonrapists, or are in fact decreasing their inclusive fitness, then the biobehavioral theories of rape are wrong.<sup>221</sup> For example, one critic argued that, for the theories to have even the slightest claim of validity, behavioral biologists would have to establish that a

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long-term effects. A small difference in fitness between men who raped when other avenues of reproduction were closed compared to men who did not rape in this context during human evolutionary history would be expected to lead to major evolutionary change.” Thornhill et al., *supra* note 118, at 115.

218. Susan Brownmiller & Barbara Mehrhof, *A Feminist Response to Rape as an Adaptation in Men*, 15 *BEHAV. & BRAIN SCI.* 381, 381-82 (1992) (critiquing Thornhill & Thornhill, *Evolutionary Psychology of Men’s Coercive Sexuality*, *supra* note 155).

219. In a totally different context, Stephen Pinker extends the roulette metaphor in a way useful here.

Imagine a game of Russian roulette where if you don’t get killed you have one more offspring. A gene for joining in the game could be selected, because five-sixths of the time it would leave an extra copy in the gene pool and one-sixth of the time it would leave none. On average, that yields .83 more copies than staying out of the game.

PINKER, *supra* note 48, at 514.

220. See Thornhill et al., *supra* note 118, at 115 (“Thus the adaptiveness of rape must be viewed in relation to the adaptiveness of other, alternative strategies.”); see also *supra* text accompanying notes 117-124 (discussing existence of evolved, context-specific strategies).

221. See, e.g., ADRIAN RAINE, *THE PSYCHOPATHOLOGY OF CRIME: CRIMINAL BEHAVIOR AS A CLINICAL DISORDER* 42-46 (1993).

modern rapist's reproductive success actually increases as a result of his raping behavior.<sup>222</sup>

The reasoning is tempting, but incorrect. Evolutionary arguments are grounded in evolutionary time. Because natural selection cannot look forward and anticipate future environmental changes, individuals of existing species are typically best adapted to their ancestors' environments. The faster an environment changes (if at all) and the lengthier a species' average generation, the more quickly historically adaptive morphology and behavior can fall out of step with one another, and a once adaptive trait can soon become maladaptive.<sup>223</sup>

Take, for instance, our taste for highly caloric sweets. All across the species, we perceive chemical stimuli associated with certain high energy foods to be "sweet" and pleasurable (rather than, for instance, bitter and unpalatable). This species-typical sensory artifact is undoubtedly a product of our evolutionary history. Ancestral primates even marginally more likely than their contemporaries to seek and consume high energy foods (such as ripe fruit) would leave more descendants than those who were less motivated, perhaps finding high calorie foods distasteful, and who therefore procured fewer calories per unit of energy invested in foraging. Today, our evolved tastebuds and psychology encounter an evolutionarily novel environment, with refined sugar. It is now possible, for virtually the first time in evolutionary history, to so overconsume sweets that obesity and adverse health effects may follow. Yet it would be nonsensical to argue that the modern maladaptiveness of sugar craving renders it not susceptible to sound evolutionary explanation.

Consequently, the robustness of an evolutionary argument cannot logically be jeopardized by modern maladaptiveness alone.<sup>224</sup> While a persuasive argument that forced copulation tended, on average, to reduce the inclusive fitness of modern rapists would require explanation, the viability of an evolutionary theory is always best measured by how a behavior probably worked in our past, rather than by how it happens, in thoroughly new environments, to work in our present.

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222. See Suzanne Sunday, *Introduction to SUNDAY & TOBACH*, *supra* note 45, at 4.

223. Randy Thornhill and his colleagues summarize the importance of ancestral history to sound evolutionary analysis in this way:

An adaptation is a feature of a living organism that is the product of the direct action of selection. These features, however, may or may not be presently adaptive. That is, the definition of adaptive must include a consideration of the relevant environmental conditions. If the relevant environmental features change, then it is possible that previously adaptive traits may be rendered maladaptive.

Thornhill et al., *supra* note 118, at 104.

224. This point is elaborated in THORNHILL & PALMER, *supra* note 14, at ch. 1.

### L. *The Argument from Incomplete Explanation*

Critics of the theories of evolutionary influences on patterns of rape quite frequently fault them for failing to explain *all* incidences of rape. For example, Akins and Windham reject biological hypotheses both because rape occurs in many contexts where reproduction seems not to be a big component and because biologists have “failed to establish that rape is one kind of act.”<sup>225</sup> Gavey and Gray say the theories cannot work because, after all, we know that some pre- and postreproductive females are raped, some victims are killed, and some are only raped anally.<sup>226</sup> And Baron adds that instances of male-male rape, oral rape, and penetration by objects are also known.<sup>227</sup>

There are four problems with this reasoning. First, biologists and non-biologists often mean different things by the term “rape” (for example, penile-vaginal intercourse, on one hand, and sexual penetration of any orifice, by any object, on the other), so it is not surprising that each often finds the other’s explanations inadequate to explain rape as *they* choose to define it.

Second, critics often misascribe the claims of evolutionists, and then measure the supposed failings of their theories by the yardstick of still unexplained phenomena that the theories never purported to explain in the first place. This comment is typical: “Still, if a primary motive is reproduction, it is harder to understand instances of child sexual abuse, homosexual rape, or sexual harassment that occur without sexual intercourse.”<sup>228</sup> Since the evolutionary theories have never claimed even to explain all instances of penile-vaginal rape (what theory, life science or social science, explains *all* instances of any human behavior?), it is nonsensical to fault them for not explaining more. Behavioral theories stand or fall on their consistency with, and on their ability to make accurate predictions about, patterns (not individual people) and specific kinds of phenomena (not all phenomena a species is capable of generating). A theory is properly judged

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225. Kathleen A. Akins & Mary E. Windham, *Just Science?*, 15 BEHAV. & BRAIN SCI. 376, 376-77 (critiquing Thornhill & Thornhill, *Evolutionary Psychology of Men’s Coercive Sexuality*, *supra* note 155); see also RAINE, *supra* note 221, at 42-46.

226. See Nicola J. Gavey & Russell D. Gray, *Rape: The Perfect Adaptationist Story*, 15 BEHAV. & BRAIN SCI. 386, 387 (1992) (critiquing Thornhill & Thornhill, *Evolutionary Psychology of Men’s Coercive Sexuality*, *supra* note 155).

227. See Baron, *supra* note 85, at 266, 271-72. Similar objections are raised in Val Dusek, *Sociobiology and Rape*, SCIENCE FOR THE PEOPLE, Jan./Feb. 1984, at 10, 15.

228. Elizabeth Grauerholz & Mary A. Koralewski, *What is Known and Not Known About Sexual Coercion*, in SEXUAL COERCION, *supra* note 7, at 187, 192; see also ALLISON & WRIGHTSMAN, *supra* note 5, at 36 (arguing that the biological theories are insufficiently supported, because “children, post menopausal women, and men, are also raped,” and some victims are killed); KITCHER, *supra* note 85, at 187 (Rape “frequently takes place on juveniles, on women past the age of menopause, and on members of the same sex. Sometimes the victims die as a result of the rape. Actions of all these kinds contribute nothing to the spread of the rapist’s genes.”).

by whether its own predictions are met, not by whether it meets the predictions of other theories.

Third, the charge of incomplete explanation is deceptively rhetorical (and perhaps deeply hypocritical). Most credible social scientists themselves readily admit that rapes come in a variety of kinds, not every instance of which is explainable by whatever theory a theorist proposes.<sup>229</sup> Lines are properly drawn (such that, for example, rape theorists do not feel compelled to explain all acts of violence, including arson). Evolutionists, like all other theorists, are entitled to draw lines where they want, inasmuch as the ultimate check on overly aggressive and narrow boundary setting is perceived irrelevance in the marketplace of ideas.

Fourth, and perhaps most significantly, this reasoning from counterexamples fails without recourse to frequency distributions. In statistical terms, it emphasizes the *range* and ignores the *median*.<sup>230</sup> Since the biobehavioral theories predict relative frequencies of different kinds of activity, it will hardly serve to discredit the theory that some observable activities could serve no useful reproductive function. For example, while it is true that some women are raped anally, it also appears to be true, as predicted by biobehavioral theories, that rapes involving anal penetration are far less prevalent than rapes involving vaginal penetration—comprising only a small fraction (two percent by one measure) of all rapes.<sup>231</sup>

#### M. "Ought-Is" Errors: The Naturalistic and Moralistic Fallacies

Arguments reflecting ought-is errors come in two forms: The Naturalistic Fallacy and The Moralistic Fallacy. Common to each is the assumption that there is an automatic connection (running in either of two possible directions) between descriptive facts and normative conclusions.

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229. Allison and Wrightsman, for example, argue that biologically-based theories are unlikely to be true, because they fail to explain many instances of rape. *See, e.g.,* ALLISON & WRIGHTSMAN, *supra* note 5, at 36. Yet the major theme of the book is that in all likelihood rapists differ from one another, and that different rape scenarios require different explanations. *See, e.g., id.* at 4 (“[W]e argue that the act of rape would be better understood if . . . everyone recognized the multiple motivations for sexual assault.”).

230. Even careful scholars make this error. *See, e.g.,* Stock, *supra* note 181, at 65 (concluding that rapists see women “as a gender class rather than as having individual characteristics. . . [because of] the age range seen in female rape victims, extending from infancy to extreme old age”); *see also* HURSCH, *supra* note 128, at 78 (“Since the recorded rapes for the full year cover an age range of victims from age three through seventy-four, and other sexual assaults were committed on victims from age two through eighty-six, it is clear that sexual attractiveness per se plays no part in many of these attacks.”). In many cases, the emphasis on range over frequency distribution is implicit. *See, e.g.,* GROTH, *supra* note 33, at 7 (“victims of rapists include males as well as females and occupy all age categories from infancy to old age”).

231. *See* MACDONALD, *supra* note 148, at 68; *supra* note 134.

The Naturalistic Fallacy is committed whenever one assumes that “ought” follows from “is,” such that what is is what ought to be.<sup>232</sup> Nineteenth century Social Darwinists, for example, bastardized the Darwinian reasoning of biologists by claiming, for political purposes, that those people at society’s political and economic top deserved to be there by virtue of nature’s design.<sup>233</sup> The Naturalistic Fallacy inherent in such reasoning has long served as a warning to biologists and nonbiologists alike. However, when critics reject biological perspectives on the grounds that such perspectives explain rape “as a phenomenon that lies outside the realm of moral judgment”<sup>234</sup> and that therefore “[the] need and drive to reproduce by any and all means would sanction rape,”<sup>235</sup> they are simply incorrect.<sup>236</sup> It is as incorrect to assume that biologists will commit The Naturalistic Fallacy as it is to commit it oneself. For while it is wise to be vigilant for this error in reasoning,<sup>237</sup> one cannot legitimately conclude that if evolutionary theories of sexual aggression were true it would necessarily follow that rapists are not legally or morally responsible for their acts. Scientists exploring possible effects of evolutionary processes on the patterns of rape behavior in humans and other animals have gone to great lengths to underscore that the worlds of information and legal or moral implication operate independently.<sup>238</sup>

The Moralistic Fallacy, in mirror image, is committed whenever one assumes that “is” follows from “ought,” such that what ought to be is what is.<sup>239</sup> Here, reality is somehow expected to conform to one’s normative

232. The term was coined by G.E. Moore in *PRINCIPIA ETHICA* 62, 89-110 (Thomas Baldwin ed., 2d ed. 1993), but the concept traces to the 1888 edition of DAVID HUME, *A TREATISE OF HUMAN NATURE* 469-70 (L.A. Selby-Bigge & P.H. Nidditch eds., 2d ed. 1978).

233. It was the Social Darwinist Herbert Spencer who coined and popularized the phrase “survival of the fittest”—which Darwin long resisted, because of its misleadingness. On Social Darwinism generally, see RICHARD HOFSTADTER, *SOCIAL DARWINISM IN AMERICAN THOUGHT* (1992).

234. Akins & Windham, *supra* note 225, at 376-77.

235. Ethel Tobach & Suzanne Sunday, *Epilogue to SUNDAY & TOBACH*, *supra* note 45, at 136.

236. Sarah Blaffer Hrdy believes that many modern thinkers, including feminists, have steadfastly resisted biological perspectives, in part, because they confuse Social Darwinian thinking with Darwinian thinking.

Social Darwinism has, almost indelibly, tainted most people’s understanding of evolutionary theory—certainly as it applies to human beings. Yet social Darwinism differs from Darwinism-without-adjectives in one all-important way, and ignoring this distinction has been one of the most unfortunate and long-lived mistakes of science journalism. Darwinism proper is devoted to analyzing all the diverse forms of life according to the theory of natural selection. Darwinists describe competition between unequal individuals, but they place no value judgment on either the competition or its outcome. . . . By contrast, social Darwinists attempt to *justify* social inequality.

HRDY, *supra* note 85, at 12-13.

237. For example, it is not irrational to be concerned that the public may commit The Naturalistic Fallacy when processing the evolutionary theories. *But compare* Dupré, *supra* note 159, at 382-83 (concluding that the danger is sufficiently great to reject the theories outright).

238. See, e.g., THORNHILL & PALMER, *supra* note 14, at ch. 1, ch. 5.

239. For discussion of The Moralistic Fallacy, see Charles Crawford, *The Theory of Evolution in the Study of Human Behaviour: An Introduction and Overview*, in *HANDBOOK OF EVOLUTIONARY*

preference for the way reality best would be. While we may wish, for example, that patterns of human rape were unaffected by evolved brain architecture and predispositions, we cannot suppose that explanation follows inclination, and that facts follow preferences. Thus, while it obviously would be unsound to conclude that rape is acceptable simply because other species rape too, it is equally invalid to conclude that there are no biobehavioral influences on rape, simply because it may be offensive or undesirable that there be such influences.

#### N. Summary

Biobehavioral theories of sexual aggression are not beyond constructive critique. Yet many of the most commonly encountered objections, categorized and explained in this Part, reveal unfortunate and generally counterproductive misunderstandings of evolutionary theory and behavioral biology. Avoiding them may help us identify what is useful in behavioral biology and employ that knowledge in efforts to reduce the incidence of rape.

### IV

#### BIOBEHAVIORAL THEORIES OF RAPE: EVALUATION TO INTEGRATION

Avoiding the many pitfalls detailed in the prior Part, we turn, in Section IV.A of this Part, to compare the current biobehavioral and sociocultural perspectives on rape. Upon concluding that the biobehavioral perspectives may be more useful than commonly supposed, Section IV.B considers how increased acceptance of those theories might affect several of the many tenets central to popular and law-animating theories of the causes and effects of rape. Section IV.C addresses how the life science and social science perspectives on rape—biobehavioral theories of ultimate causation and sociocultural theories of proximate causation—might be integrated and blended into a more accurate and comprehensive model of rape behavior, drawing on the strengths of each. Possible practical applications follow thereafter.

#### A. *How Life Science and Social Science Theories of Rape Compare*

One problem with comparing social science and life science theories of rape causation is that the two traditions have a different meaning of theory. In the former tradition, a theory can be an idea or opinion that is plausibly argued. In the latter, plausibility is measured more strictly: A theory worth its title must generate predictions that are testable or falsifiable. And

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PSYCHOLOGY: IDEAS, ISSUES AND APPLICATIONS 9 (Charles Crawford & Dennis L. Krebs eds., 1998); Charles Crawford, Book Review, *Genetic, Ethological, and Evolutionary Perspectives on Human Development*, EVOLUTION & HUM. BEHAV. (forthcoming 1999).

in life science, among competing theories that explain the data equally well, the simplest and most parsimonious (the one requiring the fewest number of discrete assumptions) is generally considered the most likely.<sup>240</sup>

Rather surprisingly, the overwhelming bulk of rape literature never articulates, or attempts to test, testable predictions.<sup>241</sup> So it is very difficult to assess how well the social science theories of rape measure up, in their current form, to life science theories. But the life science theories have generated a number of narrow and falsifiable predictions, which to date seem to receive support from existing empirical data on a wide variety of human and nonhuman species. Dispassionate assessment therefore suggests that the biobehavioral approach may be both accurate and parsimonious. Future studies may find contradictory data. But in the meantime, the continuity of data between nonhuman and human animals, on many different predictions, is sufficiently striking that if we were considering almost any context *other* than rape we might quickly credit it as persuasive. More than one respected scholar to look into the matter seriously has concluded that the biological evidence strongly suggests that rape is not independent of men's evolved sexual psychology.<sup>242</sup> Moreover, many of these apparent patterns of data, undiscovered or underemphasized before studies of forced copulation informed by behavioral biology appeared, are seemingly not predicted by popular sociocultural theories of rape alone.

For example, I can locate nothing in the social science rape literature that convincingly addresses or explains why the large-scale patterns of rape in humans demand a *completely* nonbiological theoretical foundation (and thus a necessarily less parsimonious one than the large-scale patterns of rape in other species require). Statistical outliers obviously can require different explanations, and human rapes can include multiple layers of causation in addition to those apparently operative in many other species. But the wholesale rejection of evolved male-typical behavioral predispositions is, as yet, inadequately defended.

Existing theories of human rape that do not include at least some measure of life science perspectives (integrating ultimate with proximate

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240. See HEMPEL, *supra* note 100, at 40-45.

241. See Del Thiessen & Robert K. Young, *Investigating Sexual Coercion, Soc'y*, March/April 1994, at 60. The authors report on their study of over 1610 studies of sexual coercion published between 1982 and 1992 in over 400 different journals or books, from the fields of psychology, educational psychology, anthropology, and sociology. They conclude that "scientific methods are not being applied to the understanding of sexual coercion," *id.* at 62, because, in part, "[h]ardly ever is a specific hypothesis tested," *id.* at 60. Only 9% of the studies tested hypotheses, and less than 10% were directed at understanding causes of coercion. See *id.* at 61; see also BOURQUE, *supra* note 38, at 19 (noting that, for example, "few explicit tests of hypotheses reflecting a feminist perspective have been made"). Two notable exceptions include James V.P. Check & Neil Malamuth, *An Empirical Assessment of Some Feminist Hypotheses About Rape*, 8 INT'L J. WOMEN'S STUD. 414 (1985); and Lee Ellis & Charles Beattie, *The Feminist Explanation for Rape: An Empirical Test*, 19 J. SEX RES. 74 (1983).

242. See, e.g., BUSS, *supra* note 101, at 164.

causation) also leave at least the following important questions unanswered:

1. *Why is rape overwhelmingly a male rather than female behavior in all species in which it is observed?*<sup>243</sup> If evolutionary processes had no influence whatsoever, we would expect greater variability. Culture alone cannot explain this, because forced copulation occurs even in species to which culture is not typically attributed. Size alone cannot explain this (though sexual dimorphism itself must and can be explained in biological terms, but that is another matter) because males attempt to force copulation even in species in which males are no larger than females. Hostility, sex-role stereotypes, and exploitative intent cannot explain this, because these are functions of higher cognitive capacities, not exhibited by many species in which males rape.
2. *Why does rape so rarely result in serious physical injury or death, across all populations of species in which it is observed, and across all the world's many human cultures?*<sup>244</sup> If rape were just another kind of violence, we would expect greater variability in the extent of physical harm. The overwhelming absence of major physical damage in humans is particularly odd, given: (a) the possible penalties (rape is one of the three most harshly punished crimes in most societies);<sup>245</sup> (b) the typical use of some force to overcome victim resistance; (c) the supposed hostility underlying the rape; (d) the extent to which close proximity increases the probability that a victim can identify her attacker to authorities; and (e) the extent to which eliminating the witness could minimize the risk of being caught and punished. Men commonly maim or kill each other during hostile encounters. And they often kill witnesses to severely penalized crimes. Why so little of this with rape?<sup>246</sup>
3. *Why are reproductive-aged victims of rape, in other species as well as our own, and across all human cultures, so overrepresented, compared to the population of all possible victims of rape?*<sup>247</sup> If there were no evolutionary influence, one would expect far greater variability among species, and, indeed, among human societies that differ in so many other respects. For example, if rapists selected females based primarily

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243. See *supra* note 116 and accompanying text.

244. See *supra* notes 113-115 and accompanying text.

245. See TEDESCHI & FELSON, *supra* note 116, at 334.

246. Even if men, all across the planet, reached the common conclusion that rape was an even more intimidating form of disrespect than murder, it would beg the question why women all across the planet, for as long as any record exists, consider vaginal rape to be just about the greatest insult a woman can experience.

247. See *supra* notes 126-132 and accompanying text.

on physical vulnerability, this is precisely the age group that rapists would tend to avoid. If rapists selected females to punish for their exercise of power and political influence, this is again not the age distribution we would expect.

4. *Considering all the different kinds of sexual assaults on females of all ages, why are rapists more likely to rape reproductive-aged females penile-vaginally than they are to rape non-reproductive-aged females penile-vaginally?*<sup>248</sup> This pattern does not appear to be derivable from the premises of those theories maintaining that sexual desire is irrelevant to rape.
5. *Why do reproductive-aged victims of penile-vaginal rape appear to be more traumatized, on average, than similar victims who are older or younger?*<sup>249</sup> This pattern does not seem to follow from the theories that reject the influence of evolutionary processes on human psychology.
6. *From among all sexual assaults, why is vaginal rape, on average, apparently more traumatizing than oral or anal rape?*<sup>250</sup> Absent evolutionary explanations, we would expect from the prevailing theories that either no pattern would emerge, or that, perhaps, anal rape would be more traumatizing (because it is equally invasive and more likely to result in physical injury).
7. *Why does the mean age of rapists remain at about twenty-five over time, when most rapists are never caught or punished?*<sup>251</sup> If society alone socializes men to rape, it must also be extremely effective at reversing that process as they age. Otherwise, why would former rapists so uniformly stop raping, and all at about the same age? That is, why do young rapists, almost never apprehended, not become middle-aged and old rapists?<sup>252</sup>
8. *Why does the age distribution for raped women differ so markedly from the age distribution of robbed women?*<sup>253</sup> If the sexual psychology of rapists played no role in the selection of rape victims, one would

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248. See *supra* notes 133-136 and accompanying text.

249. See *supra* notes 137-142 and accompanying text.

250. See *supra* notes 143-145 and accompanying text.

251. See *supra* notes 146-149 and accompanying text.

252. I am aware of very few works in the social sciences that even address this question, let alone answer it. For example, Brownmiller & Mehrhof, *supra* note 218, at 382, attempt to explain this away by asserting, without evidence, that "[t]he forcible rapist . . . retires from the field when his legs give out." I find this hypothesis highly unlikely to explain why there are not significantly more former rapists continuing to rape in their 30s, 40s, and 50s, at the very least.

253. See *supra* notes 150-152 and accompanying text.

expect the distributions of female victims by age to be relatively similar in rape and robbery contexts.

9. *Why does the age distribution for raped women differ so markedly from the age distribution of murdered women?*<sup>254</sup> If rape were primarily a function of hostility toward women, one would expect the distributions in rape and murder contexts to be quite similar.

These are significant challenges. They suggest that a partnership between life sciences and social sciences is necessary to construct an adequate model of rape behavior, useful to law in helping to prevent rape. For even if scholars explain these phenomena by proffering theories that continue to reject behavioral biology (as I have found, in discussions, that some colleagues do), the theories still must survive scrutiny for parsimoniousness, and not appear to be completely *ad hoc*.

For it is *always* possible to explain *any* phenomenon, let alone these patterns of phenomena, with a *more* complicated theory than any given theory under consideration. And the ability to articulate a theory that *can* explain a pattern is still, from the scientific standpoint, a long way from qualifying as a theory worth scientific respect. What other falsifiable predictions does such a theory generate? How well do those fit with observable data? How well does the proposed theory connect into the large body of existing theories already deemed robust and reciprocally reinforcing?

We must not lose sight of the fact that a theory that rape is caused by sociocultural phenomena *alone* is necessarily *less* parsimonious, *less* simple, and *less* connected to the larger body of scientifically robust theories than one positing the combination of interconnected evolutionary influences. A purely sociocultural theory therefore carries a heavier burden of persuasion than one that incorporates both the species' genetic history and its patterns of sociality and culture. This is so for two reasons. First, a purely sociocultural theory fails to explain strikingly similar patterns of rape in other species without similar cultures, and therefore erects a completely novel, disconnected, and additional assumption to explain causation in this one species all alone. Second, such a theory is simply ahistorical and without scientific foundation. It requires some plausible scientific explanation, not yet credibly tendered, of how the human brain evolved completely beyond the reach of the biological predispositions (sexual or otherwise) that not only played an undeniable role in human ancestors, but also continue to play a role in every other species on the planet. This is a big obstacle to a theory rejecting biology—something akin to explaining how one might begin construction of a building with the twentieth floor.

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254. See *supra* note 132 and accompanying text.

If the challenges of data explanation and parsimony cannot be met by theories unsupplemented by behavioral biology, two conclusions follow. First, there are several common assumptions, some of which undergird the law's behavioral models of rape and rape victimization, that may be untrue. Second, legal thinkers should pursue more aggressively the creation of an integrated model of rape behavior—one that blends social and life science perspectives.

### B. "Metamyths" of Rape

Rape researchers in the social sciences have quite usefully identified a large number of rape "myths" about causes and effects of rape, many of which are now popularly known.<sup>255</sup> Although it is extremely rare for the term "myth" to be defined in the rape literature,<sup>256</sup> it is generally clear from context that labeling something a myth is equivalent to saying that it is "false"<sup>257</sup> or "fictional,"<sup>258</sup> has "no basis in fact,"<sup>259</sup> or is the product of

255. The following are among the many rape myths so identified: (1) rape is rare or statistically insignificant; (2) women not only provoke rape, they enjoy it; (3) women "cry rape" only when they've been jilted or have something to cover up; (4) only bad girls get raped; and (5) any healthy woman can resist a rapist if she really wants to. See HURSCHE, *supra* note 128, at 74, 76; Martha R. Burt, *Cultural Myths and Supports for Rape*, 38 J. PERSONALITY & SOC. PSYCHOL. 217 (1980); Jeffery Scott Mio & Jacqueline D. Foster, *The Effects of Rape upon Victims and Families: Implications for a Comprehensive Family Therapy*, 19 AM. J. FAM. THERAPY 147, 148 (1991); Libby O. Ruch, Review Essay, *Sexual Violence Against Women*, 2 J. HIST. SEXUALITY 634, 634 (1992); Morrison Torrey, *When Will We Be Believed? Rape Myths and the Idea of a Fair Trial in Rape Prosecutions*, 24 U.C. DAVIS L. REV. 1013 (1991).

256. For sources using but not defining the term "myth," see, for example, LISA M. CUKLANZ, *RAPE ON TRIAL: HOW THE MASS MEDIA CONSTRUCT LEGAL REFORM AND SOCIAL CHANGE* 14-32 (1996); HILBERMAN, *supra* note 41, at 3; SUE LEES, *RULING PASSIONS: SEXUAL VIOLENCE, REPUTATION AND THE LAW* 6 (1997); PRACTICAL ASPECTS OF RAPE INVESTIGATION, *supra* note 6, at xiii-iv; CATHY ROBERTS, *WOMEN AND RAPE* viii (1989); SALLY K. WARD ET AL., *ACQUAINTANCE AND DATE RAPE: AN ANNOTATED BIBLIOGRAPHY* 3, 9 (1994); Halla Beloff, *Foreword* to PERSPECTIVES ON RAPE AND SEXUAL ASSAULT, *supra* note 186, at x, x; Edward Donnerstein & Daniel Linz, *Sexual Violence in the Mass Media*, in *VIOLENCE AND THE LAW* 9, 22 (Mark Costanzo & Stuart Oskamp eds., 1994); Julius A. Gyls & John R. McNamara, *Acceptance of Rape Myths Among Prosecuting Attorneys*, 79 PSYCHOL. REP. 15 (1996); Mary P. Koss, *The Measurement of Rape Victimization in Crime Surveys*, 23 CRIM. JUST. & BEHAV. 55 (1996); Diana E.H. Russell, *Pornography and Rape: A Causal Model*, in *MAKING VIOLENCE SEXY: FEMINIST VIEWS ON PORNOGRAPHY* 120, 136-38 (Diana E.H. Russell ed., 1993); Seifert, *supra* note 196, at 55; Suzanne R. Sunday, *Introduction* to SUNDAY & TOBACH, *supra* note 45, at 2, 6, 8; Ethel Tobach & Betty Rosoff, *Preface* to SUNDAY & TOBACH, *supra* note 45, at xiii-iv.

257. See, e.g., GROTH, *supra* note 33, at 1; RUTH E. HALL, *ASK ANY WOMAN: A LONDON INQUIRY INTO RAPE AND SEXUAL ASSAULT* 69 (1985); DIANA E.H. RUSSELL, *supra* note 35, at 257-60; CAROL TAVRIS, *THE MISMEASURE OF WOMAN* 243 (1992); Ann Wolbert Burgess, *Public Beliefs and Attitudes Toward Rape*, in PRACTICAL ASPECTS OF RAPE INVESTIGATION: A MULTIDISCIPLINARY APPROACH, *supra* note 6 at 3, 8; Mio & Foster, *supra* note 255, at 148 ("falsity"); Ruch, *supra* note 255, at 634 ("debunked"); Torrey, *supra* note 5, at 47 ("false beliefs and stereotypes about rape"); Julie A. Wright, *Using the Female Perspective in Prosecuting Rape Cases*, THE PROSECUTOR, Jan./Feb. 1995, at 19, 22.

258. See, e.g., CUKLANZ, *supra* note 256, at 14-32; HURSCHE, *supra* note 128, at 67, 69.

259. See, e.g., HURSCHE, *supra* note 128, at 74; Griffin, *supra* note 35, at 27.

erroneous or mistaken beliefs.<sup>260</sup> For example, it is undeniably a myth that women as a group enjoy being raped.

Legal scholars have used the existence of these many myths to garner much-needed support for a variety of progressive rape reforms, which have helped to overcome unfair prejudices that disadvantage women and treat rapists more leniently than they deserve. This surely is a good thing. But as the political power of the myth label has grown, so have—perhaps inevitably—the number of beliefs seeming to warrant it. It is no longer clear who, if anyone, is assessing the accuracy of labeling beliefs *myths*. In some cases the use seems loose. And in some contexts scholars and writers in the popular press appear to have used a standard for applying the term myth that focuses more on the potentially detrimental effect of a belief on women's political progress than on the truth, falsity, or partial truth of the belief itself.<sup>261</sup> Obviously, these “function” and “falsity” tests for myth status often concur; many of the ideas that ill serve women are indeed false. But it is error to assume that this is always so.<sup>262</sup>

Because the term “myth” is so rarely defined and so unevenly used,<sup>263</sup> we have likely reached the point at which claims of myth status should be evaluated individually, rather than accepted on faith as an extrapolation of currently popular theories of rape. If the biobehavioral theories, which

260. See, e.g., CUKLANZ, *supra* note 256, at 16; GROTH, *supra* note 33, at 1; MATOESIAN, *supra* note 30, at 13. This comports, in the main, with definitions, where they do appear. See, e.g., Denmark & Friedman, *supra* note 187, at 60 (comparing rape myths to other myths: “imaginary, make-believe, unverifiable people or things, legend, tradition, phantasy, fiction and falsehood”); Mary Margaret Fonow et al., *Feminist Rape Education: Does It Work?*, 6 GENDER & SOC'Y 108, 109 (1992) (“A myth is a traditional story with ostensibly historical content that is neither a total fabrication nor the only story that can be told.”); Odem & Clay-Warner, *supra* note 7, at xvi (rape myths “are commonly held assumptions about rape that are untrue but that allow individuals to deny that forced sex is actually rape”).

261. See, e.g., Susan Stefan, *The Protection Racket: Rape Trauma Syndrome, Psychiatric Labeling, and Law*, 88 NW. U. L. REV. 1271, 1319 (1994) (rape myths are a “set of social assumptions about rape and the way raped women behave”). Some of this may be traceable to the disjunctive in Martha R. Burt's influential definition in Burt, *supra* note 255, at 217 (rape myths are “prejudicial, stereotyped, or false beliefs about rape, rape victims, and rapists”) (emphasis added). For an unusually blunt recognition of the extent to which myth status may not depend on actual falsehood, see Kimberly A. Lonsway & Louise F. Fitzgerald, *Rape Myths: In Review*, 18 PSYCHOL. WOMEN Q. 133, 136 (1994), who write,

Although there may be a statistical ‘kernel of truth’ to [some] myths . . . their status as myths rests on their emphasis, exaggeration, and most importantly, possible function. The belief that only certain types of women are raped functions to obscure and deny the personal vulnerability of *all* women by suggesting that only *other* women are raped.

262. Consider that normative judgments and facts exist independently. See *supra* Section III.L. Consequently, one cannot validly assume that beliefs about rape that are politically unpalatable, because of their potential for misuse, are necessarily false.

263. Two scholars who have studied the subject concluded that “[a] review of [the rape myth] literature reveals that researchers have generally failed to develop a thorough, theoretically based definition of rape myths, and in addition, have failed to use any definition consistently. . . . [The literature on rape myths] is characterized by considerable unevenness.” Lonsway & Fitzgerald, *supra* note 261, at 134, 155.

posit evolutionary influences on the way the human brain processes rape-relevant information are true, then they may help to further refine what are and are not myths or falsehoods about rape. Specifically, they may separate beliefs quite accurately labeled as false and mythical from what we might label *metamyths*. I suggest this term to describe popularly maintained but false or inadequately demonstrated assertions, used in the otherwise laudable war on rape myths, that have been extrapolated beyond reality.<sup>264</sup> Here are some likely candidates.

(1) *The Metamyth that Only Humans Rape*

Although it is still common in legal literature to encounter the assertion that “[n]o zoologist has ever observed animals raping their female mates in the wild or in captivity,”<sup>265</sup> (that is, that nonhuman rape is a myth) it has been long clear that such a statement can be true only if one has implicitly defined rape so narrowly that it cannot, by definition, occur in another species. Forced copulation is commonly observable in many species, and has been for many years.<sup>266</sup>

(2) *The Metamyth that Sexual Desire is Irrelevant to Rape*

It is extremely common to encounter assertions that it is a

264. In some contexts, metamyths may include things that are prematurely or inaccurately labeled as falsehood and myth. In other words, a metamyth may also be the myth that something else is a myth, and thus something that has been falsely labeled false or mythically considered myth. These have sometimes been referred to as “so-called ‘myth[s]’” or “myth[s]-that-may-not-be-myth[s].” Bryden & Lengnick, *supra* note 5, at 1344. In my view, metamyths are probably the by-products of an overzealous myth-identifying process. They presumably emerge from an academic telephone game, in which a narrowly identified and palpably false idea has, through the accumulation of many subtle changes during repetition, swelled to encompass even some true ideas, without shedding the label of falsity at the proper time. In the process, these metamyths accrue a secondary meaning, typically aligning more and more, over time, with the political preferences of those who repeat, and often unwittingly modify them.

265. WALLACE, *supra* note 190, at 251. This metamyth of rape is likely traceable to Susan Brownmiller, who stated in BROWN MILLER, *supra* note 35, at 12, that “[n]o zoologist, as far as I know, has ever observed that animals rape in their natural habitat, the wild.” However, Lisa A. Binder notes that a court claimed the following as early as 1964, suggesting that this false belief has been around for some time. “*With More Than Admiration He Admired*: Images of Beauty and Defilement in Judicial Narratives of Rape, 18 HARV. WOMEN’S L.J. 265 (1995). The court wrote, “Man is the only member of the animal family of which we have any knowledge that is bestial enough to forcibly rape a female.” *Sims v. Balkcom*, 136 S.E.2d 766, 768 (Ga. 1964).

Unfortunately, the metamyth persists. See, for example, JOANN BREN GUERNSEY, *THE FACTS ABOUT RAPE* 10 (1990), a book for young adults in which the following passage appears: “Myth: Rape is a natural form of aggression. Fact: Rape is not natural behavior; it is learned, apparently only by humans. No matter how aggressive they are, animals have not been observed to rape.” This metamyth continues to resurface in legal scholarship. 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).

266. See *supra* notes 104-112 and accompanying text.

“fact” that rape has nothing to do with sex.<sup>267</sup> Observable patterns in existing rape data illuminated by biobehavioral theory, such as the striking parallel between risk of rape victimization and the female fertility curve,<sup>268</sup> make this conclusion highly suspect. It is important to stress that rape is not a sexual encounter of the consensual kind, and that rape should be punished as an impermissible act of aggression. But it does not follow from this that sexual desire is not an important causal factor in most rapes. Existing data have not yet been parsimoniously explained without recourse to the variable of general sexual attractiveness as measured, in part, by being of reproductive age.

### (3) *The Metamyth of Equivalent Risk*

Rape commentators often state or imply that, because rape has nothing to do with sex, and because very young and very old women have been raped, all women are equally likely to be attacked.<sup>269</sup> This is inconsistent with decades of statistics on victim age, and likely maintains, as an externality, a greater fear of rape among women outside the ages of high rape vulnerability than the statistical risk warrants.<sup>270</sup>

### (4) *The Metamyth of Equivalent Harm*

Some rape researchers claim that “[t]he effect of rape is the same whether the victim is a young girl, virgin, mother, or old

267. For example, Professor Susan Estrich has reportedly stated that “[judges] have to deal with the fact [that rape] is not [a] crime of sexual desire but brutal violence of the worst sort short of murder.” ALLISON & WRIGHTSMAN, *supra* note 5, at 240.

268. See *supra* notes 126-132 and accompanying text.

269. See, e.g., ROBERT FERGUSON & JEANINE FERGUSON, A GUIDE TO RAPE AWARENESS AND PREVENTION 16 (1994) (“Be aware, it can happen to anyone, anyplace, and at anytime. No one is exempt or excluded from rape.”); HURSCH, *supra* note 128, at 78 (“Since the recorded rapes for the full year cover an age range of victims from age three through seventy-four, and other sexual assaults were committed on victims from age two through eighty-six, it is clear that sexual attractiveness per se plays no part in many of these attacks.”); Brownmiller & Merhof, *supra* note 218, at 382 (“‘Attractiveness’ is not a dynamic in rape except in myth . . . . Victims range in age from 3-month-old infants to 87-year-old grandmothers.”); Stock, *supra* note 181, at 65 (arguing that rapists see women “as a gender class rather than as having individual characteristics. This accounts for the age range seen in female rape victims, extending from infancy to extreme old age.”). In one survey of studies, in which the disproportionately small numbers of elderly victims was routinely present, an author, already convinced that sexual desire has nothing to do with rape, felt obliged to theorize why all the elderly rape victims were so much less likely to report being raped. See GROTH, *supra* note 33, at 164-65, 173-74. The focus on range over frequency distribution can lead to overbroad prescriptions. See, e.g., Brande Stellings, *The Public Harm of Private Violence: Rape, Sex Discrimination and Citizenship*, 28 HARV. C.R.-C.L. L. REV. 185, 198 (1993) (“Because one in five women will be raped, all women must conduct their lives in ways designed to minimize the risk of rape.”).

270. See *supra* notes 126-132 and accompanying text.

woman.”<sup>271</sup> This is speculation. It is important to note that some studies have found that the effect varies according to demographic variables (such as age and presence of vaginal intromission) predicted by behavioral biology.<sup>272</sup>

(5) *The Metamyth of Equivalent Fear*

There are a number of valuable discussions about the significance of the fear of rape. Scholars uninformed of behavioral biology, however, typically do not anticipate, look for, or find apparently existing patterns in varying magnitudes of fear. Therefore, they typically assume that fear varies only in random or culturally-created ways across the female population.<sup>273</sup>

(6) *The Metamyth of Wholly Learned Fear*

It is common to encounter the assertion that women would not fear rape were they not taught and socialized to do so.<sup>274</sup> Again, this

271. Deena Metzger, *It Is Always the Woman Who Is Raped*, 133 AM. J. PSYCHIATRY 405, 406 (1976).

272. See *supra* notes 137-145 and accompanying text.

273. General statements are the norm, and the term “women” comprises an undifferentiated supercategory. For example, while Gordon and Riger note in passing that there is some variation among women in fear, see GORDON & RIGER, *supra* note 2, at 21, they generally imply that such variation is idiosyncratic, rather than patterned. They write that rape is “a fear shared by women of all ages,” *id.* at xi, and that “[t]he only crime women fear more than rape is murder. . . . Every woman has it to a degree, and all women are affected by it.” *Id.* at 2-3; see also CLARK & LEWIS, *supra* note 149, at 23 (“The fear of rape affects all women. It inhibits their actions and limits their freedom, influencing the way they dress, the hours they keep, and the routes they walk. The fear is well founded, because no woman is immune from rape.”); cf. Mark Warr, *Fear of Rape Among Urban Women*, 32 SOC. PROBS. 238 (1985) (finding that fear of rape is highest among women aged 19 to 35, nearly double their fear of murder), cited in Wright, *supra* note 257, at 21.

Professor Deborah Denno has begun to explore the extent to which sex asymmetries in evolved fear of rape may be relevant in legal contexts in Deborah W. Denno, *Evolutionary Biology and Rape*, 39 JURIMETRICS J. 243 (1999).

274. According to two leading authors on the subject, female fear

is a rational phenomenon resulting not only from women’s personal backgrounds but also from what women as a group have imbibed from history, religion, culture, social institutions, and everyday social interactions. Learned early in life, female fear is continually reinforced by such social institutions as the school, the church, the law, and the press. Much is also learned from parents, siblings, teachers, and friends.

GORDON & RIGER, *supra* note 2, at 47. This and other passages reflect the implicit assumption that you have to “teach[] women to worry about rape.” *Id.* at 67. Furthermore:

To show power and anger through rape—as opposed to mugging or assault—men are calling on lessons women learn from society, from history and religion, to defile, degrade, and shame in addition to inflicting physical pain. Rapists have learned, *as have their victims*, that to rape is to do something worse than to assault; this sexualization of violence adds a range of long-term emotional consequences to the physical injury.

*Id.* at 45. This notion has a long pedigree in rape literature:

It is men, and not women, who have defined rape as the worst thing that can happen to a woman. For a man to have his exclusive sexual property defiled by an intruder is one of the worst things that can happen to *him*, but it most assuredly is not the worst thing that can happen to a woman, even though it frequently verges on this because of its accompanying

is speculation. The fact that the reactions to threat of rape and rape are uniformly extreme across all human societies, as well as the fact that extreme reactions are both predicted by evolutionary theory and consistent with the behavior of females across the rest of the animal kingdom, makes this assertion unlikely to be true. That is not to suggest that society cannot augment fear of rape. But it is to suggest that the fear of rape is a psychological predisposition in females.

(7) *The Metamyth of Wholly Learned Rape*

Scholars often assume that rape behavior must be “learned.”<sup>275</sup> For example, in her 1990 book, *Understanding Sexual Violence*, Diana Scully states, “I assume that rape, for the most part, is socially learned behavior. . . . In contrast to the psychopathological model,

risk. What woman would not rather have a penis inserted in her vagina, even against her will, than suffer death or mutilation? Women accept the judgment that rape is a disgrace because they, too, have been brainwashed into placing pre-eminent value on their sexuality, and because they know from experience that rape will, in fact, lead to their social and personal devaluation.

CLARK & LEWIS, *supra* note 149, at 160. News accounts supposedly “reinforce[] what every woman has been taught from childhood—rape is the worst thing that can happen to a woman.” *Id.* at 23. See also Griffin, *supra* note 35, at 47, who writes,

Learning to fear is a process that begins at birth for women and continues throughout their lives. As is shown in Figure 9.1, the fear each woman experiences is the product of her own personal background as it intersects for her—in her own particular time and geographical and social space—with the forces of history and trends of contemporary times. It is striking that women respond so similarly to the threat of rape, both in their fear and in the precautionary strategies they adopt. Female fear has become a social fact.

A more recent articulation of this same view appears in H.E. Baber, *How Bad is Rape?*, in SOBLE, *supra* note 186, at 243, 256:

I suggest that the primary reason why rape is regarded as one of the most serious harms that can befall a woman is precisely because women are regarded as sex objects, beings who have little of value beyond their sexuality. Further I suggest that women who would regard being raped as the supreme violation and humiliation are implicitly buying into this view. If these are indeed the reasons why rape is seen as supremely harmful to women, as I suggest they are, then it follows that the suggestion that rape is the worst harm that can befall a woman is a consequence of sexist assumptions about the character and interests of women.

275. This conception dates back at least to 1971, and remains viable today. See, e.g., ALLISON & WRIGHTSMAN, *supra* note 5, at 16-17 (summarizing the social learning theory of rape); TAVRIS, *supra* note 257, at 243 (calling it a “myth” that “male sexuality is natural, unlearned”); Griffin, *supra* note 35, at 27 (comparing with study of other cultures suggests that “in our society, it is rape itself that is learned”); Metzger, *supra* note 271, at 405-06 (“The rapist is educated to his behavior by his society,” and the cultural artifacts of rape images in literature, art, and myth, are “social customs” that “teach rape as a learned cultural activity”). It seems to be rooted primarily in the early feminist and sociological traditions. See, e.g., AMR, *supra* note 41, at 335 (the sociological viewpoint stresses that crimes are “socioculturally learned behavior, committed within socioculturally defined situations”); Stock, *supra* note 181, at 68 (“Feminist theory contends that sexual coercion is learned.”).

For concise descriptions of how evolutionists understand these theories, see ELLIS, *supra* note 30, at 12-14, 33-41; and Malamuth, who writes,

Since feminists attribute the origins of rape and other forms of violence to socialization within patriarchal cultures, they view individual differences among men as reflections of varied learning experiences, varied degrees of internalization of patriarchal values, and the extent to which violence is required and available to create and maintain dominance.

Malamuth, *supra* note 188, at 269, 270.

this book is grounded in . . . the assumption that sexual violence is sociocultural in origin: men learn to rape.”<sup>276</sup> Although what “learned” means in the rape context is rarely clarified,<sup>277</sup> it is generally clear from context that “learned” is intended to refer to a process uninfluenced by biology (except to the obvious extent that the learning takes place in the physical brain).<sup>278</sup> That is not to say that proponents of biological theories of sexual aggression reject the significance of learning.<sup>279</sup> Indeed, they embrace it, but within a context in which the brain’s ability to learn is itself considered an evolved species-typical trait, with patterned information processing.<sup>280</sup>

Law works best when its predicates are sound, not when these predicates are based in myth. Flawed behavioral models bring flawed remedial plans. And uncritical acceptance of the popularly drawn lines between myth and fact may lead lawmakers into unproductive side eddies of legal effort. The

276. SCULLY, *supra* note 1, at 59, 162.

277. Scully, for example, added that “[t]he fundamental premise is that all behavior is learned in the same way—socially through direct association with others as well as indirectly through cultural contact.” *Id.* at 59.

278. This is a dated conception for two reasons. First, forced copulation in patterns quite similar to that in humans is quite common in the animal kingdom, even among species, such as insects, with precious little capacity to “learn.” See *supra* notes 104-112 and accompanying text. So the fact that it can exist in the absence of “culture” places a significant burden of proof on those who would assume and assert that, in humans, culture alone explains it. Second, and more importantly, learning is itself biological. The capacity to learn is an evolved trait. The brain is no longer thought to be a general-purpose information processor, as if it had the capacity to do anything equally well, and simply awaited instructions. The brain is an organ that must be understood in light of evolutionary history, just like every other aspect of human physiology. It evolved to process information in historically adaptive ways, and it analyzes, sorts, remembers, and discards information in decidedly nonrandom ways. Learning is itself influenced by evolutionary history, and that history explains, in part, why some things are easier to learn than others. See *supra* note 65 (describing Garcia effect). See generally PINKER, *supra* note 48, at 19 (protesting against the idea that there is “some single master force or mind-bestowing elixir like ‘culture,’ ‘learning’”).

279. See, e.g., Thornhill & Thornhill, *supra* note 65, at 95 (“We emphasize that the view of men’s sexual psychology proposed by the hypothesis of adaptation to rape does not imply the absence of learning. . . .”); Thornhill & Thornhill, *Evolutionary Psychology of Men’s Coercive Sexuality*, *supra* note 155, at 364-65 (“The hypothesis of rape-specific adaptation does not assume that there is no learning or sex-specific socialization in the development of human sexuality.”).

280. See, for example, Malamuth, *supra* note 188, where the author claims:

Theories emphasizing the role of learning or culture are not alternatives to theories encompassing the role of evolutionary processes since what can be learned and how learning takes place are determined by the characteristics of the evolved mind of a species. . . . [A] comprehensive theory needs to incorporate understanding of the design of the mind, as formed by evolutionary processes and as it interacts with the physical and social environment, including the cultures created by those minds. . . . [T]he role of learning can only be properly understood in the framework of the mind that translates environmental input into behavior, both throughout the lifespan and in the immediate situation.

*Id.* at 273, 280; see also Thornhill & Thornhill, *Coercive Sexuality of Men*, *supra* note 65, at 95 (“[T]he learning process involved is not arbitrary but instead is guided by evolved sexual psychological adaptations that bring about selective perception, cognition, memory, and information evaluation specific to rape.”).

many false and damaging beliefs properly labeled myths should continue to be fought by all who oppose rape. But so should the metamorphs of rape, for these too may hinder the very efforts to reduce the incidence of rape that their proponents support. Biobehavioral theories may help bring a clarifying light to distinguishing the substantively real from the simply asserted.

### C. *Toward an Integrated Model of Rape*

In sum, we have passed the point of pitting life science and social science theories of law-relevant behaviors, including rape, against each other. Although the legal community has been slow to realize it, there simply cannot be a meaningful gulf between these supposed extremes. The human brain cannot develop adequately without rich environmental stimuli, but stimuli cannot be perceived and analyzed except through a brain every bit as evolved to function in patterns reflecting adaptive evolution as the rest of the organs in the body. Because they are more accurate and provide a better fulcrum against which law can lever, behavioral models that ensure consistency between life and social science insights are necessary to law.

Moreover, there is no longer a question whether humans have evolved psychologies that predispose us to nervous system states (emotional and otherwise) that increase the likelihood of some behaviors and decrease the likelihood of others. There are simply too many findings consistent with robust life science principles to maintain otherwise.

Instead, the questions now are two: (1) how might we periodically identify and integrate the best principles of biobehavioral theories with the best from other theories; and (2) how might such integration improve our abilities to reduce the incidence of behavior we judge to be unacceptable? The remainder of this Section takes up the first question, while Part V, below, takes up the second.

A number of influential scholars have already begun attempting to integrate previously isolated life science and social science rape theories.<sup>281</sup> And these efforts may prove useful to law. But legal thinkers will need a framework for understanding how integration of life and social science perspectives on rape can proceed.

The purpose of integration, from law's perspective, is to construct a generally superior theory and model of the behavior that legal reform can address. Such a model would unify existing knowledge, be historically accurate, and use a basic understanding of evolved psychology to bridge the

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281. See, e.g., ELLIS, *supra* note 30; Lee Ellis, *A Synthesized (Biosocial) Theory of Rape*, 59 J. CONSULTING & CLINICAL PSYCHOL. 631 (1991); Cheryl Hanna, *Can a Biological Inquiry Help Reduce Male Violence Against Women?*, 22 VT. L. REV. 333 (1997); Malamuth, *The Confluence Model*, *supra* note 188; Malamuth, *An Evolutionary-Based Model*, *supra* note 102; Malamuth & Malamuth, *supra* note 13.

distance between the subjects that evolutionary biologists study and the subjects that sociologists, feminists, economists, and historians study.

Whichever biobehavioral theories of rape happen to emerge as most persuasive over time, it is overwhelmingly likely that they will derive from the principles of natural and sexual selection. From law's perspective, life science insights about the processes and patterns of sexual selection may provide a missing piece of the explanatory puzzle or even an overarching framework that enables patterns of rape in humans to make sense—sense not only within the context of rape, but also within the whole universe of animal behavior.

An integrated, blended, holistic understanding of rape would categorize some rape behavior (remember we are focusing on forcible male-female intercourse) within the larger context of mate-seeking behavior, mate-seeking behavior within the larger context of overlapping but nonidentical reproductive strategies of males and females, and those strategies themselves within the larger context of evolutionary processes, including natural and sexual selection. Taking it from the top, natural selection rewarded with persistence through time those traits that contributed toward their own replication. These traits, mixed in varying combinations, yielded genetically influenced patterns of morphology and behavioral dispositions constituting reproductive strategies, the distinctions among which mark the boundaries of what we now call species. Our own species reflects both sexual reproduction, enabling male-female conflicts in mating interests, as well as *unusually* high maternal investment per offspring in gestation and nursing, virtually guaranteeing them.

Most males and females will seek mating opportunities with the opposite sex, but they will tend to do so in ways that reflect the differences to each sex in the potential costs and benefits of each copulation. These differences were inescapable during the long precontraceptive environment of evolutionary adaptation. And because females provide a larger minimum investment in each offspring, they are choosier about their mates than vice versa.

Historically adaptive female selectivity in choosing sexual partners can optimize female reproductive success only by imposing limits on individual male reproductive success. Since male reproductive success can increase more easily as mere mate number increases, there typically have been more males seeking copulations from unwilling females than females seeking copulations from unwilling males. Sexual selection is therefore powerfully likely to contribute to the emergence, from the collected behaviors of many individuals, of nonrandom patterns of sexual coercion and victimization: more male than female sexual coercion, and sexual coercion directed primarily by males toward reproductive-aged females.

But these processes of ultimate causation will intertwine with proximate causes. Things that increase a male's unattractiveness (such as poverty) or that increase his perceptions of impunity (such as political power or legally favorable conditions) may exacerbate biobehavioral predispositions toward sexual aggressiveness, because they are likely to be condition-dependent.<sup>282</sup> So, too, may things that disinhibit violence against women, such as alcohol and drugs, easy access to intimidating weapons,<sup>283</sup> cultural factors undermining respect for women and bodily autonomy, prior victimization at the hands of sexual abusers,<sup>284</sup> and widespread messages that sexual aggression is insignificant, desired by women, or otherwise unobjectionable. Similarly, environmental factors that decrease female power, such as isolation, unequal economic and political clout, and ineffective enforcement of anti-rape prohibitions, may tend to increase the incidence of sexual aggression.<sup>285</sup>

This view is, in part, compatible with some social science perspectives. But the real breakthrough of a behavioral model that integrates life and social sciences is that it significantly increases our ability to view rape in contexts that illuminate causal influences. Rape is no longer viewed as an isolated and discrete behavior, as has been the case historically, or simply as a subset of violent behaviors, as has more recently been the case. Instead, it can be seen as but one behavior among many, all organizable and understandable (though not, of course, excusable) as a function of an evolved, species-typical psychology. The next Part explores some possible implications such a view may have for law.

## V

### LEGAL APPLICATIONS

Suppose that biobehavioral influences do indeed contribute to the incidence and patterns of human rape, and that the legal system ultimately incorporates a model of rape behavior that blends life science and social science perspectives into a seamless whole of integrated knowledge. What then? A scientific explanation has no independent normative content, and therefore offers no guidance by itself on appropriate policy. Explanation is not justification, and evolutionary analysis is only useful where we want it to be, helping us reach our goals, not setting them.

Nevertheless, this potential to assist our pursuit of separately formulated legal goals is quite palpable. As I have argued elsewhere,<sup>286</sup>

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282. See *supra* notes 117-125 and accompanying text.

283. My thanks to Professor Todd Zywicki for this observation.

284. See DOJ STATISTICS, *supra* note 6, at vi ("Sexual assault offenders were substantially more likely than any other category of offenders to report having experienced physical or sexual abuse while growing up.").

285. Nadler offers similar conjectures in Nadler, *supra* note 13.

286. See Jones, *Evolutionary Analysis in Law*, *supra* note 11, at 1226-41.

evolutionary analysis in law can prove useful in at least four general ways. First, it can help us to refine the models law uses to predict the incidence of law-relevant behaviors reflecting human evolved psychology. For example, it helps us integrate proximate and ultimate causes of behavior into a more holistic framework. In doing so, it adds historical dimension; it facilitates a deeper appreciation of the complex and dynamic interaction of genetic and environmental factors that affect the behaviors law seeks to regulate; it more narrowly identifies environmental conditions likely to increase or decrease the probability of behaviors; and it reveals opportunities to improve prevailing theoretical models. Second, these improvements in behavioral models can, in turn, help generate new legal strategies for addressing behaviors lawmakers seek to regulate. Third, evolutionary perspectives can often clarify cost-benefit analyses regarding the implementation of legal policies by identifying previously unnoticed connections between policies, and by helping us quantify the trade-offs that may arise when zealous pursuit of one policy may impede effective pursuit of another. Fourth, evolutionary analysis in law can help point legislatively funded research in directions that may provide further utility to law's regulatory efforts.

It is beyond the scope of this Article to identify every diverse legal implication that might follow from the formulation of a robust biobehavioral theory of rape. It is also beyond the scope to explore, in light of the many contemporaneous policy goals that exist in some tension with one another, the wisdom of specific changes to the legal system that evolutionary analysis could arguably further. Some preliminary speculation, however, may be useful in suggesting topics for further scholarship that may mine these potentially rich and effective applications.

Let us briefly suppose that either of the two most viable theories is accurate. That is, let us suppose that natural and sexual selection have operated over long periods of evolutionary history to preserve and spread psychological predispositions, *in males*, to correlate psychological states tending to increase the likelihood of forceful copulation with circumstances that would, on average, have made forced copulation more adaptive than alternative behaviors during the environment of evolutionary adaptation.

If so, I believe that what does *not* automatically follow, for law, may be equally important to articulate as what might follow. It does not follow, for example, that rape is inevitable. It does not follow that rape should be tolerated.<sup>287</sup> It does not follow that the legal system should be less aggressive about preventing rape, encouraging victims to report it, or prosecuting its commission. It does not follow that accused rapists should be allowed to

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287. It is unfortunate that "evolutionary explanations of rape have been repeatedly confused with justifications for rape." THORNHILL & PALMER, *supra* note 14, at ch. 5.

raise biology in furtherance of exculpatory arguments, claiming that male evolved psychology absolves them from guilt.<sup>288</sup> It does not follow that the legal system should be more lenient toward convicted rapists. It does not follow that victims should be blamed for their rape. It does not follow that evolutionary psychology will have much to contribute to criminal trials, in which specific males are being charged with the commission of specific rapes. And it does not follow that political, social, and legal changes will have little effect on rape.

Let us also suppose that natural and sexual selection have long favored and spread predispositions, *in females*, to respond to forced copulation and the threat or risk thereof in ways sensitive to demographic variables, such as age, historically associated with the reproductive consequences rape can create. It does not follow that the fear or pain of rape is likely to be lesser, or any less real, for victims using contraceptives. It does not follow that any *individual* victim, outside the reproductive ages, will necessarily be less traumatized than those within them. It does not follow that the legal system should limit female rather than male behavior, as an acceptable pathway for reducing rape.

Here are, however, a few brief illustrations of the variety of possible contexts, worthy of future discussion, in which evolutionary analysis might affect the law of rape. Topics discussed below include: (a) probation and parole alternatives, such as in the debate over chemical castration; (b) contextualizing victim trauma; (c) rape motivation legislation and litigation; (d) rape classification in criminal statutes; (e) hidden policy tensions in prostitution; (f) evidence at civil rape trials; and (g) the legal and comparative history of rape law. It is also possible that evolutionary psychology will have useful things to contribute in the context of interpreting the competing perspectives, in the date-rape context, of whether or not a woman consented to intercourse. It also may offer a basis for considering whether, given the likely fact-patterns and psychologies involved, and the goals lawmakers seek to achieve, statutory rape language should be gender neutral or gender specific.

It bears repeating, at the outset, that in each context a biologically informed model of rape behavior leads to no automatic policy position—conservative, liberal, or otherwise. Such a model provides raw information, the utility of which depends on typically preexisting values and goals, such as reducing the incidence of rape, fostering cost-effective government,

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288. See, e.g., Oliver R. Goodenough, *Biology, Behavior, and Criminal Law: Seeking a Responsible Approach to an Inevitable Interchange*, 22 Vt. L. Rev. 263 (1997). Professor Deborah Denno also provides a comprehensive treatment of why biology will typically not exculpate or mitigate criminal responsibility in Deborah W. Denno, *Human Biology and Criminal Responsibility: Free Will or Free Ride?*, 137 U. Pa. L. Rev. 615 (1988).

basing legal decisions on empirically accurate truths, and the like. These, clearly, will vary among legal thinkers.

### A. Probation, Parole, and Sentencing Schedules

Several of the clearest applications of this evolutionary analysis of rape behavior are likely to be in the context of probation, parole, and sentencing schedules. This Section explores two possible applications, one in the context of the chemical castration debate, and the other in the context of statutorily prescribed rape sentencing schedules that vary with victim age.

#### 1. Example: The Chemical Castration Debate

Rapists are sentenced, and sometimes paroled, in furtherance of several different goals, such as retribution, rehabilitation, deterrence, and the like. The content and form of judicial sentencing (which may include the imposition of probationary measures), as well as typically administrative parole decisions, each of which are often the subject of state statutes, are undoubtedly often affected by prevailing theories of why sexual aggression occurs. Perhaps the most direct application of biobehavioral theories of rape to postconviction contexts is in the area of so-called chemical castration,<sup>289</sup> which reduces male sex drive, in furtherance of law's efforts to reduce recidivism.

Whether chemical castration is both effective and legally permissible for rapists has been hotly debated for years.<sup>290</sup> (The first convicted rapist to

289. 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 Daniel L. Icenogle, *Sentencing Male Sex Offenders to the Use of Biological Treatments*, 15 J. LEGAL MED. 279, 286 (1994); 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).

290. See, e.g., William L. Baker, *Castration of the Male Sex Offender: A Legally Impermissible Alternative*, 30 LOY. L. REV. 377 (1984); William Green, *Depo-Provera, Castration, and the Probation of Rape Offenders: Statutory and Constitutional Issues*, 12 U. DAYTON L. REV. 1 (1986); Icenogle, *supra* note 289; John S. Murray, *California's Chemical Castration Law: A Model for Massachusetts?*, 24 CRIM. & CIVIL CONFINEMENT 731 (1998); Rebish, *supra* note 289; Larry Helm Spalding, *Florida's 1997 Chemical Castration Law: A Return to the Dark Ages*, 25 FLA. ST. U. L. REV. 117 (1998); 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 (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

receive chemically castrating injections as a condition of probation in the United States was Joseph Frank Smith, of San Antonio, Texas, in 1983.)<sup>291</sup> Recently six states have enacted legislation allowing (and in some cases requiring) chemical treatments of certain sex offenders, including rapists.<sup>292</sup> At least twenty-two other state legislatures have considered similar legislation,<sup>293</sup> and bills apparently remain pending in six of them.<sup>294</sup> While many different scientific, legal, and policy issues are involved,<sup>295</sup> behavioral biology is relevant to these developments in at least two ways.

First, the advisability of supporting chemical castration initiatives depends in part on the likelihood that chemical castration will in fact reduce recidivism. Chemical castration, like surgical castration, reduces the production and effects of testosterone. The male brain functions differently in the presence or absence of different hormones, and in this case decreasing testosterone decreases sexual desire. Consequently, the likelihood of reducing recidivism through chemical castration depends, in part, on the extent to which the likelihood of raping is in fact influenced by sexual desire.

From the evolutionary perspective, sexual desire is likely to be a significant contributor to rape patterns. Chemical castration should therefore be effective at lowering rape recidivism rates. Empirically, existing data on recidivism rates after chemical castration are few and unclear.<sup>296</sup> Recidivism of previously incarcerated rapists is generally considered to be quite high,<sup>297</sup> although here, too, studies employing different methodologies vary considerably.<sup>298</sup> Data on paraphiliacs, who exhibit a pattern of sexual arousal characterized by a specific fantasy, clearly indicate that chemical treatments dramatically reduce recidivism rates.<sup>299</sup> But there are far less

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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).

291. See ALLISON & WRIGHTSMAN, *supra* note 5, at 239.

292. These states include California, Florida, Georgia, Louisiana, Montana, and Wisconsin. For a helpful overview of pending legislation, as of its date of publication, see Beth Miller, *A Review of Sex Offender Legislation*, 7 KAN. J.L. & PUB. POL'Y 40 (Spring 1998).

293. Bills allowing chemical castration have been introduced in the legislatures of Alabama, Arizona, Colorado, Delaware, Hawaii, Iowa, Maryland, Michigan, Missouri, Mississippi, New Hampshire, New Jersey, New Mexico, Nevada, New York, Oklahoma, Oregon, South Carolina, Tennessee, Vermont, Washington, and West Virginia.

294. These six states are: Delaware, Hawaii, Michigan, New Jersey, New York, South Carolina.

295. These include, for example, the extent to which chemical treatments affect different kinds of sex offenders, the extent to which side effects of chemical treatment are reversible, whether chemical castration is cruel and unusual punishment prohibited by the Eighth Amendment, whether there is a First Amendment right to fantasize sexually, and whether chemical castration transgresses privacy and individual liberty rights under the Fourteenth Amendment. See generally sources cited *supra* note 290.

296. See Vanderzyl, *supra* note 290, at 116-17 (citing studies).

297. See, e.g., Gene G. Abel et al., *The Components of Rapists' Sexual Arousal*, 34 ARCHIVES GEN. PSYCHIATRY 895 (1977) (estimating recidivism rate at 35%).

298. See Marnie E. Rice et al., *A Follow-up of Rapists Assessed in a Maximum-Security Psychiatric Facility*, 5 J. INTERPERSONAL VIOLENCE 435 (1990) (discussing studies, statistics, and variables).

299. See Icenogle, *supra* note 289, at 287, and sources cited therein.

data on rapists generally. Norwegian and Danish studies tend to support the conclusion that surgical castration, at least, lowers rapist recidivism rates dramatically.<sup>300</sup> But most such studies are dated, based on small samples, or both. Studies on chemically treated "sexual aggressives," some of whom were rapists, suggest recidivism rates lower than those for untreated sexual aggressives.<sup>301</sup> But the results, while generally consistent with prediction, are not fully compelling. So the effectiveness of existing state chemical castration initiatives remains to be convincingly demonstrated. Behavioral biology does, however, suggest a firm theoretical basis for further exploring the use and effectiveness of chemical castration as a means of reducing recidivism. Indeed, if rape behavior is at all increased by reduced access to willing sex partners, and if having been incarcerated makes one a less desirable sex partner than before (through decreased status and opportunity cost to lifetime earnings) incarceration might marginally increase the likelihood of recidivism.

One difficult aspect of weighing the advisability of chemical castration alternatives to preexisting legal treatment of rapists is that while evolutionary biology predicts that chemical castration will decrease recidivism among treated rapists *generally*, because sexual desire plays some role in the average rape, it may not prevent recidivism in all cases. We therefore may anticipate that one cost of chemical castration policies will be those rapes that would not have occurred under traditional sentencing and parole procedures. This cost, however, must be compared to the cost to society, measured by the recidivism of released rapists not chemically castrated.

Second, behavioral biology is relevant to the permissibility of chemical castration. Challenges to chemical castration statutes (including one apparently planned by the American Civil Liberties Union)<sup>302</sup> are expected to raise First, Eighth, and Fourteenth Amendments issues, among others. Under the Eighth Amendment prohibition against cruel and unusual punishment, for example, if chemical castration is an aspect of state punishment, it could be held unconstitutional if it is either unnecessary or applied

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300. See Baker, *supra* note 290, at 384 (citing and discussing studies). One more recent report suggests that surgically castrated sex offenders have a 3% recidivism rate, while uncastrated sex offenders have a recidivism rate of roughly 46%. See Jennifer Nadel, *Castration Was My Cure*, SUNDAY TELEGRAPH (LONDON), July 24, 1994, at 12. The latter figure approximates a 52% re-arrest rate, within three years of prison release, for convicted rapists in the United States. See David Gelman et al., *The Mind of the Rapist*, NEWSWEEK, July 23, 1990.

301. See Fred S. Berlin et al., *A Five-Year Plus Follow-Up Survey of Criminal Recidivism Within a Treated Cohort of 406 Pedophiles, 111 Exhibitionists and 109 Sexual Aggressives: Issues and Outcome*, 12 AM. J. FORENSIC PSYCHIATRY 5, 22 (1991); Walter J. Meyer III et al., *Depo Provera Treatment for Sex Offending Behavior: An Evaluation of Outcome*, 20 BULL. AM. ACAD. PSYCHIATRY L. 249, 254-55 (1992).

302. See Miller, *supra* note 292, at 57. For speculation about legal arguments likely to be raised, see *id.*; Murray, *supra* note 290.

arbitrarily.<sup>303</sup> 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.

When legal thinkers assess the advisability and constitutional permissibility of chemical castration, the theory of rape causation carries great weight. If rape behavior is not significantly influenced by the biology and evolutionary history of sexual desire, then the advisability and constitutionality of chemical castration as a sentencing alternative, supplement, or condition of parole is harder to defend.<sup>304</sup> A great many commentators today,<sup>305</sup> including a number of legal thinkers,<sup>306</sup> subscribe to the following 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. . . . [B]ecause [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.<sup>307</sup>

These critics maintain that the effect of chemical castration on recidivism is likely to be low because rape is primarily a crime of violence, not sexual desire (The Error of the False Dichotomy),<sup>308</sup> and because treated rapists are therefore likely to find other ways of expressing the same antipathy toward women. If, however, rape behavior is significantly affected by male biology, psychology, and evolutionary history, as the biobehavioral theories and data seem to suggest, then chemical treatment may reduce the recidivism rate further than incarceration alone. This would render chemical castration sufficiently effective to be seriously considered, and sufficiently nonarbitrary to be constitutionally permissible.

Of course, there are other values at work here. We are generally hesitant (in a fashion undoubtedly susceptible of evolutionary analysis) to have

303. See *Furman v. Georgia*, 408 U.S. 238, 281-306 (1972) (Brennan, J. concurring) (articulating, in context of racially-biased death sentences, how these commonly used constitutional tests are employed); see also Bund, *supra* note 290 (evaluating a number of constitutional challenges to chemical castration).

304. For a discussion about how evolutionary analysis might, among other things, make physical castration an effective deterrent and punishment, see BECKSTROM, *supra* note 15, at 53-65.

305. See Green, *supra* note 290, at 8 (reporting views of other commentators that reducing a rapist's sexual drive will only result in his exercising deviance in other ways); Hicks, *supra* note 290, 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.").

306. See, e.g., Bund, *supra* note 290, at 188-89.

307. Spalding, *supra* note 290, at 132-33 (citations omitted). The quoted language contrasts the possible utility of chemical castration of paraphiliacs with the chemical castration of other sex offenders, including most rapists. But see Icenogle, *supra* note 289, at 281-82 (suggesting that chemical castration may be useful at least for those rapists who do have sexual fantasies).

308. See *supra* notes 157-171 and accompanying text.

our legal system interfere with procreative liberties.<sup>309</sup> 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 a rapist's future reproduction than does a similar period of incarceration. This makes chemical castration a more appealing alternative to, for example, surgical castration.

## 2. *Example: Punishments Varying by Victim Age*

In some jurisdictions, rapists are statutorily subject to different incarceration periods depending on the age of their victim. In Illinois, for example, the victim's age at the time of rape ("criminal sexual assault") has potentially serious consequences for the rapist's sentence. Far longer prison terms may be imposed if the victim is under the age of thirteen or over the age of fifty-nine.<sup>310</sup>

There are a wide variety of reasons why it might be appropriate for rapists targeting victims in these age ranges to be singled out for special punishment. One of those reasons might be the belief that victims in these age ranges are more likely to be targeted than victims of other ages (on the theory, perhaps, that rapists preferentially target the most vulnerable women), and that increasing penalties will increase deterrence of crimes committed against women of those ages. Another reason might be the belief that victims in these age ranges are likely to be more traumatized by rape than victims of other ages, and that therefore that the penalty should be increased as the harm inflicted is increased. A third might be that the public finds rapes of females in these age groups particularly offensive.

If either of the first two of these rationales is in fact animating the legislature, behavioral biology could be relevant. First, behavioral biology makes some sense of statistics, typically misunderstood or ignored, indicating that females outside reproductive ages are in fact far *less* likely to be targeted for sexual assault.<sup>311</sup> Second, behavioral biology predicts, and at least one study has found, that women outside the reproductive ages, while

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309. 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 (1972) (holding state statute impairing access to contraceptives unconstitutional); *Griswold v. Connecticut*, 381 U.S. 479 (1965) (same); *Skinner v. Oklahoma*, 316 U.S. 535 (1942) (holding state statute requiring sterilization of certain habitual criminals unconstitutional).

310. Compare 720 ILL. COMP. STAT. ANN. 5/12-13 (West 1993 & Supp. 1997) (criminal sexual assault), with 720 ILL. CRIM. STAT. ANN. 5/12-14 (West 1993 & Supp. 1997) (aggravated criminal sexual assault). Under the Illinois statute, criminal sexual assault, a Class I felony, carries a prison term of 4 to 15 years, see 730 ILL. COMP. STAT. ANN. 5/5-8-1(a)(4) (West 1997), while aggravated criminal sexual assault, a Class X felony, carries a prison term of 6 to 30 years. See 730 ILL. CRIM. STAT. ANN. 5/5-8-1(a)(3) (West 1997).

311. See *supra* notes 126-132 and accompanying text.

clearly traumatized, are traumatized less by rape, on average, than are women inside their reproductive years.<sup>312</sup> Obviously, the relevance, if any, of behavioral biology depends on precisely what values a legislature is attempting to vindicate. But these are examples of values as to which effective legal policy could be informed by behavioral biology. For if the study of behavioral biology leads us to data that are in fact consistent with biobehavioral theory but inconsistent with the assumptions upon which different sentencing schedules rest, then we may wish either to change the schedules or rest them on alternative grounds.

### B. *Contextualizing Trauma: Views of Women and Rape*

It has never been quite clear whether the message for today's men is that they should muster more sympathy or empathy for rape victims. Sympathy risks an objectifying paternalism, because its very essence underscores the distinction between the observed and the observing. Empathy risks the potentially absurd—the spectacle of a man claiming to truly understand, to feel, or to know precisely what it feels like to be a raped woman. One's assessment that sympathetic or empathetic responses are more appropriate likely varies, in part, with the extent to which one believes that male and female psychologies are the same, and that therefore there can be an ungendered "reasonable person" reaction to rape.

From the perspective of behavioral biology, however, rape is *sui generis*. Male and female brains are overwhelmingly likely to process rape victimization differently, even though they are likely to process similarly in the vast majority of other contexts. A biobehavioral perspective, were it to become more widely understood and appreciated, could have both positive and negative implications for our legal system.

The positive implications are at least three. First, and most generally, contextualizing the fear of rape and the psychological pain of having been raped within the long evolutionary history of the female brain could lead to more sympathetic support for antirape initiatives, prosecutorial efforts, and victim services. That is, understanding the historical and evolutionary significance of female mate choice, the gross disparities between males and females in the costs of enforced parenthood, and the extent to which well-understood evolutionary processes would tend to yield distinct emotional responses to behavior that threatened female mate choice in ancestral environments, would help underscore the very special nature of rape. It would also help explain why women are more likely than men to harbor a deep, visceral revulsion to rape and threats of rape. In short, it helps to make rape a big deal.

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312. See *supra* notes 137-142 and accompanying text.

To the extent that men previously have been encouraged to believe that there are no truly significant biobehavioral and psychological differences between men and women, sympathetic understanding of rape has likely suffered. Male legislators, judges, and prosecutors encouraged to discount or disbelieve the existence of male-female differences may mentally substitute themselves for a rape victim when assessing the reasonableness of her fear of rape or her response to it. They may imagine their own response to rape or threat of rape and, since they typically will not experience the same fear of or trauma due to rape that behavioral biology predicts an average woman might, they may therefore tend to discount the significance of rape to the average female.<sup>313</sup> The behavioral biology perspective buttresses greater understanding of rape responses by providing explanatory context for the belief that reasonable women and reasonable men will likely react differently to rape. To the extent that rape victims perceive increased legal responsiveness to rape trauma, rape reporting may increase.

Second, and more specifically, contextualizing women's emotional reactions to rape within the evolutionary processes that increased the probability of those reactions could improve the rational progress and effectiveness of rape trials. Presently, outcomes of rape trials often turn on the struggle to introduce or exclude evidence of "rape trauma syndrome" (RTS). This label was created to medicalize and categorize rape reactions within the larger arena of post-traumatic stress disorders. Prosecutors, for example, attempt to introduce RTS evidence to justify behavior brought into question by the defense, such as a delay in reporting the rape, behavior seemingly inconsistent with being a crime victim, and the like.<sup>314</sup> Defendants occasionally attempt to introduce RTS evidence to undermine the alleged victim's credibility, on the theory that if she did not exhibit RTS then it is unlikely that she was in fact raped.<sup>315</sup>

As courts attempt to parse the scientific acceptability of such syndrome evidence, they frequently have been encouraged by the medical profession and trial attorneys to view RTS as some sort of pathological illness and dysfunction,<sup>316</sup> rather than an often understandable outgrowth of evolved female psychological mechanisms that tended in ancestral environments to improve a woman's chances for meaningful and adaptive mate choice by associating the lack of such choice with particularly acute

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313. Professor Denno makes a similar point in Denno, *supra* note 273.

314. See, e.g., *People v. Taylor*, 552 N.E.2d 131 (N.Y. 1990) (holding that prosecutors could introduce RTS evidence to explain victim's initial unwillingness to identify her attacker).

315. See, e.g., *Henson v. State*, 535 N.E.2d 1189 (Ind. 1989) (holding that exclusion of expert testimony that complainant's behavior after alleged rape was inconsistent with RTS is reversible error); see also Nicole Rosenberg Economou, Note, *Defense Expert Testimony on Rape Trauma Syndrome: Implications for the Stoic Victim*, 42 HASTINGS L.J. 1143 (1991).

316. See Stefan, *supra* note 261.

psychological distress. Doing so may unfairly burden the state or plaintiff, demanding explanation and evidence in support of what may be a fundamental psychological feature shared widely by females of our species and many others. Moreover, it risks stigmatizing the victim (as a woman with a "syndrome") in a fashion that overblows its significance, and potentially deters rape victims from reporting rapes, cooperating fully with prosecutorial efforts, or pursuing civil remedies available to them. The behavioral biology perspective could afford a rational and intellectually accessible foundation for judge, jury, and society to accept a female victim's emotional reactions in an un-syndromed, non-aberrational, non-medicalized context.

Third, postulating evolved differences in the male and female perceptions of rape and threats of rape could inject some useful humility into cross-sex legal pronouncements about what rape means and just how pernicious it is. In *Coker v. Georgia*,<sup>317</sup> for example, an all male Supreme Court concluded that the death penalty was a constitutionally impermissible punishment for raping an adult woman.<sup>318</sup> To so hold, consistent with its prior capital punishment decisions, the Court needed to conclude that death for rape was "excessive"—a standard satisfied by, among other things, punishments that are "grossly out of proportion to the severity of the crime."<sup>319</sup> This case must be understood, of course, against the backdrop of racially biased capital punishment. But it strikes me as not insignificant that the Court bolstered its conclusion as follows:

Rape is without doubt deserving of serious punishment; but in terms of moral depravity and of the injury to the person and to the public, it does not compare with murder . . . [*Rape*] does not include . . . even the serious injury to another person. . . . We have

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317. 433 U.S. 584 (1977).

318. The Georgia Code at the time specified that "[a] person convicted of rape shall be punished by death or by imprisonment for life, or by imprisonment for not less than one nor more than 20 years." *Id.* at 586 (citing GA. CODE ANN. § 26-2001 (1972)). Upon conviction, punishment was determined by a separate sentencing proceeding in which, to impose the death penalty, a jury had to find at least one of the statutory aggravating circumstances. *See id.* at 586, 587 n.3 (citing GA. CODE ANN. § 26-3102 (1977)). *Coker* claimed that being executed for his most recent rape conviction would violate his constitutional right under the Eighth Amendment to be free from cruel and unusual punishment. Seven Justices agreed. (Two of them, Justices Brennan and Marshall, believed the death penalty to be unconstitutional in all cases, necessarily including this one.) The plurality opinion of Justices White, Stewart, Blackmun, and Stevens held the death penalty for raping an adult woman unconstitutional in all such cases not also involving murder. Justice Powell, concurring in part, would have held the death penalty for raping an adult woman unconstitutional except for "aggravated" rapes, such as those involving excessive brutality.

319. The Court had recently and firmly reiterated, in *Gregg v. Georgia*, 428 U.S. 153 (1976), that the Eighth Amendment bars not only barbarous punishments, but also punishments that are excessive in relation to the severity of the crime. The Court also held in *Gregg* that the death penalty was not a categorically unconstitutional form of punishment.

the abiding conviction that the death penalty . . . is an excessive penalty for the rapist . . . .<sup>320</sup>

Leaving aside this statement's furtherance of discussion of the death penalty, the point I raise here is that this reasoning relies on a judicially asserted fact regarding the magnitude of the harm of rape and the comparative harmfulness of being raped instead of killed. The claim is purportedly objective, it employs a "reasonable person" assessment of rape's harm, and it is likely replicated elsewhere in the legal system. Perhaps the Justices were right, in the end. But I am not presently convinced that men in the legal system should be quite so sanguine about their ability to make such assessments of female psychology in the context of rape. For everything we know about the biology of behavior suggests that male and female brains will tend to process and react to rape differently—and not solely because of the different ways in which they have been socialized. Consequently, a behavioral biology perspective on the psychology of rape's harms may prompt us to reevaluate the bases on which we compare it to other harms.

On the other hand, contextualizing the harm of rape within differently evolved male and female psychologies could yield potentially unjustifiable ripple effects of acknowledging male and female differences generally. If people were to view female psychology as particularly vulnerable in the context of rape, it might serve to justify otherwise unwarranted discrimination in hiring contexts regarding jobs that may expose women to rape-risky environments. More generally, people uninformed about the kinds of circumstances in which male and female psychologies may differ could extrapolate the existence of sex differences in the rape contexts into other contexts less supported or unsupported by the underlying behavioral biology. For example, some people might argue that evolved sex differences were broadly generalizable, rather than narrowly context-specific, and attempt to use such a misarticulation and misapplication of biobehavioral science in furtherance of even broader discrimination on the basis of sex.

Whether the potential benefits or harms of contextualizing trauma will be greater will depend, in part, on the extent to which policy makers understand that the existence of differences between the sexes is not only extremely likely to be evident in the context of rape (and other behaviors closest in nexus to the reproductive success of our ancestors), but also extremely unlikely in a great many other contexts.

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320. *Coker*, 433 U.S. at 598 (emphasis added). Interestingly, the court limited its decision to rapes of adult females, leaving open whether it would be unconstitutional to impose the death penalty for the rape of a child. So noting, the Louisiana Supreme Court, in *State v. Wilson*, 685 So. 2d 1063 (La. 1996), cert. denied sub nom., *Bethley v. Louisiana*, 117 S. Ct. 2425 (1997), upheld the constitutionality of a statute allowing capital punishment for the rape of a child under the age of twelve.

### C. Rape Motivation: The Violence Against Women Act of 1994

One area in which biobehavioral theories of sexual aggression may have clear application is in contexts in which the motives for rape themselves have direct legal significance. The Violence Against Women Act of 1994 (VAWA),<sup>321</sup> for example, in a famously controversial provision, affords civil rights remedies to victims of “crimes of violence motivated by gender.”<sup>322</sup> To prove that criminal violence upon her was “motivated by gender,” a woman must demonstrate by a preponderance of the evidence that the attack upon her was: (a) “committed because of gender or on the basis of gender”; and (b) “due, at least in part, to an animus based on the victim’s gender.”<sup>323</sup> Should she succeed, she may be awarded “compensatory and punitive damages, injunctive and declaratory relief, and such other relief as a court may deem appropriate.”<sup>324</sup> However well-intentioned the legislation, biobehavioral perspectives may call into question the wisdom of its precise wording, design, and application.<sup>325</sup> There are several issues regarding the Act: the scientific accuracy of the general understanding of human motivation that it reflects; the specific theories of rape it reflects; and its likely effectiveness.

The extent to which motive is relevant to the law’s punishment of bad acts, or compensation for injurious ones, is a matter as to which theorists have devoted much ink. Typically, motive is probative of the likelihood that a defendant committed an act with which he is charged, as in the context of an allegedly premeditated murder, or motive is independently relevant at sentencing. But it is quite rare to make a specific kind of motive a separately necessary element of an action. When the legal system ventures to make motive a formal element of an action, as it has in VAWA, two results may ensue. First, the threshold for demonstrating motive may be sufficiently high, as a practical matter, that few plaintiffs will succeed. This could be the case, for example, if the courts considered the matter of motive so complex that the plaintiff’s burden would be quite heavy. Alternatively, since judges may properly presume that Congress had cases in mind to which a statute costly to create would apply, the threshold for proving motive may *de facto* become lower than a scientific reality (at least) may suggest. This would make it relatively simple to offer persuasive evidence of motive; else none would be persuasive at all.

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321. Pub. L. No. 103-322, §§ 40111(a)-40611, 108 Stat. 1796, 1903-53 (codified as amended in scattered sections of 8, 18, 28, and 42 U.S.C.).

322. 42 U.S.C. § 13981(a) (1994). For examples of other contexts in which motive for rape may be relevant, see Baker, *supra* note 16.

323. 42 U.S.C. § 13981(d), (e)(1) (1994).

324. 42 U.S.C. § 13981.

325. For a view that evolutionary theory supports the argument that bias crime statutes should encompass gender-related crimes, see Katherine Chen, Note, *Including Gender in Bias Crime Statutes: Feminist and Evolutionary Perspectives*, 3 WM. & MARY J. WOMEN & L. 277 (1997).

In a number of important cases, the latter path appears to have been taken. For example, one federal district court opined that cases in which rape would *not* have been “motivated by gender,” with constituent animus, “would appear . . . to be few and far between.”<sup>326</sup> Another district court, in the context of an unwanted fondling the court found to be animus-motivated, applied a standard for animus so low that *all* rapes would seem to qualify.<sup>327</sup> That court reasoned that

because unwanted or unwelcome sexual advances may be demeaning and belittling, and may reasonably be inferred to be intended to have that purpose or to relegate another to an inferior status, even if the advances were also intended to satisfy the actor’s sexual desires, the allegations of the “animus” element are here sufficient.<sup>328</sup>

These judicial developments implicitly reflect judicial notice of the *claim* that sexual aggression cannot be sexually motivated without animus as if it were indeed *fact* that sexual aggression cannot be sexually motivated without animus. The momentum of this questionable view is reflected in subtitle D of VAWA, entitled The Equal Justice for Women in the Courts Act of 1994.<sup>329</sup> Notwithstanding that it immediately follows subtitle C, which creates the civil rights cause of action for violence against women “motivated by gender,” and notwithstanding that the legislative history of subtitle C makes quite plain that courts were *not* to assume that *every* rape is “motivated by gender,” subtitle D reflects the assumption that rapes are motivated by gender. Specifically, subtitle D authorizes grants for training judges and court personnel “in the laws of the States . . . on rape . . . and other crimes of violence motivated by the victim’s gender.”<sup>330</sup> The momentum of this empirically questionable assumption that rapes almost always involve gender animus is also reflected in at least two categories of legal scholarship. One calls for a rebuttable presumption of animus in rape cases because “gender animus is an underlying factor in almost all rapes.”<sup>331</sup> The other argues that VAWA should be

326. *Anisimov v. Lake*, 982 F. Supp. 531, 541 (N.D. Ill. 1997).

327. *See Doe v. Hartz*, 970 F. Supp. 1375 (N.D. Iowa 1997), *rev’d on other grounds*, 134 F.3d 1339 (8th Cir. 1998). Specifically, the defendant “came up behind [the plaintiff], grabbed her with both of his hands and pulled her back into his body, held her tightly and kissed her neck.” *Doe*, 970 F. Supp. at 1381. Later that evening, he “rubbed Plaintiff’s back up and down with his hand.” *Id.*

328. *Doe*, 970 F. Supp. at 1408.

329. Pub. L. No. 103-322, §§ 40401-40422, 108 Stat. 1796, 1942-45 (codified as 42 U.S.C. §§ 13701, 13991-14002 (1994)).

330. 42 U.S.C. § 13991 (1994) (emphasis added); *see also* 42 U.S.C. § 13992(19) (expanding concern to “gender-motivated crimes of violence other than rape”).

331. Gaffney, *supra* note 26, at 264.

amended to strike the animus requirement altogether, to make rape *per se* actionable under VAWA.<sup>332</sup>

Certainly, much male-female violence, like much violence generally, is motivated by an amalgam of anger and at least momentary hatred.<sup>333</sup> And the legislative history of VAWA provides some guidance as to circumstances, such as the presence of sexist epithets during the violence,<sup>334</sup> that make meeting the animus “at least in part” requirement fairly unambiguous to apply. But when the violence in a VAWA action is *rape* (rather than the host of other assaults that can qualify as “crimes of violence motivated by gender”) the empirical—and hence ultimately scientific—question of motivation is likely to be more complex than generally assumed.

This complexity obtains for two reasons. First, the entire legal construct of motivation is biologically naive, in ways that render its use in the rape context problematic. This is true even if one acknowledges, as the legal system clearly has,<sup>335</sup> that people can have multiple motives for their acts. By failing to recognize the distinction between, and yet inescapable interconnectedness of, proximate (immediate) and ultimate (evolutionary) levels of causation, law treats motive simplistically, as if motives come in easily disentangled and categorized kinds, which compete in a zero-sum game for relative proportional influence.

Leaving the biobehavioral theories of rape aside for the moment, biology makes compellingly clear that sexual behaviors must be understood as the product of proximate and ultimate causes. They have proximate origins (such as observation of a potential sex partner) as well as evolutionary origins (such as the nonrandom patterning of psychological desires for sex partners exhibiting certain kinds of characteristics). Thus biobehavioral causes of sex behavior, even sexual aggression, can exist *at the same time* that other contributors, such as political powerlessness of victims, do. These multiple causes coexist in the same way that an infinite variety of blueprinted boxes could all have a constant height, even while their lengths and widths permuted wildly.

The second reason the question of rape motivation is likely to be more complicated than commonly presumed is based on the biobehavioral evidence discussed earlier. There is simply a great deal of evidence, consistent with narrow, falsifiable, and parsimonious predictions, derived from robust

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332. See Frazee, *supra* note 22, at 242-43, 245-47; see also Goldfarb, *supra* note 26, at 398-99 (citing authors who would prefer that the legislation presume that rape is always gender-motivated).

333. An obvious and extreme example is the 1989 shooting attack, in Montreal, on 27 women. The gunman's suicide note indicated that he blamed women generally, and feminists in particular, for his problems. See David E. Pitt, *Montreal Gunman Had Suicide Note*, N.Y. TIMES, Dec. 8, 1989, at A9.

334. See, e.g., S. REP. NO. 103-138, at 51 (1993).

335. See, e.g., Price Waterhouse v. Hopkins, 490 U.S. 228 (1989) (describing standards for finding Title VII violations in “mixed-motive” cases).

foundations of behavioral biology, suggesting that rape is frequently influenced, at least in part, by nonrandom, context-specific, information-processing predispositions typical to the male brain of many species, including humans. This evidence neither excuses rape when it does occur, nor makes rape determined or inevitable. But it may very well mean that the popular hypothesis that most rape is a product of misogynistic animus, quite similar to that present in lynchings, is overcredited.<sup>336</sup>

In the end, the biobehavioral perspectives on sexual aggression may suggest that VAWA is unlikely to be as effective a remedial and deterrent mechanism as its proponents hoped. VAWA uses a civil rights framework largely borrowed from hate-crime legislation targeting racially motivated violence. It thus reflects the assumption that male violence against women is quite often the same sort of thing—a “hate crime”<sup>337</sup>—as racial violence (or at least that a legal framework intended primarily to deter white violence against blacks will be equally effective in deterring male violence against women).<sup>338</sup> While it is possible that a statutory mechanism designed to deter and fairly compensate for violent hate crimes may be equally effective in the context of sexual violence, biobehavioral theories suggest that view may be overly optimistic. The evolved psychology of sexuality and sexual desire, reflecting roughly 600 million years of sexual dimorphism in our lineage, likely renders the psychology of sexual violence a very different thing than the psychology of racial violence.<sup>339</sup> Thus the

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336. It is a remarkably popular belief of many legal commentators that rape is to women as “lynching” is to African Americans—an act motivated by hatred. See, e.g., W.H. Hallock, *The Violence Against Women Act: Civil Rights for Sexual Assault Victims*, 68 IND. L.J. 577, 609-10 (1993) (making lynching analogy).

337. See, e.g., S. REP. NO. 103-138, at 49 (1993); see also Peggy Miller & Nancy Biele, *Twenty Years Later: The Unfinished Revolution*, in TRANSFORMING A RAPE CULTURE 47, 52 (Emilie Buchwald et al. eds., 1993) (“Rape is a hate crime, the logical outcome of an ancient social bias against women.”).

338. The Senate Report accompanying VAWA stated that “it is time for attacks motivated by gender basis [sic] to be considered as serious as crimes motivated by religious, racial, or political bias. The provision’s purpose is to provide an effective anti-discrimination remedy for violently expressed gender prejudice.” S. REP. NO. 103-138, at 38 (1993). See also *id.* at 42 (“[VAWA] is designed to remedy not only the violent effects of the problem, but the subtle prejudices that lurk behind it.”); *id.* at 48-51 (suggesting that VAWA is not intended to make all violent crimes against women, or even all rapes of women, civilly actionable). Earlier versions of VAWA indeed defined all rapes as crimes motivated by gender. See, e.g., S. REP. NO. 101-545, at 23 (1990). Lastly, the legislative history frequently uses racial context examples to illustrate gender context points. See *id.* at 50, 52.

339. Many biologists question the very concept of “race” in the human species, considering it a social, not a biological, term applied loosely to historically localized breeding populations that can, nonetheless, interbreed when brought together. To the extent that races do exist, they can only have existed for about 35,000 years, which is likely too short a time for any significant race-specific psychological differences or adaptations to have arisen. See, e.g., L. LUCA CAVALLI-SFORZA ET AL., *THE HISTORY AND GEOGRAPHY OF HUMAN GENES* 16-20 (1994). For further discussion, see JONATHAN MARKS, *HUMAN BIODIVERSITY* (1995); Jonathan Marks, *Science and Race*, 40 AM. BEHAVIORAL SCIENTIST 123 (1996); and Lionel Tiger, *Trump the Race Card*, WALL ST. J., Feb. 23, 1996, at A12.

effectiveness of VAWA may be undercut by its very cross-conceptualization of race and sex.<sup>340</sup>

#### D. Rape Classification in State Criminal Statutes

On the theory that rape may be a crime of violence, not of sex (again, The Error of the False Dichotomy)<sup>341</sup> most states have formally reclassified rapes using terms other than “rape.”<sup>342</sup> Colorado, for example, redefined rapes as “sexual assaults.”<sup>343</sup> While a number of states, Colorado among them, retain a section on sexual assaults distinct from assaults generally, it is nonetheless clear that the taxonomic reclassification was intended to make “rape” and “assault” much closer conceptual cousins. Some authors have advocated that all former rape law be merged into state statutes’ general assault regimes.<sup>344</sup> In either case, particularly the latter, reclassifying rape has consequences, many of them quite laudable. It sends a strong symbolic message that rape is intolerable. It makes clear that rape is not a sexual experience for the victim. And it signals that rape is not the kind of behavior likely to be treated leniently.

It is unclear, however, whether invoking a legal regime that has penalties designed to confront and deter *other* crimes of violence will be effective in deterring *this* kind of violence. The reclassification, therefore, may prove unwise. If the biobehavioral theories about evolutionary influences on patterns of rape are accurate, rape behavior is likely to respond to environmental changes—and the threat of legal penalties—in a very different way than, say, violence incidental to either thefts of property or anger over a confrontation. For example, psychological processing mechanisms relevant to many rapes may be less sensitive to post-act costs not typically encountered in the environment of evolutionary adaptation. This may, in fact, suggest that rape should be subjected to a separate schedule of punishments, much *harsher* than ordinary (and harsher than ordinary assaults carry), to counter behavior that may be somewhat less rationally calculated than ordinary. Reclassifying rape as a subset of other assaults may make this separate punishment scheme more difficult to maintain and defend, because the greater the perceived similarity in the crimes, the more one expects similarity in penalties.

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340. The potential contributions of behavioral biology in this context relate only to the *accuracy* of empirical assumptions legislators and courts may bring to the implementation of subtitle C of VAWA. In no way do they suggest that the meritorious goal of reducing rape that underlies Title III should not be pursued in other ways.

341. See *supra* notes 157-171 and accompanying text.

342. See Bryden, *supra* note 5 (manuscript at Part V & n.335, on file with author).

343. See, e.g., COLO. REV. STAT. ANN. § 18-3-402 (West 1990 & Supp. 1998).

344. See Bryden, *supra* note 5 (manuscript Part V, on file with author) (describing this approach and citing, as an example, Martin D. Schwartz & Todd R. Clear, *Toward a New Law on Rape*, 26 CRIME & DELINQ. 129, 136-37 (1980)). Bryden is sharply critical of this suggestion.

It is always relevant to legal reform to estimate the relative difficulties with which different behaviors can be changed. To date, reformers have had few tools available to aid their estimates. Often, legal thinkers rely on a combination of intuition, observation, and trial and error. In certain arenas, such as market operations and tax policy, economic tools have helped law to anticipate and thus to shape legal policies predictably effective at encouraging or discouraging activities. But economics has its limits, because humans are notoriously prone to emotional and irrational behavior.<sup>345</sup>

What behavioral biology offers is a systematic way of estimating, behavior by behavior, what lawmakers are up against. Understanding how natural selection has shaped the human brain provides a reliable way of estimating the *relative* degree of legal intervention necessary to shift different law-relevant behaviors. Quite simply, when the law encourages behavior to which the human brain is already predisposed, it will be more easily successful than when it attempts the opposite. The degree of difficulty it encounters, in the latter context, will correspond to the magnitude of the effect that behavior had on the reproductive success of pre-human and early human ancestors in long-faced environmental conditions.

This difficulty does not mean that rape is inevitable. It does mean, however, that if the selection theories of biobehavioral influences on rape are true, then rape behavior will be even more difficult to eradicate than some theorists estimate.<sup>346</sup> With the exceptions of survival and sexual maturity, copulation with fertile females has long been the principal prerequisite behavior for male reproductive success. Resource acquisition, status, competition for mates, child-rearing, and the like all help. But the human brain can be expected, on average, to yield increasingly intense emotional states, predisposing its bearers to increasingly desperate, even forceful

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345. For brief discussion of this point, and the utility of evolutionary psychology in understanding human emotions, see Owen D. Jones, *Law, Emotions, and Behavioral Biology*, 39 JURIMETRICS J. 283 (1999).

346. Compare, for example, this passage,

The eradication of rape is contingent on educating and sensitizing our society to the meaning of the crime and the context in which it occurs. . . . Ultimately, however, the elimination of rape will require a massive reconsideration and restructuring of social values as well as a reorientation of the relations between the sexes. It is the thesis of this author that when the sex roles of both men and women are defined by individual needs and talents rather than by stereotypic expectations based on sex and power motives, only then will there be an end to rape.

HILBERMAN, *supra* note 41, at 62. See also Patricia Searles & Ronald J. Berger, *Conclusion to RAPE & SOCIETY*, *supra* note 30, who call for

radical social structural and cultural change . . . [by] redesign[ing] our sex-education programs so as not to continue to 'rear our sons and daughters in such ignorance of their sexuality that many confuse pleasure with pain and domination'[:] . . . confront[ing] rape-supportive beliefs and attitudes[:] . . . challeng[ing] traditional notions of masculinity and femininity[:] . . . advocat[ing] and creat[ing] social and economic reforms designed to promote gender equality and improve the overall condition of women in society [and] . . . address[ing] the socioeconomic causes of crime and seek[ing] to reduce unemployment, poverty, and racial discrimination.

action, as prospects of even minimum reproductive success fail to materialize, or otherwise diminish. Many aspects of our culture are designed to inhibit the expression of such predispositions. But we should anticipate and counter environmental stimuli that may disinhibit these predispositions, however major or minor they may be.

Proposed changes in education, socialization, and culture are useful and necessary.<sup>347</sup> But behavior can in no legitimate way be thought to arise from culture alone, whether the particular selection theories of rape are or are not true. The human brain is a specialized information processor—whose patterns of psychological states will tend, on average, to inspire behavior that was adaptive in the environments of evolutionary adaptation. This is cause for attention, not alarm. If we want to reduce the incidence of rape, the better we understand the way brains process environmental conditions in ways that increase or decrease the likelihood of rape the better we can deter it.<sup>348</sup>

#### *E. Cost-Benefit Analyses: Hidden Policy Tensions Exposed*

One of the principal and most useful applications of evolutionary analysis is its ability to improve cost-benefit estimates.<sup>349</sup> It aids this process in two ways. First, because it can reveal interconnectedness between different behaviors, it can be a powerful tool for exposing hidden conflicts between seemingly unrelated goals. Second, it increases the comprehensiveness of each cost-benefit calculus by providing some sense of the actual costs of the conflicts.

For example, evolutionary analysis reveals potential tensions between anti-prostitution policies and anti-rape policies. If we assume that there are biobehavioral influences on the patterns of rape, then the relative availability of willing sex partners for men likely has some influence on the rape rate. (Remember that sexual desire is a proximate mechanism in furtherance of evolutionarily adaptive behavior, and that a conscious desire to reproduce with a given prostitute is unnecessary for the urge to visit a prostitute to be understood as evolutionarily influenced.) Prostitution makes a sex partner available to almost any man of even the most modest means. Consequently, it follows that an aggressive policy against

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*Id.* at 266-67.

347. See, e.g., Stock, *supra* note 181, at 73 (“I hope that males can be reeducated and resocialized so that they no longer define as in their interests the maintenance of a position of control over women, particularly using sexual coercion as a means of enforcement.”).

348. Professor Donald A. Dripps observes that the causes of rape are largely “irrelevant.” See Dripps, *supra* note 4, at 1781 n.3. He states, “Whether conduct originates from social or biological causes, its incidence will be reduced by the law’s physical threat and moral condemnation. The question law must answer is *what* conduct to punish and condemn.” *Id.* I suggest that the law should also have systematic processes for choosing how to deter, or how to deter more effectively. Evolutionary psychology is relevant to those processes.

349. See Jones, *Evolutionary Analysis in Law*, *supra* note 11, at 1236-40.

prostitution may compromise an aggressive policy against rape. Although evolutionary analysis can say nothing about whether reducing the incidence of rape or prostitution is the more important social goal, it can highlight that the effective pursuit of one may come at some cost to full success in pursuing the other.<sup>350</sup> Specifically, criminalizing prostitution in ways that effectively decrease its incidence may result in a slightly higher rape rate than may otherwise have obtained.<sup>351</sup>

There is remarkably little information available that would enable us to test the hypothesis that the prostitute supply and the rape rate are inversely correlated.<sup>352</sup> For one thing, it is difficult to make reliable judgments about the number of prostitutes on the basis of prostitution's illegality alone. Jurisdictions vary widely in the extent to which prostitution is actively discouraged. For another, it is possible that males may be less inhibited from raping prostitutes than non-prostitutes, since where prostitution is illegal a prostitute may be far less likely than non-prostitutes to report her victimization. There are simply too many variables, economic, political, demographic, and the like, for a comparative study to easily control.

Nonetheless, there is some evidence from Australia that supports this hypothesis. In a longitudinal study, Barber found that the conviction rate for rape and attempted rape in the seven-year period following the closure of brothels in the territory of Queensland was triple the rate for the seven-year period prior to the closures.<sup>353</sup> The socio-economic and demographic characteristics of those convicted correlated positively with those of the men who had most frequented brothels during more permissive times.<sup>354</sup> Moreover, the increase was three times the rate of increase for convictions of other violent crimes.<sup>355</sup> This is not dispositive, of course, because the

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350. For a brief but useful discussion of some of the many possible costs of over- and undercommodifying sexual services, see Margaret Jane Radin, *Market-Inalienability*, 100 HARV. L. REV. 1849, 1856, 1921-25 (1987).

351. I am presently unaware of any indication that this idea has been seriously considered by legal policy makers, at least in the United States. One influential researcher dismissed the idea, in a section subtitled "Myths About the Remedy," with the following reasoning: "[T]he fact of the matter is that prostitution does exist and it offers no solution since, again, the offender is not seeking primarily sexual gratification." GROTH, *supra* note 33, at 8. This reasoning is unpersuasive. That prostitution exists and does not eliminate rape affords little confidence to the conclusion that increasing the availability of prostitution would not decrease the rate of rape.

352. One would think, for example, that before and after data on rape and prostitution in Nevada or the Netherlands, where prostitution is legal but limited, would be easily accessible. However, I have been unable, thus far, to locate any sources that would enable straightforward analysis.

353. See R.N. Barber, *Prostitution and the Increasing Number of Convictions for Rape in Queensland*, 2 AUSTL. & N.Z. J. CRIMINOLOGY 169, 171 (1969). Brothels, though technically illegal, had been tolerated until a large-scale crackdown in 1959. See *id.*

354. See *id.* at 172.

355. See TEDESCHI & FELSON, *supra* note 116, at 315 (discussing Barber study). Barber concluded that the data "show clearly that there was a remarkable increase in the conviction rate for [rape and attempted rape] after this closing—an increase that was not found in convictions for offences against

prosecutorial policy and personnel were not constant across the fourteen-year period, but it is provocatively probative.

Surely not all rape would disappear if prostitution were legal and accessible. And the potential rape of prostitutes is no less a concern than the potential rape of non-prostitutes.<sup>356</sup> But to the extent that patterns of rape reflect male psychological predispositions toward sexual behavior generally, prostitution rates and rape rates may trade against each other. Although those who support decriminalization of prostitution have not commonly argued this,<sup>357</sup> biobehavioral theory suggests that legalizing prostitution might therefore cause the overall rape rate to decline. Consequently, a legislature that valued reduced rape more than reduced prostitution might experiment with legalizing prostitution.

#### F. *Statistical Evidence of Harm at Civil Rape Trials*

That rape is emotionally and often physically damaging is generally uncontroversial. But the relatively novel civil actions for rape create new issues certain to be controversial. For example, the civil rights cause of action created by VAWA (over which the federal and state courts have concurrent jurisdiction)<sup>358</sup> grants some rape victims the right to sue their attacker for civil remedies, typically monetary damages.<sup>359</sup> This may ultimately enable a victim-plaintiff seeking damages beyond those incurred in medical and psychiatric contexts (for example) to proffer evidence quantifying the emotional harm of being raped. She may wish: (a) to testify as to the extent of her emotional harm; (b) to introduce statistical evidence suggesting the degree of emotional harm experienced by typical rape victims; or (c) both.

The reason biobehavioral theories may become relevant in this context is that there now exists some evidence to suggest, consistent with

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the person by males in general." Barber, *supra* note 353, at 171-72. This is, of course, only correlational evidence, but it is among the only pieces of evidence currently available.

356. See Jody Miller & Martin D. Schwartz, *Rape Myths and Violence Against Street Prostitutes*, 16 *DEVIANT BEHAV.* 1 (1995) (persuasively arguing against the myth that prostitutes are unrapeable).

357. See, e.g., Tracy M. Clements, *Prostitution and the American Health Care System: Denying Access to a Group of Women in Need*, 11 *BERKELEY WOMEN'S L.J.* 49 (1996); Michael Conant, *Federalism, the Mann Act, and the Imperative to Decriminalize Prostitution*, 5 *CORNELL J.L. & PUB. POL'Y* 99 (1996); Lars O. Ericsson, *Charges Against Prostitution: An Attempt at a Philosophical Assessment*, 90 *ETHICS* 335 (1980); Minouche Kandel, *Whores In Court: Judicial Processing of Prostitutes in the Boston Municipal Court in 1990*, 4 *YALE J.L. & FEMINISM* 329 (1992); Jessica N. Drexler, Comment, *Governments' Role in Turning Tricks: The World's Oldest Profession in the Netherlands and the United States*, 15 *DICK. J. INT'L L.* 201 (1996).

358. See 42 U.S.C. § 13981(e)(3) (1994).

359. See 42 U.S.C. § 13981(c) (1994):

*Cause of action* A person . . . who commits a crime of violence motivated by gender and thus deprives another of the right declared in subsection (b) . . . shall be liable to the party injured, in an action for the recovery of compensatory and punitive damages, injunctive and declaratory relief, and such other relief as a court may deem appropriate.

predictions of biobehavioral theories, that victim trauma, while generally substantial, tends to vary among victims in predictable ways.<sup>360</sup> Differences in demographic factors, such as victim age, and situational correlates, such as the kind of sexual assault, tend to affect the magnitude of victim trauma. It is consequently possible that some parties may seek to introduce such statistical evidence at trial in support of establishing or diminishing damage awards.

It is unclear to me whether, if this happens, it will be a constructive development. But it is clear that the biobehavioral perspective affords neither plaintiff nor defendant automatic advantage in this civil trial context. In cases of penile-vaginal rapes of females of reproductive age, for example, plaintiffs may seek to introduce statistical evidence that this combination of variables has by far the greatest average likelihood of prompting extreme distress, and therefore of justifying the highest damage awards. In cases involving non-penile-vaginal sexual assault or victims outside their reproductive years, defendants may seek to introduce statistical evidence, informed by biobehavioral theory, that the average similarly situated victim tends to be somewhat less harmed than one might otherwise assume.<sup>361</sup>

At least two aspects of these potential scenarios warrant reflection. First, even if the biobehavioral theories of victim trauma are indeed robust, it is not necessarily the case that the theories themselves must be introduced to lay the foundation for independently relevant statistics, such as those showing variation in victim trauma. Credibly gathered statistics can be evaluated on the same general bases that statistics generally are. On the other hand, the patterns evident in the statistics may be sufficiently counter-intuitive that a firm grounding in evolutionary biology is necessary to make the patterns of rape trauma both admissible and intelligible to judge and jury. Second, as Professor Steven Goldberg has pointed out, we must not lose sight of the fact that behavioral biology is generally statistical, and therefore general in nature, while the charge of the judiciary often extends into the arena of individualized justice.<sup>362</sup> Statistics about "average" female trauma may or may not be particularly helpful, and should not be considered to have sufficiently talismanic scientific qualities to warrant unreflective reliance on them.

### G. *The Legal History of Rape Law: A New Lens*

Scientists demonstrate that the human brain is an evolved, special purpose information processor. Natural selection has left it designed to correlate patterns of environmental stimuli with patterns of subjectively perceived emotional states, which tend in turn to increase the likelihood of

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360. See *supra* notes 137-145 and accompanying text.

361. See *supra* notes 143-145 and accompanying text.

362. See Steven Goldberg, *Statistics, Law, and Justice*, 39 JURIMETRICS J. 255 (1999).

behavior that was historically adaptive, in the environment of evolutionary adaptation. Separately, legal historians attempt to describe and make sense of past legal developments by tracing their origins and consequences. A behavioral biology perspective can bring these two enterprises together in interesting and potentially useful ways. Rape affords three windows on this conjunction.

First, behavioral biology can help explain why some of the current contours of legal systems came to be the way they are, and why some legal proscriptions were not randomly likely to arise.<sup>363</sup> For example, despite great theoretical potential for cultural variability, forced penile-vaginal intercourse is an inflammatory and serious offense in every known society. This is true, despite the fact that there are many acts of physical violence (say, cutting off a leg) that are, on average, more *physically* harmful than rape. All over the planet, rape makes women fearful and angry, and it makes nonraping males who are fathers, husbands, brothers, sons, and friends of the raped female livid to the point of the most extreme forms of violence and retribution-seeking.<sup>364</sup> There is no research of which I am aware to suggest that it has not always been thus. (Even the *Coker* Court conceded that “[s]hort of homicide, [rape] is the ‘ultimate violation of self.’”)<sup>365</sup> Note too that the widest variety of legal systems, including our own, formally proscribe rape with harsh penalties. Although the complexities of the crime, the difficulties of proving lack of consent, and the vicissitudes of local attitudes have often made rape underreported, underprosecuted, and underpunished, convicted rapists still tend to be subject to unusually harsh penalties, including even death. The severity of these penalties is clear when compared to the physical harm typically inflicted, and to the less severe penalties that typically follow from even more physically severe nonsexual harms.

The extraordinarily widespread proscription against rape, coupled with the unusually harsh sanctions rape invokes,<sup>366</sup> requires explanation. Absent evolutionary analysis, a comparative legal historian would need to posit that these legal systems are commonly descended from a legal system present when all early humans lived together, have arisen in separate

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363. The Thornhills explore such an application in Thornhill & Thornhill, *supra* note 130.

364. Indeed, Michael Dukakis' uneinotional response to a question about the hypothetical rape of his wife, during a televised 1988 presidential campaign debate, struck people as so inhuman that his campaign manager would later say that it was at that moment she knew Dukakis would lose the election. See Susan Estrich, *The Hidden Politics of Race*, WASH. POST MAG., Apr. 23, 1989, at 20. For a discussion of evolved male psychology concerning threats by third parties to rape a mate or relative, see THORNHILL & PALMER, *supra* note 14, at ch. 4.

365. *Coker v. Georgia*, 433 U.S. 584, 597 (1977) (citation omitted); see *supra* notes 317-320 and accompanying text (discussing *Coker*).

366. See TEDESCHI & FELSON, *supra* note 116, at 334 (1994) (“A cross-cultural survey of 110 societies from the Human Relations Area Files showed that rape is one of the three most heavily punished crimes.”) (citation omitted).

cultures coincidentally (like so many heads in consecutive coin tosses), or have mimicked each other through ancient, cross-cultural exposure. Each is possible and yet, on the basis of current knowledge, unlikely to afford adequate explanation.

From the evolutionary perspective, the widespread proscription and harsh penalties 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.<sup>367</sup> 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.

Second, and reciprocally, comparative legal history may serve to identify features sufficiently common to human existence to recommend research into previously unexplored features of shared human psychology. Suppose, for example, that we did not already have biobehavioral theories of sexual aggression. The very discovery of remarkably consistent, cross-cultural patterns in legal proscriptions against rape and extreme sanctions for rape might have prompted useful theoretical and empirical work into the evolved male and female psychologies regarding rape. It is therefore possible that such comparative legal histories may serve such a function in other contexts, where common legal features of societies may serve as markers for common features of evolved human psychology.

Third, understanding the human brain as one with commonly shared, evolved, and contingent information processing patterns may provide a richer appreciation of the interplay between legal systems and human nature.<sup>368</sup> Legal systems can then themselves be seen as culturally manifested

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367. Some initial thinking in this direction is suggested in Thornhill & Thornhill, *supra* note 130, at 159-63.

368. See, e.g., JOHN O. MCGINNIS, *WE THE PRIMATES* (forthcoming); Mark F. Grady & Michael T. McGuire, *A Theory of the Origin of Natural Law*, 8 J. CONTEMP. LEGAL ISSUES 87 (1997); John O. McGinnis, *The Human Constitution and Constitutive Law*, 8 J. CONTEMP. LEGAL ISSUES 211 (1997); John O. McGinnis, *The Once and Future Property-Based Vision of the First Amendment*, 63 U. CHI. L. REV. 49 (1996); John O. McGinnis, *The Original Constitution and Our Origins*, 19 HARV. J.L. & PUB. POL'Y 251 (1996); see also MARGARET GRUTER & PAUL BOHANNAN, *LAW, BIOLOGY & CULTURE: THE EVOLUTION OF LAW* (1983); ROGER D. MASTERS, *THE NATURE OF POLITICS* (1989); *THE SENSE OF JUSTICE: BIOLOGICAL FOUNDATIONS OF LAW* (Roger Masters & Margaret Gruter eds., 1992).

extensions of evolved psychological predispositions—as an increasingly complex reflection of evolved norm formulating behavior. For example, legal proscriptions against rape may not only reflect evolved psychological predisposition to attend to forced copulation, but may also themselves be evolved psychological mechanisms for confronting the threat of rape.

### CONCLUSION

Every legal regime has, as its fulcrum, a behavioral model that purports to describe causal influences on law-relevant behavior. The law can obtain no more leverage on that behavior than the solidity of that behavioral model affords. And yet for all that has been written about rape, its causes remain insufficiently understood—and popular behavioral models of rape behavior insufficiently robust—for law to prevent it effectively.

This is due, in part, to law's tendency to be a passive consumer of behavioral models offered up by others, rather than an active participant in the process of integrating the best parts of different theories that percolate separately in historically and arbitrarily divided disciplines. Having gradually abandoned the previously prevailing psychiatric, medical model of rape, which led our legislatures to write rape laws in terms of uncontrollable sexual urges, the law and legal literature have in recent years adopted, in its stead, a sociocultural and feminist understanding of rape.

This is, in many respects, an improvement. The prevalence, effects, and multiple meanings of rape have been exposed. And the legal system has been forced to acknowledge, and to begin remedying, its failures to protect women and to deter rape behavior. We have vindicated important principles of bodily autonomy, ended the marital rape exemption, erected rape shield laws, explored important dimensions of coercion that exist independent of physical force, eliminated the necessity of evidence of resistance, and ended the trivialization of rape. Nevertheless, legal reforms have had less impact than hoped. Law will likely sacrifice further improvements if it forgoes both its opportunity to encourage the eventual integration and cross-compatibility of relevant disciplinary perspectives, and the gains to legal prevention of rape this could afford. By any legitimate measure, the life science and social science perspectives on rape must in the end form a seamless web of knowledge—inconsistencies resolved, and compatibilities intertwined and reciprocally strengthened. This Article has explored why such integration may be far easier than commonly supposed, and why a model incorporating both sociocultural and biobehavioral influences on rape may be more accurate and more useful.

Given the history of popular perception of life science perspectives on sexual aggression, however, one raises them only with risks. And three have the greatest significance. The first risk is the possibility that invoking biology as having meaningful things to say about sexual aggression will be

misperceived as taking issue with what others have said about the meanings and effects of rape. This risk is real, I believe, because rape scholarship to date rarely distinguishes between causes and meanings, and effects and functions. In examining modern life science perspectives on sexual aggression, however, I have explored only the causation side of the equation. One of my principal points has been that we too often have assumed, rather than seen demonstrated, that actual effects of rape are intended effects of rape, and therefore causal. We therefore have underexamined rape causation, overconfident that we understand why it happens as it does.

The second risk of exploring biobehavioral influences on patterns of sexual aggression is that doing so may seem like an effort to resuscitate the biological theories of rape that are regularly bashed. It need not seem so. Biology is not destiny. And there is no such simple thing as a rape gene, or genetic determinism, or genetic programming, or irresistible impulses, or uncontrollable urges to rape. Nevertheless, it should now be clear that the "biological" theories that are regularly and ritually bashed are not in fact theories flowing from biologists. They are something altogether different—generally the incarnation of concerns about what conclusions the public might draw from any admission that biology is relevant to rape. These are real concerns, but they are straw positions when misattributed to biologists and then cathartically demolished.

The third risk is that taking biology seriously may seem a means to some convenient normative end. There are few things scarier than the prospects of zealots claiming that biology is "on their side," justifying personal and political preferences and privilege with a patina of conveniently annexed scientific facts. But information is explanation, never justification. One therefore cannot assume that the existence of biobehavioral influences on patterns of rape, and potential relevance to rape law, leads ineluctably to conservative, liberal, or any other ends whatsoever. Concluding that sexual desire is relevant to rape is not to undo the conclusion that rape is not just sex. A more moderate, and I believe more accurate, view is that there are multiple causal influences that affect who rapes whom, under what circumstances, and how rape or threat of rape affects women.

What I have argued, then, is as follows. First, the legal system improves its ability to prevent rape behavior when it increases its understanding of rape behavior. Second, understanding human behavior generally, as well as rape behavior specifically, requires a model of causation that reflects the integration of life and social sciences. Otherwise, we artificially fragment reality (at a cost to law's effectiveness) by forcing it into artificially circumscribed disciplinary compartments. And third, the life sciences, carefully studied, properly qualified, and understood on their own terms can offer us useful information about biological influences on the sexual aggression we seek to stamp out.

In science, no theory is static. Future research to test, challenge, revise, and refine biobehavioral theories is both necessary and welcome. At present, theories of biobehavioral influences on patterns of sexual aggression—viewed in context and without prejudice—are more plausible than commonly supposed, and far less deterministic than commonly caricatured. They do not contest social theories for disciplinary hegemony, but rather offer a way of seeing how critical environmental influences, such as culture and socialization and gender norms, are processed in a fundamentally corporeal brain, evolved to process information in nonrandom, behavior-influencing patterns. They offer a way of understanding, without justifying or excusing, the observable patterns of rape, and therefore better arm us to battle against it.

Like all theories, the biobehavioral theories here explored could be misunderstood, misapplied, or both. And against those possibilities we should be vigilant. The important gains of feminism are too long and hard fought (and perhaps even too easily dislodged) to risk on mere speculation. On the other hand, further progress in reducing rape could be as easily jeopardized, perhaps even more jeopardized, by undercrediting biobehavioral theories as by overcrediting them—despite common assumptions to the contrary.

In this Article, I have aimed to clarify what biological perspectives on rape behavior do and do not offer, where they are robust or frail, and how, where robust, they might improve our current legal approaches to what remains a troublingly frequent phenomenon. Surely rape is sufficiently repugnant to warrant seeking useful knowledge wherever it may be had.

APPENDIX A<sup>369</sup>EVOLUTIONARY PERSPECTIVES ON SEXUAL AGGRESSION:  
SELECTED SOURCES

Randy and Nancy Thornhill are responsible for a great deal of the literature offering evolutionary perspectives on sexual aggression. See, for example, in reverse chronology, RANDY THORNHILL & CRAIG PALMER, *WHY MEN RAPE, WHY WOMEN SUFFER: RAPE, EVOLUTION, AND THE SOCIAL SCIENCES* (forthcoming 1999); Randy Thornhill, *The Biology of Human Rape*, 39 *JURIMETRICS J.* 137 (1999); Randy Thornhill, *Rape-Victim Psychological Pain Revisited*, in *HUMAN NATURE* 239 (Laura Betzig ed., 1997); 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); Nancy Wilmsen Thornhill & Randy Thornhill, *An Evolutionary Analysis of Psychological Pain Following Rape: III. Effects of Force and Violence*, 16 *AGGRESSIVE BEHAV.* 297 (1990); 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); 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); 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); Randy Thornhill & Nancy W. Thornhill, *Human Rape: The Strengths of the Evolutionary Perspective*, in *PSYCHOLOGY AND SOCIOBIOLOGY: IDEAS, ISSUES AND APPLICATIONS* 269 (C. Crawford et al.

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369. See *supra* text accompanying note 12.

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APPENDIX B<sup>370</sup>

The three other pathways (in addition to the natural and sexual selection pathway) by which patterns of rape behavior could conceivably be evolutionarily influenced are summarized below.

(1) *Mutation-Selection Balance*: The first possible hypothesis of evolutionary influence on patterns of forced copulation is best introduced by example. Suppose there was such a thing as a heritable psychological predisposition that increased the probability of aggressive sexuality (however slightly) and hence increased, in turn, the probability that those who bore it would force copulation with unwilling females. Suppose, also, that such a trait was less adaptive than an alternative, contemporaneously existing psychological trait, which predisposed the males who bore it to be more solicitous of females, and more successful in procuring mating opportunities.

In theory, even the maladaptive predisposition, which reduced the average reproductive success of its animal bearers, compared to their contemporaries, could persist in a population over time. The necessary conditions are that the mutation typically resulting in that predisposition re-appear, independently, at some low rate and that natural selection select against it each time it appears. (Hence the term "mutation-selection balance.")

Because mutations at a particular gene locus arise infrequently, at an average rate of one mutation per 100,000 copies of the gene, *see* MONROE W. STRICKBERGER, *EVOLUTION* 214 (2d ed. 1996), we can deduce that if a trait is both maladaptive and sustained within a population by mutation-selection balance, it would appear very infrequently. It is extremely unlikely, for example, ever to spread to one percent of a population. *See* Thornhill, *supra* note 86, at 141. As a consequence, we can also conclude that it would be unlikely that a significant proportion of other individuals within the full population would exhibit evolved counter-adaptations specific to that trait (that natural selection would have favored because they function to deflect the imposition of costs forced copulation imposes).

Two things suggest that a hypothetical, genetically influenced propensity to force copulation, in certain general kinds of circumstances, is not explicable by the mutation-selection balance of a maladaptive trait. First, rape is simply too common in the animal kingdom to be the product of a trait that repeatedly resurfaces in the face of negative selection pressure over evolutionary time. *See id.* at 141. Rape in other animals is explored in Part II, *supra*. Second, the cross-species and cross-human-society patterns of female resistance to rape, and the increased avoidance of rape-risky

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370. *See supra* text accompanying note 87.

encounters by reproductive age human females during the fertile parts of their cycles, suggest specific anti-rape psychological adaptations. See THORNHILL & PALMER, *supra* note 14, at ch. 4 (citing Tara J. Chavanne & Gordon G. Gallup, Jr., *Variation in Risk Taking Behavior Among Female College Students as a Function of the Menstrual Cycle*, 19 *EVOLUTION & HUM. BEHAV.* 27 (1998)).

(2) *Evolutionarily Novel Environment*: The second possible hypothesis of evolutionary influence on patterns of forced copulation involves positing that a predisposition that increases the likelihood of forced copulation is a currently maladaptive by-product of historically adaptive traits, which happen to be expressed today in suddenly changed environmental circumstances (such as those precipitated by recent human technological and population growth). See Thornhill, *supra* note 86, at 143. Such an explanation might make sense in humans, were it not for the puzzlingly similar patterns of rape, under seemingly normal conditions, in so many other species. (Again, patterns of rape in humans and nonhumans are explored in greater detail, in Part II, *supra*.) Positing completely unrelated causal pathways, for humans and nonhumans, without both substantially more theoretical development, and persuasive evidence of how such similar patterns could arise independently, would be improperly unparsimonious.

(3) *Genetic Drift*: The third hypothesis of evolutionary influence on patterns of forced copulation derives from the effects of random chance on distributions of genes in successive generations—so-called “genetic drift.” See GOLDSMITH, *supra* note 47, at 30-31; STRICKBERGER, *supra*, at 515-18. For example, a local environmental catastrophe could wipe out individual animals in a population that might otherwise have had greater reproductive success than their contemporaries. That certainly would change the proportions of future populations in which copies of the unfortunate individuals’ genes appeared, compared to what would have obtained in the absence of the catastrophe.

We can deduce, however, that drift cannot explain the persistence of heritable traits that impose significant costs on reproductive success. See Thornhill, *supra* note 86, at 143. The exponential effects of natural selection on the proliferation or diminishment of traits that have even small relative effects on reproductive success relentlessly decrease the proportion of a population bearing less successful traits. See *supra* text accompanying note 61. Consequently, if a propensity to force copulation in some circumstances imposed reproductive costs not otherwise compensated for with average reproductive benefits, genetic drift could not provide adequate explanation.

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