Incest, Incest Avoidance, and Attachment: Revisiting the Westermarck Effect

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This article defends a version of the Westermarck Effect, integrating existing clinical, biological, and philosophical dimensions to incest avoidance. By focusing on care-based attachment in primates, my formulation of the effect suggests the power of a phylogenetic argument widely accepted by primatologists but not by cultural anthropologists. Identifying postadoption incest as a phenomenon with underexplored evidential value, the article sketches an explanatory strategy for reconciling the effect with the clinical reality of incest, concluding with an explicit argument against culture-first or conventionalist accounts of incest avoidance prevalent in anthropology.

1. Starting Points: Incest and the Human Sciences. When it was reported in 2008, the case of Joseph Fritzl elicited universal feelings of disgust, horror, and moral condemnation. Fritzl was the 74-year-old Austrian man eventually found guilty of a range of charges related to the confinement of his daughter for 24 years and the five children he fathered with her, all kept in a sealed, hidden room in his basement. Although the case involved child abuse, enslavement, rape, forced imprisonment, coercion, and even homicide, it was typically called up under a one-word label that caused in many the strongest emotional reactions: incest.

Theoretical discussion of incest in the biological and social sciences has understandably bypassed the sensationalism in media reports of Fritzl-like cases. In so doing, however, it has also largely ignored the clinical reality of which such cases are an extreme form. Early in anthropology's history, the-

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ories about the naturalness of incest structured grand narratives about the evolution of human society, taking incest taboos and exogamy to hold the key to distinctively human culture and its development. In early twentieth-century clinical psychology, incest and incest taboos were central components to Freud's psychoanalytic practice and theory, informing his now discredited treatment of reports of childhood sexual abuse as fantasized projections rather than accurate memories, and his theorization of the Oedipal complex. Beyond the clinical sciences, however, the extensive clinical literature on actual incest has been and remains strangely peripheral to contemporary theorization of incest and incest avoidance.

Theorizing about incest in the social sciences, dominated by anthropological and psychoanalytic perspectives, has in addition downplayed or mistakenly evaluated the significance of key evidence from the biological sciences, particularly from primatology. This has given what I will call *culture-first* accounts of incest avoidance, according to which distinctively human culture plays a critical originating role in human incest avoidance, more credibility than they warrant. Culture-first accounts, what Wolf (2014, 1–5) has called *conventionalism* about incest, hold that restrictions on sexual activity between close relatives are human cultural innovations, since left to the natural inclinations passed on to us by our primate ancestors, sex between close relatives would prevail. This view, widely endorsed within psychiatry and cultural anthropology early in the twentieth century, has persisted for longer than it should. This is partly due to the historical entrenchment of views formed in the absence of reliable clinical and evolutionary data that serve as anchors for culture-first views and partly because of a broader disciplinary tendency to evince, as Wolf says, "a profound dislike of biological explanations" (5).

One legacy of this is the limbo-like status of a hypothesis concerning incest avoidance that develops a line of thought first articulated by the Finnish sociologist-philosopher Edward Westermarck (1891). That hypothesis posits an effect, typically referred to as the Westermarck Effect following Fox's (1962) coinage, linking experiences during childhood association with sexual inhibition or indifference following sexual maturation (Lieberman, Tooby, and Cosmides 2003; Wolf and Durham 2004). Roundly dismissed in the social sciences for most of the twentieth century, Westermarck's hypothesis was revived by proponents of recent biosocial approaches to incest, notably Shepher (1983) and Wolf (1995), a revival subject to ongoing discussion within anthropology and elsewhere in the biological and social sciences.[1]

1. For the ongoing, often critical discussion that reflects the central place of culture-first or conventionalist views of incest avoidance within anthropology, see Spain (1987), Leavitt (1990, 2007), Ingham and Spain (2005), Leiber (2006), Shor and Simchai (2009), and, more recently, Kushnick and Fessler (2011), Read (2014), Shapiro (2015), and Shor (2015). For recent discussion beyond anthropology, see Lieberman, Fessler, and Smith (2011)

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The current article provides a sharpened, broadened statement of the Westermarck Effect that specifies a particular mechanism for the effect hypothesized, one that appeals not simply to association or familiarity but to the kind of emotional intimacy generated by care-based attachment (secs. 2 and 3). Locating that mechanism and the rule that it underwrites, what I call the Attachment–Sexual Inhibition Rule, in the context of both recent primatological research on inbreeding avoidance and clinical psychiatric work on incest (secs. 4 and 5), the article draws on a version of a primate-specific phylogenetic argument, eschewing more problematic global adaptationist appeals, such as to inbreeding depression in incestuous populations. A general form of this phylogenetic argument, articulated originally by Pusey (1987, 2004) and Paul and Kuester (2004) and developed by Chapais (2008, 2010), has gained general acceptance in primatology but not in anthropology. Refocusing discussion of the Westermarck Effect around this argument both redirects explanatory strategies aimed at reconciling the clinical reality of incest with the effect and reduces the plausibility of culture-first accounts of incest avoidance in our own species (secs. 6 and 7).

In sharpening both the statement and defense of the Westermarck Effect and integrating the views of the effect from psychiatry (Erickson 1991, 1993, 2004) and primatology (Paul and Kuester 2004; Chapais 2008), the argument here reinvigorates critiques of views of incest avoidance particularly prevalent in cultural anthropology and opens up space for further conceptual and empirical investigations. Accepting that the Attachment–Sexual Inhibition Rule is part of our primate heritage does not settle questions about the origin of incest taboos and their relationship to moral disapproval. But it does imply that these are not at the root of human psychological inhibition or indifference and behavioral aversion to incest. Before offering a precise specification of the Attachment–Sexual Inhibition Rule in section 3, I introduce a statement of the Westermarck Effect that, while inadequate, is found in much of the literature and points to one way in which even proponents of the effect, including Westermarck himself, have cast their discussions in ways that have promoted neglect of the clinical literature on incest.

2. Peer Aversion and Beyond. The hypothesis associated with Westermarck's name often has been characterized by its most prominent defenders in terms of the effects of relationships between persons living together or in close proximity from childhood, or as *intimate childhood associates* (e.g.,

(evolutionary psychology), Rantala and Marcinkowska (2011) and Marcinkowska, Moore, and Rantala (2013) (behavioral ecology), Bittles (2012) (genetics), Borneman (2012) (trauma studies), Chapais (2013, 2014) (primatology), Tralau (2013) (political philosophy), Hörnle (2014) (legal studies), Scheidel (2014) (history), and Strohminger (2014) (moral psychology).

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Durham 2004, 122; Erickson 2004, 162; Wolf 2004a, 4; 2004b, 78). Peer Aversion provides a representative statement of the Westermarck Effect along these lines:

a) **Peer Aversion:** if two individuals have been intimate childhood associates, having been raised together for a number of years from early in life, then when those individuals are sexually mature they will feel sexual inhibition or indifference with respect to each other and will, as a result, be averse to sex with each other.

While there are ways to be more precise here—how many years together? what kinds of behaviors are sexual?—Peer Aversion captures how the effect often has been expressed in anthropology and the human sciences.

In the context of the kinds of social groups in which children are typically reared, Peer Aversion concerns relations between full or half siblings, in the first instance, and between less closely related children in those cases in which the level of association during upbringing between these is indistinguishable from that of siblings, such as when care is provided in a single household or when child-raising arrangements transcend or extend kinship (e.g., through adoption practices). And among such children it concerns just those who are relatively close in age, this being entailed by their being intimate childhood associates together.

Peer Aversion is reflected in the exclusive (Leavitt 1990; Lieberman and Symons 1998; Lieberman et al. 2003) or dominant (Durham 2004; Kushnick and Fessler 2011; Shor 2015) focus on cases of sibling incest in discussions of the effect and corresponds to much that Westermarck himself said.[2] Given that adults and children do not have the experience of being reared together as children, however, Peer Aversion has no direct implications for other forms of incest, such as those between parents and children or between other adult family members (such as uncles or significantly older siblings) and children (see also Leavitt 1990; Haig 1999, 84; Smith 2007, 308). Since these are exactly the forms of incest of most concern in the recent clinical literature on incest, trauma, and survival, this implies that Peer Aversion alone is of limited relevance for clinical practitioners and their traumatized, recovering patients. It omits from its purview not simply the more horror-inducing cases of incest, such as those represented by Fritzl-like cases, but the broader set of family dyads subject to incest avoidance beyond close-in-age siblings.

2. For example, "there is an innate aversion to sexual intercourse between persons living very closely together from early youth" (Westermarck 1901, 320), which is a claim repeated in his later, retrospective conclusion: "the essence of my theory has from the beginning been the influence which close living together from childhood has exercised on the sexual instinct" (Westermarck 1934, 146–47).

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Despite often discussing the effect in ways that suggest Peer Aversion, neither Westermarck nor his contemporary defenders would reflectively endorse Peer Aversion as a complete and accurate expression of the effect. To arrive at such an expression, we can simply augment Peer Aversion by adding:

b) **Child-to-Adult Aversion:** children raised by an adult will show the same resulting inhibition or indifference to that adult, via the same or a similar childhood association mechanism; and
c) **Adult-to-Child Aversion:** adults will show the same resulting inhibition or indifference to any child they have raised via the same or a similar mechanism.

Just as Peer Aversion expresses sexual inhibition or indifference between siblings, given typical environments in which children are raised, *b* and *c* express sexual inhibition or indifference between parents and children under typical child-rearing conditions. And just as there are conditions in which those other than siblings function as peers in *a*, so too are there conditions in which those other than parents function as the adults referred to in *b* and *c*, as the literature on alloparenting and cooperative rearing environments implies (Hrdy 2009; van Schaik and Burkart 2010).

The version of the Westermarck Effect that I focus on ranges across all such dyads and follows the clinical psychiatrist Mark Erickson (1989, 1991) in positing a connection between *care-based attachment* arising through and during intimate childhood association and postmaturity sexual inhibition (see also Erickson 1993, 2004, 2006; Wolf 1995, chap. 28; 2004b). The concept of care-based attachment derives from Bowlby's (1951, 1969) classic work on attachment, which although focused particularly on mother-infant attachment has wider application (Main, Kaplan, and Cassidy 1985; Ainsworth 1989; Maestripieri 2003, chap. 5). Contrasting in developmental onset with postpubertal *sex-based* attachment, care-based attachment forms through a large cluster of repeatable, often joint activities over an extended period of time, including food provisioning, emotional comforting, physical touching (e.g., grooming, hugging), cooperative assistance, play, and protective interference (see Wolf 1995, chap. 28, esp. 463–64, 474–75). In the normal case and over time, such unilateral and bilateral activities gradually build states of care-based attachment in both parties to them. Care-based attachment provides a kind of emotional glue binding individuals together, motivating them to act in mutually empathetic and altruistic ways.

Appealing to care-based attachment, rather than simply to intimate childhood association, is important in the context of explaining not only incest avoidance but the occurrence of incest, given the clinical realities of incest that extend, in extreme form, to the Fritzl-like cases with which we began. Doing so facilitates recognition of a feature of incest about which reflection

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on incest in the nonclinical human sciences has been mostly silent—the distinction between adult perpetrators and child victims of incest—a distinction, in turn, important to understanding why incest is especially traumatic for those who survive it and to identifying at least some of the features of perpetrators that cause them to commit incest (see also Weinberg 1955; Erickson 1989, 1991, 2006; Middleton 2013a, 2013b).

3. The Attachment–Sexual Inhibition Rule. To move from the simple conjunction of *a*–*c* to a more succinct expression of the emotionally enriched version of the Westermarck Effect that I want to defend, consider the Attachment–Sexual Inhibition Rule:

> **The Attachment–Sexual Inhibition Rule.** Humans share with other primates a disposition linking care-based attachment to behavioral sexual aversion that can be expressed as the following rule: if you have developed care-based attachment with individuals during your or their childhood, you feel sexual inhibition or indifference toward those individuals.

The rule integrates the long-standing emphasis placed on care-based attachment in incest and its avoidance in Erickson's work with the phylogenetic thinking about incest avoidance in nonhuman primates that has won widespread acceptance among primatologists (Pusey and Packer 1987; Paul and Kuester 2004; Pusey 2004; Chapais 2008, chap. 5). Focusing discussion of the Westermarck Effect on this more specific rule consolidates what passing cross-fertilization there has been (e.g., Chapais 2008, 69, 80–81; see also Wilson 2009) between these two largely independent bodies of work, providing the basis for a strengthened defense of Westermarck's basic insight and in so doing posing a deep problem for culture-first or conventionalist views. It does so by explicitly extending the scope of the disposition specified to nonhuman primates, making the empirical evidence from primatology more critical than cultural anthropologists have typically viewed it as being (see secs. 4 and 7).

As noted in section 2, various individual and joint activities enacted over a sustained period of time contribute to care-based attachment. While many of these activities may also be found in postpubertal adult relationships, the clustering of such activities is a distinctive developmental feature of human and nonhuman primate life. The strength and temporal robustness of the inhibition of sexual feeling and behavior caused by these activities that generate care-based attachment invites further empirical study, just as the relationship between care-based and sex-based attachment calls for further conceptual exploration.

The rule itself has five desirable features: it is generationally neutral, bilateral, asymmetrical, experientially specified, and emotionally rich. Consider each briefly.

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First, the rule is *generationally neutral* in that it applies both intragenerationally (e.g., to siblings) and intergenerationally (e.g., to parents and children). While parent-child dyads invest more heavily in some of the attachment-generating activities (e.g., food provisioning), sibling dyads engage more in others (e.g., play).

Second, the rule is *bilateral* in that the disposition it specifies will exist in *both* members of any of these dyads, provided that they form care-based attachment during the childhood of one of them. This is so even though the specific participatory activities can differ not only across dyads (as above) but within them.

Third, the rule is *asymmetrical* in that it allows just one member of any dyad to develop contrasexual feelings or erotic indifference. This asymmetry will hold when only one member of the dyad forms care-based attachment and so is compatible with the rule's specifying a bilateral disposition. These two features of the rule are likely important to understanding the dynamics of the perpetration of incest and its devastating psychiatric effects (see sec. 5).

Fourth, the rule is *experientially specified* in being conditional on the development of care-based attachment, itself a function of an individual's life history either as one develops from infancy through to sexual maturity or as one participates in the individual and joint activities that contribute to another's development. The relevant experiences here are multiple and diverse, and care-based attachment takes an extended period of time to be acquired through such recurrent social interactions. Thus, although there is a sense in which the disposition expressed by the rule is part of our primate heritage, the role accorded to environment-involving interactions implies that, much like developmental systems theory (Griffiths and Gray 1994), the rule does not express a form of what has been called *strong nativism* (Wilson 2004, chap. 3).

Fifth, the Attachment–Sexual Inhibition Rule is *emotionally rich* in articulating a relationship between strongly motivational feelings—care-based attachment and felt sexual inhibition or indifference—that themselves causally interact with other complex such states, such as trust and disgust, with behavioral consequences (Strohminger 2014). This emotional richness makes the rule apt for probing sophisticated psychosocial interactions associated with incest.

Specifying a version of the Westermarck Effect with these features that emphasizes care-based attachment as the result of a developmental pathway suggests that arguments for the rule need not rest on general sociobiological or adaptationist considerations, such as those involving inbreeding depression (Bittles 2012, chap. 12). By requiring the existence of emotionally rich states that are experientially specified in terms of life history and are only uncontroversially shared by primates, the rule (unlike earlier versions of the Westermarck Effect) specifies a cladistically restricted disposition relat-

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ing a particular form of emotional intimacy to felt sexual inhibition or indifference. This in effect restricts the rule to the *Primate* order, thus suggesting a phylogenetic argument that traces the development of one or more homologous traits within lineages or hypothesizes parallel evolution across closely related lineages.

This departs from the emphasis on general sociobiological or adaptationist arguments provided in most defenses of the Westermarck Effect, including those focused on the nonhuman primate data (e.g., Pusey 1987; Pusey and Wolf 1996; Paul and Kuester 2004; cf. Turner and Maryanski 2009). Such general arguments fuel antecedent skepticism among cultural anthropologists—for example, about evolutionary psychology, biological reductionism, and genetic determinism (Leavitt 1990; Read 2014; see also Westermarck 1934, 159). Given the long history of critical engagement with such issues in anthropology, resting a defense of the Westermarck Effect on particular stances on them in effect functions to deflect attention from the most powerful evolutionary argument for the effect. A sound clade-specific, phylogenetic argument that brackets these more general issues is thus strategically and epistemically preferential.

The connections between nonhuman primate and human forms of incest avoidance that the rule makes perspicuous do not imply that there are no distinctively human features of incest, the most often discussed of which is its regulation by conventional incest taboos. Yet what is most strikingly distinctive about the practice of human incest when set against our primate heritage, as the clinical literature makes clear, is that it has a dominant *pedophilic* manifestation. We are the only primate whose incestuous behavior is often, if not typically, forcefully directed at prepubescent relatives. Human incest typically begins with some form of sexual contact when the child is prepubescent, beginning as young as age 2 and often between ages 5 and 10 (Herman 1981, 1992).

Any adequate explanatory strategy for reconciling incest taboos and prohibitions with clinical reality needs to account for this significant dimension to the practice and incidence of human incest, something about which the substantial literature on incest avoidance in the biological and social sciences centered on the Westermarck Effect has largely remained silent. Reconciling the clinical reality of incest, including its pedophilic character in humans, is a key part of the larger explanatory project of providing an integrated account of the existence of mechanisms for incest avoidance with human conventions regarding incest. I briefly explore one aspect of this reconciliation project in sections 5 and 6 as part of the larger integrative task that lies beyond this article. But first I turn to the primate evidence for the rule.

4. Thinking Phylogenetically: The Primate Evidence for the Rule. Those within anthropology who have dismissed Westermarck's claims about

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human incest avoidance have sometimes done so both by professing a confidence about the existence of nonhuman primate incest that is misplaced and, correspondingly, by falsely claiming that incest avoidance was a uniquely human innovation stemming from culture. Levi-Strauss tells us, for example, that "whatever the uncertainties regarding the sexual habits of the great apes, and the monogamous or polygamous character of the gorilla and chimpanzee family, it is certain that these great anthropoids practise no sexual discrimination whatever against their near relatives" (1949/1967, 31). It is unclear what the basis is of Levi-Strauss's certainty here. What is clearer is that subsequent research in primatology has shown this view to be badly mistaken (Paul and Kuester 2004; Pusey 2004; Chapais 2008, 2014; see also Wolf 1995, chaps. 24 and 25).

The associated view that Levi-Strauss goes on to express about the uniqueness and importance of incest avoidance to hominids (if not to *Homo sapiens* more specifically) has been widespread among those theorizing about incest, incest avoidance, and incest taboos in cultural anthropology and in the social sciences more generally. Incestuous tendencies have been repeatedly assumed to pervade the animal world, with traces found in primitive forms of humanity and with the struggle to overcome them representing the eventual rise, triumph, and advancement of civilization and human culture. Operative here has been the long reach of the psychoanalytic views of Freud, according to whom, famously, the "first choice of object in mankind is regularly an incestuous one, directed to the mother and sister of men, and the most stringent prohibitions are required to prevent this sustained infantile tendency from being carried into effect" (1920, 344; see also Freud 1913/1950). Like Levi-Strauss, Freud notoriously ascribed a special role to incest taboos in marking the transition from creatures with a merely animal nature to those equipped with, and shaped by, full human culture (Wolf 1993, 1995, chaps. 1 and 28). One pillar on which this view sits—evolutionary primitivism—has long been abandoned in cultural anthropology (Kuper 2005). The other foundational pillar—the assumption that nature is incestuous—has not, however, met the same deserved fate.

Although that assumption is mistaken about large parts of the sexually reproducing world (Pusey and Wolf 1996; Bittles 2012), in keeping with my endorsement of a phylogenetically specific (vs. general sociobiological or adaptationist) argument, I am concerned here only with its falsity with respect to that part taxonomically closest to home: the nonhuman primates (see also Turner and Maryanski 2009). Both Paul and Kuester (2004, 284) and Pusey (2004, 61) make clear that a review of the primate evidence provides positive support for a Westermarckian hypothesis of some kind. While Paul and Kuester appeal simply to *evolved psychological mechanisms*, and Pusey, to *familiarity during immaturity*, as major causes of "inbreeding avoidance" in nonhuman primates, the broader view of the primate data they

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sketch supports the more specific claims made by the Attachment–Sexual Inhibition Rule, which posits emotionally laden, care-based attachment as the operative state. More particularly, that evidence supports the claim that the rule holds of mother-offspring dyads throughout the primate lineage and that this is therefore likely a homologous trait in the primate lineage (see Pusey 2004, 64, table 3.1; cf. Leavitt 1990).

In more general and sweeping work on kinship, Chapais (2008, 2010) has argued that such maternal dyads are of special significance in serving as a basis for extending features of kinship to other maternal-based dyads, part of what he calls the *deep structure* of kinship and its role in human society. Care-based attachment is a psychological feature of maternal dyads, and since both mother-offspring and maternal sibling dyads are phylogenetically primitive traits in the *Primate* order, this serves as the basis for the extension of that attachment to maternal siblings via their common attachment to the mother through the extended period of their dependence (Chapais 2013, 2014).

How complete this extension is of care-based attachment from mother-offspring to sibling dyads, and how strong the resulting bonds are, will vary in accord with demographic factors, such as birth spacing, the length of the period of dependence, and sibling rivalry. But in general, bilateral maternal attachment significantly increases the chance that at least maternal siblings will develop a form of care-based attachment to each other. Since siblings of both sexes remain in their natal group for an extended period of time before dispersal to other groups, the appropriate conditions exist for the rule to apply to maternal siblings, in addition to mother-offspring dyads. Maternal siblings will share in many of the activities—such as play, huddling, protective interference, and emotional comfort—that cause care-based attachment, allowing the rule to generate sexual inhibition between them.

As Chapais himself has emphasized, among nonhuman primates these conditions are not, in general, satisfied either by father-offspring dyads or by paternal sibling dyads. Even among nonhuman primates in the *Hominini* tribe—the clade consisting of chimpanzees, bonobos, and humans—paternity recognition is at best weak and inconsistent, and together with sexual nonexclusivity, this significantly limits the rule's extension to paternal-based dyads. There are some instances in the *Primate* order (e.g., among monogamous gibbons) in which conditions for both the recognition of paternity and pair bonding between adult mates create conditions for these extensions of care-based attachment. The prediction of the rule is that when the conditions for father-offspring attachment exist over evolutionary time, there will also be father-offspring sexual aversion—likewise for paternally based sibling dyads. But paternity recognition and paternal provisioning, both of which are among those conditions, are not universal in the *Primate* order and occur only intermittently in particular primate species. This asymmetry between maternally

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and paternally based dyads restricts the extension of the rule in nonhuman primates.

There are two claims here, and the distinction between them is important for reconciling the rule with the variation that one finds in incest avoidance in the primate lineage. First, the rule applies, fundamentally and in the first instance, to mother-offspring dyads and then derivatively to maternally based sibling dyads. The basic forms of care-based attachment and sexual inhibition or indifference that apply to mother-offspring dyads are likely homologous across the *Primate* order; the derivative forms of attachment and sexual inhibition or indifference that apply to maternally based sibling dyads are likely homologous across only the *Hominini* tribe. This is because the conditions, such as maternal sibling recognition, necessary for this serial extension of the rule from mother-offspring dyads are themselves not found uniformly beyond the *Hominini* tribe. The disposition specified by the correspondingly restricted forms of the Attachment–Sexual Inhibition Rule are similarly homologous, with intergenerational (parental) inhibition or indifference serving as the phylogenetic basis for the extension to intragenerational (sibling) inhibition or indifference. Running phylogenetically deep in human ancestry are two forms of sexual inhibition or indifference due ultimately to care-based attachment established through maternal care.

Second, these dyadically restricted forms of the rule could readily have been extended to father-offspring dyads and to paternally based sibling dyads through the advent of certain kinds of innovations to group living, such as pair bonding, monogamy, single-male dominance, paternal provisioning, and the corresponding recognition of paternity. While such conditions are occasionally found among nonhuman primates, they are not, like the care-based attachment and subsequent inhibition or indifference found between mother-offspring and maternal-based sibling dyads, features homologous in any part of our primate ancestry. If they have evolved in different parts of the *Primate* order, this would need to be through parallel evolution, rather than via homologous inheritance, despite their being further serial, phylogenetic extensions of established homologies.

Thus, consider monogamous gibbons and marmosets, as well as gorillas that are polygynous but live in social groups with a single dominant male (Pusey 2004). All three taxa live in conditions conducive to father-offspring attachment and so, according to the Attachment–Sexual Inhibition rule, to father-offspring sexual inhibition or indifference. Such attachment-inhibition pairings suggest that an extension of dyadic attachment could lead to correspondingly dyadically extended forms of sexual aversion. The direction of this dyadic extension might be summarized pithily as moving from mothers to brothers to others, where the primary others are fathers and other adult relatives.

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The dyadic extension of mother-offspring and (maternal) sibling aversion in these nonhuman primates—gibbons, marmosets, gorillas—is what we might call an *indicative* precursor to human incest aversion, rather than, like mother-offspring aversion itself, a *homologous* precursor to such aversion. It provides evidence of the further extension of the rule paternally, but since that extension does not pervade any clade that we are a part of, that evidence is more speculative about what may have happened in hominid evolution.

Recall that care-based attachment in a pair requires not only a relatively sustained period involving activities and pair-wise interactions, such as nutritive provisioning, protection, play, and collaboration, but also relatively rich psychological capacities on the part of both participants, including recognitional, emotional, and memory capacities that allow individuals to be tracked over time (see also Maestripieri 2003, chap. 1, 5). Precisely where in the mammalian lineage the coalescence of care-based development and psychological capacities first emerges is an issue we need not resolve, but it is at least as early as the origin of the primate lineage. Evolved, psychologically rich capacities deployed in maternally based kin recognition can later be readily applied to paternally based kin recognition, once circumstances facilitating such recognition become stable over evolutionary time. This implies neither that primates have the concept *mother* or *sibling* (although they might) nor that primates display as rich a repertoire of sexual behaviors as humans. The decision to describe this as care-based attachment, and all that entails, is much like the decision—most famously in Harlow's (1958; see also Harlow, Dodsworth, and Harlow 1965) ethically controversial experiments on maternal deprivation in rhesus monkeys that were inspired by Bowlby's early attachment studies—to use *attachment* itself to refer to the kind of bond that develops, in the first instance, between primate mother-offspring dyads and, in the second, sibling dyads. Doing so acknowledges both the psychological richness of the phenomenon in primates and its approximation to human forms of the phenomenon.

Finally, the rule is not the only evolved mechanism for incest avoidance in our lineage. One likely universal feature of the 200 or so species of primates is the geographical sex-based dispersal of offspring from the natal group upon sexual maturity. Such dispersal is found broadly in social mammals and birds (Pusey 1987; Pusey and Wolf 1996), but it is especially widespread among primates, with no documented exceptions. Here most (although often not all) of the offspring of one sex—males in the case of nearly all nonape primate species, females in all ape species except perhaps orangutans (Nater et al. 2011; van Noordwijk et al. 2012)—disperse from the natal group upon reaching sexual maturity (Pusey and Packer 1987; Pusey 2004), both emigrating from their natal group and typically joining another group. Pusey notes that "most biologists believe that this pattern has evolved at least partly as an inbreeding-avoidance mechanism" (2004, 62).

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That said, "this pattern" is more complicated than the shorthand summary I have given suggests, and the picture sketched above omits much, including sex differences with regard to avoidance of sex with closely related partners, questions about the role of female choice in structuring dispersal patterns, and the extent to which avoidance is driven by information about a given individual's behavior (e.g., with respect to parental care). The quantitative analysis by Lukas and Clutton-Brock (2011) supports the hypothesis that female dispersal occurs in primates and other mammals when the breeding tenures of males is sufficiently extensive to overlap with the onset of female sexual maturity. Lukas and Clutton-Brock interpret this as evidence for female dispersal being an adaptation for inbreeding avoidance, with Lee and Strier (2015, 216) taking this as the avoidance of father-daughter (rather than sibling) inbreeding. This complexity consolidates the view of dispersal as a mechanism for inbreeding avoidance and, given the concentration of female dispersal among the great apes and within the *Hominini* tribe, may be of special significance for our own species.

If female dispersal, and perhaps the dispersal of one sex more generally, is an adaptation for inbreeding avoidance, then the relationship of the rule to that adaptation needs to be articulated. Chapais has made the enticing suggestion that dispersal patterns and the Westermarck Effect are "two aspects of the same process" (2008, 65–66). My own suspicion, partly based on the arguments of Lukas and Clutton-Brock (2011) briefly recounted above, is that dispersal is likely to be more primitive than the rule and, thus, that it is an additional and phylogenetically more recent mechanism for incest avoidance. Pursuing this issue further here is beyond the scope of the current article. However each mechanism originated and coevolved in primates, their coexistence is phylogenetically plausible.

5. Three Other Sources of Evidence. To this point, I have said nothing about two sources of evidence often adduced in support of Westermarck's original hypothesis that arise from socially directed familial practices: Jewish kibbutzim studies (Spiro 1958; Talmon 1964; Shepher 1971) and the study of *sim pua* marriage in Taiwan (Wolf 1993, 1995, 2004b). The Israeli kibbutzim studies focus on adults raised together as children in a kibbutzim, finding low rates of marriage, heterosexual intercourse, and love affairs between these adults. The Taiwanese studies focus on the practice, common in Taiwan (until the early 1930s) and in large parts of mainland China (until the mid-1940s), of adopting a female child into one's family at an early age in order to raise her as a spouse for a biological son. In this practice of "minor marriage," those destined to become spouses grow up in just the conditions that would generate care-based attachment and so, like children raised together in a kibbutzim, would be expected to satisfy the antecedent in the conditional specified by the rule. Higher rates of divorce and lower numbers

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of children among couples in a minor marriage—striking in a culture with a strong disapproval of divorce and a high value of large family size—are among an extensive set of data that Wolf (1995) provides. I bracket discussion of these sources of evidence here, chiefly because, although I view both as offering substantial support for the rule, they have already received abundant consideration in the literature, even if they remain subjects of ongoing debate.[3]

A third source of evidence has received significantly less attention in the literature on incest avoidance, yet it has potentially more decisive epistemic power with respect to the rule. This is the phenomenon that has been dubbed *genetic sexual attraction* and *postadoption incest*, involving biological family members reunited as adults after separation during infancy or shortly after birth (Gonyo 1991; Kirsta 2003). Recent Western adoption and divorce patterns, combined with increased access to family history, have fostered the curiosity that fuels the adult desire to discover or rediscover immediate biological family members from whom one was separated early in life. Unexpected sexual attraction was one of the striking results of some of these reunions. Here genetically related individuals—mothers and sons, siblings, and daughters and fathers—separated from very early in life and reunited as adults have reported strong unilateral or mutual sexual feelings. Most striking in these reports are those coming from individuals separated for more than 20 years who reunite at an age and in circumstances when the likelihood of sex, let alone reproduction, is significantly diminished. In general, the sexual feelings reported are deep, unanticipated, novel, either unwelcome or received with confusion, and recognized both by those experiencing them and those in whom they confide as violating strongly sanctioned incest taboos.

I characterize this source of evidence as "more decisive" because perturbing the life history pathway that, according to the rule, inhibits sexual feelings between close relatives predicts this effect. Unlike the kibbutzim and *sim pua* cases in which the proposed causative factor for sexual inhibition or indifference—care-based attachment—is present but entwined with a number of other such causatives, in postadoption incest care-based attachment is absent, with strong sexual feelings emerging. These feelings are generated despite the presence of much personal and cultural scaffolding militating against their occurrence. And I say this source of evidence is only "potentially" more decisive because there has been very little systematic study of the phenomenon itself. The chief sources here are newspaper and magazine articles, internet support groups (e.g., CBC 2009; http://www.geneticsexualattraction.com), and the occasional autobiography or autobio-

3. For the ongoing debate, see Read (2014, 165–68) and Shor (2015) for critiques, and see Wolf (2014, 52–60) for replies to the sorts of concerns raised by Read and Shor (although not to their specific works). Resolving this issue is important for an ultimate defense of the rule but not for this article's contribution to that defense.

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graphical novel, many of which (Gonyo 1991; Kirsta 2003) are extremely informative. Yet the sole academic study remains that of Greenberg and Littlewood (1995; see also Greenberg 1993; Hörnle 2014).

Postadoption incest is distinctive in taking both intergenerational and intragenerational forms, with neither being pedophilic. Absent here is precisely the intimate (but nonsexual) activities during childhood that generate care-based attachment and, in turn, sexual inhibition or indifference, according to the Attachment–Sexual Inhibition Rule. The phenomenon suggests that in circumstances in which the disposition that the rule specifies is not realized, other factors that drive sexual attraction play a less constrained role in generating erotic, intimate desires and emotions. Particularly revealing, given the particular phylogenetic argument offered in section 4, is that genetic sexual attraction is found between mother-son pairs, same-sex siblings, and postreproductive dyads. Studying the phenomenon more systematically would likely clarify not only what positive factors affecting sexual attractiveness are operant but also the nature of the mechanisms underpinning the Westermarck Effect.

6. Explaining Incest: The Reconciliation Question. I have noted that historically influential discussions of the Westermarck Effect have tended to neglect the clinical reality of incest. Whatever innate and cultural constraints there are on incest, the clinical reality is that incestuous feelings and behavior do occur in both nonhuman and human primates. Despite canvassing a variety of family circumstances, human incest is distinctively pedophilic in nature, often involving adult perpetrators and child victims. Yet as standard discussions of the Westermarck Effect indicate, even this distinguishing feature of human incest is not an essential feature of it, one shared by all its instances. In addition, as the extreme, Fritzl-like cases indicate, intergenerational incest is often enmeshed with a cluster of familial pathologies and is strongly gendered, with adult males initiating forcible incest significantly more often than do adult females (Finkelhor 1979; Russell 1986). Finally, we have just seen that postadoption incest further complicates the clinical reality of incest.

Consider three obvious, general explanatory strategies for reconciling the rule with the clinical reality of incest. The first holds that incest occurs when the mechanism that the rule specifies breaks down: in effect, incest occurs as an individual pathology identified by the failure of the mechanism underwriting the rule. The second argues that although the rule exists, incest is caused by many different factors, and in light of that, we should not expect any sociopsychological rule to prevent all cases of incest. The third points to connection between care-based attachment involving childhood and adult sexual aversion holding only ceteris paribus, with cases in which the rule is apparently violated being those in which the *cetera* are not *paribus*.

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While there are truths underpinning all three of these strategies—all mechanisms break down, few causal pathways are single factor, and all are perturbable—their genericness makes these strategies mere outlines of explanations of the occurrence of incest. Here I think the case of postadoption incest proves more suggestive of how to move beyond such outlines.

We can square the clinical reality of incest with the existence of the rule by pointing to the absence of what I have called the appropriate conditions for its operation. That is, we explain the practice and incidence of human incest by appealing to what happens when the phylogenetically programmed machinery we are equipped with does not develop in the conditions that produce care-based attachment, and so the mechanisms specified by the rule are not properly built or activated. That is the obvious suggestion to make about what happens in the case of postadoption incest (which is nonpedophilic). Living outside the conditions that generate the experiential base to develop mutual, care-based attachment, individuals in these kin-based dyads lack the usual feelings of sexual inhibition or indifference with respect to each other, despite being fully aware of general incest taboos.

This is also a natural view to take of some other parts of the clinical reality of incest that are often pedophilic in nature. Stepfathers and other parental figures who do not develop care-based attachment to an individual child or children because they were absent during the relevant childhood period would be expected, on this line of reasoning, to be less sexually inhibited with respect to those children and youth with whom they come into regular (often coresident) contact, a prediction confirmed by prevalence data on incest in Western societies (Williams and Finkelhor 1995). As with postadoption incest, here we might see the absence of, or limitations to, the conditions generating care-based attachment as closing off one otherwise natural pathway linking care-enhancing activities to sexual inhibition or indifference.

A generalization of this second kind of case would extend to other cases in which we compare absent and present parents, in the first instance, and, in the second, parents who vary with respect to their level of intimate involvement in children's development during their early years. Likewise, the same kind of data about felt attachment between siblings raised apart, some of which has been collected recently (e.g., Shor 2015), will determine whether this explanatory strategy proves useful in accounting for the clinical reality of sibling incest.

Focusing on cases in which care-based attachment is unilaterally absent also has the potential to shed further light on the lived reality of victims in the perpetration of incest. Whether incest involves parental figures and children or siblings, when it is pedophilic it predominantly involves the asymmetrical abuse of power, authority, and trust. That trust is typically anchored in care-based attachment formed in the child, as the tradition of work on attachment stemming from Bowlby's classical studies has shown. When there

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is asymmetrical attachment-based trust, itself fueling perpetrator-victim dynamics in cases of sustained pedophilic abuse, one would expect those abuses to be experientially severe, whether manifest somatically or via explicit recollection (see Erickson 1993, 414–15).

It remains an open question to what extent the explanatory strategy of focusing on the presence, functioning, and absence of care-based attachment can further reconcile the rule with the broader clinical reality of incest and shed light on incest more generally. The most promising applications of attachment theory to understand sexual offenders (Marshall 1989; Ward et al. 1995; Ward, Hudson, and Marshall 1996) do distinguish pedophilic sex offenders from others. Yet such research has not focused on incest specifically and has tended to offer explanations in terms of categorical attachment styles as a result of the upbringing of offenders, rather than the attachment relationship between perpetrator and victim. Here, as with further exploration of the significance of postadoption incest, I believe that it is a matter of wait and see.

7. Argument Summary and Concluding Thoughts. Reconciling the Attachment–Sexual Inhibition Rule with the clinical reality of incest is one small step in the broader integrative project of understanding the relationships between incest, incest avoidance, and incest taboos. The phylogenetic argument for the Attachment–Sexual Inhibition Rule does not strictly imply anything about how incest taboos originated, particularly if one holds (plausibly) that there is only felt inhibition and behavioral aversion—and not also moral disapproval—in nonhuman primates. But it does imply that culture-first or conventionalist accounts of incest avoidance, whereby cultural taboos are the origins for incest avoidance in humans, cannot be correct. If that is right, then views of incest taboos should be assessed against the background assumption that human incest avoidance is regulated in part by the kind of developmental mechanism specified here.

The view that I have defended might be summarized as an argument with four premises:

1. Sex-biased dispersal patterns, close parental care, and developing pair bonding in primates have created a primate disposition that links care-based attachment to sexual inhibition or indifference.
2. This disposition is a rule with the following content: if you have developed care-based attachment with individuals during your or their childhood, you feel sexual inhibition or indifference toward those individuals.
3. Nonhuman primate forms of this disposition, attachment, and inhibition or indifference are dyadically restricted, maternally focused pre-

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cursors to more encompassing human forms of the disposition, attachment, and inhibition or indifference.

4. Human forms of the disposition, attachment, and inhibition or indifference vary beyond this homologous primate form, but all extend to encompass both parent-child and sibling dyads.

Premises 1 and 2 together express the Attachment–Sexual Inhibition Rule, with 3 and 4 distinguishing nonhuman from human primate forms of the disposition. While the mechanisms that the rule specifies are part of our primate heritage, they are not simply triggered by environmental inputs but substantially formed and directed through temporally extended, shared social activities that produce care-based attachment in the *Primate* order. We might well think of it as an *extended mechanism* in the same sense that advocates of the extended mind thesis have argued that cognition is extended (Wilson 2004): it is not bounded by, and not supervenient on, what happens within the bodily envelope of the individual. Together these premises support the following conclusion:

(C) Since the dispositions, attachments, and inhibitions in 1–4 predate the development of human culture, culture-first explanations of incest avoidance are mistaken and should be rejected.

This argument locates the rule squarely as part of our primate heritage and so draws on the concepts of phylogeny and homology. In doing so, it keeps the focus on a sequence of psychologically mediated dispositions that are emotionally enriched and phylogenetically shared only within the *Primate* order. Moreover, by expressing the disposition in terms of care-based attachment and making it clear that the disposition is constrained in terms of which dyads in a primate group it applies to, this argument directs us to consider, in the first instance, the dyad most often either overlooked or taken for granted in discussions of incest and incest avoidance: mother-offspring dyads.

This focus reinforces C by introducing a lowest-common-denominator case against those who reject all such rules that putatively apply across the divide between human and nonhuman primates. For consider just a version of the rule that applies to mother-offspring dyads only. There is strong evidence that such a rule runs phylogenetically deep in the *Primate* order, and it corresponds to the strongest incest taboo—in terms of felt aversion, level of disapproval, taboo normativity, and contravention rates. In contrast to those who accept the rule and the defense I have given of it here, those rejecting this form of the rule on the grounds that it is "incest taboos first, feelings of inhibition and aversive behavior later" have no explanation of the robust primate data on mother-offspring inhibition and avoidance.

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