



Intelligence, Coalitional Killing, and the Antecedents of War

ABSTRACT Advances in primatological research have recently led to a hypothesis that lethal coalitional raiding in chimpanzees is the product of an evolutionarily adaptive “dominance drive” that disposes adult males to seek out low-cost opportunities for conspecific killing. This conclusion has been extended into a claim that human warfare and other forms of coalitional killing are outcomes of a hardwired, “demonic male” complex. Reversing this evidential approach, I argue from data on conspecific killing in humans that humans and chimpanzees have an aversion to killing conspecifics. Their lethal violence, I propose, is more parsimoniously explained as the result of a developed intelligence capable of envisioning the future and, when necessary, of disabling this aversion to achieve desired goals. [Keywords: intelligence, coalitional killing, war, imbalance of power, dominance drive]

WAR IS SECOND ONLY TO MICROPREDATION as a tax in blood, treasure, and misery on the human species, and a long-standing proposition asserts that it has its origins in an innate human disposition to kill conspecifics. Recently, a fresh version of this theory has attracted media attention to the possibility that warfare is “hard wired” into the human species. Extrapolating from field observations of conspecific killing among wild chimpanzees, this “dominance-drive” hypothesis argues that war has its antecedents in an evolved male disposition to kill when the individual costs of doing so are low. Using evidence of conspecific killing in humans, I contend in this article that empirical support for this proposition is poor, and I argue instead for an equally plausible hypothesis that humans have an innate aversion to conspecific killing. This idea is as venerable as the “hardwired” hypothesis, but it encounters two obvious explanatory challenges. First, how could an aversion to conspecific killing possibly evolve or persist in a species that so routinely kills its own members? Second, how is it possible for humans to kill if, indeed, they have an aversion to the act? I propose that the aversion to conspecific killing has its origins at a point in our past when it served to enforce the kind of “ritualized,” nonlethal fighting observed in many other species. This disposition was eventually undermined, however, as our primate ancestors developed an advanced intelligence, a faculty that conferred on them the abilities to envision when killing was in their personal interests and to disable their aversion to killing to do so. By suppressing the behavioral manifesta-

tions of our aversion to killing, moreover, the latter ability insulated it from deselection, thereby ensuring its persistence into the present.

THE BEHAVIORAL ECOLOGY OF FIGHTING

Ethologists and game theorists argue that, in confrontations between organisms of roughly equal fighting strength, the lethality of a species’ fighting behavior is determined by a trade-off between the reproductive value of the resource at stake in the contest (e.g., mates, food, or sanctuary) and the expected value of the future (i.e., the expectation of further reproductive opportunities following the fight; see Archer and Huntingford 1994; Enquist and Leimar 1990; Maynard Smith and Price 1973; Parker 1974). Fighting takes dangerous forms when the value of the contested resource exceeds the expected value of the future, the severity of the fighting increasing in proportion to the difference. In the extreme, when an organism has no expectation of further mating opportunities following the fight or when a contested resource is in short supply and critical to reproduction (e.g., mating opportunities, or protecting and provisioning offspring), fighting becomes extremely dangerous and the chances of fatality are high (e.g., Austad 1983; Dimock 1983; Hamilton 1979). Conversely, when the value of the future outweighs the value of the contested resource, a form of “ritualized” fighting emerges in which outcomes are decided not by dangerous fighting but by honest signals of fighting strength such as threat displays (e.g., charging

or roaring) or trials of strength (e.g., head butting, biting, or pushing contests; e.g., Clutton-Brock et al. 1979; Jakobsson et al. 1979). "Ritualized" fighting is not without its occasional costs in morbidity and mortality. Moreover, losers must defer to winners, surrendering access to whatever was at stake in the contest. Even so, "ritualized" fighting is advantageous to losers as well as to winners because it allows each to assess which of them would win a fight to the death without either incurring the potentially catastrophic costs of an actual fight to the death.

In an important extension of this model, Richard Wrangham and his colleagues have advanced an imbalance-of-power hypothesis to account for the distribution of lethal fighting in group-living species. In these species, the cost-benefit calculus determining the severity of fighting is affected not only by the evolutionary value of the resources at stake and future mating expectations but also by the relative sizes—that is, fighting power—of the contesting parties (Manson and Wrangham 1991; Wilson and Wrangham 2003:381–382; Wrangham 1999a; 2004; Wrangham and Peterson 1996; see also Alexander 1989:455–513; Goodall 1986:525–528). In most group-living species, individuals live and travel in enduring communities; confrontations occur between parties of roughly similar size (i.e., fighting strength); and, as in solitary-living species, fighting—if it occurs—is "ritualized" and broken off before it turns lethal (e.g., Kitchen 2000; McGuire 1974; see also Wrangham 1999a:4–11, 17–18, 2004:33).

A few group-living species, however, adopt a fission-fusion grouping pattern, in which individuals sometimes live and move by themselves rather than in a party. Chimpanzees are a case in point. In contrast to orangutans, bonobos, and gorillas, which according to Wrangham (1999a:12–18) spend most if not all of their time in large companies, chimpanzee party size varies considerably through time, fluctuating with the total membership of their community, the sexual state of its females, and the amount and distribution of ripe fruit in its habitat (see also Boesch 1996; Goodall 1986:146–171; Nishida 1979; Wrangham 1999b). When ripe fruit is scarce, chimpanzees may forage for extended periods of time by themselves.

Because these species are characterized by fission and fusion, the parties to encounters between different communities can be markedly unequal in size: In the extreme, a large company from one community confronts a lone individual from another. Because the contesting parties are no longer of similar fighting strength, "ritualized" fighting ceases to be the optimal strategy. For the outmatched individual, the best policy is to attempt immediate withdrawal. For the numerically dominant party, however, the individual risks of fighting as a coalition may be low enough that lethal violence becomes a profitable strategy if something is to be gained by it.

In support of the imbalance-of-power hypothesis, a number of group-living species characterized by imbalance-of-power encounters do indeed kill conspecifics.¹ These include lions (Grinnell et al. 1995; Packer et al. 1988),

spotted hyenas (Kruuk 1972), wolves (Mech et al. 1998), and chimpanzees (Goodall 1986:488–534; Watts and Mitani 2001; Wrangham 1999a:16, table 6). These killings appear to be largely motivated by resource defense. In the course of border patrolling or by chance, a coalition from one community encounters a lone animal from another on or within its territorial borders and, by killing it, removes a competitor for its resources at minimal cost (summarized in Wrangham 1999a:4–11). Chimpanzees are unusual, however, because they also kill conspecifics during so-called "deep incursions." A party of three or more adult males from one community, accompanied commonly by one or two adolescent males and an occasional adult female, silently and cautiously penetrates a kilometer or more into the territory of another with the apparent aim of tracking down one of its members out foraging alone. If they succeed, they attack with ferocity and then, leaving their victim to die, flee back to their home territory, where they mount noisy and vigorous displays (Goodall 1986:488–534; Manson and Wrangham 1991:370–371; Wilson et al. 2001; Wrangham 1999a:7, 14–16; see also Boesch and Boesch-Achermann 2000:136–138, 143–144). In a series of such raids between 1974 and 1977, the entire adult male complement of the Kahama community at Gombe was picked off by one, or possibly two, neighboring communities (Goodall 1986:503–519). A similar fate apparently befell the K-group at Mahale in the 1970s (Nishida et al. 1985). More recently, other probable instances of coalitionary killing also have been documented (summarized in Wilson and Wrangham 2003:372–375).

Because chimpanzee deep incursions and human raiding occur between autonomous communities, and because they deploy similar organizational and tactical behaviors, Wrangham and his colleagues contend that human warfare has common cause and origin in chimpanzee coalitionary raiding, a conclusion that suggests the rudiments of war predate the human-chimpanzee divergence, some five to ten million years ago (Wrangham 1999a:18–20, 23–24; Wrangham and Peterson 1996:63–74). Not everyone would agree. Some scholars deny any commonality between chimpanzee and human raiding; others insist that a qualitative difference exists between human ambush and raiding, on the one hand, and warfare, on the other hand (e.g., Fry 2006:86–91; Kelly 2000; Sponkel 2000:837). However that may be, a capacity for coalitional conspecific killing of the type evident in chimpanzee deep incursions would seem to be at least a necessary, even if it is not a sufficient, precondition for war.

The feature of Wrangham's argument that has attracted most attention, however, is his contention that male chimpanzees—and, by extension, human males—have an innate disposition to kill conspecifics. Although deep incursions among chimpanzees often appear to be proximately elicited, returning immediate rewards in food or mates (Nishida 1979; Wrangham 1999a:15), a number seem to have no immediate payoffs, returning instead longer-term gains in the form of territorial expansion and

female transfers at the expense of the predated community. On the assumption that these longer-term payoffs are opaque to the animals involved, Wrangham hypothesizes that they must be motivated by an innate “dominance drive” (1999a:2, 14–16, 19, 22, 2004:34–35; Wrangham and Peterson 1996:182–199). In chimpanzees—and, by extension, humans—natural selection has favored “emotional predispositions” that provoke adult males to seek out low-cost opportunities to kill, a strategy that returns net evolutionary benefits in the long run in terms of mating opportunities, food, and other resources (Wrangham 1999a:15–16, 2004:34; Wrangham and Peterson 1996:167, 199).

INNATE DISPOSITIONS AND RESERVE POLICE BATTALION 101

The idea that war stems from an “instinct,” an “innate” or “biological” drive, has a long—albeit controversial—history (e.g., Ardrey 1966; Freud 1933; Ghiglieri 1999; Lorenz 1966). Wrangham’s dominance-drive hypothesis merits special attention, however, not only because it has attracted considerable media attention but also because it capitalizes on recent advances in the comparative ethology of lethal violence. In addition, the hypothesis has not gone without challenge. Raymond Kelly (2005:15294) questions whether the fitness benefits to chimpanzee aggression of increased territory are not outweighed by the costs of resource underutilization imposed by the dangers of foraging border areas. Reed Wadley (2003:544–547) doubts Wrangham’s assumption of a shared ancestry to human and chimpanzee lethal raiding, suggesting that convergence rather than homology is the more likely scenario. He also questions the necessity of invoking special, imbalance-of-power mechanisms to explain coalitionary killings, because the mental abilities used by solitary-living species to assess power differentials in “ritualized” fighting might be sufficient to produce similar actions (Wadley 2003:546–547). Other critics argue that the deep incursions to which Wrangham and his colleagues refer are in reality the consequence of human disturbance, of logging activities, or of provisioning to attract and habituate the animals for and to observation (e.g., Ferguson and Whitehead 1999:xv–xvi; Sussman 1998:127; see also Marks 1999 and response by Wilson and Wrangham 2003:364–367).

An alternative approach to evaluating the dominance-drive hypothesis is to examine it not against the chimpanzee data but against the human evidence. This is something of a challenge, because propositions about innate dispositions are demanding enough to test, with practical and ethical concerns making those about human killing exceptionally so. What evidence we have is of necessity serendipitous; extraneous variables are rarely therefore under complete control; and, consequently, the data are susceptible to multiple interpretations. There exists, nonetheless, one case study that is sufficiently robust to raise serious questions about the validity of the dominance-drive hypothesis. This is Christopher Browning’s (1998)

meticulous reconstruction, from judicial interrogations of 125 participants, of the involvement by Reserve Police Battalion 101 (RPB 101) in the Nazi’s Final Solution in Poland. Between July 1942 and the end of 1943, the 500 or so mostly middle-aged and working-class men drafted into RPB 101 were directly involved in the massacre of 38,000 Jewish men, women, and children and in the deportation to extermination camps of at least another 45,000. The scale of these actions and the manner in which they were executed is testimony to the capacity of “ordinary men,” as Browning labels them, to perpetrate horrific acts of violence. The difficulty lies in interpreting their behavior as the outcome of a dominance drive.

The men of RPB 101 had incentives for participating in these killings, and they faced no discernible costs. Some of those who followed orders could anticipate potential career advancement after the war, whereas those who refused could, at a minimum, expect the opprobrium of their fellows. The Jews they exterminated were not compatriots but citizens of occupied Poland, an enemy of the German state. Moreover, like the rest of German society, battalion members had been “immersed in a deluge of racist and anti-Semitic propaganda,” much of it designating Jews a mortal threat to the German population. They had in addition received further anti-Semitic indoctrination during basic training and as an ongoing practice (Browning 1998:184). Finally, as fully armed agents operating well behind front lines, battalion members were free to kill their unarmed targets at no discernible personal risk.

If these men were innately motivated to seek out low-cost opportunities to kill, in sum, we should expect them to have participated eagerly in these massacres. Instead, most of them appeared to experience a marked aversion, at least to begin with. The battalion did contain “a nucleus of increasingly enthusiastic killers who volunteered for the firing squads and ‘Jew hunts’ ” (Browning 1998:168). But between ten and 20 percent of the unit avoided killing by requesting that they be excused from execution details, by sidling to the back when firing squads were mustered, or by spreading word that they were too “weak” for such work (Browning 1998:74, 168, 184). Of the remainder, most “*did not seek opportunities to kill* (and in some cases refrained from killing, contrary to standing orders, when no one was monitoring their actions)” (Browning 1998:168, emphasis added, see also pp. 215–216). Of special note, “almost all of them—at least initially—were horrified and disgusted by what they were doing” (Browning 1998:184, see also pp. 55–77). On the evening following their first massacre at Józefów, a “sense of shame and horror . . . pervaded the barracks” (Browning 1998:69), “a reaction to the sheer horror of the killing process” (Browning 1998:76). “Witness after witness used the terms *erschüttert* [shocked], *deprimiert* [depressed], *verbittert* [embittered], *niedergeschlagen* [downcast], *bedrückt* [depressed, oppressed], *verstört* [distracted, consternated], *empört* [shocked, scandalized], and *belastet* [burdened] to describe their feelings (Browning 1998:237, n.78; my translations). As time progressed, and their

experience in massacring grew, battalion members did become “increasingly efficient and calloused executioners” (Browning 1998:77). This apparent ability to learn how to kill is a point to which I later return.

As intelligent bearers of culture, of course, the men of RPB 101 may have envisioned costs to their deeds that other species cannot. Perhaps they feared punishment in the afterlife; perhaps their moral consciences betrayed them. The problem is that the more we plead uniquely human possibilities to protect the dominance-drive hypothesis from falsification, the less power we can grant it as an explanation for human conspecific killing. If human males are motivated by a dominance drive, in other words, we can only conclude from the RPB 101 evidence that its force—and explanatory value—are extremely limited.²

INTELLIGENCE AND THE ORIGINS OF HUMAN CONSPECIFIC KILLING

If the evidence from RPB 101 is difficult to reconcile with the presence of a dominance drive, it is nonetheless consistent with a contrary hypothesis that humans have an aversion to conspecific killing. This contention is as long-standing as its converse (e.g., Montagu 1976; Tinbergen 1968) and is especially popular among military psychologists and scholars (e.g., Dyer 1985; Grossman 1996:1–4). Yet it raises several obvious questions. First, why should humans possess such an aversion? Second, how could an aversion to conspecific killing emerge or persist in a species that so routinely kills? And third, if humans are averse to killing, then how do they nonetheless manage to do so?

As bearers of a developed intelligence and a cultural capacity, one reason why humans might have an aversion to conspecific killing is simply that they are enculturated against the act: In most if not all human communities, after all, murder is morally and legally penalized. The difficulty with this position is the socially circumscribed nature of the proscription. Killing members and allies of one’s own community is condemned, and there are obvious functional reasons why this should be so, but in most times and places the killing of enemies is culturally valorized and encouraged. Yet, as the evidence from RPB 101 indicates, humans still seem reluctant to kill. Perhaps some kind of “spillover” effect makes it difficult in some circumstances conceptually to differentiate enemies from allies. If so, though, the question remains: how can humans nonetheless bring themselves to kill?

Proponents of a human aversion to conspecific killing frequently stipulate, in fact, that the disposition is innate. If this is the case, then it is plausible that the mechanism involved is one that once deterred “ritualized” fighting among our predecessors from escalating to lethal violence. Recall that, in “ritualized” confrontations between roughly matched individuals or groups, fighting escalates until one party concludes that it is unlikely to prevail, at which point it withdraws or signals its submission. In theory, the winner could now pursue its advantage to a lethal end. Instead,

it immediately de-escalates its attack, a response indicating the presence of a mechanism that deters the killing of a conspecific. It follows that, if “ritualized” fighting was advantageous at some period in humanity’s past then, through homologous (shared evolutionary history) or homoplastic (convergent evolution) processes, our forebears would have evolved a similar mechanism.

When the species subsequently developed a capacity for intraspecific killing, this mechanism could have persisted for one or both of two reasons. First, it may still have carried an evolutionary advantage. This possibility finds support in the standoffs sometimes observed in fighting between human parties of approximately equal strength—be they individuals in bars, warrior forces in “ritualized” battles in New Guinea, or soldiers in nation-state warfare. In these confrontations, contestants appear mutually to benefit by withdrawing after some level of threat display or “ritualized” skirmishing has established the mutual futility of escalating the confrontation to lethal levels (Ashworth 1980; Daly and Wilson 1988; Gardner and Heider 1968:138–146; Grossman 1996:118; Meggitt 1977:16–21; Rappaport 1968:123–124; Vial 1942).

A disinclination or aversion to killing might also have persisted as humans became a homicidal species, however, if it somehow became insulated from selective pressures: if, for example, the emergent faculty responsible for the development of killing was able simultaneously to short-circuit its operation and thus suppress its behavioral manifestation. The obvious candidate is humanity’s most distinctive feature: its intelligence. An advanced intelligence confers two competencies that, together, are capable of explaining the evolution of killing in both humans and chimpanzees. First, it bestows a capacity to build and maintain a refined model of the self and the world, to envision personally relevant goals, and to calculate how these might be achieved through actions that, *inter alia*, may include the murderous. We have known for some time that humans deploy two forms of aggression (e.g., Berkowitz 1994; Geen 1990; McCauley 1990:17–20). Affective (or emotional or impulsive) aggression has as its principal goal the infliction of injury or harm *per se*. Associated with powerful emotional states such as anger, it is accompanied by distinctive patterns of activity in the central and autonomic nervous systems and is probably under strong genetic control (Berkowitz 1994:34–35; Geen 1990:4–5). But humans are also characterized by instrumental aggression, the capacity to envision long-term goals and to use aggressive or lethal action as an instrument to secure them (Berkowitz 1994:34–35; Geen 1990:5–6). In humans, in other words, conspecific killing in imbalance-of-power encounters may be the result not of a dominance drive that has evolved to reap long-term benefits from killing but, rather, of cognitive faculties sufficient to perceive such benefits and act accordingly. Under this hypothesis, the stage was set for humans to become a killer species when they or their predecessors became sufficiently intelligent to recognize when it was advantageous to kill.

The second capability that advanced intelligence has conferred on humans is an ability, when it is in their interests to kill, to short-circuit the mechanism that inhibits them from doing so. In addition to envisioning long-term goals, intelligence is capable also of devising courses of action to realize them. These include strategies designed to side-step or short-circuit whatever physical limitations or genetic dispositions might impede them. This ability is self-evident in the material technologies that allow humanity to overcome so many of its physical limitations: For example, projectile weapons and armor designed to circumvent the physical limitations of bare hands and bared teeth for killing and the mortal jeopardy of soft underbellies under fire. Intelligence has played an equally important role, though, in devising psychological and cultural “technologies” to overcome the limitations imposed by the genetic emotions and dispositions to which humans are heir. With regard to conspecific killing, it has devised a set of techniques that side-step or short-circuit humanity’s aversion to this act with results that have been as consequential for human lethal violence as any projectile weapon or suit of armor. The further result is that, by decoupling the disposition from its behavioral manifestations, these techniques have had the effect of insulating our aversion to killing from deselection by Darwinian processes. It is to a brief survey of these psychological and cultural “technologies” that I now turn.

THE PSYCHOLOGICAL AND CULTURAL “TECHNOLOGIES” OF WAR

If a human aversion to conspecific killing has its origins in the mechanism that de-escalates a winner’s attack in response to an opponent’s submission or withdrawal, then a developed intelligence can attempt to short-circuit or deactivate it in at least three ways. First, it can attempt to alter or distort the perceptions or interpretations that trigger de-escalation: for example, by suppressing awareness that the opponent is a conspecific or that the opponent has submitted or withdrawn. Second, it can try to counterbalance or overwhelm the aversion: for example, by offering rewards for killing or by recruiting other, countervailing reflexes or emotions. Finally, it can endeavor to alter human psychology itself. With their advanced intelligence, humans appear to have devised killing strategies that draw on all three possibilities.

The ability to suppress the perceptions or interpretations that trigger an aversion to killing has been greatly assisted in recent times by developments in military technology, tactics, and organization. Projectile weaponry, firearms, modern artillery, and ballistic missile technology all insert a physical distance between killers and victims that facilitates homicide by rendering the latter and their supplications invisible to the former (e.g., Grossman 1996:97–113; Hinde 1997; Tinbergen 1968). Similarly, complex divisions of labor have allowed civilians who produce and distribute armaments and munitions to shield themselves from rec-

ognizing or acknowledging their participation in the conspecific deaths these weapons wreak.

In technologically and organizationally sophisticated warfare, as in archaic combat, however, fighting commonly involves a considerable degree of close-quarter killing, and human intelligence has devised a suite of techniques to distort the killer’s perception of the victim, the act, or both. Dehumanization is perhaps the most common tactic: Enemies are represented as animals, insects, subhumans, or non-humans rather than as conspecifics, thereby transforming homicide into an interspecies rather than an intraspecies killing (Fromm 1973:170–174; Wahlström 1987). In the Vietnam War, the enemy were not humans but “gooks”; in the Rwanda genocide, they were “cockroaches” (Wax 2003).

A second technique is to obscure perception and its interpretation by inducing an altered mental state (McCauley 1990:19). In New Guinea, Waropen warriors consumed palm wine before head-hunting to “muster courage” and overcome their “fear of and revulsion against” intentionally killing and beheading another human being (Held 1957:199, 220). Elsewhere in New Guinea, warriors consumed betel nut, tobacco, ginger, wild aroids, or tree bark prior to battle to induce a “trance state” or render themselves “deaf” to the entreaties of their victims (e.g., Haberland and Seyfarth 1974:349, 351; Lewis 1995:34; Telban 1998:193). In Euro-American societies, hard liquor and marijuana are the agents of choice (Keegan 1976:113, 181–182, 241, 326). Repetitive drumming, singing, and chanting—and, among U.S. troops currently in Iraq, heavy metal music played at deafening volume—seem to be alternative means of inducing these states (Telban 1998:193; Zabriskie 2004:53). Where belief in their efficacy is strong, it is conceivable that even magical practices can temporarily alter consciousness: Avatip men along the Sepik River of New Guinea “speak of war-magic as having induced in them a state of dissociation in which they became capable of extreme, indiscriminate violence, a kind of trance-state in which their only thoughts were of homicide” (Harrison 1989:588).

A third technique is to distort the reality of killing by displacing responsibility for the act onto a spiritual or secular authority. In New Guinea, ancestral or totemic spirits may be represented as the real authors of a kill, the warrior acting merely as the vehicle of their desires (Haberland and Seyfarth 1974:351; Telban 1998:193). In more centralized societies, holy wars and killings are conducted in the name or service of a deity. Where war is under the control of a hierarchy, responsibility also can be displaced onto secular authorities: The killer was “just following orders” (Browning 1998:171–176; Milgram 1974).

In addition to obscuring the reality of killing, humans also attempt to undermine their aversion to conspecific murder by neutralizing or overwhelming it. In numerous societies, cultural sanctions reward lethal violence with prestige, reproductive opportunities, and material benefits while condemning or punishing as cowards those

who balk (Goodall 1986:531; Roscoe 2000:88–92; Tinbergen 1968). Culturally specific techniques also come into play. In his nuanced account of the Cambodian genocide, for example, Alexander Hinton (1998) describes how, among other things, the Khmer Rouge manipulated cultural categories to disempower and devalue certain groups and legitimize their persecution, while also playing on models of “face” and “honor” in a way that “dared” men to become executioners.

Also common are techniques and images that seek to overwhelm the aversion to killing by recruiting other reflexes and emotions in the human repertoire. In New Guinea, preparations for battle commonly included “priming” events that evoked courage and rage through repetitive chanting or by invoking memories of events such as the assassination of kinfolk that demanded revenge (e.g., Bowden 1983:103; Bragge n.d.:291). In Euro-American society, memories of terrorist bombings have played a similar role in “firing-up” the troops.

The most common way to overwhelm an aversion to killing, however, is to combine dehumanization of the enemy, which denies him or her conspecific status, with an image that elicits killing responses appropriate toward nonhuman species. Frequently, war is depicted as hunting rather than murder, and the enemy as a game animal rather than a human, thereby recruiting emotions associated with “the thrill of the chase.” Allied airmen in the Pacific War were sent off on their missions with the catchphrase “Good luck and good hunting” (Dower 1986:90; see also, on ancient Greece, Homer 1961: *passim*). In New Guinea, enemies were commonly styled wild pigs, and battle was a pig hunt rather than a homicide (Bateson 1958:140; Bowden 1983:110–111; Harrison 1993:102–103; Roscoe n.d.). Alternatively, enemies are depicted as enraged or unreasoning micro- or macropredators—bacilli, parasites, disease-spreading vermin, snakes, large carnivores, or capricious demons—agents that represent an imminent threat to survival and so incite a lethal reaction to preserve the expected value of the future. During the World Wars, for instance, Soviet propaganda depicted the German nation as a menacing tiger (Anonymous n.d.b). Allied propaganda portrayed it as a deranged, drooling gorilla (Hopps n.d.). The Nazis represented their enemies and the Jews as bacilli or vermin that spread disease (Anonymous n.d.a; Kershaw 2000:150–153, 582–583), and the Japanese portrayed the Allies as capricious and dangerous demons and shape-shifters (Dower 1986:71, 81–83, 90–92, 242–248).

A final strategy to suppress an aversion to killing is a set of systematic, ritualized practices that are apparently designed to transform human psychology on a permanent basis. During military training in nation states and initiation in New Guinea, young men are secluded from society, stripped of personal identifiers, subjected to verbal abuse and physical ordeals that inflict anxiety, fear, pain, exhaustion, hunger, and dehydration, and then indoctrinated into the meaning and value of masculinity and warriorhood. This combination of indoctrination and ex-

treme experiential and affective states, it has been theorized, acts as a form of “brainwashing,” “behavioral surgery,” or “flashbulb” memorization, transforming callow youths—“mamas’ boys”—into warriors, men who will kill regardless of their personal fears or the plight of their victims (Herdt 1981:305; Sargent 1957; also Whitehouse 1996). In modern military training, these measures are reportedly combined with “operant conditioning” techniques designed to further dull a recruit’s aversion to killing. In sharp-shooting practice, for instance, soldiers no longer fire at a bulls-eye target but at a lifelike dummy that sprays imitation blood when hit (Grossman 1996:252–255).

Citing Stanley Milgram’s (1974) experiments on aggression and obedience to authority, Browning (1998:171–176) argues that conformity, peer pressure, and the ability to displace responsibility onto a higher authority were crucial in facilitating the genocidal actions of RPB 101. His evidence also shows, however, how quickly the men of the battalion adopted a variety of other psychological “technologies” mentioned above. After their first, disastrously traumatic massacre at Jósefów, in which they were ordered to pair off with their victims face to face, march them into a forest, and execute them with a neck shot at point blank range, battalion members discovered that it was considerably easier to kill as part of a squad that fired from a distance at rows of victims who had been ordered to lie face down in their mass graves (Browning 1998:61–70, 83–85, 163). With this modification in the mechanics of massacre, they were able to shield themselves from facial cues of their victims’ submission and terror while being unsure whether and whom their bullets had killed.

Battalion members and their collaborators also took to drinking liberally before, during, and after their slaughters because, as one of them put it, “such a life was quite intolerable sober” (Browning 1998:82, see also pp. 61, 68, 80–85, 93, 108). During the second massacre at Łomazy, one First Lieutenant became so drunk that “he was in constant danger of falling into the grave” (Browning 1998:83). By the time the action had ended, a number of the Hiwi (*Hilfswillige*) shooters accompanying the battalion had fallen into a drunken stupor (Browning 1998). Ordered in the Fall of 1942 to pursue and shoot Jews who had escaped the Nazi dragnet, battalion members dubbed the exercise a “Jew hunt,” and many were now proving eager to track their victims down like prey (Browning 1998:123–132). “Like much else,” Browning (1998:85) observes, “killing was something one could get used to” (see also 1998:102, 127–128, 161). When the battalion’s role was reduced to rounding up Jews to be transported for extermination at Treblinka, the functional distance inserted by this division of labor made their participation in mass murder easier yet. As for the barbarism in the camps themselves, Fred Katz (1993) has argued that a “culture of cruelty” evolved in which the most gratuitous murders and grotesque sadisms were celebrated as though they were aesthetic forms, garnering enhanced status for those who promulgated them.

CHIMPANZEES, INTELLIGENCE, AND COALITIONAL CONSPECIFIC KILLING

Although the dominance drive hypothesis allows that intelligence (or cognition) is implicated in the execution of chimpanzee deep incursions and human warfare, it rejects the possibility that intelligence accounts for the origins of these behaviors (Manson and Wrangham 1991:376; Wrangham and Peterson 1996:182–193). As noted earlier, the principal evidence in support of this position is a set of chimpanzee deep incursions that appear to have no proximate payoff, but that, by degrading “enemy” strength, yield benefits in the longer term in the form of territorial annexation or female transfers. Presuming that the payoffs to these attrition strategies are opaque to the animals involved, proponents of the dominance-drive hypothesis conclude that the actions must be under genetic control. In fact, there is reason to believe that chimpanzees are capable of envisaging goals beyond the proximate as well as cause to question just how far-sighted they need to be to profit from a strategy of attrition.

Evidence confirms that chimpanzees are one of the most—if not the most—intelligent of species after humans. They appear to possess elementary mathematical skills; to have well-developed mental abilities in the domains of object permanence, causality, and spatial representation; to be capable of elementary symbolic communication; and possibly also to have a theory of mind (for recent reviews, see Boesch and Boesch-Achermann 2000:225–257; Hauser 2005). Like other great apes (Mulcahey and Call 2006), moreover, there is little doubt that they can foresee future contingencies and plan ahead (Biro and Matsuzawa 1999; Boesch and Boesch-Achermann 2000:238–240), with some observers of wild chimpanzees considering them capable of “long-term planning” in anticipation of future rewards (Boesch and Boesch-Achermann 2000:156).

Whether these capabilities are sufficient to endow chimpanzees with the ability to envision and plan the eradication of males from another community is unclear, but the scale of cognitive projection necessary to achieve such an end need not involve a multiyear plan of campaign. When the Gombe predators exterminated the male complement of the Kahama community, they did not wait the four years or so it took them to complete their genocide before reaping its rewards. With each successive kill, they were able to encroach further onto their victims’ territory, yielding a series of shorter-run gains as their campaign proceeded (Goodall 1986:505, see also pp. 514–517). Over this same period, they also received at least one permanent and one temporary female transfer from the Kahama community (Goodall 1986:514). As the predator community at Mahale gradually eroded the strength of the predated group, a total of 17 females transferred from the latter to the former (Nishida et al. 1985). In sum, these data suggest, chimpanzees could lack the foresight to envision and plan genocide as a long-term strategy and yet still achieve it as a by-product of intelligent actions that deploy superior numerical strength to yield much shorter-term profits.³

Tests that would decisively discriminate between the dominance-drive and developed-intelligence hypotheses are difficult to formulate, but two empirical avenues could advance the issue. First, the two hypotheses make different predictions about the distribution of nonproximately elicited deep incursions in species characterized by imbalance-of-power encounters. In the dominance-drive hypothesis, we expect nonproximately elicited attacks to characterize all such species; in the developed-intelligence hypothesis we expect them only among the more intelligent ones, not the less intelligent. Wrangham’s reading of the literature leads him to conjecture that, in addition to chimpanzees, deep incursions also occur among wolves, spotted hyenas, and lions (1999a:16, table 6). To date, however, these raids have been conclusively observed only among chimpanzees and humans (Goodall 1986:528; Wrangham and Peterson 1996:160), much as we might expect from the developed-intelligence hypothesis given the superior cognitive abilities of these two species.

A second avenue for testing the two hypotheses involves the mechanics of chimpanzee killing during nonproximately elicited, deep incursions. The developed-intelligence hypothesis makes a counterintuitive prediction about these attacks. Because it presumes that an innate aversion to conspecific killing predates the ape–human split, it predicts that, to kill, chimpanzees, like humans, must have developed primitive killing strategies to short-circuit this aversion. Anecdotal evidence suggests that chimpanzees can indeed recognize when their emotional dispositions conflict with their interests and act to subvert the adverse consequences of the former for the latter. In a dominance fight between captive chimpanzees, for example, one male was observed using his hand to try and mask his “fear grin” from the other, indicating an awareness that it was undesirable to reveal his nervousness to his rival (De Waal 1998:128). Congruent with prediction, moreover, Jane Goodall (1986:532) has interpreted the extreme affective arousal that chimpanzee raiders exhibit during lethal attacks as an attempt to “dechimpize” their victim, to reclassify it temporarily as a prey animal rather than a conspecific. In one lethal confrontation, for example, “there was a confusion of screaming, waa-barks, and roar pant-hooting *as though there had been a [game] predation*” (Goodall 1986:507, emphasis added; see also Wrangham 1999a:22). As Joseph Manson concedes, this behavior is a “plausible proximate mechanism promoting lethal aggression” (1991:387).

As it happens, the dominance-drive hypothesis also appears to predict “dechimpization.” Wrangham (1999a:22) proposes that practices such as dehumanizing the enemy, interpreted above as a learned “technology” for overcoming the aversion to killing, are actually evolved components of a dominance drive. It therefore follows that “dechimpization” is to be expected in chimpanzees as the genetic counterpart of dehumanization (and like phenomena) in humans. The developed-intelligence account of dehumanization and “dechimpization” has the advantage

of parsimony over the dominance-drive hypothesis. Rather than postulating the presence of a novel evolutionary drive, it can explain these phenomena in terms of a faculty—advanced intelligence—that chimpanzees and humans are already known to possess. The potentially testable difference between the two hypotheses, though, concerns the nature of these behaviors. The dominance-drive hypothesis asserts that “dechimpization” is genetic in nature; the developed-intelligence hypothesis that it is learned. The former hypothesis thus predicts that young male chimpanzees can kill without any prior learning; the latter that they must first be exposed to and learn such behavior. These predictions may be testable by observing the microdynamics of young chimpanzee participation in killing.

CONCLUSION

Without question, genetically based dispositions and biological structures are implicated in primate aggression and violence. The specific issue, though, is whether killing in nonproximately elicited deep incursions and ambushes—the behaviors that distinguish human and chimpanzee lethal violence from other forms of animal fighting and conspecific killing—are also motivated by dispositions that have evolved through natural selection. Wrangham and his colleagues allow that human intelligence is responsible for the marked elaboration of lethal violence apparent in human warfare, but they insist that the ultimate origins of this behavior lie in emotional dispositions that are under genetic control (Wrangham and Peterson 1996:182–193). In both chimpanzees and humans, reason (or calculation) “paves the road” for action, but “emotion sits in the driver’s seat” (Wrangham and Peterson 1996:190). The more parsimonious hypothesis, I suggest, is that intelligence is responsible both for the origins of conspecific killing among chimpanzees and humans as well as for its intensification and elaboration among the latter. A species capable of developing an advanced mental model of the self and of the world has the capacity both to recognize when lethal violence can be advantageously deployed and to devise strategies capable of short-circuiting whatever genetically based, emotional impediments obstruct its deployment. Emotion may sit in the driver’s seat, in other words, but intelligence is employing it as a chauffeur.

This theory that intelligence is a prerequisite for war can be dovetailed with another, long-standing contention that intelligence is the consequence of war (e.g., Alexander 1989; Alexander and Tinkle 1968; Pitt 1978; see also Flinn et al. 2005). By making humans their own predator and prey, “their own principal hostile force of nature” (Alexander 1990:4), according to this argument, conspecific killing has acted as a formidable selective force on the evolution of intelligence, instituting a cognitive arms race that favors those with superior abilities to outwit and outmaneuver others in the organization and technology of lethal violence. Given conspecific killing, in other words, intelligence

may rapidly advance. But what accounts for the emergence of conspecific killing? If the theory advanced here is correct, then intelligence may be both its cause and consequence. Prior to the advent of lethal violence, intelligent capacity developed slowly until a “tipping point” was reached, at which time it became capable of recognizing conspecific killing as a viable tool for advancing personal and group goals. Once it had also devised psychological and cultural “technologies” capable of surmounting emotional impediments to killing, lethal violence emerged as a feature of the interactional landscape. Intelligence, the feature that produced conspecific killing, then became its consequence, the object of a runaway selection process that produced a creature ever more capable of transcending endogenous and exogenous constraints to kill.

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NOTES

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1. Throughout this article, I exclude infanticide from my consideration of conspecific fighting and killing among adults because it appears to have different evolutionary origins.
2. An obvious rejoinder to this evidence is that, under judicial interrogation, the men of RPB 101 had self-evident motives to repress, distort, or simply lie about their participation in and feelings about this infamy. This was Goldhagen’s (1996) position in arguing that the Holocaust was the product of a uniquely German anti-Semitism that, far from faltering in the massacre of Jews, actively delighted in it. Browning (1996; 1998:xviii–xix) took close account of the incentives battalion members had for lying, however, and has replied effectively to both the details and the thrust of Goldhagen’s critique. In particular, he demonstrates (Browning 1998:210–215) how Goldhagen’s methodological prescriptions and the double standard he employs in selecting his evidence function to predetermine his conclusion that the men of RPB 101 “wanted to be genocidal executioners” (Goldhagen 1996:279).
3. There is intriguing, albeit limited, evidence that chimpanzee communities pursue a strategy of attrition only when they have a numerical superiority; with one possible exception, no weaker community has been observed to mount a raid against a stronger one (Goodall 1986:82, 504, 514; Nishida et al. 1985; see also Ghiglieri 1999:175). This asymmetry is not easily explained by a dominance-drive hypothesis. If chimpanzee lethal violence is guided by a genetic disposition to kill whenever low-cost opportunities arise or can be engineered, we should expect conspecific killing to be blind to overall community size differentials—at least until the size of one has fallen so low as to prevent it from ever achieving a numerical superiority in an encounter. The asymmetry is more explicable, however, if we assume that (a) chimpanzees can assess the size of foreign communities and deduce whether or not they are outnumbered (see Goodall 1986:491; Hauser 2005; Nishida et al. 1985:297; Wilson et al. 2001); (b) they can remember and update this information on an ongoing basis; and (c) they can figure out from it when it is in their better interests to engineer deep incursions or to try and hide from them.

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