BEHAVIORAL AND BRAIN SCIENCES (2006) **29**, 211–257.
Printed in the United States of America

Cruelty's rewards: The gratifications of perpetrators and spectators

Victor Nell
Institute for Social and Health Sciences, University of South Africa, Pretoria, South Africa. Correspondence to: West Hill House, 6 Swains Lane, Highgate, London N6 6QS, United Kingdom.
psychology@victornell.co.uk **www.victornell.co.uk**

To the memory of Linda Mealey

Abstract: Cruelty is the deliberate infliction of physical or psychological pain on other living creatures, sometimes indifferently, but often with delight. Though cruelty is an overwhelming presence in the world, there is no neurobiological or psychological explanation for its ubiquity and reward value. This target article attempts to provide such explanations by describing three stages in the development of cruelty. *Stage 1* is the development of the predatory adaptation from the Palaeozoic to the ethology of predation in canids, felids, and primates. *Stage 2*, through palaeontological and anthropological evidence, traces the emergence of the hunting adaptation in the Pliocene, its development in early hominids, and its emotional loading in surviving forager societies. This adaptation provides an explanation for the powerful emotions – high arousal and strong affect – evoked by the pain-blood-death complex. *Stage 3* is the emergence of cruelty about 1.5 million years ago as a hominid behavioural repertoire that promoted fitness through the maintenance of personal and social power. The resulting cultural elaborations of cruelty in war, in sacrificial rites, and as entertainment are examined to show the historical and cross-cultural stability of the uses of cruelty for punishment, amusement, and social control.

Effective violence prevention must begin with perpetrators, not victims. If the upstream approaches to violence prevention advocated by the public-health model are to be effective, psychologists must be able to provide violence prevention workers with a fine-grained understanding of perpetrator gratifications. This is a distasteful task that will compel researchers to interact with torturers and abusers, and to acknowledge that their gratifications are rooted in a common human past. It is nonetheless an essential step in developing effective strategies for the primary prevention of violence.

Keywords: compassion; cruelty; entertainment industry; evolutionary psychology; intraspecific killing; pain; predation; punishment; torture; violence prevention

1. Introduction

Cruelty (from the Latin *crudelem*, "morally rough") is the deliberate infliction of physical or psychological pain on a living creature; its most repugnant and puzzling feature is the frequently evident delight of the perpetrators. Cruelty has an overwhelming presence in the world – in wars and massacres, in the routine work of police and military interrogators, in children's play, and in the dealings of men with women and of adults with children. Although the ease with which situations can overwhelm values and elicit cruelty in hitherto irreproachable individuals is empirically (Haney et al. 1973; Milgram 1969/1974; Zimbardo 2003) and observationally (Browning 1993; Grossman 1995; Tester 1997) well established, there is no motivational or neurobiological explanation for cruelty's prevalence or the fascination it holds.

This target article argues that the reinforcement value of pain and bloodshed derives from the predatory adaptation from the Middle Cambrian to the Pleistocene. The argument is therefore as follows:

1. Cruelty is a behavioural by-product of predation.
2. Cruelty is driven by reinforcers that derive from this adaptation.
3. Because cruelty presupposes the intention to inflict pain and is therefore exclusively a hominid behaviour, it dates to no earlier than *H. erectus*, about 1.5 million years ago (Ma).
4. Cruelty has fitness benefits in solving problems of survival and reproduction in forager, pastoral, and urban societies.
5. The enjoyment of cruelty is a culturally elaborated manifestation of the predatory adaptation.

VICTOR NELL is Emeritus Professor of Psychology at the University of South Africa, where he directed the clinical neuropsychology training programme, and led epidemiological studies of traumatic brain injury and interpersonal violence in Johannesburg. He established the university's Institute for Social and Health Sciences and headed a World Health Organisation Collaborating Centre for Injury and Violence Prevention, which is now a South African Medical Research Council Lead Programme on Crime, Violence, and Injury. He has published books and book chapters on neuropsychology, policing and police accountability, theoretical social psychology, and the psychological impact of Apartheid.

© 2006 Cambridge University Press 0140-525x/06 $12.50

These hypotheses generate a research agenda for affective neuroscience, for social psychology, and for violence prevention. They also provide a heuristic for understanding why media violence is attractive, why men find war beautiful, why homicide has been a fixed feature of human societies from prehistoric times to the present (Buss 2005; Daly & Wilson 1988), and why, despite the human capacity for compassion, atrocities continue.

1.1. Three stages in the emergence of cruelty

1.1.1. Predation. The predatory adaptation derives from resource competition between and within species, which, in the Cambrian, becomes predation, the killing and consumption of one living creature by another. Predation is hard work: the evidence reviewed in section 3 shows that it is powerfully reinforced in mammalian carnivores and in the hunting apes by a set of linked conditioned stimuli that are carried over to the hunting adaptation in hominids. The stimuli driving predation and hunting are the pain-blood-death (PBD) complex: the prey's terror and struggles to escape as it is brought down, the shedding of its blood, and its vocalisations as it is wounded and eaten, often while it is still alive. A range of anticipatory and consummatory reinforcers is triggered by the PBD complex, which is also active in intraspecific killing, and strikingly so in chimpanzees. The material in section 3 on the neurobiology of predation suggests that predation is dopaminergic, affectively positive, and distinct from rage.

1.1.2. Hunting. Nutritional killing by hominids is also hard work: the palaeontological and anthropological evidence reviewed below suggests that hunting in hominids, as with predation in canids, felids, and primates, is reinforced by the PBD complex and that the nonnutritional "other end" of hunting, for which anthropologists have sought, derives from these reinforcers.

1.1.3. Power. Cruelty requires a sufficient cognitive basis for intentionality and a sufficient social basis for its disciplinary elaboration (see sect. 5). Once these foundations have been laid, there are florid social and cultural elaborations of cruelty as punishment, for amusement, and for social control. Each of these modalities affirms the power of the perpetrator – this may be an individual acting alone or as the agent of a collective – over the victim. In hierarchical states with centralised power, cruelty becomes a vehicle for public entertainments that buttress the power of the state and heroise war. The affective loading of these elaborations is described in order to identify parallels between blood as a principal reinforcer of predators and hunters on the one hand, and, on the other, of the audiences that delight in spectacles of pain and bloodshed.

In Stage 3, the *use* of cruelty is a strongly male-gendered and contextually sensitive adaptation, which "could remain dormant for the entire life of an individual, if the relevant contexts are not encountered" (Buss 1999, p. 284), promoting inclusive fitness by augmenting the personal power, survival, and sexual access of cruel individuals. Historically, the *enjoyment* of cruelty has been sufficiently powerful to have led to huge social resources being channelled into cruel rites and spectacles, and this enjoyment remains a primary driver of the modern entertainment industry. The distinction between use and enjoyment has behavioural and neurobehavioural implications that may have animal parallels with quiet-biting predation on the one hand and aggressive rage on the other. However, as with all behavioural states, the boundaries between instrumentality and affectivity are permeable: for example, hunters may inflict pain on the prey beyond that which is instrumentally necessary, and the hunt may slip into surplus killing that continues beyond the satisfaction of nutritional needs (as with Actaeon in Ovid's *Metamorphoses*, *c.* 8 AD/1997, p. 105). Violence is a significant by-product of cruelty (see sect. 6).

Evidence for the continued salience of the predatory adaptation for human behaviour is derived from palaeontology and taphonomy (Brain 1981); predator ethology; primatology, with special reference to chimpanzee predation and intraspecific killing; cognitive evolution with special reference to language; the psychology of motivation and learning; the anthropology of provisioning; societal evolution; cultural history; and the psychology of individual differences.

The reinforcers of cruelty feed into violence, defined by the World Health Organisation as the intentional use of physical force or power – against oneself, another individual, or a group – that causes injury, death, or psychological harm (Krug et al. 2002, p. 5): one of this target article's purposes is to show cruelty's relevance to the initiation and escalation of high-volume everyday violence such as drunken brawls, child beating, and sexual assault.

The study of cruelty, which is one of the manifestations of evil, is dangerous on three counts: first, because of the fear that evil is contagious, and that those who deal with it become tainted (as, for example, in "The Problem of Evil" in Coetzee 2003); second, because to probe the psychology of perpetrators fails to condemn, casting a shadow over the researcher's rectitude; and third, because rooting cruelty in the human evolutionary past appears to naturalise it, absolving perpetrators and their audiences of moral responsibility. The study of cruelty neither contaminates nor condones, and the purpose of this article is compassionate and preventive. Cruelty will not be contained through obscurantism. Its reinforcers must be understood, and if these have evolutionary origins, effective prevention requires that they be revealed.

2. A taxonomy of cruelty

The *preconditions* for cruelty are a mental state, namely the intention to inflict pain, which in turn presupposes a theory of mind (Premack 1988), as well as an action, which is the deliberate infliction of physical or psychological[1] pain on another living creature, or on the self.[2]

Punishment is cruel if its purpose is not to vanquish or disable the victim, but to inflict pain; if the victim has no control over the intensity or duration of the pain; and if the victim is physically restrained or otherwise rendered helpless. Punishment may also be used for *social control and discipline*: here, the preconditions are that the reason for the punishment is communicated to the victim, and that the punishment is derived from a penal code, is imposed by a higher authority, and is implemented by agents of that authority.

Affectivity. Cruelty's affective state is *ferocity* (from the Latin *ferox*, "fierce," now in the sense of savage violence).

Cruel acts arouse strong positive or negative emotions in the perpetrator and the audience, although habituation and instrumentality may attenuate them. Whether or not the conditions for punishment are met, an act is cruel if the perpetrator or the audience experiences physiological or psychological arousal triggered by the victim's pain. *Entertainment* is cruel if the audience is aroused by the intentional shedding of blood or infliction of pain; the infliction of pain for *amusement* is always cruel.

These definitions hold regardless of the perpetrator's position on a continuum ranging from *instrumental* cruelty, marked by the perpetrator's emotional coldness and distance from the victim, to *expressive* or *affective* cruelty, marked by the perpetrator's escalating arousal.

Exclusions. These definitions of cruelty exclude pain that results from fighting, killing, and war,[3] in which the goal is not to inflict pain but to cause the adversary's flight, submission, or death, and also exclude pain that is a by-product of treatment intended to cure or heal.

3. Stage 1: The predatory adaptation

3.1. Antecedents of predation

Predation's precursor is competitive aggression, which confers fitness by solving an animal's problems in relation to self-preservation, protection of the young, and resource competition (Archer 1988, p. ix); this competition began three billion years ago with the first primordial cell, a benthic procaryote, which, "outreproducing its competitors, took the lead in the process of cell division and evolution" and made the world we know (Alberts et al. 1989, p. 10). Organisms at a primitive level of neural organisation and without specialised effector organs are capable of aggression. For example, intertidal molluscs such as limpets and chitons show spatial aggression by crawling over a rival conspecific and trying to dislodge it from its rock crevice by backward and forward movements; and the nematocysts of the solitary anemone *Actinia equina* are used for offence against conspecifics, with the loser detaching from the substrate (Archer 1988, pp. 18–19).

The earliest evidence of predation in the fossil record is from the terminal Proterozoic, 600 Ma, from which *Cloudina* fossils with tiny rounded holes have been recovered, suggesting that the attacking organism was a predator, selecting its prey for size (Brain 2001). With the Middle Cambrian explosion of animal life, 540–23 Ma, the first effective predators emerged, with sense organs to locate prey and the ability to pursue and overpower it. The largest and most fearsome of these was *Anomalocaris*, an active swimmer growing up to 50 cm with two large eyes; *Opabinia*, another Burgess Shale organism, "had five large eyes at the front of the head and a long flexible proboscis that ended in an array of grasping spines" (Brain 2001, p. 23).

3.2. The ethology of predation

Predation is widespread in the animal kingdom. Salticids, the largest family of spiders, have elaborate, vision-mediated predatory behaviour that is prey-specific, with behavioural flexibility that includes conditional predatory strategies, trial-and-error to solve predatory problems, and detours to reach prey (Jackson & Pollard 1996); there is similar flexibility in the predatory behaviour of Pacific white sharks (Klimley 1994) and electric rays (Lowe et al. 1994).

The ethology of mammalian predation is now reviewed in relation to the arousal level, sensory feedback, and biochemical neurobiological drivers of the search-swoop-kill-feed cycle. Photographic evidence and the field observations reported below show that this cycle is accompanied by a range of auditory, visual, olfactory, tactile, gustatory, and visceral stimuli which together make up the PBD complex.

3.2.1. Hyenas and lions. In his Serengeti notebook, Kruuk described an adult male wildebeest turning to confront four spotted hyenas who had pursued it at speeds of 40–50 kph over a 3 km distance:

> The hyenas tried to bite him in the hindquarters, sides, and especially the testicles, while he in turn struggled to horn his attackers. . . . All four [hyenas] bit simultaneously at the loins, testicles, and anal region of the wildebeest, paying little attention to his horns. The mobility of the victim was much impaired by the four pursuers hanging onto his hindquarters. Another two minutes later the wildebeest had a large gash in the right loin, the testicles had been bitten off, and he stood as if in a state of shock. Occasionally he made some frantic movements and was able to struggle free from the hyenas, but then some member of the pack would renew the attack. . . . Eight minutes after the wildebeest had stopped running he went down and the hyenas stood over him pulling out his insides. Another two minutes later, the wildebeest died. (Kruuk 1972, p. 149)

Like wild dogs (Van Lawick 1977, pp. 242–43, 246–47), hyenas "kill the victim by eating it" (Kruuk 1972, p. 153), in that the animal may be struggling and vocalising as feeding begins and may die up to a quarter hour later. The belly and loins are torn open; the fetus is eaten if the prey is pregnant; the testicles or udder is eaten; the stomach is pulled out; and the stomach wall is eaten and the contents spilled on the ground (Kruuk 1972, p. 125). Mills's descriptions (1990, p. 103 and Fig. 3.25) and photographs (Mills & Harvey 2001, pp. 66–69) of spotted hyenas hunting and feeding in the Kalahari, and Van Lawick's (1977, pp. 186–87) for the Serengeti, show virtually identical behaviour.

Lions kill by slow strangulation, biting the throat of their prey: death is rapid for small prey but may take an hour for an adult wildebeest (Schaller 1973, p. 31) while it struggles to escape.

Auditory stimuli. Most prey species emit distress calls as they are wounded during the kill – zebras give a high, intense scream that is quite different from their bark or snort alarm calls; wildebeest and buffalo bleat or moan, like an intensified lowing (Mills, personal communication, November 22, 2001). Schaller (1973) describes the "wild . . . frenzied cry of a dying zebra" (p. 97), and Kruuk (1972) writes of wildebeest "moaning at the incessant . . . bites" inflicted by hyenas (pp. 27, 29). A Thomson's gazelle fawn pursued by a hyena "jumped, ran, bleated until the hyena's jaws closed around its shoulders" (Kruuk 1972, p. 25). Lions dig out a warthog burrow, the animal finally bolts, and, "amid screaming cries from the pig, the lions . . . tear it apart" (Mills & Harvey 2001, p. 46).

Olfactory stimuli are equally rich. Schaller arrived at a fresh zebra kill to find "the air heavy with the odors of blood and sour rumen contents" (Schaller 1973, p. 97).

Visceral reinforcers operate through gastric distention and satiation. Hyenas, for example, gorge themselves at great speed: Kruuk describes a pack of 25 hyenas completely consuming a zebra and her foal within 40 minutes (Kruuk 1972, p. 16). *Tactile* stimuli include proprioceptive feedback as the prey is clawed and bitten, and the prey's bucking, writhing, kicking, and goring as it attempts to escape.

Arousal level. The predatory cycle is highly energised. Schaller writes that "at no other time do animals convey such a high level of mental and physical tension" (1973, p. 25). Kruuk (1975) describes hyena hunts as "wild and exciting.... there is the sudden action, the wild run, the gasps of the victim.... Then the kill, steaming in the chill air, with a hyena cacophony over and around it" (pp. 23, 33). Lion hunts are attended by the same high arousal (Mills & Harvey 2001, pp. 44–45).

Arousal during feeding. High arousal is maintained during the feeding phase as the predators scan for scavengers, chase them off, and jostle one another (Schaller 1973, p. 83), while hyenas also feed in large competitive groups; a single hyena may be overwhelmed by vultures (Van Lawick 1977, pp. 188–89). For lions, scavenging from a hyena kill (and vice versa: Van Lawick 1977, pp. 98–99) is dangerous work accompanied by loud vocalisations.

3.2.2. Baboons and capuchins. One of the earliest authenticated cases of baboon predation is an eyewitness description with photographs in Dart 1957 (Figs. 11 and 12). The Gilgil baboons in Kenya hunt cooperatively and eat meat once a day – more often than any other non-human primate population (Strum 1981, in Stanford 1999). New World capuchins "hunt as avidly and successfully as chimpanzees" (Stanford 1999, p. 30), preying on squirrels, tamarin monkeys, and immature coatis. Like chimpanzees, they have a high brain-to-body-mass ratio.

3.2.3. Chimpanzees. At the Gombe, Taï, Mahale, and Kibale research sites, chimpanzees hunt red colobus monkeys as well as other primate and ungulate species (Mitani & Watts 1999). Hunting is coalitionary (Boesch 1994): for example, a group of Gombe chimpanzees locates a troop of red colobus and posts drivers and blockers; the trap closes, and the colobus retreat to the highest branches: "all the forest is screaming, meat is so rare and so special, there is huge excitement" (soundtrack, *National Geographic*, 1995). The prey is often an immature colobus "that is grasped by the hands, pinned to the branch, and bitten through the rear of the skull or the neck" (Stanford 1999, p. 96). Chimpanzees are highly successful hunters (Stanford 1999; Stanford et al. 1994; Wrangham & Peterson 1996, p. 216), and arousal during hunts is very high, with pant-hooting, screaming, whistling, piloerection to exaggerate body size, charge displays, and the shaking of tree branches (Michael L. Wilson, personal communication, April 24, 2001). At all the sites,

> the chimpanzees' visceral reaction to a hunt and kill is intense excitement. The forest comes alive with the barks and hoots and cries of the apes, and aroused newcomers race in from several directions. The monkey may be eaten alive, shrieking as it is torn apart. Dominant males try to seize the prey, leading to fights and charges and screams of rage. For one or two hours or more, the thrilled apes tear apart and devour the monkey. This is blood lust in its rawest form (Wrangham & Peterson 1996, p. 216; see also pp. 10–11).

Bonobos, on the other hand, do not prey on monkeys and are socially more peaceable than their close relations, the chimpanzees: Wrangham and Peterson (1996, p. 219) speculate that as predation was suppressed, so was intraspecific violence.

3.3. Intraspecific killing

The array of sensory and autonomic reinforcers that operate during nutritional hunting is also activated when conspecifics are attacked, wounded, or killed, as with Norway rats (Blanchard et al. 1995) and wild rats (Niehoff 1999, p. 61). Hyenas and lions defend their home ranges vigorously. Kruuk records four sightings of hyenas dead near the site of a kill "with clear evidence that they were killed by other hyenas" (1972, p. 256); Schaller (1973, p. 76) documents territorial killing in Serengeti lions.

Among chimpanzees, alpha-male unseating can lead to life-threatening or fatal wounds (De Waal 1989; Wrangham & Peterson 1996), and territorial defence may involve lethal violence. As with colobus hunts, these interband confrontations are marked by intense excitement that appears indistinguishable from that during predation. Goodall's early account of such intergroup violence (Goodall 1990, p. 89) has now been supplemented by Wrangham and Peterson (1996) and by Wilson et al. (2001). Though rarer than nutritional hunting, chimpanzee intraspecific killing is frequent enough to account for between 24% and 52% of Gombe male mortality (Wrangham & Peterson 1996, pp. 271–72).

3.4. The neurobiology of predation

Three distinct aggressive circuits in the mammalian brain are evoked by electrical stimulation of the brain (ESB) of three slightly different brain areas, namely predatory aggression; intermale territorial and sex-related aggression; and angry aggression (RAGE in the terminology of Panksepp 1998, pp. 51, 188).

3.4.1. Predatory aggression. Predatory, quiet-biting aggression is mediated by the SEEKING system, a foraging, exploration, curiosity, and expectancy system "that leads organisms to eagerly pursue the fruits of their environment.... Energy is delight" (Panksepp 1998, pp. 145, 164), and SEEKING is its vehicle. Predatory aggression is quiet, with methodical stalking and well-directed pouncing.

ESB, in the ascending dopamine pathways from midbrain nuclei through the extended lateral hypothalamic corridor from the ventral tegmental area to the nucleus accumbens, evokes the most highly energized exploratory and search behaviours of which the animal is capable (Panksepp 1998, p. 145). The emotional tone of affective attack is unpleasant (see sect. 3.4.2), but the hunt and kill are positive emotional experiences for the predator (Panksepp 1998, p. 188).

> The most effective quiet-biting attack electrodes always evoke self-stimulation.... [Self-stimulation and predatory aggression] are two behavioural expressions of SEEKING tendencies that emerge from homologous systems in the brains of different species. The species-typical expressions of this system lead to foraging in some species and predatory stalking in others. (Panksepp 1998, p. 194)

Though SEEKING is dopaminergic, the pleasures of the consummatory processes (feeding, sex) diminish arousal in the SEEKING system (Panksepp 1998, p. 147) and are strongly linked to brain opioid systems which "may participate in every pleasure, serving as a general neurochemical signal that the body is returning to homeostasis" (Panksepp 1998, p. 184).

3.4.2. Affective aggression. RAGE circuits run from the medial areas of the amygdala through the hypothalamus and down to the dorsal periaqueductal grey (PAG). Affective attack sites yield escape behaviours (Panksepp 1998, p. 195), and most animals soon learn to turn off rage-inducing ESB (Panksepp 1998, p. 194). High testosterone, high MAO-A, and low serotonin potentiate aggression; in "tournament species," testosterone is highest in the breeding season (Panksepp 1998, p. 189).

Affective attack, whether offensive or defensive (this latter is a mix of RAGE and FEAR), has marked display features – piloerection with noisy hissing and growling (the chimpanzee vocalisation during affective attack is the pant-hoot). Both quiet-biting attack and self-stimulation are evoked by ESB to the PAG of the midbrain, whereas the dorsal PAG evokes affective attack and aversive response.

3.4.3. Predation in relation to aggression. It has been customary to make a clear distinction between predation and aggression. Archer (1988) holds that "so-called predatory aggression is so motivationally and neurally different from other forms of aggression that it is most usefully considered as a separate form of behaviour" (p. 25; also Lorenz 1963/2002 and Niehoff 1999).

Panksepp's model accords more parsimoniously with the above behavioural accounts of predation and intraspecific killing, which suggest that predation and aggression are closely interwoven (see also Wilson 1975/2000, p. 243), with quiet stalking (felids) or observation (canids and hyenids) alternating with noisy defence of the kill. It also provides a neurobehavioural basis for predation's distinctiveness, in that, first, predation and affective attack have separate circuits in the brain; second, the RAGE and SEEKING circuits have mutually inhibitory interactions and cannot therefore co-occur; third, predatory attack is endogenously generated because the predatory cycle usually begins before the stimulus is present – unlike affective attack, which is triggered by the presence of the target; and fourth, it is accompanied by positive affect, even though the energising contribution made by hunger may be aversive, and, "from the animal's point of view, there is no apparent anger involved in this food-seeking response" (Panksepp 1998, p. 198).

3.4.4. Endogenous opioids. The literature on the role of the neuropeptides in predation, especially endorphins and enkephalins, is sparse and contradictory: for example, that microinjection of naloxone at PAG sites at which ESB evoked quiet-biting attack in cats blocked predatory behaviour (Weiner et al. 1991); a later study (Manchanda et al. 1995) showed, on the other hand, that microinjection of an enkephalin at excitatory PAG sites suppressed both the somatomotor and affective display components of predatory attack.

There is, however, a copious literature on opioid release under predatory threat, which entrains a sequence of defensive responses in prey that include hypoalgesia (in mice exposed to a cat, Kavaliers & Colwell 1994, and to insect stings, Kavaliers et al. 1998), and, as a final-stage response, tonic immobility (Gargaglioni et al. 2001). Predator odours are highly salient in eliciting innate defensive analgesia (Williams 1999). In humans, the release of endogenous opioids in acute traumatic injuries correlates significantly with physician pain ratings and scores on an injury severity scale (Bernstein et al. 1995), suggesting that anecdotal accounts of spontaneous analgesia in soldiers wounded in combat have a physiological basis.

The hunt and kill are a dangerous time for predators. The prey butts, kicks, and gores, and scavengers must be repulsed. If the predator is the scavenger – as often happens with hyenas and lions – the risk of injury increases. The known links between consummatory processes and brain opioid systems may therefore be augmented during the killing–feeding cycle by further opioid release in response to injuries: an aspect of the predatory adaptation may thus be an opioid "high" that is further augmented by injury.

3.4.5. Pain and pleasure in predation, hunting, and sexuality. The predatory cycle makes massive energy demands of the predator: among them, a sustained high level of autonomic arousal; the physical exertion of what may be a prolonged high-speed chase; the act of killing, during which the predator must overcome the last highly energised struggle of the prey and the close-in hazards of the kill; and scavenger threats. The aversive stimuli of physical exertion to the point of exhaustion are augmented by this final struggle. Yet the dopaminergic biochemistry of the predatory cycle and ESB evidence of its reward value indicate that far from being aversive, predation is a powerfully rewarding experience even before satiation occurs.

One may thus hypothesise that a necessary condition for the success of the predatory and hunting adaptations is the conjunction of pain – the stress of exertion and the pain of injury – with a high level of pleasurable reward intermixed with sexual arousal, and that this is also true of fighting in its various forms, including single combat, assaults by individuals or groups on rivals, and war: though fighting is by definition not cruel, pain is inseparable from combat.

It is incomprehensible that the infliction of pain on the self is both pleasurable and also sexually arousing. This unlikely conjunction has long puzzled moral philosophers and psychologists. In a famous passage, Freud wrote that "the existence of a masochistic trend in the instinctual life of human beings may justly be described as mysterious from an economic point of view" (Freud 1924/1985, p. 413). Yet, using functional magnetic resonance imaging (fMRI), Becerra et al. (2001) report that a pain stimulus (a probe heated to 46°C applied to the skin) activated the brain's reward circuitry, following a pathway similar to that of the pleasure response: protein from the *cfos* gene shows "that many neurons in the amygdala that are aroused by aggressive encounters are also aroused by sexual activity" (Panksepp 1998, p. 199): the underlying motivation may be the seeking of safety.

The intertwining of aggression and sexuality is linguistically and ethologically apparent. The term for the !Kung

hunting bow, *n!au*, is "a bawdy metaphor for the penis" (Lee 1979, p. 207), and !Kung hunters say that "when one's heart is sweet with the thought of the kill, intercourse is particularly good" (Lee 1979, p. 220). In primates and humans, intermale territorial and dominance-seeking aggression is driven by reproductive-fitness needs, with females responding positively to aggressive success so that the most vigorous males get preferential access to reproductive opportunities (Panksepp 1998). Men with absolute power may father several hundred children (Ridley 1993; Wrangham & Peterson 1996, p. 234).

4. Stage 2: The hunting adaptation

Despite its high costs, the hunting adaptation mediates powerful social and psychological rewards and is "the most successful and persistent . . . man has ever achieved" (Lee & DeVore 1968, p. 3). It remains so in 58 surviving forager societies from the equator to latitudes above 60 degrees, in which the contribution of hunting to annual food intake converges on 35% (Lee 1968). The following sections review the emergence of hominid hunting and then, in two forager societies, the Dobe !Kung of Botswana (Lee 1979; 1984) and the Yanomamö of southern Venezuela (Chagnon 1983), consider the reinforcements that support the expenditure of large time and energy resources on meat procurement.

4.1. Early hominid hunting

As hominids moved into the dry savannahs of the Pliocene, the evolutionary shift from gathering to meat eating required major changes in sociality, brain size, and weapons (Stanford 1999). The nutritional accommodation of a big brain is shrinking of the gut, which can be done only if there has been a switch to easily digested and highly nutritious foods (Aiello & Wheeler 1995) such as meat and tubers, with preconsumption processing of chemically or mechanically protected tubers (O'Connell et al. 1999).

The earliest fossil evidence of hominid meat eating is the appearance of crude stone tools in east Africa in the mid-Pliocene about 2.5 Ma, probably representing an overlay of large mammal scavenging on a tradition of small mammal hunting (Plummer & Stanford 2000); killing or meat scavenging without tools may have occurred much earlier but would not have left fossil evidence (Stanford 1999). O'Connell et al. (1999) argue that the earliest hominid meat eating is considerably later, contemporaneous with the appearance of African *H. erectus* about 1.8 Ma. Changes driven by "grandmothering" – foraging by postmenopausal women – would have promoted larger group size, which in turn brought advantages in defending against predators and opened the way to aggressive scavenging (O'Connell et al. 1999). Isotope evidence shows that archaic *H. sapiens* were not only scavengers but also top-level carnivores, obtaining almost all of their dietary protein from animal sources (Richards et al. 2000; but see Binford 1987 on *H. erectus* as primarily an aggressive scavenger).

The controlled use of fire, which Brain (2001) has dated from 1.42 Ma in East Africa, served both to make meat more palatable and to keep predators at bay: hominids were both hunters and hunted (Brain 1981; Frison 1998), with both life-threatening dangers and nutritional opportunities driving the development of hominid intelligence. Folded within this brain development were the emotional drivers of the predatory adaptation, responding powerfully then as now to any opportunity to pursue, butcher, and consume prey animals, whether as hunters making the kill or as scavengers drawn to the kills of other predators.

4.2. The high arousal of the hunt

4.2.1. Learning to hunt. The rough-and-tumble play of young predators – rats, puppies, kittens – mimics the techniques for tripping up, gripping, and biting prey (Van Lawick 1977, pp. 164–65; Panksepp 1998, Fig. 15.2). There are aspects of children's play that are also a preparation for predation. Lee (1979, pp. 236–38) describes the predation games of !Kung children; and among the Yanomamö, young boys capture a live lizard, tie it to a stick in the village clearing, and gleefully shoot featherless arrows at it with their miniature bows: "since lizards are very quick and little boys are poor shots, the target practice can last for hours" (Chagnon 1983, p. 118).

4.2.2. The hunter's arousal. The large antelope species and giraffe are hunted with bow and poisoned arrows. The hunt proceeds through a cycle of stalking, wounding, tracking, killing, and butchering. !Kung hunters, like felids, are intensely focussed and silent stalkers: when the prey is sighted, "one man moves forward, crouching at first, then crawling, then inching forward on his belly" (Lee 1979, p. 217). If the animal shows any signs of alarm, the hunter freezes for several minutes at a time; then, having reached bowshot range (10 m is the optimum distance), he looses the first arrow. The time for stealth now over, he breaks cover, running to intercept the fleeing animal and shooting his remaining arrows at it.

The hunting group now tracks the wounded animal until the poison takes effect and the animal collapses: "in all cases a spear is methodically worked in and out of the throat to ensure that the animal is dead" (Lee 1979, p. 221). The party immediately sets about butchering the animal, first skinning it, then removing the heart, liver, and lungs and emptying the stomach contents. The liver is cooked and eaten on the spot, and the long leg bones may be split for the marrow, which is rubbed onto the body. Blood from abdominal cavity is collected and carried home in an empty stomach sac; during the night after a kill, the hunter "is in a ritually heightened state" (Lee 1979, p. 220). The excitement of the pursuit and kill is no less for small game (Lee 1979, pp. 216–21).

4.3. The status of hunting and the hunter

Lexical and narrative elaboration are markers for the social salience of a phenomenon; similarly, elaborated memories of distant events are evidence both of its social significance and of high arousal at the time of the event: Rolls (1999) notes that if a powerful reinforcer accompanies a situation, many details will be stored, including memories of the emotional state that accompanied that situation. This storage may be implemented by nonspecific projecting systems to the cerebral cortex and hippocampus, including

cholinergic pathways in the basal forebrain and ascending noradrenergic pathways.

Lee writes that "hunting vocabulary has undergone a fantastic elaboration in !Kung speech . . . there are many dozens of synonyms, metaphors, and euphemisms" (1979, p. 207) for stalking, shooting, fleeing, finishing off the wounded animal, butchering, and so forth. Men tell the story of the hunt round the fire "until the sky rips open" [meaning until dawn breaks]. . . . Graphic descriptions of hunts, both recent and distant, constitute an almost nightly activity. . . . Men can portray a hunt, step-by-step, in microscopic and baroque detail" (Lee 1979, pp. 207, 205) and give lifetime retrospective hunting histories (pp. 230–31).

Hunting success confers direct *fitness benefits:* Among the Ache, "better hunters were more often named as lovers by Ache women and better hunters had more surviving children. . . . Better hunters had much higher fertility than other men" (Hawkes et al. 2001, p. 134; also Holmberg 1950).

4.4. The high costs of meat eating

The costs of meat eating are high for both predators and hunters.

4.4.1. Predators. The balance between the moose and wolves on Isle Royale in Lake Superior – there are 20–25 wolves and 600–1,000 moose – is maintained because "it is very hard work to trap and kill a moose" (Wilson 1975/2000, p. 86). The wolves travel an average of 25–30 km a day during the winter, and one set of field observations showed that on 131 separate moose hunts, 77 resulted in a confrontation, and in only 6 of these were moose killed. The kill success rate is 4.58%, and the meat yield is 4 kg of meat per wolf per day. The success rates for Kalahari spotted hyena are 63% for all encounters with gemsbok calves, 14% for gemsbok adults, 39% for wildebeest, and 31% for springbok (Mills 1990, pp. 94–110). For the Gombe chimpanzees, hunting is nutritionally uneconomic: a 1 kg baby monkey is the typical yield for a hunting party of up to 20, so that the effort expended "is enormously costly relative to the quantity of meat that is usually available" (Stanford 1999, p. 97).

4.4.2. Hunters. In human hunter-gatherer societies, the meat yield is high for the group, but successes for the individual hunter are sparse and unpredictable, with the daily failure rate for individual Hadza hunters at 97%, and a hunter may go days or weeks without a kill (Hawkes et al. 2001); the !Kung hunting yield is 1 hr/100 calories. Nonetheless, "the !Kung . . . are willing to devote considerable energy to the less reliable and more highly valued food sources such as medium and large mammals" (Lee 1968, p. 41).

Why do hunters make such large investments in a nonessential resource? O'Connell et al. (1999) argue that human paternal provisioning, a key aspect of the man-the-hunter hypothesis, is absent in primates and is not the purpose of human big-game hunting. If it were, hunters would spend more time on small game and plant foods, which are more reliable food sources: that they do not "strongly suggests that big game hunting serves some other end, unrelated to provisioning wives and children" (p. 464). The material in this section, taken together with the cultural elaborations of cruelty (in sect. 5.2) suggest that this other end is the confirmation of male sexual desirability through shedding the blood and taking the life of big game, which is both scarce and dangerous.

4.5. Pain, blood, and death in predation and hunting

Although the predatory cycle is endogenously generated, usually beginning before the stimulus is present (Panksepp 1998), the predator is greatly energised by the prey's presence and its actual or attempted *flight*, which is a powerful trigger for pursuit and attack; by the prey's *pain* (ears, lips, and genitalia are ripped off, and the prey is disembowelled while alive; hunters snare, club, and stab living animals); and by the invariable nexus between the infliction of pain and release of the prey's *blood*, which is a signal for the prey's imminent *death*: the muzzles of two spotted hyenas tearing at a zebra's stomach are red with blood (Mills & Harvey 2001, p. 128; Van Lawick 1977, pp. 186–87); blood smears the teeth, mandibles, and snouts of feeding lions (Mills & Harvey 2001, p. 128; Schaller 1973, p. 21). It is possible that in forager societies, blood has become a principal conditioner of the reward system that drives predation, deriving its cultural weight (see sect. 5.2.6) from its centrality in predation, hunting, and intraspecific violence.

Stimuli regularly attached to a rewarding activity become conditioned reinforcers: During both mammalian and hominid evolution, the prey's flight and pain, and then the sight, smell, and taste of blood, were prominent among the reinforcers that shaped the predatory and hunting adaptations. For predators, pain and blood signal satiation; for humans, they are the harbingers not only of impending satiation and sexual access, but also of the animal's death, which was bound up with the precarious survival of Pleistocene hunters, who were also the hunted (Brain 1981).

4.6. The predatory transition

In historical context, these notions emerged in a largely forgotten and, in its time, much derided 1953 paper "The Predatory Transition from Ape to Man," in which the South African palaeontologist Raymond Dart characterised Australopithecus africanus as "carnivorous creatures that seized living quarries by violence, battered them to death, tore apart their broken bodies, dismembered them limb from limb, slaking their ravenous thirst with the hot blood of victims, and greedily devouring living writhing flesh" (Dart 1953, p. 209). Towards the end of the paper, Dart observed that "the taste for animal meat led inexorably . . . to unspeakable cruelties" (p. 219).

In the 1950s, Dart's thesis that the australopithecines were bloodthirsty murderers, and the suggestion that their bloodlust was the foundation of human cruelty, was ridiculed by palaeontologists. The orthodox and altogether more optimistic view was that of Richard Leakey – that early hominids were food-sharing foragers, and that violence emerged only "when we became psycho-social man probably 30 to 40,000 years ago" (in White 1985, p. 7). Dart writes of himself that because of this onslaught,

he was presumed to have retired "wounded or wroth. . . . into some parochial tent to brood upon the unresponsive attitudes of my overseas colleagues" (1957, p. vii).

R. F. Ewer, Dart's colleague, once remarked that Dart was usually right – though sometimes for the wrong reasons. Bob Brain, Dart's student and collaborator, who described Dart as "this gentle, yet strangely bloodthirsty man" (Brain 1993, p. 4), has shown that most of the reasons Dart gave for his characterisation of the australopithecines were indeed wrong (Brain 1981). But if, as this paper has argued, there is a wide and accommodating passage from predation to cruelty, he was right, after all.

5. Stage 3: The social uses of cruelty

Section 5.1 considers the points in hominid evolution at which punitive and disciplinary cruelty could have emerged in relation to the preconditions set by the taxonomy of cruelty and examines its design features at these points. Section 5.2 reviews the fitness benefits of cruelty through its various social and cultural elaborations.

5.1. Emergence and design features of cruelty in relation to cognitive and societal evolution

Punishment in the sense of inflicting pain on another creature has no preconditions: in this sense, the behaviour of the rats, hyenas, lions, and chimpanzees described in section 3 is indeed punishment, but the great apes cannot meet the first of the criteria for disciplinary cruelty, that the reason for the punishment must be communicated to the victim: Donald (1993) argues that although the great apes are brilliant event perceivers, with the capacity for social attribution and insight, they are unable to communicate even their simplest intentions because they cannot "actively shape and modify their own actions or . . . voluntarily access their own stored representations" (p. 739; Tomasello et al. 1998 cite field evidence that apes cannot understand the communicative intentions of others).

5.1.1. Mimesis as a sufficient basis for intentionality. Mimetic communication "broke the hold of the environment on hominid motor behaviour" (Donald 1993, p. 740). Using the whole body as a communication device, body actions can be retrieved from memory, replayed, stopped, and refined, allowing the development of toolmaking, social expressiveness, and extended competition, all with prosodic intonation of nonlinguistic vocalisations. The transition to a mimetic culture with *H. erectus* would therefore have increased the differences between individuals and groups in the capacity for social manipulation, fighting, physical dominance, and rewards for competitive success; it also would have provided a sufficient communicative basis for the emergence of the preconditions for cruelty and disciplinary cruelty.

5.1.2. Stages of societal evolution. Johnson and Earle (1987) identify three levels of socioeconomic integration, emerging in sequence as population density increases: the family-level group, the local group, and the regional polity.

5.1.3. Cruelty in the family-level and local group. Hominid forager societies, dating to no later than 1 Ma (Brain 2001), are organised as *family-level groups* of some 25–50 individuals, as for example the !Kung San. Leadership in most surviving forager societies is egalitarian, with consensual decision-making and a strict humility ethic that effectively blocks any aspirations to dominance and leadership that a high-status and physically powerful individual might have. In the *local group* (for example the Yanomamö) with aggregations of 300–500 people, a strong charismatic leader, the so-called big man, may emerge who maintains group cohesion and negotiates intergroup alliances – but in the absence of coercive social mechanisms, his power lasts only as long as supporters' loyalty. Disciplinary cruelty cannot occur at these levels, because the requisite hierarchical social structure with a penal code and judicial system is unavailable.

5.1.4. Design features of cruel punishment in the family-level and local group. However, there is a sufficient linguistic and organisational basis to punish individuals who threaten group survival: for example, by deliberately frightening off game during a hunt or defecting from a war party. The offended individuals and their kin would have had the communicative and social resources to restrain the offender and flog, break bones, or inflict other exemplary pain. Since group disintegration would have created major survival threats in relation to food procurement, predator dangers, and attack by rival groups, public punishment would have been strongly adaptative by contributing to effective hunting, defence, mate guarding, and stable food sharing.

Trinkaus (1992) observes that "the difficult existence of the Neanderthals is reflected in their high frequency of traumatic injury. . . . The remains of all older individuals show signs of serious wounds, sprains, or breaks" (p. 838; see also Walker 1989). The palaeopathological evidence required to date the first emergence of cruel punishment would be to differentiate bone fracture caused by combat or accidental injury from the pre-mortem twisting or other manipulation of broken bones, which causes intense pain (Edgerton 1985, p. 135) and would leave identifiable pre-mortem traces in the fossil record (White 1985). The theory of mind requirement (sect. 5.1.1) suggests that such evidence would not be found earlier than *H. erectus* (c. 2 Ma).

Anthropological investigation of surviving forager and pastoral societies might determine whether violation of fundamental social norms elicits cruel punishment in the family-level group (sect. 5.1.3) and whether disciplinary cruelty is absent under big-man leadership (sect. 5.1.4), first appearing in regional polities.

5.1.5. Disciplinary cruelty: The regional polity and early state. Regional polities, whether as chiefdoms of several thousand people or the empires that emerged in Egypt, China, and India in the third millennium BC, brought "not only dazzling advances in civilisation, but also the enormously powerful instrument of state power as a new moving force in history" (Heilbroner 1992, p. 907).

Disciplinary cruelty that meets the conditions in section 2 becomes a political imperative with the establishment of conscript armies requiring the immediate punishment of cowardice or desertion, the systematic slaughter of

rebels,[4] and the creation of slave or serf populations: the costs of maintenance and subjugation are recovered through coerced labour, necessitating an escalation in the frequency and severity of punishment to maintain productivity (on slave penal codes, see Kiefer 1938; Hornblower & Spawforth 1999). Cruelty thus acquires an economic driver.

5.1.6. Design features of cruelty in the regional polity. Kings or emperors affirm their power as social regulators through carnivalesque public entertainments and punishments in which the social purpose of cruelty is manifest. The infliction of prolonged pain is an effective way to establish and maintain social dominance; the harsher or more painful the punishment, the greater the relative status advantage of the perpetrator in relation to the victim; and the more terrible the punishment, the more permanent its effects on the social system.

5.1.7. The retained design features of cruelty. The social-control functions of Roman and mediaeval carnivals of death continue to the present in public entertainments that are unwillingly stopped short of frank killing – boxing and kickboxing, college football, car and motorcycle racing. Animal baiting continues, in enclave groups in the west, and more openly in other cultures. The willingness of military establishments to develop technologies of cruelty as instruments of war flourishes globally, and the coercive forces of the state and its opponents use confessional and disciplinary cruelty for political ends.

Deliberate infliction of pain, as with any other decisive manifestation of interpersonal power, enhances the status of the perpetrator. Accordingly, the initiation and coordination of punishment in the family-level and local group would have facilitated the emergence of a leadership figure, whose willingness to injure would have created a reputation for ferocity with significant resource access benefits for that individual. Thus with Agathocles the Sicilian in the third century BC, whose "barbarous cruelty and inhumanity, together with his countless atrocities" are recounted with approval by Machiavelli (1513/1940, p. 32) and with gang life in Glasgow's Gorbals district: describing the latter, Boyle (1977) tells how he slashed a boy in a fight, the first time a knife had been used in a gang fight in that area. Within days, Boyle was a force to be reckoned with and placed on a pedestal by his own gang. Today as in the past, aggression linked to a readiness to inflict pain is a route to prestige, leadership, and social mastery that entrains survival and reproductive benefits. Empirically, it might be shown that group hierarchy rankings are significantly altered by "cruelty rumours" – for example, that a low-ranking member had tortured and killed a rival. Cruelty attributions may elevate status, leadership, and sexual attraction ratings more, for example, than attributions of physical strength or intelligence.

5.2. Social and cultural elaborations of cruelty

The striking stability of the *social* uses of cruelty for punishment, amusement, and social control suggests that the underlying motivational structures have a species-wide evolutionary origin. Within the *cultural* sphere, "quite new kinds of evolution may occur" with great rapidity, spreading through a population or becoming extinct within a single generation (Lea 1999, pp. 17–18; cf. Plotkin 1996). Whether a cultural innovation spreads or becomes extinct will be determined by its social utility and its contribution to individual fitness.

This section reviews evidence that throughout recorded history and in a diversity of cultures, cruel entertainments – which as a means of social control also have a fitness value – have attracted huge audiences. The attractions of war, the veneration of the warrior hero, and the symbolic weight of blood are further cultural manifestations of the predatory adaptation.

5.2.1. Cruel punishment. The strong routinely use pain as punishment (from the Latin *poena*, penalty) in their dealings with the weak – masters with slaves, adults with children, and men with women. When Sarai complained to Abram of Hagar's contempt, he replied, "'Your slave-girl is in your power, do with her as you please.' Then Sarai dealt harshly with her, and she ran away from her" (Genesis 16.6). Corporal punishment of children and pupils was part of mediaeval and early modern life. From the fifteenth century, the birching of school pupils became increasingly common and brutal "for all offences and all ages" (Ariès 1960/1962, p. 259). If a Yanomamö woman is tardy in responding to her husband's needs, "the husband is within his rights to beat her. . . . It is not uncommon for a man to injure his errant wife seriously" (Chagnon 1983, p. 112). This domestic cruelty has behavioural parallels among chimpanzees. When a young male attains the size of an adult female, he is "systematically brutal towards each female in turn"; a male can almost always coerce an unwilling female into copulation (Wrangham & Peterson 1996, pp. 143, 145; Stanford 1999).

5.2.2. Cruelty as amusement. The boundaries between punishment and amusement are permeable. Caligula (12–41 AD) tortured Roman senators, men he knew well, not to extract information, but for amusement (Kiefer 1938). Commodus (177–192 AD) was destructive even in his humorous moments (*Scriptores Historiae Augustae*, c. 500 AD/1960), and a chief delight of the emperor Augustus was to watch boxing matches, "and not merely professional bouts, in which he used to pit Italians against Greeks, but slogging matches between untrained roughs in city alleys" (Suetonius, *Augustus*, 45); the combatants wore gloves made of leather bands loaded with balls of lead or iron that often blinded the fighters (Tertullian 197 AD/1958, p. 97, note 7).

When the state's official torturers believe that they will not be held accountable, the oscillation between instrumental and affective cruelty becomes apparent. Thus with surreptitiously videotaped scenes of South African police brutality – setting dogs on prisoners as a "training exercise" or burning an unconscious hijack suspect with a cigarette lighter: the perpetrators laugh uproariously. In one of his notebooks, the artist Francis Bacon wrote, "The reek of human blood, /it's laughter to my heart."

5.2.3. The escalation of cruelty. A hallmark of cruelty is its rapid escalation, from a slap to a punch to the smashing of bones and teeth, from teasing to murder: the closing scenes of Pasolini's *Salo* illustrate the frenzy of the torturer inflamed by the terror and pain of his victims.

The underlying mechanisms appear to be, first, that the affective tone of bullies and mob killers is energised and exultant. Because RAGE and SEEKING are mutually inhibitory in animals (Panksepp 1998), it is possible that in humans, cruelty's escalation arises from the SEEKING rather than the affectively aversive RAGE-aggression circuits. A hypothesis worth investigating is whether the gratifications of perpetrators are dopaminergic and fuelled by opioid release. Second, though victims' distress can inhibit violence (Blair 1997), their fear and pain may also escalate the perpetrator's savagery, paralleling the predator's escalating ferocity in the prey's death struggle as its terror and its vocalisations mount.

5.2.4. Disciplinary cruelty. *Judicial punishment* to enforce laws and preserve discipline ranges from verbal reprimand, shaming, and ostracism (see Note 2), to death by execution or lethal mutilation. The agent of these punishments (sometimes formally appointed to this role: see Applbaum 1995) is emotionally cold. Herodotus (440 BC, 5:25) tells how the Persian king Cambyses ordered a corrupt judge to be flayed. Gerard David's *Justice of Cambyses* (1498) portrays the flaying in a scene as devoid of emotion as a coroner's autopsy: the ritualised severity of the executioners and the assembled court perfectly illustrate the emotional quality of instrumental cruelty. The contrast between this high sobriety and the laughing crowds portrayed in popular woodcuts of execution scenes (Puppi 1991, *passim*) is striking.

Mutilative punishments derive from the principle of *talion*, retaliation, first codified by Hammurabi (c. 1760 BC) and transmitted through Deuteronomy 19:19–21 (c. 600 BC), and the Roman Law of the Twelve tables (450 BC): its cruelty led Gibbon to remark that it is "written in characters of blood" (1776/1903, vol. 4, p. 587).

5.2.5. Social control. The worst cruelties were inflicted on slaves and the "inferior races" of the New World colonies. Spartan youths killed helots for sport (Plutarch, c.100 AD/1988, p. 28), and in Roman law, citizens freely used the power of life and death they had over their slaves (Kiefer 1938). Torture to inculcate terror was a favoured instrument of political control in Europe's African and South American colonies: 15 million Africans are reported to have perished in King Leopold's Congo (Kimbrough 1972); rubber traders on the Putamayo River, a tributary of the Amazon, were equally cruel (Mitchell 1997; Taussig 1986). In the late twentieth century, the Greek and Argentinian juntas adopted torture as an instrument of state policy (Haritos-Fatouros 2003; Timerman 1981).

5.2.6. Confessional cruelty. Pain bends the victim's will to the torturer's. Judicial torture in order to obtain evidentially admissible confessions was recognised by the Greek, Roman, and mediaeval European legal systems (Held 1985; Robbins 1960). Criminals torture to uncover loot: in early-fourteenth-century England, burglars placed a housewife on a trivet over a fire until she revealed the goods they sought (Hanawalt 1976).

5.2.7. Cruelty as entertainment.

5.2.7.1. The Roman arena. Cruelty as an instrument of social control in the form of elaborate, state-sponsored entertainments (Coleman 1990; Wistrand 1992) reached its apogee in the late Roman Republic and early Empire. The elaborate and theatrically sophisticated arena ceremonial (Barton 1993; Lafaye 1896) had a twofold social purpose. It was educative, teaching the Romans "exactly what their leaders thought essential to the survival of Rome" (Wistrand 1992, p. 69): soldiers in training were obliged to witness the combats in order to harden them for war (Barton 1993). Second, the extravagant arena spectacles were an extension of the emperor's power and benevolence (Coleman 1990). Suetonius (100 AD/1984, *Jul* 39.3) records that Caesar, for his triumph in 46 BC, held five days of animal hunts in the arena and the first naumachiae (mock naval battles) in a specially excavated basin near the Tiber: these were mock battles in the sense that they were theatrical, but the deaths were real: "thousands of superfluous foreigners were despatched in a single extravagant display" (Coleman 1993, p. 74).

Gladiatorial shows in the amphitheatre were "the most prominent and most popular spectacle of all," writes Tertullian (197 AD/1958, 12:1). One could not attend the arena spectacles, he continues, "without his mind being aroused and his soul being stirred by some unspoken agitation. No-one ever approaches a pleasure such as this without passion [and] violent agitation of the soul" (15:2–6). Even sober citizens demanded that "the man who has been slain be dragged back to feast [their] eyes on him, taking delight in scrutinising [his death] close at hand" (21:1–5). The allusion is to a platform in the middle of the arena to which wounded victims were dragged, "thus enabling the spectators to observe more closely their death struggle" (Tertullian 197 AD/1958, p. 94, note 3). In his *Confessions*, St. Augustine tells of his young friend Alypius, a Christian who had come to Rome to study law. Augustine's account captures the delirious contagion that swept over the arena audience: "some man fell; there was a great roar from the whole mass of spectators . . . . [Alypius] saw the blood and he gulped savagery . . . . he was drunk with the lust of blood" (vi, 8).

On occasion, this frenzy tipped spectators into active killing, as with Pothinus of Lyons (Musurillo 1979, *Martyrs of Lyons*, 5.35), and the Oriental monk Telemachus, who in 404 AD in Rome leaped from the stands into the arena demanding that the bloodshed cease: he was stoned to death (other versions say that he was torn limb from limb) by the enraged spectators (Durant 1950). Bullfights arouse similar passions: if a matador has been unsuccessful, writes Hemingway, the spectators may decide to kill the bull themselves, "swarming on him . . . with knives, daggers, butcher knives and rocks . . . cutting up at him until he sways and goes down" (1939/1994, p. 21).

As the neurobiology of predation predicts, blood and death have erotic force. Barton (1993) writes that the raging sexuality of the arena came to a focus in the gladiator's scarred body, and Rome's prostitutes gathered at the arena exits, where they did a brisk trade.

5.2.7.2. Mediaeval carnivals of death. Spectacles of pain and death were a fixed part of mediaeval life, and there is a rich popular art of execution scenes (Edgerton 1985; Puppi 1991). The route followed by the executioner's cart was planned so as to draw the whole of the urban fabric into these public demonstrations of the sovereign's

power (Foucault 1975/1986). Great crowds followed the wagon and gathered at the place of execution, as with the Catholic conspirator Guido Fawkes, who in 1606 was drawn backwards through the streets of London at a horse's tail with his head near the ground, "being not entitled to the common air" (Fraser 1996, p. 223).

5.2.7.3. Animal baiting. The conjunction between pleasure and the pain of animals is especially distressing to western sensibilities but is ubiquitous across time and cultures. The Romans scoured their African and Asian provinces for exotic beasts that were transported to Rome in huge numbers to be killed by a special class of gladiator called *bestiarii.* Indian palace paintings portray elephant fights, and in 1846 a traveller to Java reported that "one of the favourite amusements ... is a fight between a tiger and a native buffalo; the former has often to be urged on by... pouring boiling water over it, or pelting it with lighted straw" (Friedländer 1871/1964, p. 189). In 1575, Queen Elizabeth attended a baiting of 13 bears, and in eighteenth-century England, bullbaiting and cockfighting drew excited crowds (Malcolmson 1973). In the southern United States, cockfighting continues (Herzog & Cheek 1979), and South Africans stage dogfights in empty swimming pools.

5.2.8. War. War may be the most significant social product of the predatory adaptation. The material that follows suggests that the emotional state of the warrior in combat mimics that of predators and hunters, with high arousal, positive affect, and heightened libido, which in turn raises the possibility that in the transition from predation to intraspecific, non-nutritional killing, the reinforcers of the pain-blood-death complex have become attached to combat and warfare.

5.2.8.1. The warrior hero. In mythology, ethnography, and contemporary culture, there are explicit links between hunting, war, and manhood. Because of the male gendering of hunting (Lee 1979; Lee & DeVore 1968; Hawkes et al. 2001; Stanford 1999, pp. 40–41), it becomes an affirmation of manhood: Croesus of Lydia dreamed that his son Atys would die by the blow of an iron weapon and accordingly forbade him to hunt a huge boar that troubled the people of Mysia. "What face meanwhile must I wear as I walk to the agora or return from it?" lamented Atys. "What must ... my young bride think of me? What sort of man will she suppose her husband to be? ... I pray you, therefore, let me go with them" (Herodotus, 440 BC, 1:34–39).

Reciprocally, the great warrior is a great predator, and combat, like hunting, is a high-risk activity. Warlike brutality may be invoked through the metaphors of predation, as in Yanomamö war-party preparations (Chagnon 1983); Achilles is "a soaring eagle / launching down from the dark clouds to earth / to snatch some helpless lamb or trembling hare" (Homer, 800 BC/1990, pp. 22:364–68). In the hominid past, young "warrior hawks" were highly prized because of violent interband rivalry that made it essential for a group to have a contingent of "dawn warriors ... healthy, adventurous, and potentially violent young men.... The most brutal ... have the advantage over their less 'sociopathic' adversaries" (Bailey 1995, p. 542). As in the arena, killing is erotic: a Vietnam veteran says, "carrying a gun was like having a permanent hard-on. It was a pure sexual trip every time you got to pull the trigger" (Grossman 1995, p. 137). An American tank commander talks about his first killing of German soldiers: "The excitement was just fantastic ... the tremendous feeling of lift, of excitement, of exhilaration, it was like the first time you go deer hunting" (Grossman 1995, p. 235). A deer hunt is the central metaphor in Michael Cimino's brutal 1978 movie about Pennsylvania steelworkers serving in Vietnam.

It is possible that in combat and in cruel acts, the intensity of wounding and killing activity is escalated by pain, just as the dopaminergic biochemistry of predation, in itself powerfully rewarding, may be augmented by endorphin release in response to exertion and pain (4.4–4.5). If so, this dopaminergic escalation could be experimentally demonstrated.

5.2.8.2. The beauty of war. In *Dispatches* (Herr 1978), Michael Herr describes the nights at Khe Sanh: "Even the incoming was beautiful at night, beautiful and deeply dreadful. I remembered the way a Phantom pilot had talked about how beautiful the surface-to-air missiles looked as they drifted up towards his plane to kill him." A reviewer of Herr's book wrote that he had returned from Vietnam "with the worst imaginable news: war thrives because enough men still love it." Why? The novelist John Coetzee suggests an answer: The gun is "the only copula we knew of between ourselves and our objects.... The gun saves us from the fear that all life is within us. It does so by laying at our feet all the evidence we need of a dying and therefore a living world" (Coetzee 1974, pp. 17, 79).

5.2.9. The weight of blood. If war is predation's most significant *social* product, its principal *cultural* product is the emotional weight of blood in mythology, religion, literature, and the graphic arts. A fixed feature of early religions is the gods' thirst for animal and human blood: "for the life of the flesh is in the blood: ... for it is the blood that maketh an atonement for the soul" (Leviticus 17:11). It is the wasting life of the sacrificial victim that gives the words their power: The Neoplatonist Sallustius writes, "Prayers divorced from sacrifice are only words, prayers with sacrifices are animated words, the word giving power to the life and the life to the word" (Sallustius 361 AD/1926). A Yanomamö creation myth tells that warriors were created from the moon's blood (Chagnon 1983, p. 95).

Blood feeds frenzy, and frenzy demands blood. In Euripides' *Bacchae* (c. 406 BC/1970), the ecstatic women, bare-handed, attack grazing cattle, "tearing full-grown cows to pieces" and hurling body parts to and fro in a scene of bloodlust that parallels the Wrangham and Peterson description in section 3 of chimpanzees dismembering red colobus monkeys (Wrangham & Peterson 1996).

5.3. The walls of shame

Given that the human appetite for cruel spectacles is unabated and that arousal by scenes of cruelty remains part of the human condition, it is remarkable that punishment and killing, once openly displayed in amphitheatres and

city streets, have for the past two centuries been banished from public view and hidden behind prison walls.

What psychosocial mechanisms have operated to achieve this great shift from the permitted to the taboo? Part of the answer is given by Norbert Elias (1939/2000), who writes that the history of western civilisation is of "an advance in the frontiers of shame, in the threshold of repugnance"[5] (p. 172). No shame attached to the public torment of humans and animals in ancient or mediaeval times (sect. 5.2.4); the warrior had "extraordinary freedom in living out his feelings and passions, it allows savage joys ... [and] hatred in destroying and tormenting anything hostile or belonging to an enemy [and] a particular pleasure ... in the mutilation of prisoners" (Elias 1939/2000, pp. 162–63, 371).[6] But in the seventeenth and eighteenth centuries, knights became courtiers, so that "a warrior nobility [was] replaced by a tamed nobility with more muted affects" (Elias 1939/2000, p. 389). Soon after, centralised state power created pacified social spaces, the restraint of aggressive instincts was internalised, and "an automatic, blindly functioning apparatus of self-control [was] established ... [protected] by a wall of deep-rooted fears" (Elias 1939/2000, p. 368). Regrettably, these barriers are permeable and crumble as opportunity and situation allow: the challenge for violence prevention is to anchor them more deeply in the life of the instincts.

6. The problem of violence prevention

Though treatment of the victims of cruelty (Basoglu 1992; De Jong 2002) remains a moral imperative, effective prevention must begin with perpetrators. How might the foregoing analysis of cruelty's reward systems relate to the prevention of violence, defined by the World Health Organisation as the intentional use of physical force or power against oneself or others that threatens or causes injury, death, or psychological harm (Krug et al. 2002, p. 5)? Put differently, the question is how many of the 1,659,000 violence-related deaths in the year 2000 (Krug et al. 2002, p. 270) were driven by delight in pain and bloodshed, and might therefore have been prevented if the public health upstream initiatives advocated by Krug et al. (2002, p. 243) had, however imperfectly, acknowledged and found ways to address the power of cruelty to inflame violence?

6.1. The voice of the perpetrator

To begin developing answers to these questions would in the first place require an understanding of the large individual differences in cruelty's eliciting triggers and behavioural expressions on the one hand, and an understanding of the needs and gratifications of perpetrators on the other: if so, the perpetrator's voice must be heard. Repugnant though this may be, violence-prevention workers will need to gather affectively rich descriptions of the inner experience of police and military torturers and interrogators. These cannot be affectively bland public confessions, with amnesty and social rehabilitation in mind (Gardo 1987; Huggins 2000; Victor 1981), but clinical data elicited by skilled interviewers under conditions that guarantee confidentiality (Fanon 1968; Haritos-Fatouros 2003). Some elements of the required analysis are given below.

6.2. Universal potentials

6.2.1. The potential for cruelty. Current evidence is that under situational press, readiness to commit cruel acts is a human universal. In the 1970s, Milgram's (1969/1974) "Eichmann experiment" and the Stanford prison experiment (Haney et al. 1973) demonstrated the "enormous power of situations" (Haney & Zimbardo 1998, p. 709) to shape and transform the behaviour of perfectly ordinary people, whose actions are facilitated by a stance of moral disengagement (Bandura 1990). Obedience makes moral idiots of otherwise admirable individuals: the men of Charlie Company who massacred 350 civilians at My Lai in 1968 are described as "a typical cross section of American youth assigned to most combat units throughout the Army.... most would regard [William Calley] as coming close to the American ideal" (Tester 1997, pp. 84–85). It is resistance to situations that makes moral heroes.

6.2.2. The potential for compassion. Common wisdom holds human nature to be fundamentally compassionate: "Nature hath implanted in our breasts a love of others, a sense of duty to them, a moral instinct ... which prompts us irresistibly to feed and succour their distresses" (Thomas Jefferson 1814, in Fiering 1976, p. 195; Nell 2004). The universal instinct for compassion derives from genetically based kinship bonds (Blair 1997; Panksepp 1998).

6.3. Gendering of cruelty

The gendering of hunting and the links between testosterone and aggression suggest that active cruelty would be strongly male-gendered. Mealey (1995) notes that boys with high sensation-seeking and high testosterone are more likely to initiate aggressive behaviour and be successful in dominance interactions, which in turn triggers further testosterone release.

6.4. Fascination and horror

These universal potentials cause an oscillation between fascination and horror (see sect. 2.4.1). *Fascination* may be dopaminergic, originating in the proximate and distal rewards of the predatory/hunting adaptations. The *horror* is compassionate, "a certain pain at an apparently destructive or painful evil happening to one who does not deserve it and which a person might expect himself or one of his own to suffer" (Aristotle, *Rhetoric*, c. 330 BC, p. 1385b). This inward-turning, narcissistic quality is captured by Darwin: "Almost every one would experience [horror] in the highest degree in witnessing a man being tortured or going to be tortured" (Darwin 1872/1965, p. 304).

If there is indeed an oscillation between cruelty and compassion, experienced by the subject as a switch from fascinated gratification to horror, the reversal (Apter 1979) might be neurally detectable. One would further predict that high- and low-readiness individuals would differ in the location of this reversal on the cruelty continuum. This location could be determined by construction

and validation of a Cruelty Readiness Questionnaire (CRQ), generated through content analysis of experiential material gathered from perpetrators telling of their responses to the pain and terror of their victims. The theoretical prediction is that high scorers would be individuals at the high-readiness end of the cruelty continuum, with a low optimal level of arousal, and therefore have a higher reversal threshold than low scorers. If high CRQ scores do indeed correlate with high readiness and pleasurable arousal at cruelty that continues beyond the point at which low scorers experience a reversal, they might have utility in the prediction of dangerousness.

6.5. Passive and active cruelty

The actualisation of this universal potential to use and enjoy cruelty may vary along a continuum from low to high readiness. At the low-readiness end are those who *passively* enjoy media cruelty but refrain from cruel acts; moving along the continuum are those who respond to situational cues, inflicting pain if social inhibitions are removed and role triggers are present, and following a pathway into affective cruelty through a reversal from cruelty inhibition to cruelty potentiation, in which the victim's cries and pleading activate the PBD complex, augmenting the perpetrator's arousal and escalating cruelty. At the high-readiness end of the continuum are *active sadists:* the crazed monks in *Juliette* (Sade 1798/1968), blood-crazed Fritz Haarman and Karl Denke in Weimar Germany (Tatar 1995), the 1960s Yorkshire Moors murderers Ian Brady and Myra Hindley, and the protagonist of *American Psycho* (Ellis 1991): these are the monsters of history and the most spectacular members of the criminal class, for whose atrocities there is an endless public appetite. Mealey (1995, p. 526) notes that criminality and sociopathy have a substantial and overlapping heritable component, which suggests that a common factor may underlie the various expressions of social deviance, including active sadism.

Behaviourally, individuals with a high readiness for cruelty are likely to have a predatory, victim-seeking style, with homologies between predator self-stimulation in animals, and the behavioural sequence of victim stalking, capture, and wounding in humans: this novelty- and harm-seeking sequence may be found to map to the dopaminergic SEEKING circuit.

6.6. Neurologies of cruelty

"Psychologically, when different states feel different, they are different" (Klinger 1971, p. 7). If so, there will not be a single neurology of cruelty, but many, with different points on the active–passive continuum that may be marked by the activation of distinctive patterns of neural drivers: mapping these is a cardinal prevention challenge. Is the passion of the street-fighter neurally distinct from the cold interest of the cigarette burner? Can the rapt, immobile spectator be distinguished from Alypius' friends, howling as the gladiators fall? Can perpetrators be distinguished from spectators? Is recall for portrayals of torture and painful punishment, and rumination on such scenes, more intense in low- or high-readiness individuals, and does this recall covary with optimal level of arousal (Eysenck & Gudjonsson 1989)? As noted above, this differential affective neuroscience should begin by gathering affectively rich descriptions of the inner experience of perpetrators.

7. Is cruelty an adaptation?

Ferocity is a prerequisite for successful competition and aggression, predation, hunting, and affective cruelty. The behavioural commonalities between competitive aggression and early predation, the ferocity of predators, and the high arousal of hunters, perpetrators, and spectators suggest that common neural pathways dating to the Cambrian subserve this cascade of behaviours that begins with primordial competition and may end with human cruelty. The symbolic weight of blood and death, and their retained power to arouse powerful emotions, may derive from an endlessly repeated scene in early hominid history: at the kill, the hunting party is flooded with the fresh blood of the prey, smeared with its bone marrow, and exposed to its stomach contents. These conditioned stimuli are preceded by a multitude of sensations associated with the prey's pain and death, followed by proximate physiological rewards and deferred reproductive advantages. These stimuli make up the pain-blood-death complex, which continued to have survival and reproductive benefits at successively more recent stages of societal evolution.

With appropriate contextual judgment, the use of cruelty leads to the accretion of social power and its maintenance; contextually inappropriate or excessive use will result in social ostracism and punishment. The former has survival and fitness advantages, especially if male violence is under stabilising sexual selection, whereas the latter will limit or prevent reproductive access.

However, despite its ancient provenance, it is unlikely that cruelty is an adaptation that emerges through the activation of a special-purpose evolutionary module hard-wired in the cortex. A more parsimonious view that would account for the striking homologies between predation, hunting, and human fascination with pain, blood, and death is that all have a common origin in "the archetypal emotional-motivational processes that all mammals share" (Panksepp & Panksepp 2000, p. 112): biogenic amines, present in the nervous systems of many animal groups, from molluscs through to mammals, provide the cortical foundation for these processes. Projections from the neurons that produce these amines "stretch over large areas of neural tissue and release chemical messages diffusely, rather then through information-specific synaptic transmissions" (Panksepp & Panksepp 2000, p. 120). These hypothesised continuities between predation and cruelty would be confirmed if fMRI demonstrated cerebral pathways, homologous to those that evoke predatory gratification in canid, felid, and primate predators, in human males exposed to scenes of pursuit, mutilation, and killing of human victims, and their pain vocalisations: there is no lack of graphic stimulus material, as, for example, in films such as *Last Exit to Brooklyn* (Uli Edel, Germany, 1989) and *Salo* (Pier Paolo Pasolini, Italy, 1975). The male gendering of cruelty could be confirmed by comparison of male–female responses to these stimuli.

It is therefore plausible that the wide range of behaviours linked to the pain-blood-death complex, from the

passive enjoyment of media violence and blood sports to the activities of interrogators and abusers, is reinforced by these diffuse and very old emotional circuits that humans share with animals, that "are able to imbue 'cold' perceptions with a 'hot' affective charge" (Panksepp & Panksepp 2000, p. 115). This would in turn account for the apparent universality of these emotions, which erupt as powerfully in the educated and morally exemplary citizens of the twenty-first century as in the monsters of history.

NOTES

1. Though not further considered in this paper, psychological punishments that inflict no physical pain are also cruel, as in solitary confinement, public shaming, or social ostracism. The *pittura infamanti* (defaming portraits) of mediaeval Florence had "fearsome potency as an instrument of official state punishment" (Edgerton 1985, p. 60; see also Miller 1993).

2. Self-inflicted pain is not the preserve of masochists, but a pervasive social phenomenon in contests and sports, especially contact, endurance, and "extreme" sports. Humour and the mutual vulnerability of lovers also hold cruelty in tension. A life without reflexive pain would be dull and colourless, but again, as with psychological pain, and except in passing, I have excluded this domain from the argument.

3. I have dealt with war and massacres from the perspective of the individual actors, and not in their political context: the exhilaration of the machine gunner is relevant, but, in this target article, the military command structures that control these events are not.

4. A wall carving in the north palace at Nineveh shows King Ashurbanipal and his commanders walking over headless enemy bodies, with a beheading still in progress (Bersani & Dutoit 1985, fig. 26). Roman commanders summarily executed rebels: a stone relief (Andreae 1978, Fig. 536) shows the beheading of rebellious barbarians under Marcus Aurelius in about 170 AD.

5. Ariès (1981) chronicles a similar process, within a similar time frame, that has displaced natural deaths from the public to the private domain.

6. This condition recapitulates the famous passage in Hobbes' *Leviathan*: in war, "every man is enemy to every man . . . . in such condition, there is no place for industry, because the fruit thereof is uncertain. . .; no account of time, no arts, no letters, no society; and which is worst of all, continual fear, and danger of violent death; and the life of man, solitary, poor, nasty, brutish, and short" (Hobbes 1651/1996, p. 84)

Open Peer Commentary

Cruelty may be a self-control device against sympathy

George Ainslie

Veterans Affairs Medical Center, Coatesville, PA 19320.

george.ainslie@va.gov **http://www.picoeconomics.com**

Abstract: Dispassionate cruelty and the euphoria of hunting or battle should be distinguished from the emotional savoring of victims' suffering. Such savoring, best called *negative empathy*, is what puzzles motivational theory. Hyperbolic discounting theory suggests that sympathy with people who have unwanted but seductive traits creates a threat to self-control. Cruelty to those people may often be the least effortful way of countering this threat.

Victor Nell presents plausible hypotheses about how human cruelty may have evolutionary roots in carnivores' emotional preparedness to hunt. However, humans' greater mental capacity can be expected to add unique properties to cruelty, as it does to most other motives. Nell himself suggests that there is a kind of cruelty that "presupposes a theory of mind" (sect. 2), henceforth ToM, a condition that would limit it to humans and a small number of other species with advanced mental development. He initially speaks of this condition as necessary for all cruelty, but much of his subsequent discussion covers species without ToM. It is not clear whether a cat plays with a mouse partially in order to savor the distress of the victim, or merely since it is an optimally challenging game. The common human projection onto this activity certainly includes the savoring, as in *Tom & Jerry*, but since a real Tom has no ToM, he is presumably not imagining his victim's suffering, much less trying to induce it.

I doubt if many human hunters are rewarded by evidence that their prey is suffering. In the television show *Northern Exposure*, the protagonist was introduced to bird hunting, and said afterwards, "I loved the shooting; it was the dying I couldn't stand." Habitual hunters can obviously stand the dying more, but there is little evidence that they glory in it. Primitive Amerindian hunters were not necessarily any more sadistic. Sometimes they would perform ceremonies before a hunt to apologize to the spirits of the intended quarry. On the other hand, their enjoyment of torturing captives was clearly on a par with that of the ancient Roman mobs at the Coliseum (Adair 1736/2005). My point is that the urge to do injurious things while disregarding or actively avoiding attention to the suffering of victims is different from the urge to seek out and even enhance this suffering – although the disregarding might sometimes be a reaction against the latter urge. Killing in war can be intensely pleasurable (Bourke 1999, pp. 1–31; Grossman 1995, p. 115) and is more apt than killing in hunting to intentionally inflict suffering, but most infantrymen throughout history never even fired their weapons at the enemy (Grossman, pp. 17–39). Even in the euphoria of combat, the thrill is not usually that of cruelty but of winning a mortal contest or of the power of wielding a "magic sword . . . all you do is move the finger so imperceptibly, just a wish flashing across your mind . . . and poof! In a blast of sound and energy and light a truck or a house or even people disappear" (William Broyles, quoted in Bourke 1999, p. 2). The simultaneous perception that the "mutilated and dead [are] sad and beastly" (Bourke 1999, p. 21) does not enhance the high for most soldiers, and indeed soon spoils it.

The puzzle for motivational science is Nell's "affective cruelty," as opposed to the kind that is incidental to hunting or war, or the workmanlike "instrumental" kind practiced dispassionately for extrinsic reasons, which probably includes that of the obedient subjects in Milgram-type experiments (sect. 6.2.1). The point of affective cruelty is to let yourself experience the suffering of the victim vicariously, but with the kind of attitude that yields net pleasure rather than pain, an attitude perhaps best called negative empathy. Intended physical injury and intended suffering are entirely dissociable. Medea killed her children not to be cruel to them, but to be cruel to their father, Jason.[1] The crucial question is how this attitude works, that is, how negative empathy rewards. To discuss this, I need to include the psychological cruelty that Nell does not cover, which is the only kind seen in everyday life.

I have argued elsewhere that empathy, the exercise of your ToM, is itself rewarding (Ainslie 2001, pp. 161–86; 2005; 2006). My basic argument is that emotion is a goal-directed (rather than conditioned) process that largely serves as its own reward, but that entertaining emotions at will attenuates them into daydreams, because the urge to anticipate the high points undermines any longing or suspense that might make them even moderately intense. You therefore learn to make adequately rare and surprising external events the occasions for emotions.

Events interpreted through the models of other people built by your ToM usually turn out to be the most satisfactory ones for occasioning emotions.

Emotions cannot be divided strictly into positive and negative, because all emotions must have a fast-paying reward component in order to have their characteristic vividness. Some emotions are usually aversive because initial attention to them leads to longer-term inhibition of reward, but even fear and grief can be cultivated in ways that make them pleasurable, for instance, in horror movies and tear-jerkers. Anger is often called negative, but it shares many psychometric and neurophysiological properties with the more obviously positive emotions (Lerner et al., in press). I agree with Nell that cruelty need not involve anger (sect. 3.4), but I have argued that, like anger, it often becomes preferred despite its spoiling effect on other rewards because it repairs a felt vulnerability (Ainslie 2001, pp. 183–86). As with anger, there are people who cultivate cruelty habitually, presumably in default of richer sources of reward, but occasional cruelty seems to be common to everyone. It is the commonplace examples that best differentiate negative empathy from Nell's examples of predation: the pleasures of seeing the boor get his comeuppance, the driver who cut us off stopped by the police, and the pretensions of the poseur punctured, as well as less respectable examples like *schadenfreude* and our minor persecution of people whom we hope we do not resemble.

What sometimes impels us toward cruelty? Because sympathy is a mental response quickly rewarded by emotion, it is hard to bring under voluntary control. But there are people with traits that we fear in ourselves or who might exploit such traits, sympathy with whom might let them weaken us or even enchant us. In the absence of more direct controls, cruelty toward these people might be the handiest way to reduce our sense of potential seduction. That is, sympathy with the thief or heretic, with someone who has a sexual taste we are afraid we might develop, with a painfully naïve younger sibling who has traits we have barely overcome, with the rejecting lover we can't get over or the needy lover who threatens to become dependent, with any object of envy, even with someone whom we are conscious of having wronged – sympathy with any of these people might threaten to weaken us. A solution that hedonically pays for itself in the short run is to attack positive empathy with negative empathy, "set affection against affection and master one by another: even as we used to hunt beast with beast" (Francis Bacon, quoted by Hirschman 1977, p. 22). The capacity to do this undoubtedly comes from a more elementary process, perhaps the sheer arousal occasioned vicariously by anyone else's strong feeling – as in the fascination of a fight or car wreck, perhaps by the inherited preparedness for predation that Nell suggests. However, because of its tendency to spoil other sources of reward, it is apt to be cultivated only by people with a need to suppress their sympathy.

NOTES

The commentator is employed by a government agency and, as such, this commentary is considered a work of the U.S. government and not subject to copyright within the United States.

1. This was not just Euripides' imagination. I professionally encountered the case of a man who, when his wife served him with divorce papers, killed their children and himself, "to give her something to think about."

A murky portrait of human cruelty

Albert Bandura

Department of Psychology, Stanford University, Stanford, CA 94305-2130.
Bandura@psych.stanford.edu

Abstract: In this commentary, I review diverse lines of research conducted at both the macrosocial and microbehavioral level that dispute the view that cruelty is inherently gratifying. Expressions of pain and suffering typically inhibit rather than reinforce cruel conduct in humans. With regard to functional value, cruelty has diverse personal and social effects, not just the alluring benefits attributed to it.

In the target article, Nell brings an unusually broad perspective to bear on the possible origins of human cruelty. He reports that, despite the cultural evolution over the many millennia, human cruelty is still overwhelmingly present in the contemporary world. The cited examples of contemporary cruelty highlight the need for further specification of the defining criteria for what belongs in this category. Boxing may be construed as an attenuated form of cruelty, but why does motorcycle racing qualify as a vestige of the pain-blood-death complex? If psychic pain is a modern proxy of physical slaughter, does cruelty essentially become a boundless category?

There is a difference between behavior motivated and reinforced by conditioned pain-based gratifications and by its functional value. For example, motorcycle racing can bring monetary prizes, social status, and a sense of self-pride for a race well run. But what do these rewarding benefits have to do with cruelty and pain gratification? Empirical evidence indicates that cruel behavior can be more readily modified by varying its functional value than by relying on inherent affective gratifications of pain cues (Bandura 1973).

The cited support in the target article for the upper stages of the theory of human cruelty, which are amenable to empirical test, is largely in terms of biblical quotations, anecdotes, descriptions of ancient Greek practices, medieval carnivals, and arena spectacles in the ancient Roman era. Except for passing comments, surprisingly little attention is devoted to the third stage of cruelty. This stage requires the most detailed theoretical specification because the link from gorging excitedly on prey in the pain-blood-death complex to the exercise of social power is the most enigmatic.

The support for the sexualization of cruelty at the hunter stage is essentially metaphoric and anecdotal. As evidence for the fusion of sex and aggression, Nell reports that !Kung hunters use the penis as the metaphor for their hunting bow. He refers to a hunter who claims that thoughts about the kill produce the best sex, and a Vietnam veteran who found killing to be erotic. No evidence is presented, however, on whether these experiences are anomalous or normative ones.

In commenting on the "beauty of war," Nell cites the example of a military pilot mesmerized by the beauty of surface-to-air missiles. One can find support for almost any view by careful selection of cases. The vast numbers of soldiers who experience the hell of war and suffer posttraumatic stress disorders receive no mention. The infliction of death and destruction remotely by satellite and laser-guided missiles actually creates problems for Nell's theory. People behave more injuriously when they do not see and hear the pain and suffering their acts cause. Faceless hardware wars heighten destructive conduct by eliminating the restraining effect of human suffering.

Findings of sexual arousal at depictions of rape, as measured by a penis transducer, further dispute that cruelty is inherently erotic. Rapists are sexually aroused by depictions of pain and suffering of a rape victim, whereas non-rapists are aroused by consensual sex but are turned off by sexual cruelty (Abel et al. 1977). Verification by selective examples of cruelty elevates atypical reactivity to universal proclivity.

At the macrosocial level, Nell greatly exaggerates the prevalence of human cruelty. There exist wide intercultural differences representing both warring and pacific societies with large intracultural variations and even rapid transformation of warring societies into peaceful ones (Alland 1972; Bandura 1973; Gardner & Heider 1969; Levy 1969; Sanday 1981). The Swiss used to be the main suppliers of mercenary fighters in Europe. As they transformed into a pacific society, their militaristic vestige is evident only in the plumage of the Vatican guards.

For ages, the Vikings plundered other nations. After a prolonged war with Russia that exhausted Sweden's resources, the populous rose up and collectively forced a constitutional change that prohibited kings from starting wars (Moerk 1995). This political act promptly transformed a fighting society into a peaceable one.

According to Nell, cruelty is "strongly male-gendered." This, too, is an exaggeration. Most males do not go around mugging people, and a good number of females are child and spouse abusers. Meta-analyses reveal that the gender difference is much smaller than commonly believed and further diminishes with age, under conditions of provocation, and in the presence of aggressive cues. (Bettencourt & Kernahan 1997; Bettencourt & Miller 1996; Hyde 1984). The theoretical challenge is to explain the substantial diversity within gender groups, which far exceeds the difference between them.

The cultural evolution of social roles, norms, and sanctions has long stripped barbaric cruelty of social and reproductive benefits. This evolutionary social transformation in the coevolution process requires theoretical specification. Attributing the shift toward more humane conduct to the development of "walls of shame" does not provide much theoretical guidance for deeper inquiry.

At the microanalytic level, the findings of experiments in which the intensity of victims' suffering and pain are systematically varied show that expressions of pain typically inhibit rather than reinforce aggressive conduct (Baron 1971a; 1971c; Geen 1970; Milgram 1969/1974).

Nell refers to the large audiences for violent entertainment as further evidence that people seek gratification from watching cruelty inflicted on others. In Nell's view, the rewards of cruelty explain the attraction to media violence. However, the widespread belief that violence is a draw is disputed by empirical evidence. Television programs that trade on violence rarely appear in the upper ranks of popularity. As one television executive explained, "There is one maxim that is always true. The network with the most comedy shows is the dominant network." Diener and DeFour (1978) tested the relation between level of program violence and its popularity as measured by the Nielson index of viewership. Program violence was unrelated to popularity, $r = 0.05$. Uncut versions of violent programs are not liked any more than the same programs with most of the gratuitous violence deleted.

Nell mentions the infliction of severe pain on oneself as a case of major puzzlement to philosophers and psychologists alike. He reasons that as both aggression and sexual activity activate the brain's reward system, the underlining motivation for self-infliction of pain is the fusion of sex and aggression. Empirical research has identified some of the conditions governing this perplexing behavior. For example, self-inflicted pain serves a self-protective function if it averts more painful treatment by others (Bandura 1986; Stone & Hokanson 1969). Under these conditions, self-punitive behavior is adopted and maintained because it is the lesser of two evils. If preventing the external painful threat requires ever increasing intensities of self-punishment, it can escalate to the level of the avoided threat and even be performed persistently, through lack of reality testing, after the external threat no longer exists (Sandler & Quagliano 1964). To observers who witness the seemingly senseless self-inflicted pain, without knowing its functional origin and supporting expectations, the behavior appears deranged or driven by some obscure masochistic pleasure.

A substantial body of research demonstrates that large-scale inhumanities are heavily rooted in ideology (Bandura 1999; Haritos-Fatouros 2003; Reich 1990; Zimbardo 2004). Extensive training and a multitude of social structural influences are needed to produce cruel perpetrators. A good part of this socialization for cruelty is designed to disengage moral self-sanctions from inhumane conduct (Bandura 1999). Through selective moral disengagement, people who behave compassionately in other areas of their lives can perpetrate ruthless inhumanities on disfavored groups.

Cruelty as by-product of ritualisation of intraspecific aggression in cultural evolution

Ralf-Peter Behrendt

MRC Psychiatry, The Retreat Hospital, York, YO10 5BN, United Kingdom.

rp.behrendt@btinternet.com

Abstract: There are few commonalities between intraspecific aggression and predation and few convincing arguments for the conceptualisation of blood and pain as rewards for predation. Not cruelty, but ritualised intraspecific aggression is the predominant mechanism of accretion of social power and this, not cruelty, is what bestows reproductive advantages. Enjoyment of media cruelty is not reinforced by "emotional circuits" adapted to predation, but represents transient relief from culturally determined inhibition of aggression.

Although in predation unspeakable suffering is inflicted, this does not mean that the prey's suffering is enjoyed by the predator. McDougall (1924), for whom instincts were central to behaviour, argued comprehensively against hedonistic theories of behaviour. The "prey's terror and struggles to escape" (target article, sect. 1.1.1), acting as an incentive stimulus, may certainly lead to greater arousal and increase the predators' determination to kill, but "pain" and "blood" are unlikely to represent rewards for the sake of which the animal kills, not least because they do not arrest the striving of the animal. "[H]unters may inflict pain on the prey beyond that which is instrumentally necessary" (sect. 1.1.3, para. 2) because predation is an intrinsic instinctual drive that – once set into motion and energised – has to run its course (according to drive theory), as opposed to it being something done for the sake of enjoying a reward (hedonism) or instrumentally to achieve a certain end (teleology).

Dopaminergic transmission from the ventral tegmental area to the nucleus accumbens is activated not just by stimuli related to predation but a range of motivationally meaningful and salient stimuli that require behavioural reorientation and sustained effort (Horvitz 2000; Parkinson et al. 2000). Dopaminergic activation invigorates incentive motivation and drives appetitive approach but is unrelated to the experience of reward itself (Berridge & Robinson 1998; Horvitz 2000; Ikemoto & Panksepp 1999). Its occurrence during predation does therefore not indicate that "predation is a powerfully rewarding experience even before satiation occurs" (sect. 3.4.5, para. 1).

The hunter is in a "ritually heightened state" during the night after the kill and elaborates in detail on his experience in the presence of others – not necessarily because of his "high arousal at the time of the event" (sect. 4.3) but in accordance with his enjoying the admiration of others (pride) and his potential for rise in the group's ranking order. If there is *enjoyment* in hunting that is not socially mediated, then one should consider the possibility that it represents the sense of mastery arising from the successful solution of a challenging problem rather than "blood lust." Thus, the motivation for hunting may not at all include enjoyment of cruelty or a desire to inflict suffering.

Little justification is given for the notion that predation derives from intraspecific resource competition, or competitive aggression. These behaviours are elicited by different sets of stimuli, are accompanied by different affective states ("quiet-biting predation" vs. "aggressive rage" [sect. 1.1.3]) and find their resolution in the enactment of different states of affairs. Intraspecific aggression can indeed be "marked by intense excitement that appears indistinguishable from that during predation" (sect. 3.3) but – in the animals' natural habitat – it does not lead to bloodshed or death in most cases (Lorenz 1963/2002). Its evolutionary purpose is to effect a distribution of territory and access to resources among individuals of the same species that is advantageous for survival of the species as a whole (Lorenz 1963/2002). In higher vertebrates, intraspecific aggression regulates rank order in groups and expresses itself in ritualised ways in a wide range of social behaviours (Lorenz 1963/2002).

Is it true that "apes cannot understand the communicative intentions of others" (sect. 5.1), and that, therefore, their acts of intraspecific aggression cannot be seen as punishment? Primates develop socially in part by learning how to avoid punishment from other members of the group. Macaque infants quickly develop an appreciation of the meaning of social signals, such as direct eye contact; already by the middle of the second postnatal week, infants show gaze aversion to another individual's direct stare (reviewed in Machado & Bachevalier 2003). During the second year of their lives, macaques acquire their dominance rank in the troop equipped with an understanding that each individual has a "unique set of intensions determined by the combination of kinship, dominance, gender, environmental conditions, and the current social context" (Machado & Bachevalier 2003). Such observations challenge Nell's assumption that the intention to inflict pain presupposes a theory of mind.

"Disciplinary cruelty" and "public punishment" inflict pain deliberately but are not motivated by delight in another person's suffering. The motivating affect is anger caused by an individual's breach of social conventions or challenge to the rank order. If spectators or perpetrators do delight in public punishment then this may be attributable to projection of and temporary relief from their own punishment anxieties. What spectators experience in "spectacles of pain and bloodshed" is a marked, though transient, relief in *psychic tension* that derives from constant unconscious death fears in a society that readily resorts to corporal punishment and wars. Soldiers in war have to endure continuous fear of death so that success in combat is bound to produce a surge of relief and feelings of superiority and invincibility. The mechanism is one of projection, as hinted at in Nell's quote (in sect. 5.2.8.2 of the target article) from Coetzee (1974): "The gun saves us from the fear that all life is within us. It does so by laying at our feet all the evidence we need of a dying and therefore a living world."

It can be argued that it is the suppression of aggression in the process of cultural evolution – not enjoyment of cruelty per se – that became "a primary driver of the modern entertainment industry" (sect. 1.1.3). People are likely to enjoy media cruelty for the same reason that they show an incessant interest in scandals involving the downfall of people in society, where there is no role to play for "blood, pain, and death." Impulses of intraspecific aggression that are culturally suppressed can find transient relief also in humour (laughter as a sudden relief of inhibited aggression, according to Lorenz [1963/2002]), but once the cultural inhibitory framework is removed (including through "moral disengagement"), intraspecific aggression becomes disinhibited and can manifest in actual acts of cruelty. Social barriers restrain aggressive impulses, as Nell acknowledges, and these barriers "crumble as opportunity and situation allow" (sect. 5.3). Then, indeed, aggression may be accompanied by "exultant" affective tone – mostly, though, because of its effect of instilling a sense of dominance and power in the perpetrator.

Hunting success may not confer "direct," as Nell argues, but indirect "fitness benefits" in terms of sexual desirability and access to females for reproduction – mediated by enhancement of one's ranking position within the group; and the same applies to cruelty. Both hunting success and public acts of cruelty may signify greater potential for social control over others or greater likelihood of success in hostile encounters with the outside world. Indeed, as Nell reviews, females respond positively to "aggressive *success*," that is, the acquisition of dominance, not "aggression" per se. It is primarily the "dominance-seeking" aspect of what Nell calls "dominance-seeking aggression" that "is driven by reproductive-fitness needs" (sect. 3.4.5, para. 4). Clinically, this is evident in the association of mania (representing excessive dominance-seeking and control of others) with hypersexuality, and depression (marked by low self-esteem and social withdrawal) with loss of interest in sex.

Sadism does seem to involve the deliberate infliction of pain for the sake of enjoyment. Unlike competitive aggression, there is no anger involved, and unlike predation, the perpetrator is not just aroused by but enjoys the other's suffering and, perhaps more importantly, the other's *denigration*, allowing him to project into the victim his sense of inferiority, experience a sense of superiority, and, in conjunction with this, become sexually aroused. The question why the "infliction of pain on the self" can be "pleasurable and also sexually arousing" is challenging but not "incomprehensible." Freud (1917) elucidated the mechanism of enjoyable self-tormenting in melancholia. Masochism plays a role also in the psychodynamics of narcissism, envy (Joseph 1986; Spillius 1993), and child abuse (Milton 1994).

Make love, not war: Both serve to defuse stress-induced arousal through the dopaminergic "pleasure" network

Mary F. Dallman

Department of Physiology, University of California at San Francisco, CA 94143-0444.

mary.dallman@ucsf.edu

Abstract: Nell restricts cruelty to hominids, although good evidence suggests that secondary aggression in rodents and particularly primates may be considered cruel. A considerable literature shows that glucocorticoid secretion stimulated by stress facilitates learning, memory, arousal, and aggressive behavior. Either secondary aggression (to a conspecific) or increased affiliative behavior reduces stressor-induced activity, suggesting the reward system can be satisfied by other behaviors than cruelty.

Nell writes on important issues that have plagued human societies from time immemorial. However, he has boxed himself in with his third point, specifying that cruelty is only a human endeavor, because of its intention to inflict pain. Thus, he ignores a considerable literature that documents "cruelty" in subhuman primates and other mammals. I generally and strongly agree with the other points he has developed. However, I must take issue with respect to the notion that cruelty is specifically a characteristic of hominids, because much applicable behavioral and neuroscience research is lost through this definition.

Some dictionary definitions of cruel, or cruelty include the phrase "inhuman" or "inhuman treatment" (cf. *The American Heritage Dictionary of the English Language* [American Heritage Dictionary 1992]; *Webster's Seventh New Collegiate Dictionary* [Webster 1963]); thus, implicit in the definition is the notion that humans should be a step more morally advanced than subhuman primates or other animals. I suspect that Nell is probably right in his assertion that the origin of cruelty is some kind of a behavioral by-product of predation. However, because of his exclusion of the use of cruelty to behavior solely in humans, he ignores the fact that the situations which he documents so well of cruelty in mankind have strong parallels in other animals. Unprovoked aggression to group members in animals is, in my opinion, analogous to cruelty in man. Predatory aggression in animals (and probably in man) comprises physiological and psychological stimuli that result in adrenocortical activation.

Rapid actions of cortisol (or glucocorticoids) secreted by the adrenals increase learning and memory, arousal, and salience of ongoing activity, and also facilitate ongoing aggression (Bass & McKibben 2003; Makara & Haller 2001; Pardon et al. 2002; Roozendaal et al. 2001). Aggression is reinforcing, and many species will perform instrumental responses that are reinforced by the opportunity for aggression (cited in Fish et al. 2005). In mice and rats, aggression is glucocorticoid dependent (Fish et al. 2005; Haller et al. 2004). Thus, the glucocorticoid response to stress sensitizes both aggressive behavior and the memory of aggression, as well as taking arousal to a higher pitch. Such a

state is both dangerous for appropriate future behaviors and uncomfortable, and it needs to be defused.

In socially vocal midshipmen fish, cortisol increases the frequency and duration of vocalization in a hierarchical network in the brain pons and medulla when territory is threatened by conspecifics (Remage-Healey & Bass 2004). In socially threatened rats, corticosterone also increases aggressive behavior toward conspecifics (Haller et al. 2000). Under conditions of acute or chronic stress, there is increased glucocorticoid-dependent secretion of norepinephrine throughout the cortical and limbic brain in response to a novel stress (Finlay et al. 1995; Nissenbaum et al. 1991; Valentino et al. 1983). Thus, the actions of glucocorticoids on the stress response network in the brain hone vertebrates to a greater pitch of arousal.

There is a need, then, after predation, or during and after stress, to cool off, reduce arousal, and return to a sustainable state that is ready to deal with the future. I suggest that this may occur in both animals and humans by employing aggression, accompanied by either real or potential cruelty, to available conspecifics. Reduction of stress-induced glucocorticoids (and presumably a high state of arousal) is effected in both rats and baboons through aggressive behavior toward others in the group.

Given the opportunity to aggress with another rat when electrically shocked, male rats fight. Provided with that opportunity, ACTH and corticosterone concentrations are lower than if the rats are not given that outlet (Conner et al. 2000; Weinberg et al. 1980). Other "displacement behaviors," such as schedule-induced polydipsia, and biting wooden sticks can also achieve reduced adrenal activity during stress in rats (Brett & Levine 1979; Hori et al. 2004). More to the point raised by Nell, baboons that have been defeated by a dominant male have lower cortisol concentrations when they aggress either other more subordinate males or females, compared to similarly defeated males that do not aggress (Virgin & Sapolsky 1997). These results suggest strongly that secondary aggression reduces stress and arousal. However, when the composition of the troop under study shifted to one that was more female-dominated, affiliative rather than aggressive interactions came to dominate behaviors, and again, glucocorticoid concentrations were lower (Sapolsky & Share 2004).

Clearly, in at least two species, intense and uncontrollable stress stimulates glucocorticoid secretion, which, in turn, augments and cements aggressive behavior. However, equally clearly, provided that other outlets to the stress-induced arousal exist, aggressive behavior is either diminished, or need not occur. Frans de Waal has beautifully distinguished behavioral differences between our close relatives, chimpanzees (de Waal 2000), and bonobos (de Waal & Lanting 1997). Although the former are quite highly aggressive, the latter are generally non-aggressive but highly sexually affiliative. Tapping into the same "pleasure" dopaminergic pathways that are invoked by Nell to explain the pleasures of cruelty, both increased conspecific aggression and heightened affiliative behavior appears to reduce arousal and glucocorticoid reactivity. These findings suggest strongly that a positive response to the issue of human cruelty could be to push the motto of "make love, not war" into formal programs that foster affiliative behavior. It seems that the deliberate promotion of increased affiliative behaviors could achieve the same tension reduction as secondary aggression, and might, if widely available, result in reduction of the amount of pleasure seeking directed toward cruel behaviors.

Neurobiological bases of aggression, violence, and cruelty

María Inés de Aguirre

Department of Neurology, Instituto de Investigaciones Médicas Alfredo Lanari, Combatientes de Malvinas 3150, Buenos Aires, 1427, Argentina.
mideaguirre@ciudad.com.ar

Abstract: Aggression, violence, and cruelty are symptoms of psychiatric illness. They reflect abnormalities in the regulation of the stress and emotion circuitries. The functioning of these circuitries depends upon the interaction between genetics and environment. Abuse and neglect during infancy, as well as maternal stress and poor quality of maternal care, are some of the causes that produce these types of abnormal behavior. Research on the neurobiological bases of emotion regulation will allow the detection of the population at risk.

Alterations in the hypothalamic-pituitary-adrenal (HPA) axis and the sympathetic nervous system (SNS) constitute the stress system and its connection with a complex circuit that regulates emotions. These alterations produce psychiatric illness, where aggression, violence, and cruelty are the most remarkable symptoms. The stress system and its interconnected particular brain structures exist in humans and nonhumans to ensure adaptation and survival (Chrousos 1995; Kelley 2004). While these systems generally serve a highly functional and adaptive role in behavior, they can be affected in maladaptive ways, producing psychopathology (Brady & Sinha 2005; Duman 2002; Goeders 2003; Sinha et al. 2003; Weiss 2005; Wüst et al. 2004).

Difficulties in managing stressful life events associated with negative emotions and failure in coping to regain control, without attaining the desired goal, influence the adaptative processes and produce psychopathology (Sinha et al. 2004). Evidence from studies performed on animals and humans have substantiated the belief that maternal stress or anxiety in pregnancy is associated with general, rather than specific, susceptibility to psychopathology in offspring, as a result of an overactivity and impaired negative feedback regulation of the HPA axis. Reduced activity of the opioid GABA/benzodiazepine, serotonin, and dopamine and increased activity of the sympathico-adrenal systems have also been found.

The serotonergic system has been associated with mood disorders, anxiety, aggression, and impulsivity. The noradrenergic system is involved in attentional processes, memory, and stress responses. The dopaminergic system is involved in cognition, affects, and control of locomotion. The amygdala mediates fear, anxiety, and mood regulation. In addition, other brain structures complete the emotion regulatory circuitry, such as the orbital frontal and the prefrontal cortex, amygdala, hippocampus, hypothalamus, anterior cingulated cortex, insular cortex, as well as the ventral striatum and periaqueductal gray (Huizink et al. 2004). The orbital frontal cortex is also involved in the modulation of antisocial behavior.

We have to contrast reactive from instrumental aggression. Reactive aggression (impulsive aggression) is triggered by a frustrating or threatening event, often culminating in physical violence. It is associated with a low threshold for activating negative affects (a mixture of emotions and mood that include anger, distress, and agitation). It is initiated regardless of any potential goal. Patients with borderline personality disorders characterized by impulsive aggressive behavior, affective instability, inappropriate intense anger, and unstable interpersonal relationship present this type of aggression. Conversely, instrumental aggression (proactive aggression) is purposeful and goal directed. It is premeditated and is used instrumentally to achieve a specific desired goal, which is not always the pain of the victim (cruelty), but rather the victim's possession, or the increased status within a group hierarchy. Psychopathic individuals present a breakdown in moral socialization and impairment in the affective system, thus showing especially this type of aggression. Dysfunction in the orbital frontal cortex has been described in reactive aggression as the amygdala in instrumental aggression. The activity of this circuitry will depend on the interaction established between genetics and environment (Blair 2004; Davidson et al. 2000b; Moya-Albiol 2004).

It is known that the quality of maternal care received during infancy determines the adult social competence and ability to cope with stress. The development of a neurochemical system within the brain that regulates mothering, aggression,

and other types of social behavior, such as the oxytocin and vasopressin systems, are affected by parental nurturing received during infancy. It is hypothesized that the neural bonding system may be important for the development of loyalty in individuals towards a social group and its culture. Neglect and abuse during early life may cause the bonding system to develop abnormally and compromise the capacity for rewarding interpersonal relationships and commitment to societal and cultural values later in life. Other means of stimulating reward pathways, such as drugs, sex, aggression, and intimidating others, as well as the involvement in sects or gang activities, could become relatively more attractive as a way of life (Pedersen 2004). We have to recognize that aggression, violence, and cruelty reflect abnormalities in the emotion regulatory circuitry of the brain.

ACKNOWLEDGMENT
I would like to extend my appreciation to Dr. S. Finkielman, Director of Instituto de Investigaciones Médicas Alfredo Lanari, for his continuous support.

Compassion as an antidote to cruelty

Michael Allen Fox
School of Social Science, University of New England, Armidale, NSW 2351, Australia.
mfox3@une.edu.au

Abstract: The impulse toward violence and cruelty is endemic to the human species. But so, likewise, is the impulse toward compassionate behavior. Victor Nell acknowledges this, but he does not explore the matter any further. I supplement his account by discussing how compassion, specifically in the moral education of children, can help remedy the problem of violence and cruelty in society.

Aggressive impulses are innate in the human species. And perhaps all humans are prone to exhibiting and enjoying cruelty under certain conditions (even if these conditions are never met in their particular life circumstances). The commonly told story of human evolution centers upon positing such impulses as the drivers of our destiny (humans as aggressive, self-seeking, greedy, "man the hunter," and so on). Other accounts, however, recognize the obvious (but often neglected) truths that: (1) humans are also cooperative, caring, nurturing beings; and (2) if it were not for these latter traits, our species' history – although undeniably bloody – would arguably have been far less characterized by peaceful periods and everyday cooperation, far less filled with constructive, creative accomplishment, and much shorter (Kropotkin 1908; Mead, G. H. 1934, Pt. 4; Mead, M. 1937; Skyrms 1996, Ch. 3). However gloomy today's human scenario may appear, then, it is important to keep a sense of balance and hope.

I have no doubt whatsoever that Victor Nell would agree. His research project is in no way intended to contest the foregoing perspective, but rather, to take on the challenge of understanding and, to the extent possible, help counteract and neutralize the violent and cruel tendencies that are so evident and widespread, cross-culturally, in our contemporary world. These are laudable objectives, for two reasons. First, Nell's approach forces us to look at violent and cruel acts as having positive reinforcement for the perpetrators. Only if we unravel how this process works can we improve our chances of control and rehabilitation in this arena. Second, his project has the underlying significance that ordinary people should not have to live in fear for their safety, and victims of violence should not have to bear the onus of readjusting to a hostile social environment taken as the norm.[1] Yet I wonder whether, in addition to Nell's approach, we might still need to give careful consideration to the compassionate side of our nature[2] as an antidote to "the rewards of cruelty."

Nell presents strong evidence for regarding the perpetration and enjoyment of cruelty as having deep evolutionary, neurological, and biochemical underpinnings, and we probably must accept this. However, within the context of his thoughts on mitigating the problem of violence and cruelty in human life, very little is said about the role of compassion in defining who and what we are, and in describing the human potential. In section 6.2, Nell acknowledges that the human motivational repertoire comprises both cruelty and compassion. But the impulse toward compassion is not addressed further. Granted, Nell has another research agenda. I respect that and wish to make it clear here that my purpose is not to try to pick holes in his argument, but rather to supplement it, in the positive spirit of collaborative scholarly exploration.

Compassion is defined as "deep awareness of the suffering of another coupled with the wish to relieve it" (*American Heritage Dictionary* 2000). This formulation illustrates that compassion is a deeper feeling than either sympathy or empathy (with which it is often compared), inasmuch as compassion entails not just resonant fellow-feeling, but also the desire to ameliorate another's negative situation. While the above definition is an etymologically faithful rendering (com/passion as "suffering with"), I believe compassion has come to have an even richer meaning than is suggested here, namely, one that embraces what the philosopher Arthur Schopenhauer calls "loving-kindness" (Schopenhauer 1841/1965, sect. 17), or everyday caring concern for the other and his or her interests, and the desire to see the other flourish. I have given careful thought to the idea that compassion might be, as Schopenhauer claims, the sole motivational foundation of ethics (Schopenhauer 1841/1965, sect. 19:4), the primary moral emotion. Two principles of right conduct, above all others, might generally be considered as absolutely basic: "Do no harm" (nonmaleficence) and "Do good whenever possible" (beneficence or benevolence). Both can be construed as following naturally from the compassionate side of our nature (Schopenhauer 1841/1965, sect. 16). This is not the place to debate whether compassion is the whole of morality. But it may be of interest to reflect upon just how central it is to a better world.

What is special about compassion is that it appears to be an innate tendency. Children show caring concern toward their peers, those younger than themselves, and animals. They are naturally inclined toward acceptance of others and toward being nonjudgmental (what later may blossom as tolerance, celebration of diversity, etc.). Lack of compassion and intolerance are, in the broadest sense of the term, learned responses that stem from certain kinds of conditioning, life experiences, and circumstantial events, such as cultural images of violence, examples set by role models, neglect, emotional impoverishment, and abuse and bullying. These influences lead to desensitization and may allow other natural impulses – toward violence and aggression – to predominate in thought and action. But if lack of compassion, intolerance, and cruelty, for example, can be learned, they can also be unlearned – or better still, prevented by different learning.

To teach and instill a cultural ethos of compassion and respect for others, as well as animals and the environment, is the goal of the humane education movement (Selby 1995; World Animal Net, n.d.). The simple precept here is that if we want desirable personality qualities and dispositions to flourish, we need to nurture and reinforce these. Imaginary exercises, thought experiments, and role-playing can help create and strengthen the capacity to put oneself in another's shoes, and to prevent the development of a closed mind characterized by compartmentalization, distancing, and the objectification, marginalizing, and inferiorizing of the other.

The aim of making children more compassionate by enhancing their natural tendencies in this direction can positively contribute to creating a society in which people are less prone to violence and cruelty. It would, however, be naïve to

assume that such an endeavor could succeed without other large-scale measures being put in place to remove or at least restrict the conditions that motivate and encourage violent and cruel behavior. In this respect, Nell is completely correct to stress that we must do what we can to make such behavior less rewarding – a gargantuan task, but one on which the human future depends. Yet I would maintain that peaceful social reconstruction hinges equally on the careful, systemic cultivation of compassion.

NOTES

1. I owe this victims-of-violence point to Fiona Utley.

2. As I trust will become evident, compassion is to be distinguished from, and is much more profound than, the altruism that some theorists explain in terms of evolutionary reproductive strategies, simple reciprocity, prisoner's dilemma gamesmanship, and so forth.

Cruelty: A dispositional or a situational behavior in man?

Mika Haritos-Fatouros

Department of Psychology, Aristotle University of Thessaloniki, Salonika, Greece 54640.

mikahar@otenet.gr

Abstract: Presentation of evidence from multiple disciplines is the most impressive feature of Nell's article. I have observations and objections, however, about the following issues: (1) violence as a by-product of cruelty; (2) the equation of animal and human cruelty; (3) social psychological evidence contrary to the biological model; (4) whether prevention of cruelty best arises from predispositional or situational factors.

By presenting admirable, extensive evidence from paleontology, predator ethology, primatology, anthropology, and cognitive and experimental psychology related to motivation and learning, as well as social psychology and cultural evolution, Nell traces the evolutionary origins of cruelty and violence to present-day human beings. Hypothesizing continuity between the behavior of predation in animals and contemporary cruelty in humans, he links a wide range of behaviors into a "pain-blood-death complex," a very important and useful thesis. However, several observations and objections should be stated.

Nell notes that violence is the by-product of cruelty and maintains that if effective prevention is to be applied, such origins must be revealed. But cruelty may also be the by-product of violence; in war, a general climate of violence may lead to cruelty and torture by military personnel on their victims without any previous preparation for it (see, e.g., the Abu Ghraib torturers; Haritos-Fatouros & Zimbardo 2005). Archetypal emotional-motivational processes common to all mammals may well influence human behavior, as Jung has proposed many years ago. But human behavior is also greatly influenced by cognitive processes, and by the resulting situations produced. The Freudian biological model which proposes a destructive, biologically determined, death-seeking force, a human "instinct" that produces aggressive behavior and violence has long been with us and has been repeatedly challenged and largely refuted by experiments as well as field studies.

In particular, torturers do not have to have a certain kind of personality, only exposure to certain kinds of psychological, social, and political conditions, (Haritos-Fatouros 2003). Similarly, gender differences, with greater male violence, and sex-related aggression, and abuse, cannot be attributed mainly to high testosterone and low serotonin in males. Albert Bandura (1973; 1990) and followers of social learning models have shown evidence that aggression is a behavior pattern largely learned through positive or negative reinforcement. Disengagement mechanisms are also used in situations of cruelty, and their importance is indeed acknowledged by Nell in the target article.

Finally, prevention of human cruelty and violence clearly requires more than detecting high and low scorers on any type of questionnaire – Nell proposes a Cruelty Readiness Questionnaire (target article, sect. 6.4) to predict high readiness and pleasurable arousal in situations of potential cruelty. Neither would MRIs' demonstrating individual differences in cerebral pathway involvement to differentiating stimuli predict cruelty, or go far to prevent cruelty from occurring. I certainly agree with the author that cruelty will not be contained through obscurantism and that effective prevention requires that its reinforcers are revealed. However, it is also important not to lose sight of classic works emphasizing cultural and situational factors, for example, Foucault's *Discipline and Punish* (Foucault 1975/1979/1986), Milgram's work on obedience to authority (Milgram 1969/1974), and Zimbardo's Stanford Prison Experiment (Zimbardo 1970).

On the other hand, the target article offers an abundance of possible hypotheses for research. Why certain kinds of behavior confer direct fitness benefits is of interest; Nell informs us that among the Ache, better hunters are more often chosen by the Ache women and have much higher fertility. The basic question remains, however: How far are aggression, violence, and cruelty in humans today the result of predisposition factors, or biological or archetypal processes, and how far are they the result of cognitive/emotional processes evoked by situational factors? To paraphrase Voltaire: I do not agree with you, but I shall do everything within my power to help you express your point of view.

Human–animal connections: Recent findings on the anthrozoology of cruelty

Harold Herzog[a] and Arnold Arluke[b]

[a]*Department of Psychology, Western Carolina University, Cullowhee, NC 28723;* [b]*Department of Sociology and Anthropology, Northeastern University, Boston, MA 02115.*

herzog@email.wcu.edu **profarluke@aol.com**

http://wcuvax1.wcu.edu/%7Eherzog/

Abstract: Recent findings in anthrozoology – the study of human–animal interactions – shed light on psychological and social aspects of cruelty. Here we briefly discuss four areas that connect animal cruelty and cruelty directed toward humans: (1) voices of perpetrators and their audiences, (2) gender differences in cruelty, (3) cruelty as play, and (4) the putative relationship between animal abuse and interpersonal violence.

To support his contention that the roots of cruelty lie in predation, Nell invokes findings from psychology, ethology, neurobiology, history, and paleoanthropology. Curiously, given the central importance of inter-specific interactions to his theory, Nell neglects anthrozoology – the study of human–animal relationships. Of special relevance are current findings on animal abuse. Here we briefly raise several findings from this literature that are relevant to understanding cruelty generally.

1. Voices of perpetrators and their audiences. Nell correctly calls for greater understanding of the perspectives of those involved with cruelty, although his idea for doing so seems narrowly psychological. Anthrozoological studies of animal cruelty have examined the mistreatment of animals as it is defined in the course of social interaction in groups. People arrive at shared agreements about what things mean in given situations, and cruelty is no exception, whether this includes conventional groups, such as adolescent males, or unconventional groups of purported abusers, such as "kill-shelter" workers who are considered to be cruel by their "no-kill" peers (Arluke 2006). Second, when studying their voices, the gratifications of perpetrators and their audiences must not be limited to psychological ones such as "escalating arousal." For example, members of

humane societies constitute an audience for cruelty and can experience increased solidarity after egregious instances of harm come to their attention (Arluke 2006), and humane law enforcement officers, who are another collective audience, can find ways to elevate their professional status as a result of their contact with cruelty (Arluke 2004). Finally, by focusing on intent as the basis for defining cruelty, serious forms of animal harm such as hoarding are minimized because the perpetrator lacks clear intent to harm, and it is also important to capture the voice of those who commit such forms of passive cruelty (e.g., Vaca-Guzman & Arluke 2006).

2. Gender and animal cruelty. According to Nell, sex differences in testosterone levels and in hunting mean that cruelty should be a predominantly male enterprise. When it comes to animal abuse, this is indeed the case. Gerbasi (2004) reviewed gender differences in media reports of animal abuse convictions. The male/female ratios were as follows: beating, 38 to 1; shooting, 16 to 1; mutilation/torture, 20 to 1; and burning, 17 to 1. Arluke and Luke (1997) reported that virtually all cruelty cases prosecuted in Massachusetts courts over a 10-year period involved males. While these represent extreme forms of cruelty, males are also more likely to be involved in lesser forms of cruelty. For example, both parental reports and child self-reports indicate that boys are more likely to abuse animals than girls. Of course, this preponderance of males is likely to change in the future if the demographics of animal abusers follow the trend toward increasing violent crimes in general by women.

3. Animal cruelty as play. Consistent with Nell's hypothesis, cruelty can be a recreational extension of hunting. An apparent example of this relationship is found in Jared Diamond's depiction of animal abuse among traditional hunters in the highlands of New Guinea. Diamond (1993) observed captive animals systematically tortured by hunters, much to the amusement of onlookers. Arluke (2002) found that childhood animal cruelty frequently takes the form of "dirty play," akin to other forms of play such as the use of sexual or racial epithets that are objectionable to many adults, but that can function as a form of socialization into the world of adults. In fact, some individuals he interviewed interpreted their involvement in animal abuse as a rehearsal of the hunting experience. Similarly, at Appalachian cockfights, young boys learn the formal rules and informal norms of their fathers' sport by staging their own mini-fights with discarded roosters in the corners of cockpits during derbies (Herzog 1985).

4. The relationship between animal cruelty and human violence. Perhaps the most controversial issue in anthrozoology concerns the putative relationship between animal abuse and human-directed violence. The idea that these phenomena are closely connected is often referred to simply as "the Link." (For reviews, see Merz-Perez & Heide 2004; and Ascione 2001.) Scholarly discussions of animal cruelty are commonly sprinkled with grisly accounts of animal abuse by serial killers such as Albert DeSalvo, Jeffery Dahmer, and David Berkowitz. A number of studies have shown that animal abuse is related to antisocial behavior in children; indeed, in the DSM-IV-TR, animal cruelty is listed as a diagnostic criterion for conduct disorder (American Psychiatric Association 2000). There is also evidence that violent felons are more likely to have a history of animal abuse than non-violent offenders (e.g., Kellert & Felthous 1985; Merz-Perez & Heide 2004).

The causal nature of the relationship between animal abuse and violence directed toward humans, however, has not been established. Of particular interest is the "graduation hypothesis," which posits that an early history of animal cruelty leads to interpersonal violence. As Piper (2003) has pointed out, there are significant problems with much of the literature on this topic. These include reliance on anecdotal evidence, hazy definitions, and the use of small clinical samples. In addition, some studies have not found the predicted relationship between animal and human violence. Arluke et al. (1999) compared the criminal records of convicted animal abusers and matched non-abusing controls. As expected, the animal abusers were much more likely to have been arrested for a variety of offences than the controls. They did not, however, commit a disproportionate number of violent offences as opposed to property or drug offences. In a large, 10-year longitudinal study of risk factors and adolescent delinquency, Becker et al. (2004) found that animal abuse was only weakly related to subsequent criminality.

Finally, childhood animal cruelty may be more common than is usually recognized, with most abusers developing into non-violent adults. Miller and Knutson (1997) reported that two-thirds of male undergraduates they surveyed had participated in animal abuse. Clearly, most of these individuals did not go on to a life of crime. We suggest that the relationship between animal cruelty and subsequent psychopathology may parallel findings on the consequences of child sexual abuse. An increased proportion of individuals in deviant groups show evidence of early sexual abuse; however, several studies have now shown that the majority of sexual abuse victims become psychologically healthy adults (Rind et al. 1998; Ulrich et al., in press). This pattern may well be characteristic of early exposure to animal abuse.

Conclusion. The predation theory of the evolution of cruelty will be difficult to test. Nell's idea, however, is provocative, and, hopefully, will pique interest in intentional cruelty among researchers. Anthrozoological studies of animal abuse can provide fundamental insights into this dark side of human nature, insights that shed light on human violence generally.

Considering the roles of affect and culture in the enactment and enjoyment of cruelty

Spee Kosloff[a], Jeff Greenberg[a], and Sheldon Solomon[b]

[a]*Department of Psychology, University of Arizona, College of Behavioral Sciences, Tucson, AZ 85721-0068;* [b]*Department of Psychology, Skidmore College, Saratoga Springs, NY 12866.*

kosloff@email.arizona.edu **jeff@email.arizona.edu**
robertodebump@aol.com

Abstract: Research on aggression and terror management theory suggests shortcomings in Nell's analysis of cruelty. Hostile aggression and exposure to aggressive cues are not inherently reinforcing, though they may be enjoyed if construed within a meaningful cultural framework. Terror management research suggests that human cruelty stems from the desire to defend one's cultural worldview and to participate in a heroic triumph over evil.

We applaud Nell for attempting to understand human cruelty in the hope of attenuating human destructiveness. However, his characterization of cruelty's universal reward value is at odds with research on human aggression (Geen 1990). Moreover, although Nell proposes that cruelty is a cultural elaboration on the predatory adaptation, he fails to explain adequately why and how this cultural elaboration may have occurred. We will offer an alternative view of the role of culture in cruelty.

Given that Nell's definition of cruelty and psychologists' definition of aggression (Geen 1990) are virtually identical, we were surprised to find few references to the vast literature on the psychology of human aggression (e.g., Geen 1990). A wide variety of findings in this literature appear inconsistent with Nell's central claim concerning the universal reward value of encounters with stimuli associated with cruelty.

First, research on the situational conditions that trigger aggression suggests that negative affect, which is hardly rewarding, mediates the expression of aggression. Affective aggression is evoked under conditions in which an aversive situation – for example, exposure to pain, heat, attack or insult, crowding, goal

blockage, relationship threat – elicits hostile thoughts, angry feelings, and arousal (see, e.g., Anderson et al. 1995). Second, cues that have been found to instigate aggressive reactions bear no resemblance to blood, pain, and death; rather these cues are stimuli that have become associated with violence through learning processes (see, e.g., Berkowitz 1968). Moreover, indicators of a victim's pain often decrease aggression; when victims wince, cry out, or groan, people are typically less aggressive in retaliation for prior provocation (Baron 1971b; Geen 1970). Even in modern predation, whether in traditional tribal cultures or modern technological ones, there are clear cultural rules for the hunt, transmitted from generation to generation, that are designed to limit the infliction of pain and prescribe the value of the clean, relatively merciful kill. If cultural elaboration of predation were the root source of cruelty, why would forms of contemporary human predation generally discourage unnecessary cruelty?

Third, viewing cruelly aggressive acts often does not elicit aggressive behavior and, in fact, may inhibit it. If, as Nell claims, stimuli associated with cruelty elicit endogenous reinforcement, cruel behavior should increase rather than decrease in the presence of such cues. Yet viewing aggressive acts has been shown to decrease subsequent aggression if the aggression seems excessive or gratuitous. For instance, when media violence is framed as morally unjustified because the victim does not deserve the attack, viewing it may have no effect on subsequent aggression or may in fact lead to inhibition (Goranson 1970). Observed morally justified violence, on the other hand, will increase aggression (e.g., Berkowitz & Geen 1966). This body of work shows that the culturally mediated meaning of the aggressive act greatly affects the viewer's reactions to it – actions that do go beyond what is deemed justified or beyond the culturally prescribed rules for appropriate behavior elicit negative reactions rather than enjoyment (e.g., when boxer Mike Tyson bit Evander Holyfield during a heavyweight championship fight).

These and other research findings on the social conditions for aggression and the vicarious enjoyment of it (see, e.g., Geen & Stonner 1973; Zimbardo 1972) also suggest that understanding human cruelty requires explaining why humans are so motivated to follow symbolic, culturally prescribed standards of conduct. Many thinkers have stressed that an account of human cruelty that will aid in its abatement must *explain* how the motivation to create and maintain culture contributes to the human propensity for cruelty and destructiveness (Becker 1975; Bertalanffy 1958; Burkert 1983; Fromm 1973).

Terror management theory (TMT; Greenberg et al. 1986; Solomon et al. 1991) provides an empirically corroborated explanation of the functions of culture. Based on the work of Ernest Becker (1973; 1975), TMT contends that with the advent of self-awareness in hominid evolution came cognizance of mortality, an awareness which, in juxtaposition with basic biological systems promoting self-preservation, engendered a potential to experience overwhelming dread. To manage concerns with this potentially debilitating terror, humans have created and maintained beliefs about the nature of reality (cultural worldviews), which function to provide individuals with the hope of symbolic or literal immortality through perception of themselves as valuable contributors within a meaningful social world. This analysis suggests that accepting and abiding by culturally sanctioned standards of conduct enables humans to manage existential concerns with death.

More than 200 published experiments have supported hypotheses derived from TMT, many finding that individuals confronted with reminders of their own mortality express intensified reverence for validators and intensified derogation or aggression against threateners of their cultural worldview (Greenberg et al. 1990; McGregor et al. 1998). These findings support the contention that the defense of cultural worldviews serves to mitigate the anxiety associated with death, and that such defenses contribute substantially to human aggression. Recent work also shows that reminders of mortality make leaders and ideologies focused on the heroic triumph over those designated as evil (scapegoats) especially appealing (Landau et al. 2004; Pyszczynski et al. 2006).

This work can help to explain the appeal of human cruelty. Nell identifies cruelty's cultural elaboration in political imperatives to sustain social control, but a readiness to inflict pain affords no more than temporary instrumental command unless leaders also speak to individual needs for a sense of broader significance in a triumph over evil. For example, Hitler's rise to power was accomplished not only by intimidating the German people, but also by confidently offering a worldview built upon ancient Germanic traditions that could both blame problems on outsiders and provide deep feelings of self-worth to the Aryan majority (Becker 1973; 1975). Social control is often a critical element in the rise to power, but TMT suggests that the psychological mechanisms that render such political ascension possible stem from followers' needs for a death-transcending ideology more so than from the herding effect of threats rained down from above.

Finally, consider the experience of an audience member at the Roman arena, for whom "maximum excitement is the confrontation of death and the skillful defiance of it by watching others fed to it as he survives transfixed with rapture" (Becker 1975, p. 111). As this psycho-historical example illustrates, individuals may enjoy contextualized displays of blood and death that allow them to feel part of a heroic instantiation of their culture's success in thwarting death.

Despite our alternative view, we welcome Nell's article as an addition to discussion of the psychological underpinnings of cruelty; an addition that, along with the associated commentaries, we hope will stimulate advances on these issues.

Signifying nothing? Myth and science of cruelty

Boris Kotchoubey

Institute of Medical Psychology and Behavioral Neurobiology, University of Tübingen, Tübingen 72074, Germany.

boris.kotchoubey@uni-tuebingen.de

www.mp.uni-tuebingen.de/mp/index.php?id = 96

It is . . . full of sound and fury, signifying nothing.
Macbeth, Act 5, Scene 5

Abstract: Nell proposes another myth about human aggression, following thousands of old myths from Homer to Lorenz. Like all myths, this one might be partially true and partially false. However, the use of emotional and propagandistic effects, rather than evaluation of empirical results, obscures any attempt to describe the truth about cruelty.

Nell opens with the citations of Haney et al. (1973), Milgram (1974), and Zimbardo (2003) as examples of empirical work on cruelty. Only Haney et al. (1973) can be interpreted in this vein, but this early experiment suffered from numerous methodological flaws vastly discussed since its publication. Zimbardo (2003) is not an empirical study, and Milgram (1974) was devoted not to cruelty but to the quite different phenomenon of obedience. The target article ends with a list of references, about half of which are works of art, moral philosophy, anecdotes, essays, and novels, and only about 20% are empirical studies on brain and behaviour, some of them (like Milgram 1974) unrelated to the theme of the article. The biological basis of aggression is presently intensively studied at the empirical level (e.g., reviews in Bufkin & Luttrell 2005; Moll et al. 2005), but only a few such studies are mentioned in the target article.

This raises some basic questions. What kind of text are we confronted with in the target article? Does it belong to science? What distinguishes scientific texts from *belles lettres*, armchair

philosophy, advertisement, or propaganda? From a scholarly article, one should expect weighing up of positive and negative evidence; use of quantitative data if available, rather than single-case descriptions; the lack of over-generalizations from one example; avoidance of emotional arguments and tacit insinuations. As suggested by Popper (1963), a scientific theory is supported not by supporting cases but by unsuccessful attempts to refute it. Platt (1964) contended that it is psychologically difficult for scientists to actively look for facts contradicting their own theoretical thinking. Therefore, he recommended that scientists at least compare alternative theories. As a minimum, a scholar should mention an alternative and argue why his or her view is better than the alternative.

How does the target article fulfill these criteria?

Discussing controversial topics. In the domain of human aggression, in particular, many alternative views are disputed. Even though the aim of the target article is the presentation of a new view, not a discussion of the existing views, any new approach can only be understood against the background of, and in comparison with, the extant controversy. Nell's list of references contains antique historians, poets, and religious texts, but not Fromm (1973) – a book that, though controversial, too, at least presents an overview of the plurality of alternative stances. Even if we remain within the ethological perspective, it is strange to quote from a popular book of Lorenz (who was a great scientist but never studied humans) but not cite the fundamental works of Lorenz's pupil, Eibl-Eibesfeld (1989; 1996) who devoted several decades to the ethology of human aggression. Nell does not mention any theory of violence except his own.

Generalization from single cases. Section 5.2 of the target article comprises a long list of single-case descriptions of murders and atrocities. We do not know whether these behaviours are typical or frequent. Caligula tortured his senators (5.2.2) – how many kings did this, and how many did not? Of those who did, what is the evidence that they did it "for amusement" and not, say, for fear of conspiracies, like the Russian tzar Ivan IV (Soloviev 2002)? Single cases do matter, but their role is logically limited. If a sociopath reports that killing people makes him "excited" or "exhilarated" (sect. 5.2.8), this only shows that *some* people *can* experience such feelings, but not that these feelings are usual or have any significance in human history, let alone that these feelings are "a human universal" (sect. 6.2.1).[1] But even very many examples do not constitute a scientific proof. Millions of ill people prayed for recovery and got healthy, but this does not prove the effect of the prayers. If one wants to make a conclusion from that issue, one should compare the numbers of those who prayed with those who did not, to find out how many among the prayers and non-prayers recovered and how many did not. Then one should build a 2×2 matrix and calculate a chi-square test.

Emotions. Section 3 starts with long descriptions of how predators (hyenas, lions, and primates) torment their victims, eating them alive and causing them unbelievable suffering. From the viewpoint of the author's definition of cruelty as the "deliberate infliction of pain," this behaviour is *not* cruel. It is not a deliberate torture but simply a way for predators to save energy. So what is this accumulation of horror for? That animals are not moral beings is a truism. Logically, this part of the text appears unnecessary. But psychologically, it plays an important role. It shocks the reader with a flood of blood, screams, and the pain of prey consciously perceiving how they are eaten and torn apart. This shock prepares the reader for the emotional atmosphere of the subsequent parts.

Ad hominen argument. At the end of section 1, that is, before starting the argumention, the author employs a technique previously used by Freud: "Surely you will not accept my ideas for ethical reasons." It is suggested that the present view would be rejected because of the fear of contact with the "contagious" evil, and because studying such "dirty" things as cruelty may damage the scientific reputation. Thereby, potential critics are devaluated from the very beginning, as their objections are assumed to be of purely psychological origin.

Therefore, there is not sense in discussing the content of the presented view. Its attractive power is not its content but the consistency of its emotional tone and the persuading energy of amassed examples of brutality, cruelty, barbarity, violence, pain, blood, cry, intestines, and so on. We are presented with an ideological article that skillfully uses a variety of propaganda techniques: emotional shock; appeal to identification; thorough selection of supporting, affectively impressive examples; careful denial of counterevidence; and implicit devaluation of future opponents as narrow-minded conservative moralists.

This does not imply that the article is uninteresting or useless. Myths are interesting, but they are not hypotheses. Thus psychoanalysis (whose many aspects the target article shares) contains many brilliant insights, but it is not a scientific theory. Likewise, the target article may contain interesting impulses for thinking about aggression; this is a well-composed mythology, a potential object of a cultural analysis, but not [this "of" is useful, meaning: "object of a cultural analysis but not an object of a scientific discussion"] a scientific discussion.

NOTE

1. The term "universal" appears six times in the text.

The cruelty of older infants and toddlers

Sebastian Kraemer

Child And Family Psychiatric Service, Jenner Building, Whittington Hospital, London N19 5NF, United Kingdom.

sebastian@kraemer-zurne.freeserve.co.uk

Abstract: Cruelty is evident in the play and interactions of quite small children. This is almost certainly normal, though it is more evident in children who have themselves been harshly treated (Amato & Fowler 2002; Luk et al. 1999).

This is a brilliant paper, crossing many learned boundaries. More could be made of the development of cruelty in the immature human individual. Though we cannot know what babies think, they clearly experience extremes of emotion from rage (and terror) to bliss.

Once they can coordinate intentional movements, infants and toddlers show in their play with toys, siblings, friends, and pets that they are readily capable of inflicting pain on others (mentioned only in passing by Nell in the Introduction). This is widely known by those who care for small children, and also by child psychotherapists who witness such demonstrations in the consulting room (Alvarez & Phillips 1998).

Curiosity may be one driver – a wish to find out how much damage the victim can stand, or simply to dismantle it and see what it is made of – but punishment is also a feature. The birth of a younger sibling can provoke cruelty both in play and in fact. That is, a child can express violent intentions without causing actual harm to his victim. The child may instead assault a toy or a pet.

Overt cruelty may be more obvious in little boys, because they tend to be more aggressive in their actions. Girls, however, are probably just as capable of having the same feelings and intentions but are less likely to act them out. Even as young as 6 months, girls are more able to express feelings in complex ways (Malatesta & Haviland 1982). Because of their greater sophistication with emotions, it is too easy for observers to assume that girls are less cruel. In purely behavioural terms this may be so, but the emotional and cognitive state of wishing harm on another, and taking some pleasure in it, is probably equally distributed between the sexes.

It is only in the past half century that careful observation of very small children has shown the enormous range and depth of emotions they can experience. The psychoanalytic method of infant and young child observation (Sternberg [2005] is the latest text) is a unique source of disciplined and detailed recording of changes in behaviour, mood, and intentions of young children.

Recent advances and hypotheses regarding the neural networks involved in cruelty and pathological aggression

Harold Mouras

INSERM, U742, Paris, F-75005 France; Université Pierre et Marie Curie, Paris 6, UMR S 742, Paris, F-75005, France; and Socio-Affective Development Group, Department of Psychology, University of Geneva, CH-1205 Geneva, Switzerland.

harold.mouras@snv.jussieu.fr

Abstract: Functional neuroimaging studies allow examination of the cerebral networks involved in human behavior. For pathological aggression, several studies have reported a involvement of frontal and temporal areas, reflecting disruption of emotional regulatory systems. Recent genetic studies that bring together reward system dysfunction and violent behavior.

Nell argues that modern neuroimaging could be used to examine the continuity between predation and cruelty, as it could be demonstrated in commonalities of their neural circuits. A number of studies have already used functional neuroimaging techniques to describe the neural networks involved in violence and aggressive behavior that could form the basis for future comparisons. In a sample of healthy males, Pietrini et al. (2000) reported reduced activity in ventromedial frontal cortex during imagination of aggression compared to imagination of a neutral scene, suggesting a functional deactivation of this part of the frontal lobe. This observation is consistent with the well-documented general role of the orbitofrontal cortex in behavioral inhibition.

In studies of violent offenders with schizophrenia or schizoaffective disorder, fluoro-deoxyglucose uptake, an indicator of neuronal activity, was reduced in anterior temporal regions as compared to healthy controls (Wong et al. 1997). Resting cerebral metabolism was reduced in the medial temporal and prefrontal regions for repeatedly violent psychiatric patients compared to healthy controls (Volkow et al. 1995). For murderers pleading not guilty by reason of insanity, cerebral metabolism was significantly lower in a continuous performance task in prefrontal areas, superior parietal gyrus, left angular gyrus, and the corpus callosum in comparison to sex- and age-matched controls (Raine et al. 1994). A following study (Raine et al. 1998) demonstrated that the reduction of activity on frontal areas was much more pronounced in "affective" than "predatory" murderers. This contrast is of interest because of the greater impulsivity of emotional than planned crimes (Hoptman 2003). Thus, several lines of evidence appear to show that violent and aggressive behaviors, in their most severe forms, involve abnormal neural correlates, particularly reduced activity in the frontal and temporal areas.

Some neuroimaging studies of the voluntary control of emotional responses have been done. Davidson et al. (2000a) instructed subjects to voluntarily regulate their emotional response to unpleasant pictures. While suppressing negative affect induced by unpleasant pictures, subjects also had a significantly diminished startle response (an index of emotional processing) compared to conditions where subjects were instructed to normally experience or enhance their reactions. There was marked individual variability in the skill in negative emotion suppression shown between subjects. Jackson et al. (2000) further argue that the mechanism that underlined suppression of negative emotion would imply inhibitory connections from the prefrontal cortex to the amygdala, well known to be involved in anger processing. Individual differences in emotion regulation skills (particularly for negative emotion) echo the differences seen in violent offenders and might be an indicator of individual vulnerability to aggression and violence.

Among neurotransmitters, serotonin and dopamine appear to be particularly involved in the neurobiology of violence and aggression. First, disruption of the serotoninergic system, which has been hypothesized to exert inhibitory control over impulsive aggression (Volavka 1999), has been linked to violent behaviors (see also Davidson et al. 2000a). In a recent study of adolescents, Chen et al. (2005) found a correlation between indexes of pathological aggressive behavior and polymorphisms of several genes of the dopaminergic system. In their paper, Chen et al. note that pathological aggression behavior involves a number of behavioral tendencies that could be linked by the emerging concept "reward deficiency syndrome" that broadly defines a predisposition to a number of addictive, impulsive, and compulsive behavioral tendencies. All substances and behaviors linked by this syndrome involve pre-synaptic dopamine release at the nucleus accumbens.

In sum, neurobiological studies have made a start in describing the neural substrates of both "normal" and pathological aggression. Although ethical considerations pose many problems for these studies, we can hope for more precision in time in the neuroanatomy and genetics of aggressive behavior.

ACKNOWLEDGMENT

I would like to thank Naia Silveira for the correction of this manuscript.

The affective neuroeconomics of social brains: One man's cruelty is another's suffering

Jaak Panksepp

Center for the Study of Animal Well-Being, College of Veterinary Medicine (VCAPP), Washington State University, Pullman, WA 99164-6520.

jpanksepp@vetmed.wsu.edu

Abstract: Cruelty does not emerge from a single emotional system of the brain. Its many cognitive aspects are intermeshed inextricably with the nature of negative affects ranging from fear to suffering. The rewards of cruelty may be counteracted by a variety of neurochemical factors as well as novel social policies.

Nell provocatively introduces a topic rarely brought to the scientific limelight. He shares dramatic snapshots of the possible evolutionary antecedents of our capacity for cruelty. By discussing the social and ecological history of intense human and animal aggression, he seeks neuro-causal underpinnings among ancient emotional processes we still share with other animals. As William James (1890, p. 410) reflected, "we, the lineal representatives of the successful enactors of one scene of slaughter after another must, whatever more pacific virtues we may also possess, still carry about with us, ready at any moment to burst into flame, the smoldering and sinister traits of character by means of which they lived through so many massacres."

Nell's gripping analysis may provide scientific insight into such troublesome, value-laden conceptual complexities. I have more questions than argumentation or answers: To understand this dark underbelly of human nature, may we need better taxonomies of cruelty? Can one have cruelty without the reflective desire to impart suffering? If "intention to inflict pain" (target article, sects. 1 and 2) is critical for the concept, how can one evaluate and defend knowledge derived from animals, whose cognitive ability to reflect on other minds may be rudimentary?

When a cat toys a captured mouse to death, in apparent joyful delight, is that cruelty? Is it appropriate to use such concepts for animals that may have no desire to hurt others in their pervasive predatory efforts to survive? Is a critical crux of cruelty that animalian SEEKING/predatory[1] systems generate primal intentions that are integrally linked to aroused action tendencies, while with maturation, we humans also reflectively guide our actions?

When human aspirations get energized by the ancient appetitive arousal systems, cruelty could be facilitated and inhibited in many ways. Although the neuroeconomics of cruelty are foundationally linked to basic emotional systems of mammalian brains, we know remarkably little about the relevant neural details. Thus, Nell's analysis is a promissory note to be cashed out through future research. His provocative animalian conjectures may link up to primary-process human cruelty issues, but less to culturally mediated ones. Within the full complexity of the SEEKING system, which promotes both foraging and predation, dopamine (just one key part of that system) may not be as critically causal in cruelty as certain cognitions that arouse dopamine-energized circuitries toward goal directed behaviors. All emotions rely to some extent on brain mesolimbic/mesocortical dopamine for their expression (Panksepp 2005; Watt 2005). Although dopamine facilitators can enhance affective attack (Panksepp 1971a), this appetitive neurochemistry is active in all goal-directed behaviors, especially before approach urges become stereotyped and habitual.

Dopamine-energized SEEKING desires have a broader psychological scope than any of the other basic emotional systems, providing psychomotor support for many emotions and cognitive activities, as in the pursuit of sex and knowledge, energization of attachments, and maternal intent. Dopamine circuits are aroused in states ranging from dreaming (Lena et al. 2005) to playfulness (Panksepp 1993), and even the seeking of safety (Ikemoto & Panksepp 1999). When fearful freezing explodes into flight, this may also reflect a release of dopamine circuitry from inhibition. The ability of dopamine to support various forms of aggression other than predation may help explain why juvenile play-fighting and inter-male aggression can be as rewarding as predatory stalking and chasing. The multidimensionality of the brain SEEKING system is now a cornerstone for neuroeconomic thinking about human desires: The lower parts (nucleus accumbens, olfactory tubercle, ventral pallidum, and septal area) mediate positive affect, while higher cortico-cognitive fields compute reward probabilities (Kuhnen & Knutson 2005). Is it worth considering that SEEKING/predatory cruelties in humans are expressed only when certain socio-sexual needs are frustrated (Panksepp & Zellner 2004)? Other brain chemistries, such as brain opioids, represented in most brain areas, also participate in all these behaviors.

Cruelty's rewards, at least in humans, also need to be discussed in terms of dominance and submission. In addition to the dopamine and opioid invigorated highs of successful dominance, induction of fearfulness may be one of the cognitive "rewards" of cruelty. Conversely, various primary-process anxieties (e.g., as facilitated by FEAR and PANIC systems) surely inhibit cruel behaviors, thereby allowing some cultural-control of violence. Individual human cruelties can only thrive in circumstances where societal sanctions that promote anxieties for offensive behaviors are weak. The public displays of cruelty that Nell describes have probably diminished in "recent" human history because of increasing cultural sanctions against open public consumption of bear-baitings and beheadings, so to speak.

Societies use the power of retribution (cultural cruelty?), and the resulting anxieties, to diminish individual tendencies toward cruelty, which may not counter the underlying deficits in empathy (Watt 2005). Urges for cruelty need to be understood at individual neuro-existential levels. Savageness is magnified enormously by damage of the medial diencephalon, where FEAR circuits course downward. Animals become unforgivingly vicious after large ventromedial hypothalamic damage – aggressive rats no longer modulate their hyperagressiveness in response to displays of fear (submission) by normal rats (Panksepp 1971b). Is this partly because medial hypothalamic beta-endorphin circuits normally promote pleasure and peacefulness? Of course, this system also has a double edge. Positive feelings of opioids can increase social dominance (Panksepp et al. 1985). Powerful people may at times become emotional insensitive and exhibit less empathy (more cruelty?) because their high opioid titers prevent them from appreciating the pain of others.

Thus, cruelty is surely a multidimensional concept. I would encourage Nell to discuss the many dimensions he ignored in his gripping focus on the primal "pain-blood-death" aspects. Where in the human side of this condition lie the influences of anxiety and suffering? When the Amish shun those who do not abide by community standards, generating separation-distress, is that a form of cruelty or simply a profoundly effective way to sustain social cohesion? To what extent is the concept of suffering essential for the concept of cruelty?

Many everyday human cruelties emerge from failures of empathy, so common in the midst of social strife. Can we diminish cultural atrocities through yet unrealized social policies that seek to distribute social rewards and the bounty of mother earth more equitably, and thereby diminish culture wars? Once we have a good Cruelty Readiness scale, we surely will find genetic factors that facilitate cruelty. Might allelic variants of constitutionally anxious individuals dispose against acts of cruelty? Can certain cultural environments change the weight of factors in those equations? Even when relevant brain factors are empirically identified, I suspect cultural controls will continue to figure more heavily in societal control of cruelty – especially among the "boys who pull out grasshopper's legs and butterflies' wings, and disembowel every frog they catch. . . . The creatures tempt their hands to a fascinating occupation, to which they have to yield" – as William James (1890, p. 410), quoted here, related while discussing that "fatal reflex response" which in Nell's view is the very source of cruelty.

Perhaps the best way to foster cruelty-dissolving empathy is to better deploy one of our most under-utilized social resources, childhood rough-and-tumble play, to train each generation about what good humans can and cannot do to each other. During the competitive joys of childhood play, kids will "naturally" hurt each other. We should be there, more consistently at many critical moments, to gently intervene with guidance toward prosocial equations. If from the earliest ages, we allowed more independent playful social engagement, under the watchful eye of those who realize that playful joy brings children to the perimeters of their emotional knowledge, could we more consistently train members of our species not to hurt each other? If at many critical moments, more of our young promptly heard some good advice from above – "You shouldn't have done that . . . If you want to play, don't do that anymore. OK?" – might we be able to construct more prosocial brains? Can we diminish the potential for cruelty inherent in our bloodline through the promotion of more empathic touch/speech and equitably joyous social policies?

NOTE

1. My practice of using capitalizations for emotional primes (Panksepp 1998) is to highlight that specific circuits are referents for these vernacular terms, so as to minimize mereological (part–whole) confusions. These are circuits that are critically important for certain emotions, with no implication that I am talking about all aspects of the emotional term. None is a single-chemistry system. For example, the SEEKING system is strongly aroused by dopaminergic arousal, but there are many other neural components.

Human cruelty is rooted in the reinforcing effects of intraspecific aggression that subserves dominance motivation

Michael Potegal

Department of Pediatrics, University of Minnesota Medical School, MMC 486, Minneapolis MN 55455.

poteg001@umn.edu

Abstract: Intraspecific aggression (IA), in service to dominance, has far deeper roots in animal behavior and human evolution than does predation. The reinforcing properties of such aggression are most likely to be a major source of human cruelty.

Throughout history and across cultures, cruelty occurs frequently and in many forms. Nell's many graphic, if not lurid, examples focus attention on this important but poorly understood phenomenon. Nell also alludes to or implies each of the points made in this commentary, but space limitations preclude specific acknowledgments.

Predation versus intraspecific aggression. Although evidence exists for predation in hominid evolution, primates are facultative predators at most. The number, nature, and sequence of ancestor species in the human lineage that were predatory is unknown. In contrast, intraspecific aggression (IA) is extremely common, found throughout animal taxa, in, for example, herbivores, carnivores, and omnivores of all sorts. It certainly predates the basal insectivore presumed to be at the root of the primate lineage. Common examples of intraspecific aggression include mating contests, residency disputes in territorial animals, conflicts over position in the social dominance hierarchy, and endless species and situational variations on these themes. Most of these conflicts are ritualized, ending with the loser's escape or submission. If victorious aggression elicits signs of submission, cruelty would produce still more. Machiavellianism and, in a more extreme form, "callous/unemotional" traits (in youth; Barry et al. 2000) and psychopathy (in adults) may represent dominance motivation hypertrophied. Cruelty, with its arbitrary infliction of humiliation, pain, and death, is the ultimate expression of dominance. A final argument against predation being cruelty's source is that most instances of cruelty do not result in the victim being eaten, which is, after all, a hallmark of predatory behavior.

Intraspecific aggression is both adaptive and reinforcing. IA is adaptive; it establishes and maintains dominance that, in turn, provides access to resources and increases inclusive fitness. In contradiction to proposals that social disorganization of some type is necessary for IA, unprovoked daily fighting occurs in well-established, undisturbed rat colonies (Blanchard et al. 1988). The routine, brief early morning attacks by the alpha rats presumably re-establish their dominance status. In primates, apparently random, unprovoked attacks by dominant animals increase their inclusive fitness by stressing the physiological function and reproductive capacity of the subordinates whom they attack (Silk 2002).

If IA serves distal, evolutionary ends by engendering dominance, than IA itself should be supported by proximal, psychological mechanisms. In fact, IA has reinforcing properties under appropriate circumstances, for example, if there have been prior victories (e.g., Potegal 1979; 1994). Animals sometimes appear to look for a fight, and winning encounters increases their subsequent attack rates. Although the reinforcing effects of IA may be weaker than, and/or different from, those for food, fish swim through apertures, birds peck at keys, and mice press bars or run in mazes to have a successful fight. Male rats even prefer access to a highly aggressive conspecific than to a submissive rat, where victory is easy (Taylor 1977).

Two routes to human aggression. Anger and social dominance are distinct motivations for human IA. Anger is involved in "road rage," spouse abuse, and so forth. Dominance motivation is involved in individual and group behaviors from teasing through bullying in schoolyard, fraternity, and boardroom, and on through gang violence, torture, "ethnic cleansing," and genocide. The distinguishing feature of such behaviors is their implicit or explicit demonstration of power and dominance. Although accompanied by the emotion of contempt, perhaps, anger is neither experienced nor expressed. This same dichotomy distinguishes angry "reactive" aggression from more socially adept "proactive" aggression" in children and adolescents (e.g., Hubbard et al. 2002). This distinction also arises in "circumplex" models of personality and social interaction where anger and dominance are found to lie along orthogonal axes (e.g., Gifford & O'Connor, 1987).

Whereas anger is largely aversive, dominance motivated IA can be satisfying or pleasant (Potegal 1979). Ingle (2004) documents many historical examples of "recreational fighting" for "fun" or "honor" rather than for material gain. Nobles, monks, and priests in Renaissance Venice engaged in ritualized battles; some fought with sharp sticks and wore armor. After sticks were abandoned in 1570, the fist fighting became affordable to sailors, fishermen, gondoliers, and artisans who joined neighborhood brigades. Ritualized but violent "faction fights" in nineteenth-century rural Ireland were viewed as a blood sport. "Fighting for fun" is frequently mentioned in social histories of American loggers and cowboys. Buford (1992) remarks on English football hooliganism, noting "I had not expected the violence to be so pleasurable." Examples from non-Western cultures include chest-pounding and side-slapping duels of the "fierce" *Yamomani* of the Amazon. The ritualized battles of young Australian aborigines often involve fist fighting. Older men use sticks and boomerangs; their skill with weapons allows them to "pull" their blows and avoid injuries. Losers can end a fight by dropping weapons. Like the boxers on Venetian bridges, however, prestige is obtained by accepting blows without retreating (Ingle 2004). Even in more lethal combat, Viking "beserkers" experienced a culturally sanctioned "battle joy." Although fear is the emotion most commonly experienced in combat, the beserkers were neither the first nor the last warriors to feel pleasure in battle (Potegal 1979).

Why is IA reinforcing? Space limitations preclude discussion of IA's reinforcement mechanisms, but they might include: intrinsic reward (possibly dopaminergically mediated) in activating the neural circuitry for aggression, pleasure in winning a competition against peers, pride in fighting prowess, increase in self-esteem and/or sense of control, and relief of general "tension" or specific anxiety/ or fear of harm. IA may become more pleasurable with arousal and practice; for at least some individuals aggression may be reinforcing only or particularly when aggressive arousal is high (Potegal 1979). Finally, social facilitation can exacerbate any of the above: for example, in the "contagion of aggression" among boxing fans or rioters (e.g., Bohstedt 1994).

Aggression, dominance, and cruelty in development. IA appears early in mammalian ontogeny, usually in the form of playfighting (which is more common than play predation, Pellis & Pellis 1998). In canids, for example, playfighting becomes progressively rougher, eventually leading to serious fighting (Bekoff 1974); children's playfighting, in the form of rough-and-tumble play, is important in establishing dominance (Humphreys & Smith 1987). More lethal forms of early IA include the killing of younger siblings. Siblicide is routine in various bird species and, notably, in hyena twin litters (Mock & Parker 1998).

Children's aggression is of especial interest because it may be less influenced by social learning and convention than that of adults; it can also predict future antisocial behavior (e.g., Tremblay & Nagin 2005). Attili and Hinde (1986) suggest that teasing is a route to dominance in children. "Gleeful taunting" by 4- to 5-year-old boys was judged as being more objectionable and antisocial than their angry reactions (Miller & Olson 2000). Cole and Zahn-Waxler (1992) suggest that enjoying one's antisocial behavior represents some sort of developmental

psychopathology. Sroufe (1983) noted that hurting others appears especially pleasurable for children with insecure/avoident attachment. In contrast to these views, children's enjoyment of non-angry IA may be more the normal rule than the abnormal exception.

Why not all cruelty, all the time? This commentary could have as easily begun with the statement that, throughout history and across cultures, empathy (or kindness, or reciprocity) exists in many forms. In the well-regulated individual, tendencies to aggression, dominance, and cruelty are balanced by prosocial feelings, judgments, and impulses. It is reductions in empathy, either intrinsic (e.g., in psychopathy) or learned (e.g., dehumanizing others through propaganda), that allow the unfettered exercise of dominance motivation.

Shame, violence, and perpetrators' voices

Nancy Nyquist Potter

Department of Philosophy, University of Louisville, Louisville, KY 40292.
nancy.potter@louisville.edu

Abstract: Fostering shame in societies may not curb violence, because shame is alienating. The person experiencing shame may not care enough about others to curb violent instincts. Furthermore, men may be less shame-prone than are women. Finally, if shame is too prevalent in a society, perpetrators may be reluctant to talk about their actions and motives, if indeed they know their own motives. We may be unable accurately to discover how perpetrators think about their own violence.

Nell's argument that cruelty has its origins in evolutionary rewards is fascinating and deeply disturbing. He is correct that, if societies want to curb violence, they must understand what reinforces it (sect. 1.1.1). But having read this theory, I am less optimistic than ever that violence can be diminished.

Nell argues that "effective prevention must begin with perpetrators (sect. 6, para 1.)" and that "violence-prevention workers will need to gather affectively rich descriptions of the inner experience of police and military torturers and interrogators" (sect. 6.1). He also argues that "the challenge for violence prevention is to anchor [shame] them more deeply in the life of the instincts" (sect. 5.3). I begin with a discussion of shame and then turn to the suggestion that we listen to perpetrators.

John Rawls defines shame as a feeling one has when one suffers a blow to one's self-respect as a result of failing to live up to one's values (Rawls 1971, p. 442). Shame is a painful feeling, so we want to avoid it, and the desire to avoid shame motivates us to remain true to our principles. This idea is part of a long tradition of thinkers who see value in shame. Aristotle, for example, held that shame restrained youth, who are more prone to live by feelings rather than reason and, hence, are apt to go astray (Aristotle 1985, 1129b20).

But contemporary understandings of shame view it as potentially debilitating. Gershen Kaufman, for example, explains shame as the breaking of the interpersonal bridge. Our trust in intimate others is founded upon the expectation of mutual responses, and "shame is likely whenever our most basic expectations of a significant other are suddenly exposed as wrong. To have someone valued unexpectedly betray our trust opens the self inside of us and exposes it to view" (Kaufman 1985, p. 13). Kaufman's view suggests that shame is undesirable. Martha Nussbaum, too, argues that shame is an undesirable emotion because it suggests a desire to deflect ourselves from our humanness (Nussbaum 2004).

Nell implies that by inducing shame in humans who behave cruelly, societies will reduce violence. But if Kaufman is right that shame is a feeling of betrayal by and alienation from others, it doesn't seem to provide the motivational source that Nell believes it does. Perpetrators who violate expected norms against engaging in shameful acts might feel less a part of society and, therefore, less concerned with how their acts affect others. This consequence could undermine any attempt to utilize shame as a curb to cruelty and violence.

Evidence does not suggest that inducing shame in perpetrators brings about positive results. Psychiatrist James Gilligan (1996) works with extremely violent perpetrators such as serial killers. His theory is that violence is the ultimate means of communicating the lack of being loved by someone who commits the violence; he calls the absence of love "shame." By working intimately with violent men, he identifies a "logic of shame" that he calls a kind of magical thinking: "If I kill this person in this way, I will kill shame—I will be able to protect myself from being exposed and vulnerable to and potentially overwhelmed by the feeling of shame" (Gilligan 1996, pp. 65–66). In fact, Gilligan says that, throughout his career of working in maximum security prisons, "I have yet to see a serious act of violence that was not provoked by the experience of feeling shamed and humiliated, disrespected and ridiculed, and that did not represent the attempt to prevent or undo this 'loss of face'" (Gilligan 1996, p. 110).

Gender differences further complicate the suggestion that shame can serve to dampen instincts toward violence. Eroticized violence is almost always enacted by males in the dominant role. And this may present a problem, because susceptibility to shame, too, may be gendered. Jennifer Manion argues that women may be more prone to shame (Manion 2003), and empirical studies suggest that women are more shame-prone than men (Ferguson et al. 2000; Lutwak et al. 2001). If susceptibility to shame is gendered, then attempts to attenuate violence in those more likely to perpetrate it will be a difficult task.

I now turn to the idea of listening to perpetrators. Attending to the voices of those who do violence seems correct. Yet Nell's suggestion may present more difficulty than one might expect. As John Conroy points out, interviews with torturers are likely to be flawed for two reasons. One reason is that torturers usually do not consent to be interviewed when they are actively torturing; the other is that torturers who are willing to talk about their cruel behavior are most often dissenters, not sadists (Conroy 2000, p. 121). This raises the question of whether we can obtain an accurate understanding of why people engage in cruel and violent acts. Our motives often elude us; many of us are well defended against seeing ourselves in a bad light. People who commit wrongful acts that are blatantly against norms of a society are even more likely to deflect their own motives. Elaine Scarry argues that torturers routinely supply themselves with a false motive so as to block any feelings of sympathy toward the actual sufferer (Scarry 1985, p. 59).

People who are violent may also dissemble. Nell discusses ways in which hunters retell stories of hunting successes, thus reinforcing details and accompanying emotions. But social responses to the retelling of an event will vary depending on the group to which one is storying. Norms for acceptable and deviant behavior are culturally bound. For example, a gang member may boast to the others in his gang of a successful retaliation against a rival gang and expect praise and congratulations, but he would probably consider boasting to others outside his gang as an act of foolishness. Furthermore, most of us are keenly aware of which actions are considered outside the pale of acceptable deviance, and perpetrators of cruelty and violence are no exception. They may try to infer what their audience is likely to tolerate and tailor their descriptions and explanations to suit the civility of a researcher or therapist.

A paradox may be at play here. If we want to create spaces where perpetrators can freely talk about their actions and the motives behind them, we must have a climate free of shame. But if Nell is correct, more social shame needs to circulate in order to erect barriers to violence. Can societies accomplish both these things? I would like to think so, but I fear not.

Cruelty's utility: The evolution of same-species killing

Malcolm Potts
School of Public Health, University of California, Berkeley, CA 92704.
pottsmalcolm@yahoo.com

Abstract: Human beings, like chimpanzees, deliberately kill their own species in order to expand their territory. For a self-aware social animal to attack its own kind, it would need to evolve a mechanism to dehumanize, or "dechimpanzee-ize" those it attacks. It is suggested that cruelty reflects such an evolved predisposition. The implications for violence prevention are discussed.

Nell's review of the evolutionary origins of cruelty is careful and much needed. He suggests that gratuitous cruelty evolved 1.5 million to 2 million years ago, and that it is an extension of the rewards predatory animals find in "pain, blood, and death." I suggest that cruelty is linked to coalitional aggression and same-species killing, and probably goes back 7 million years or more to a common ancestor with chimpanzees. I agree with Nell that cruelty used to maintain personal and social power depends on the ability to communicate the intention to inflict pain on another person, but I suggest that we need something in addition to the rewards of a predatory animal to explain the scale and universality of human cruelty.

Sometimes competing males lock horns or gore one another to death, and lionesses can band together to kill a strange male. Systematic, same-species killing, however, is limited to three or four mammalian species. Chimpanzees live in troops of related males who patrol the borders of a defined territory (Goodall 1986). Occasionally, a small group of adult males enters a neighboring territory in a stealthy way. If they find an isolated individual belonging to another troop, they will attack in the most vicious manner imaginable (Wrangham 1999; Wrangham & Peterson 1996). The victim usually dies in a day or two from wounds, blood loss, and shock. As individuals are killed, the attacking troop is able to expand its territory; more space means more fruiting trees, and more food means more females to be impregnated. Up to one-third of chimpanzees die as a result of coalitionary aggression.

Chimpanzees demonstrate self-awareness (Gallup 1982). It seems reasonable to postulate that for an intelligent, intensely social animal to kill another member of its own species, it will require a brain mechanism which in specific circumstances enables it to "de-identify" the animal it is attacking as a member of its own species. Human behavior is replete with examples of cruelty based on dehumanizing the victims, whether it is the enemy in the opposing trench, the believer in another religion, slaves, or criminals. The link between coalitionary aggression and cruelty also fits with the classic psychology experiments on obedience to authority (Milgram 1969/1974), the human predisposition to degrade an out-group (Zimbardo 1972), and recent work associating aversive stimuli with a different racial group (Olsson et al. 2005). It is a hypothesis that implies human cruelty is fundamentally different from that of a shark killing a seal, or cat playing with a mouse.

The fossil (Arsuaga 2002; Defleur et al. 1999), archaeological (LeBlanc & Register 2003), and anthropological record suggests a seamless transition from chimpanzee raiding to raids in preliterate human societies, and ultimately to modern warfare and terrorism. Among the Yanomamo – a preliterate society in South America – 4 out of 10 adults have participated in killing another person (Chagnon 1988). Once an adult brain categorizes a group as "the enemy," then empathy evaporates, and the more that are killed at one time, the better. The basic unit of warfare, whether troops in the Battle of the Somme (Macdonald 1983) or insurgents in contemporary Iraq, is a small group of men who are either kin (as in the Greek Hoplites) (Hanson 1991) or perceive themselves to be kin after basic training, as in the modern Marine Corps (Ricks 1998). The same combination of male bonding and violence can be observed in street gangs (Shakur 1993) and soccer fans (Buford 1992).

It seems as if almost any young adult male, whether as a volunteer or drafted into battle, can join a "band of brothers," and dehumanize a perceived enemy so as to commit obscenely cruel acts against his own species (Gray 1998). Mesquite and Weiner (1997) demonstrate that a high ratio of men ages 15 to 29 years correlates with a greater probability of aggression, whereas a higher proportion of women in a population has been correlated with a more peaceful social order (Worsnop 1990). Eviscerating a live victim on top of the Templo Mayor in sixteenth-century Tenochititlan, wielding the slave driver's whip in early nineteenth-century America, competing to behead the citizens of Nanjing in 1937, cheering a lynch mob in Minnesota in 1920, feeding people into a gas chamber in 1944, or flying a commercial jet loaded with fuel into skyscraper in 2001 are all acts of team aggression that demand an ability to dehumanize the victims.

I suggest that in chimpanzee and hominid evolution, coalitional aggression never benefited females, as territories are established and defended by related males. Although women can fight courageously (Costello 1985), no "band of sisters" parallel to a "band of brothers" has been observed in any culture. Perhaps the closest are the well-documented "Amazons" of Dahomey in the nineteenth century (Edgerton 2000). But, on close examination these seem to have been women surplus to a despot's harem who were literally whipped into battle, rather than the spontaneous, recurrent phenomena of male warriors volunteering to attack.

If cruelty is linked to the evolution of coalitional aggression, then anything strengthening female equality and enhancing women's role in society is likely to promote a more pacific and ultimately less cruel society. One practical step is to improve access to family planning. Since the late 1980s, Iranians have been offered realistic family-planning choices they did not previously enjoy, and family size has plummeted from five in 1990 to two in 2000 – a more rapid decline than in China, and without a one-child policy (Campbell & Potts 2003). There are now more women in Iranian universities than men. In Pakistan, family size still averages almost five; there is massive unemployment of young men, and the population is projected to grow from 162 million today to 295 million in 2050 – almost as many people who live in the United States in a country not much bigger than Texas. In a generation's time, Iran is likely to be a more stable society than Pakistan.

Animal cruelty: Definitions and sociology

Andrew Nicholas Rowan
Humane Society of the United States, Washington, D.C. 20037.
arowan@erols.com

Abstract: The definition of cruelty used by the author is broad and ambiguous and does not distinguish between acts of sadism, abuse, and neglect that all lead to the suffering of other beings. Some of the research involving animal cruelty is reviewed with the aim of raising questions about the relevance of the pain–blood–death (PBD) complex described by Nell.

When is cruelty not cruelty, and does it matter for Nell's argument?

Nell starts his argument with a definition of cruelty as "the deliberate infliction of physical or psychological pain on a living creature (target article, sect. 1)." This is far too broad a definition to be the basis of the development of a biological theory about the origins of cruelty. The discussion and elaboration of the intriguing and provocative pain-blood-death (PBD) complex is weakened by the unexamined ambiguities whenever "cruelty" is used in the text.

For example, there is a very important difference between those who inflict physical and psychological pain or suffering on animals as a "by-product" of their activities and those who do it because they enjoy or gain some other satisfaction from causing suffering. Nell, I suspect, is most concerned about this second, very rare behavior when he argues for the reinforcing nature of the PBD complex, but then ranges much further afield in discussing "cruelty" as a social control measure. The rare occurrence of sadistic cruelty, except in important instances of mass recruitment and pathology (e.g., the Rwandan genocide) or mass moral blindness (e.g., the Holocaust), leads one to question why such cruelty is not more common if the PBD complex has such a fundamental biological basis in our cultural lives.

Someone who engages in abusive behavior (an act of commission) should be distinguished from someone who is simply *indifferent* to or *ignorant* of the same suffering (an act of omission) – (see Rowan [1999] for a more detailed discussion of cruelty definitions). In fact, in instances of apparent "indifference" to suffering, the onlooker may be using various protective devices, either societal or personal, to ignore, obscure, or justify the suffering. The importance of being very careful in how one defines cruelty is demonstrated by an important review of cruel behavior by Felthous and Kellert (1987). Felthous and Kellert looked at studies examining the links between cruel and abusive behavior towards animals and towards humans. The studies that found no such link defined animal cruelty and abusive behavior to humans very broadly. The studies that did find a link used much more restrictive definitions of both animal cruelty and abusive behavior toward humans.

Many people fall into the category of those whose activities might cause suffering to sentient creatures but who either discount or deny the existence of such suffering or who argue that the suffering is an unfortunate by-product of an activity that is beneficial or necessary. For example, workers in animal-slaughtering facilities often either discount or ignore the animal suffering (see Grandin 1988). Those who perform medical experiments on animals often cause physical or psychological suffering (somewhere between 10% and 45% of research animals experience suffering; cf. Anonymous 1999), and their actions are deliberate and premeditated. However, animal suffering in research projects is neither necessary nor desired.

Sadistic cruelty – where the animal suffering is both intentionally inflicted and enjoyed by the actor – is both rare and the subject of very little serious scholarship. Nearly all the pertinent literature on the links between animal and human abuse could have been gathered into a single volume (Lockwood & Ascione 1997), and scholarly studies of cruelty to animals are even more limited. Two South African authors analyzed 1,863 cruelty cases from four SPCAs in South Africa over a one-year period (Vermeulen & Odendaal 1993). More than 80% of these cases involved neglect (acts of omission) rather than abuse or sadistic cruelty. The analysis did not differentiate between sadism and other forms of abuse such as an anger-induced over-reaction. Out of 80,000 complaints received by the Massachusetts SPCA over a 20-year period, only 268 cases were prosecuted, all of which involved some form of deliberate abuse (Arluke & Luke 1997).

Nell briefly discusses the fact that the enjoyment of human and animal suffering is now far less common than in the past and suggests it is because of the social controls exercised by modern, developed societies. Yet, the Rwandan and Serbian activities illustrate that the human ability to be sadistic or to suspend normal moral constraints is still alive and well. We now know that an exposure to a violent or abusive environment is a very strong predictor of later abusive behavior. However, only a minority of children brought up in an abusive household continue the cycle of abuse. If the PBD complex was as important a reinforcer as Nell claims, would we not expect the proportion of children who continue the cycle of abuse to be much higher? Zimrin (1986) reported that the "survivors" of an abusive upbringing (i.e., those that did not continue the abuse cycle as adults) were distinguished from the "non-survivors" by three characteristics – they had an adult mentor in their lives who supported them, they had strong fantasy lives, and they had the responsibility for caring for another being such as a sibling or an animal.

Interestingly, a proportion of those who suffer abuse as children not only avoid continuing the cycle of abuse, but they become what might be termed "super-nurturers." These are individuals who often end up in a caring profession (such as child protection or animal protection). For example, Quinlisk (1999, p. 169) reported that 2 of 49 children from abusive households had become "super-nurturers," and I personally know a number of animal activists who were abused as children, and who described how their care of animals taught them how to care (see Zimrin 1986). If the PBD reinforces cruel behavior, then how would such an outcome be explained?

In sum, we need to be much more careful in how we define and use the word *cruelty* if we are to understand its manifestations and its biological roots. If the "thrill of the kill" is self-reinforcing, as the presence of a PBD complex might imply, then how does being raised in an abusive household lead some into continuing that behavior as adults, while others end up at the opposite extreme as super-nurturers?

Executive function and language deficits associated with aggressive-sadistic personality

Anthony C. Ruocco[a] and Steven M. Platek[b]

[a]*Department of Psychology, Neuropsychology Program, Drexel University, Philadelphia, PA 19102-1192;* [b]*Department of Psychology, Drexel University, Philadelphia, PA 19104.*

acr32@drexel.edu **smp43@drexel.edu**

http://psychology.drexel.edu/ECNL/

Abstract: Aggressive-sadistic personality disorder (SPD) involves derivation of pleasure from another's physical or emotional suffering, or from control and domination of others. Findings from a head-injured sample indicate that SPD traits are associated with neuropsychological deficits in executive function and language, suggesting difficulties in frontal-lobe-mediated self-regulation of aggressive and emotional impulses. Implications for rehabilitation of aggressive offenders are discussed.

Human aggression is the result of a complex interplay of biological, psychological, and social influences. Nell provides an intriguing exposition of the evolutionary context of cruelty that takes into account the interactive nature of genetic, neural, instinctual, and environmental forces in shaping aggressive behavior in primate species. The functional neuroanatomy of aggressive behavior in humans, however, might best be conceptualized as involving reciprocal relations among neurobiological systems, higher-order neurocognitive processes, distal organismic factors, and environmental antecedents and consequences.

Nell's account of the functional neuroanatomic underpinnings of cruel behavior implicates the involvement of multiple subcortical systems commonly regarded as primary circuits that mediate the expression of aggressive behavior. These neural systems, however, have largely been studied in primates using stimulation techniques, and the extent to which studies of this nature can be generalized to human aggression is unclear. In humans, capacity for higher cognition requires that models of aggression accommodate neurobiological systems that might mediate such behaviors and the ways in which these systems may go awry. Neuropsychological findings provide rich information about the neurocognitive functions and associated neuroanatomic subsystems and regions that may be implicated in aggressive behavior. Unfortunately, inconsistent operationalizations of aggression and cruelty in humans have largely precluded meaningful study of these constructs from a neuropsychological perspective (Blake & Grafman 2004).

Most neurobiological investigations of aggression have tended to focus on persons with antisocial personality disorder (APD), psychopathy, and violent offenders; however, little is known about the aggressive-sadistic personality disorder (SPD). SPD is a condition characterized by derivation of pleasure from another person's physical or emotional suffering, or from the control and domination of others (Meloy 1997). The Millon Clinical Multiaxial Inventory–III (MCMI–III; Millon et al. 1997) provides an assessment of APD and SPD traits, and research has largely substantiated the validity of these scales (Holt et al. 1999).

Although there exists a large neuropsychological literature examining APD and psychopathy, only limited evidence is available for SPD.

Recent findings implicate a subset of neurocognitive deficits associated with SPD traits that clearly diverge from those related to APD, and they also implicate the involvement of more anterior regions in traits associated with cruelty and aggression (Ruocco & Swirsky-Sacchetti, in press). The neuropsychological profiles of 161 patients referred for neuropsychological evaluation following closed head injury were examined in relation to their standings on MCMI–III personality scales, including APD and SPD indices. Deficits in executive function and language were associated with SPD traits, even after accounting for shared variance with other neuropsychological domains of function. APD traits, on the other hand, were solely associated with language deficits.

The findings highlight key neurocognitive differences that may exist between SPD and APD. Studies indicate that whereas MCMI–III SPD traits emphasize emotional acting out, strong-willed determination, social independence, and defensive aggression, APD is associated with social mistrust, social independence, and behavioral acting out (see Choca 2004). Compared with APD, SPD appears to be more strongly associated with overt emotional and defensive aggression, rather than psychopathic and competitive attitudes, as is more characteristic of the APD scale. Although both traits are associated with language deficits, only SPD traits are associated with poor performance on tests of executive function.

The executive functions are higher-order regulatory and supervisory functions carried out primarily by the frontal lobes (Miyake et al. 2000). Component cognitive processes considered part of the executive system are the functions of planning, mental flexibility, and inhibitory control. The observed decrement in executive function in relation to SPD traits may represent deficient functioning in any of these subdomains. Given the predominance of emotional and defensive aggression implicated in SPD traits, deficits in executive function may underlie poor self-regulatory skills in the domain of inhibitory control, whereby specific antecedent conditions (e.g., insult, perceived threat) may trigger a prepotent emotional or defensive reaction that individuals may have difficulty inhibiting. Moreover, deficits in language skills may escalate difficulties associated with executive dysfunction, whereby successful communication of emotional reactions to the perceived aggressor may be hampered and lead to further problematic interpersonal exchanges.

In contrast, no executive function deficits were associated with APD traits in the head-injured sample. This is consistent with meta-analytic findings that revealed only minor deficits in executive function for APD groups compared with larger deficits for groups with overt antisocial behavior problems, such as psychopathic offenders (Morgan & Lilienfeld 2000). The implication of language deficits in association with APD traits, even when controlling for level of education, suggests that there may be problems in the way that individuals high in APD traits communicate with others. This is a finding common to SPD traits and necessitates further exploration to examine the nature of language difficulties for persons with strong antisocial and sadistic tendencies.

These observations are intriguing because they are drawn from a sample of individuals with a wide range of functioning in neuropsychological and personality domains, from normal to impaired or disordered. The implication is that SPD traits exist along a continuum and that functioning in executive and language domains coincide with these traits across a wide range of functioning. Indeed, Nell's neurobiological account of aggression in primates does not postulate that such behavior or the underlying neural mechanisms are maladaptive; on the contrary, they are necessarily adaptive for the species. It may well be the case that maladaptive forms of aggression in humans, in the context of an orderly society, are invoked primarily by deficient regulation of more primitive subcortical systems by anterior brain regions. Certainly, the orbitofrontal and ventromedial frontal cortex play important roles in regulating key systems associated with emotional responses based on analyses of context (Ochsner & Feldman Barrett 2001). The "controlled" nature of functioning of these systems stands in contrast to the more "automatic" processing engaged by more subcortical and primitive structures of the amygdala and basal ganglia.

Given these considerations, rehabilitation of psychopathic offenders ought to take into account the integrity of executive functions, language skill, and the presence of SPD and APD traits. Offenders who possess strong sadistic tendencies would seem to necessitate attention to deficits in both self-regulatory abilities and language skill, whereas antisocial persons who do not have sadistic qualities may benefit more from interventions aimed at improving communication abilities. Cognitive rehabilitation may be appropriate for ameliorating problems with executive function, particularly inhibitory control of emotional and impulsive behaviors, a skill crucial for successful societal engagement. Rehabilitation service delivery professionals ought to be acutely aware of the unique neurocognitive deficits associated with SPD and APD and the ways in which these might impede progress in therapy and community reintegration.

ACKNOWLEDGMENT

The first author acknowledges fellowship support from the Natural Sciences & Engineering Research Council of Canada and Drexel University College of Arts & Sciences.

Nice idea, but is it science?

Richard Schuster

Department of Psychology, University of Haifa, Mount Carmel, Haifa, 31905, Israel.

schuster@psy.haifa.ac.il

Abstract: In the target article, human cruelty is linked to intrinsic reinforcement from engaging in the behavior without any recommendations for a research program to validate or test for such reinforcement and its independence from ultimate adaptive outcomes. Suggestions are offered in this commentary for such a program.

The target article suggests that human cruelty exists to deliberately inflict pain and suffering on others because it is intrinsically pleasurable and rewarding, that is, a goal in and of itself. In principle, there is nothing intrinsically wrong with the idea of behaviors that can be intrinsically reinforcing (e.g., Harlow 1953). Play behavior, for example, seems to offer this possibility of performance without evidence of any immediate material outcome (Bekoff & Byers 1998), and Schuster and Perelberg (2004) have suggested that intrinsic reinforcement linked to the *behavior* of cooperating could explain why cooperation can persist when it is not immediately beneficial. Moreover, the existence of both play and cooperation can be linked to long-term benefits that impact on fitness. In the case of

cruelty, however, the arguments are based mostly on a flood of examples implying universality in humans, supported by evolutionary arguments about alleged links between cruelty and the normal behavior of predators. But there is no program of research with testable hypotheses for substantiating the central claim that human cruelty is a goal based on a process of intrinsic reinforcement. What remains is circularity: Cruelty exists only because it reinforces itself. This commentary will briefly suggest six possible ways for testing that human cruelty is linked to both intrinsic reinforcement and ultimately beneficial outcomes.

One test is to measure the degree of *choice between behavioral alternatives that lead to the same tangible outcome*. In the case of cruelty, it is conceivable to consider two routes available for vanquishing an enemy – defeating/killing it either *with* or *without* an excess of violence, pain, and cruelty. Which would be preferred? There are, incidentally, evolutionary reasons for arguing that excess violence and cruelty might not be adaptive because they invite retaliation and the risk of injury or death to the victor (e.g., Krebs & Davies 1993). So it is a bit odd that evolutionary arguments are used to suggest the existence of cruelty as an end in itself without considering how this could possibly be an adaptive consequence of natural selection.

A second test is to demonstrate the degree to which *cruelty might be linked to eventual outcomes that indeed are profitable and contribute to fitness*. Nell states: "These definitions of cruelty exclude pain that results from fighting, killing, and war, in which the goal is not to inflict pain but to cause the adversary's flight, submission, or death" (sect. 2) But the use of the term "goal" is inconsistent. Sometimes, "goal" is used to mean only the immediate, intentional, conscious aim of tormenting another that seems a gratuitous waste of time and energy not justified by eventual profit. A useful explanatory alternative is to distinguish between *two kinds of potential outcomes from behaving cruelly*: the immediate affective "high" from tormenting another, and the eventual profit that can be linked at least probabilistically to the use of cruelty as a product of natural selection (see Schuster & Perelberg 2004). The allegedly powerful affects associated with behaving cruelly would then be lumped with all the other kinds of immediate positive outcomes that motivate and reinforce an individual's behaviors at the time of performance. But these processes are not the same as the evolutionary processes governed by long-term outcomes – those profitable events during an individual's lifetime that eventually impact on fitness and therefore influence the operation of natural selection. This is the *ultimate process* that could determine why individuals might deliberately engage in cruelty. In fact, the target article suggests a sequential chain of events between immediate cruelty and long-range benefits such as increases in dominance, territory, and political power/control. In theory, these events are also goals but only in the sense of long-range consequences that the individual probably does not know about at the time that he or she is engaging in, and enjoying, acts of cruelty.

A third test is to *measure and validate the kinds of behaviors that can serve as markers for positive affect associated with acts of cruelty*. For example, rats emit 50 KHz ultrasound calls associated with positive affect (Panksepp & Burgdorf 2003). Such behavioral markers of underlying states can be compared when individuals defeat others either with or without cruelty, and when acting alone or cooperatively.

A fourth test arises from the author's suggestion that the *reinforcement for cruelty arises from the same general process responsible for any so-called conditioned reinforcer*: Pavlovian associations between an initially neutral stimulus and a *primary natural reinforcer* such as food (Schuster 1969). The target article suggests that there is a set of linked conditioned stimuli that reliably accompany the successful end of a predator's hunt and precede the beginning of feeding: the pain-blood-death (PBD) complex. The target article also implies that this PBD complex can acquire an independent capacity to reinforce, thereby explaining the powerful effects of the PBD complex in humans. The first question is to ask whether the conditioned PBD stimuli in an animal can provide *additional reinforcement* on top of the primary reinforcer. This is testable in principle by again using a choice procedure: comparing choices between two routes to bringing down the same prey: one accompanied by the PBD conditioned stimuli and one without them (see, e.g., Schuster 1969). It is not obvious, for example, that a predator prefers hunting and killing over the easier and less dangerous alternative of stealing prey item killed by another. The second question is whether a conditioned reinforcer can continue to provide motivation and reinforcement after it is disconnected from its original primary reinforcer. This is also testable by measuring how long the PBD complex is capable of reinforcing behavior by itself after the final event in the chain – the food – is no longer available. The answer from animal research in the laboratory is that the efficacy of a conditioned reinforcer usually dissipates rather rapidly when disconnected from the primary reinforcer. This is because the reinforcing value of a conditioned reinforcer is usually linked to the positive information it provides about gaining a real, tangible and immediate profit such as food (Schuster 1969). In terms of cognitive expectancies, the conditioned reinforcer seems to be effective as long as it continues to evoke an expectancy of food. The conditioned reinforcer therefore does not in itself add to the economic value an alternative that leads to food. Instead, the food is in fact the only real event of value. In animals at least, a preference for the PBD route should eventually become negligible.

So why did modern humans supposedly evolve with a unique sensitivity to the PBD complex that makes it independently motivating and reinforcing for engaging in acts of cruelty? The fifth test is therefore to determine *whether cruelty exists in other animal species*, and *why*. Assuming agreement on how to identify cruelty, there is suggestive evidence (Schaller 1972, pp. 273–74, and in the National Geographic documentary film *Eternal Enemies*) that lions and hyenas sometimes act as if they are sworn enemies, mauling and killing each other on sight without any goal of eating the vanquished target. But this cruelty is not gratuitous: These species are intensely competing for food and regularly kill each other's offspring. And the "territorial warfare" of chimpanzee males is marked by continued beating, biting, and pounding that do not always end with the death of the victim. Instead, the attacks continue and even include ripping the testicles off the battered corpse (Watts & Mitani 2001; Wrangham & Peterson 1996). Again, there are long-range benefits from expanding territory and increasing access to females. If these are markers of hate and cruelty, then chimpanzees, lions, and hyenas seem to show them. Perhaps lions and hyenas, as cooperating social carnivores, also share the rudiments of a theory of mind that has been associated mainly with chimpanzees and other apes (e.g., Byrne 1995).

Finally, the sixth test concerns *the likelihood that any given human is fully capable of the kinds of extreme cruelty described in the target article*. Some people are clearly cruel, even to their own kin. But the target article implies that the human potential for cruelty lies dormant in all of us and has not changed much over the millennia. Thus, the Caligulas, Saddam Husseins, and Abu Ghraib Prison guards in Iraq would be the rule and not the exception. But is this a valid claim? Surely more information is needed to validate the author's sweeping claims that there is a potential in *all of us* to be readily energized and rewarded just by the opportunity to torment others. Or is there something about particular individuals or their histories that predisposes them to cruelty? Without any of this information, the article risks being a polemic. And that is unfortunate because the subject is interesting and important.

Sadistic cruelty and unempathic evil: Psychobiological and evolutionary considerations

Dan J. Stein

Department of Psychiatry, University of Cape Town, Groote Schuur Hospital, Observatory, Cape Town 7925, South Africa.

dan.stein@curie.uct.ac.za

Abstract: Understanding the origins of evil behaviour is one of our most important intellectual tasks. A distinction can perhaps be drawn between overt sadistic cruelty and the lack of empathy to suffering that is a hallmark of evil. There is increasing data available on the prevalence, proximal psychobiological underpinnings, and distal evolutionary basis for these contrasting phenomena.

Understanding the origins of evil behaviour is one of our most important intellectual tasks, and Nell makes a useful contribution by emphasizing the ubiquity of cruelty, its reward value, and its emergence over the course of evolutionary history.

Although the term *evil* has origins in theological rather than scientific literature, it is useful insofar as it emphasizes that cruel behaviour forms only a subset of a larger class of violent behaviour that involves the infliction of physical or psychological pain on others. Cruelty is often associated with delight or with other forms of arousal in the pain of others (as Nell points out), whereas other kinds of violence may simply involve a failure to be sufficiently empathic to the suffering of others (e.g., the evil of bystanders).

If this distinction between overt sadism and a lack of empathy is valid, then immediate questions arise about the relative prevalence of these different kinds of phenomena, about their proximal psychobiological mechanisms, and about the distal evolutionary origins that underlie them. A large body of literature has tackled this area, but at this point in time there are perhaps more questions than answers. Nevertheless, a number of points can be made about the prevalence, psychobiology, and evolutionary underpinnings of overt sadistic cruelty and lack of empathy to suffering.

In an influential review, Baumeister emphasized that absolute cruelty – brutality inflicted on innocent victims for sadistic pleasure – is rare (Baumeister 1999). Instead, he argued that most violence can be understood in terms of emotions such as fear, lust, pride, and idealism. If he is correct, most perpetrators do not enjoy their acts, but nevertheless feel justified in doing them. Certainly, while it is crucial to recognize the overt sadism in the acts of cruelty described by Nell, it is equally important to recognize the banality of evil involved when individuals and societies ignore the suffering caused by their violent acts (Kaminer & Stein 2001).

The neuropsychiatric literature would seem to suggest a distinction in the proximal psychobiology of overt sadism and unempathic evil. Temperolimbic lesions may lead to sadistic behaviour, and more commonly, prefrontal lesions are associated with a lack in empathy and inhibitory dyscontrol (Stein 2000). fMRI studies have indicated that it is not only the occasional patient who takes pleasure in the suffering of others; reward centres are ordinarily activated during altruistic punishment (de Quervain et al. 2004). Similarly, inhibitory dyscontrol is also not uncommon; adolescence and substance use are associated with decreased prefrontal capacity (Chambers et al. 2003).

The evolutionary literature may shed further light on the distinction between overt sadism and unempathic evil. As Nell concludes, there is currently little evidence that cruelty is an adaptation underpinned by a hard-wired model of the brain. In contrast, there is strong evidence that empathy is an adaptation with a specific neurocircuitry and particular adaptive value (Preston & de Waal 2002; Stein 2005). Nevertheless, it is not necessarily adaptive to extend one's empathy to all; there are individual differences in empathic capacity, and in individuals' willingness to extend empathy to unrelated individuals or to other species (Stein 1996).

Nell provides some useful suggestions about the measurement of individual differences in the capacity for cruelty. Here it is relevant to emphasize the possible impact of differences in early environmental adversity on subsequent proneness to sadistic or unempathic behaviour. Prevalence data have emphasized an association between early trauma and adult psychopathology (Paolucci et al. 2001). Psychobiological research has noted that early adversity may disrupt dopaminergic neurocircuitry and reward-related behaviours (Stein et al. 2005). And an evolutionary literature has suggested that in the context of high levels of environmental adversity, impulsivity may be adaptive (Gerard & Higley 2002).

Violence not only presents moral quandaries, but it is a major public health issue. Is it possible to translate gradual insights into the biological and evolutionary psychology of cruelty and evil into the prevention of violence? Arendt, Baumeister, Nell, and many others have emphasized the need to begin by acknowledging the ordinary and universal human capacity for cruelty and evil; these behaviours cannot merely be relegated to those who are "abnormal" or otherwise marginal. Other steps are also needed; individuals and societies need to increase their awareness of violence and to use their empathy and understanding to reduce cruelty and evil (Stein et al. 2002).

Epigenetic effects of child abuse and neglect propagate human cruelty

James E. Swain

Child Study Center, Yale University School of Medicine, New Haven, CT 06520.

james.swain@yale.edu

Abstract: The nature of children's early environment has profound long-term consequences. We are beginning to understand the underlying molecular programming of the stress-response system, which may mediate the destructive long-term effects of cruelty to children, explain the evolutionary stability of cruelty, and provide opportunities for its reversal of early trauma.

In the target article, Nell tries to demonstrate that cruelty is a historically and cross-culturally stable feature of human behavior. Although the elaborations of cruelty for punishment, amusement, and social control may have arguable evolutionary merits, the problem of explaining cruelty directed against children – child abuse – is profound and perplexing for humans. In fact, recent surveys suggest rates of child abuse to be alarmingly high and unequivocally damaging. For example, child sexual abuse prevalence is at least 20% for women and 5%–10% for men worldwide (Freyd et al. 2005). Further, in clinical (Brown & Anderson 1991), community (Bifulco et al. 1991), and epidemiological samples (Holmes & Robins 1988), experiences of early child maltreatment have been associated with the burden of higher rates of major depression, anxiety, and other psychiatric disorders. More recent studies have begun to examine mechanisms. In one study of 268 adults, retrospective questionnaire responses indicated a significant association of childhood trauma and impulsivity (Roy 2005). Further, Pine et al. (2005) found an association between maltreatment and attention avoidance of threatening faces in 34 children who had been abused. The significant psychiatric sequelae likely result from a plethora of evolutionarily adaptive mechanisms that normally mediate positive influences, which are co-opted by trauma to affect children's sensitive, developing, and adaptive nervous systems (Worthman & Kuzara 2005). Research so far focuses on epigenetic modulation of the stress-response system by the experience of violence and neglect

(Bevans et al. 2005; De Bellis 2005; Heim et al. 1997a; 1997b; Kaufman & Charney 2001; McEwen 2003). Increased stress may lead to chronic cortical dysfunction and activation of the hypothalamic-pituitary-adrenal axis with associated systemic health detriments including hypercortisolemia, immunosuppression, and elevated blood pressure.

Animal studies have examined the impact of trauma on developing brain function. In rat models, infant stress through maternal separation causes increased basal and stress-induced adrenocorticotropic hormone (ACTH) and corticosterone, increased hypothalamic, amygdala and locus ceruleus noradrenaline and corticotropin activity, reduced gamma amino butyric acid (GABA) tone, and hippocampal atrophy (Ladd et al. 1996). However, ACTH response to air-puff startle decreased with handling or foster mothering (Huot et al. 2004). Similarly, in infant macaques, peer rearing rather than maternal rearing (a model of neglect and abuse) is associated with increased ACTH response to separation. However, serotonin gene promoter polymorphism (5-HTTLPR) moderated this effect: Animals with the l/l allele had a lower ACTH response (Barr et al. 2004). Although the molecular details of how childhood experiences shape mental health in humans is unknown, the model of maternal care as the mediator of experience-dependant changes in gene expression has been the subject of numerous recent studies in rats (Meaney & Szyf 2005). Meaney and colleagues describe a fascinating model, in which the environment shapes the expression of glucocorticoid receptors. Tactile maternal stimulation of the rat pup (licking and grooming) stimulates serotonin release in the hippocampus. This, in turn, increases the second messenger cAMP, which activates protein kinase A and stimulates nerve growth factor 1A (NGF-1A), which increases glucocorticoid receptor expression. In addition, NGF-1A causes long-term cytosine demethylation, and histone acetylation that increases NGF-1A binding into the animal's adulthood. This is likely one of several mechanisms by which cruelty towards infants – in the form of physical, sexual, and neglectful traumatic abuse – has long-term consequences.

The possible mechanisms by which early trauma may shape long-term mental health are beginning to be studied (Bevans et al. 2005) in humans as well. In adults, trauma is associated with a range of measurable changes in the stress-response system including increased CRF and noradrenalin in cerebrospinal fluid (Bremner et al. 1996). In one of the first studies of gene–environment interaction in the manifestation of psychiatric problems in children, Kaufman and colleagues have found that the quality and availability of social supports moderated risk for depression associated with a history of maltreatment and the presence of the short (s) allele of the 5-HTTLPR (Kaufman et al. 2004). Maltreated children with the s/s genotype and poor positive supports had the highest depression ratings – scores that were twice as high as the non-maltreated comparison children with the same genotype. However, the presence of positive supports reduced risk associated with maltreatment and the s/s genotype, such that maltreated children with this profile had only minimal increases in their depression scores. These findings are consistent with emerging preclinical and clinical data, suggesting that the negative outcomes associated with early stress are not inevitable. In fact, it appears that the risk for negative psychiatric outcomes is modifiable through both genetic and environmental factors. Specifically, it appears that the quality and availability of social supports are among the most important environmental factors in promoting resiliency in maltreated children, even in the presence of a genotype expected to confer vulnerability for psychiatric disorder.

Given the debatable benefits of cruelty, especially with the knowledge of the negative psychiatric outcomes, and the predisposition to warlike behavior (as described in the target article) in an age of weapons of mass destruction, it appears fortunate that human adaptability through experience-dependant chromatin plasticity may provide a means to reduce human violence. Perhaps cruelty is preventable through interventions at the earliest stages of human development aimed at eliminating child neglect and abuse. Further studies of the molecular mechanisms may also suggest treatments aimed at older children and adults already affected with approaches that combine pharmacological targeting of those molecules along with psychotherapy aimed at reprogramming the stress response system.

Predation versus competition and the importance of manipulable causes

Katy Tapper

Cardiff Institute of Society, Health and Ethics, Cardiff University, CF10 3AT, United Kingdom.

tapperk@cf.ac.uk **http://www.cardiff.ac.uk/socsi/cishe**

Abstract: It is difficult to fully account for (1) cruelty in modern society and (2) female cruelty, referring only to a cruelty-satiation association. Instead it seems likely that cruelty acquires its reinforcing value via association with a range of reinforcers. In addition, when one's goal is violence prevention, it is important to identify causes that can be manipulated.

Nell argues that cruelty is a by-product of predation and suggests that signs of pain, blood, and death come to function as positive reinforcers as a result of their association with satiation. However, in modern society few individuals will have the opportunity to acquire such associations, and yet, as Nell points out, examples of cruelty abound. How then can we account for these? One possible explanation is that signs of pain and death have at some point is our evolutionary history become primary (i.e., innate) reinforcers, on a par with food and sex. This seems inconsistent with the vast numbers of men who find the idea of physical cruelty highly aversive. An alternative explanation is that our predatory heritage has left us predisposed to more readily acquire signs of pain and death as *conditioned* reinforcers (see Seligman [1971] for a similar theory of "preparedness" in relation to phobias). Thus, signs of pain and death would very rapidly come to function as reinforcers but *only* after the individual had associated them with existing reinforcers (e.g., approval or submission; see Skinner 1953). It would be possible to test this hypothesis experimentally, though perhaps a challenge to do so ethically.

However, this cannot account for the data on female aggression. Nell states that, because of its association with hunting, active cruelty is likely to be strongly male-gendered. Yet research shows that while males employ more "direct" or "overt" forms of aggression than females (e.g., physical aggression), females employ more "indirect" or "relational" forms of aggression than males (e.g., excluding someone from a group, spreading rumours) (Bjorkqvist et al. 1992; Crick & Grotpeter 1995; Tapper & Boulton 2004). These indirect forms of aggression are consistent with Nell's definition of cruelty as "the deliberate infliction of physical or psychological pain on a living creature" (target article, sect. 1).

What are the implications of female aggression for Nell's theory? If in our evolutionary history cruelty was a marker for male hunting skills, it would have been adaptive for females to be attracted to males who displayed this trait. In a culture that is reliant on hunting, it is also reasonable to assume that females would not be averse to cruelty and may also derive some pleasure from it. However, given that most hunting would have been carried out by males, one would still expect to find higher levels of cruelty among men. How then can we account for the fact that when it comes to psychological cruelty, the evidence suggests that females are more likely to be the perpetrators?

One possible explanation is that much cruelty is a by-product, not of predation, but of competition for resources. (For females

this might consist of access to high status partners for oneself and one's offspring.) In this case, signs of victim suffering and/or death would acquire their reinforcing value via repeated association with a wide range of other reinforcers. For example, if Peter frequently hits John, making John cry and give Peter the toys he's been playing with, the sight of John crying may eventually become a conditioned reinforcer because of its association with access to toys. As a result, Peter may start to hit more often, not simply to gain toys, but also to make other children cry (see Patterson et al. 1967).

Additionally, cruelty may arise even in the absence of direct contact with reinforcers. Diamond (2005) argues that a major contributing factor to the Rwandan genocide of 1994 was a rising population that had resulted in land shortages and extreme poverty. He suggests that land and resource redistribution were major incentives for the killings. In this example, individuals may not have had previous experience of gaining land as a result of killing but may have had a cognitive representation of this association. They may also have mentally linked killing to a variety of other positive outcomes, such as notions of justice and retribution. As a result, the act of killing may have become imbued with some of the positive emotions associated with land gain, justice, and so on (see Hayes et al. 2001). Hence, in this example it is not our predatory nature that distinguishes us from other species and accounts for the widespread cruelty, but our cognitive ability to link killing to a range of positive notions and outcomes.

Thus, although predation may help account for the prevalence of physical cruelty, it seems too restrictive to relate all forms of cruelty to predation. Rather, it appears possible to account for cruelty via its association with other reinforcers, many of which may stem from resource competition. Such associations in our ancestors could have contributed towards an innate predisposition to enjoy cruelty (see above). However, even in the absence of any innate predisposition, such associations are still able to account for cruelty in the modern world.

Turning to violence prevention, Nell calls for descriptive data on eliciting triggers to cruelty and the gratifications of perpetrators. This is in accord with the views of aggression researchers who have also argued for more descriptive data (Archer 1995; Tapper & Boulton 2002; 2005). However, when it comes to prevention, we need to identify the most manipulable causes. In this regard, aspects of modern society structure may be more important than insights from our evolutionary history. For example, research indicates that among primary school children certain types of aggression will mainly result in positive responses from onlookers (Salmivalli et al. 1996; Tapper & Boulton 2005). This suggests that the rewards for much school aggression may lie in the responses of onlookers rather than any form of material gain. Attempting to reduce or remove reinforcement from onlookers may therefore be one route to aggression reduction. It is possible that this analysis may also apply to certain types of adult cruelty, such as incidents of prisoner mistreatment. The aggression literature contains many such examples that would usefully inform attempts to collect data on, and make sense of, the more extreme forms of violence referred to by Nell. A research programme of this kind would be invaluable.

ACKNOWLEDGMENT
Thanks to Emmanuel Pothos for comments and discussion.

Torturers, horror films, and the aesthetic legacy of predation

Lionel Tiger
Department of Anthropology, Rutgers University, New Brunswick, NJ 08901.
ltiger@rci.rutgers.edu

Abstract: A Rousseauist bias towards the study of human aggression has treated it as a regrettable anomaly rather than a volatile reflection of important forces in human evolution. Intrepidly, Nell displays the arc of connection between predation in humans and other animals and the neurophysiological factors that underlie chronic interest in accident, death, and harsh force.

Plus ça change. There is an arc between this excellent and provocatively well-researched essay and Robert Ardrey's *African Genesis* (1961), which was immensely controversial when it first appeared. "Not in Asia and not in innocence was man born . . ." set the stage for a hot debate about the naturalness or not of human aggression (Ardrey 1961). Though Ardrey did not deal with the issue, Nell here innovatively portrays the issue as also an aesthetic one – of the fact that there are brain circuits (not modules, for heaven's sake) that respond to and sustain the extraordinary behavior in which humans and other animals engage and which he describes. It seems clear that a species committed to predation should have a set of positive emotional and physiological correlates to accomplishment of the task. I tried in my book *The Pursuit of Pleasure* (Tiger 1992) to suggest that the push of scarcity and fear had to be accompanied by the pull of pleasure and reward in motivating people. Here, with punctilious and imaginative (in the good sense) scholarship, Nell makes the case for the pull of cruelty as a factor in the human repertoire.

Now, of course, no one likes this, and a large precinct of the academy is devoted to claiming that cruelty and its cousins exist mainly because a few bad people contrive to dragoon many people into bad schemes. The fact that teenagers on budgets will willingly spend 16 or more dollars for two tickets to a horror film is attributed to – what? Years ago I attended a conference in Knoxville at the University of Tennessee, about morbid curiosity. One of the other speakers was a state trooper who described the difficulty his force had in coping with drivers evidently eager to see the content of an accident scene. There is a whole police drill for dealing with this particular aspect of policing, which Nell's analysis illuminates. If nothing else, accident rubberneckers are clearly acknowledging that "there but for the twist of the steering wheel go I," and that it is instructive to know the potential outcome of one's behavioral options.

So, in part, the interest in mayhem, cruelty, and accidents reveals a sensible concern about preparing the self for eventuality. And the worldwide fascination with the natural disasters, which are a staple fare of television and other news providers, is also an index of human awareness of the thin membrane between normality and perilous even fatal disruption of life's patterns. The burgeoning of human populations escalates the number of victims of natural disasters such as floods and earthquakes, which routinely occur. Greater mobility because of the availability of vehicles and energy for personal transport may in fact also increase awareness of the intrinsic risk in any community. Sharp right angles, unyielding metals, and fast-moving large objects are easily perceived potential messengers of personal horror. It is also reasonable to assume that changed technological conditions have produced changed levels of awareness of personal safety. They have possibly even fueled enthusiasm for graphically anti-empirical religious notions of salvation and ecstatically comfortable other-worlds.

Nell is informative about the role of cruelty in politics, which, as we know, ranges from producing genuine amusement for many leaders such as Idi Amin and Saddam Hussein to causing routine beatings by guards and police of human beings under their control and presumably in their care. I have for long wondered when and where are the national and international conventions of torturers – there must be such, even if they consist of covert subsets among broader gatherings of those concerned with policing and warring. The restorative and benign – and puzzlingly popular – response to cruelty and torture is reflected in endless spectacles, from the expert Roman ones Nell describes to the more theoretical ones that

revolve around punishments donated to those who are religiously incorrect and morally frail. Perhaps the ultimate formal cruelty is the currently very popular jihadist announcement that all those uncommitted to Islamic fundamentalism of a particular flavor should be killed in an eager form of broad service to godly rectitude. The idea is, of course, quite amazing, yet the dancing in some streets that followed the attacks on the World Trade Center and the Pentagon is no small datum about the value of Nell's central and profound assertion. Armageddon as an idea of appropriate punishment for bad people remains an attractive feature of various systems of belief. Who dreams up such notions but members of a species apparently equipped with the full toolkit Nell describes? And yet, given Nell's analysis of vicious primate hunting, we may be permitted to wonder what would be the result if chimps employed assertive theologians to justify their behavior.

Cruelty, age, and thanatourism

Pierre L. van den Berghe

Department of Sociology, University of Washington, Seattle, WA 98195-3340.
plvdb@u.washington.edu

Abstract: Two areas of research for testing Nell's theory are suggested. One is cruelty's seemingly negative correlation with age, which would confirm its linkage with testosterone, sex, and dominance. The other is the special field of leisure activity called *thanatourism*, that is, the transformation of loci of human horror into tourist attractions.

Nell makes at least two major contributions in the target article. First, he convincingly destroys the frequent, categorical, but empirically unsupported dissociation between predation and aggression. To be sure, the two are not necessarily associated, but their coevolution in predatory vertebrate species is highly plausible. Second, Nell notes the quantum jump in cruel behavior associated with the rise of states. In this, he shows how any complete account of human behavior always involves the interplay of biology and culture.

My one quibble with Nell concerns the third part of his central argument, where he restricts cruelty to hominids, starting with *Homo erectus*. If cruelty, by definition, is the intentional infliction of pain, it must involve self-consciousness, a trait clearly present in apes and quite probably in other highly intelligent mammals, such as elephants and cetaceans. Therefore, I would hesitate to deny a priori the capacity for cruelty in intelligent predator species such as orcas. Almost every claim for human behavioral uniqueness has bitten ethological dust. Prudence dictates avoidance of making a new one, although we are very probably best at being cruel.

Let me suggest two programmatic addenda to test Nell's cruelty model for humans. The first concerns a hypothesized negative correlation between cruelty and age. If cruelty activates the same hormonally based reward circuits as sex, dominance, and aggression, one would expect it to decline past puberty. This proposition could be tested, for example, on the behavior of sport fishermen and hunters (even though both groups would deny that cruelty motivates them). The frequency with which they kill their quarry could easily be correlated with age. For instance, the incidence of voluntary "catch-release" among fishermen would be a good index. The point of satiation in the shooting of multiple small game (such as ducks and partridges) would be another.

The second suggestion relates to the incipient research area of *thanatourism*, a neologism referring to the study of what attracts millions of visitors to the loci of atrocities such as Nazi concentration camps (Auschwitz rivals the Eiffel Tower as one of Europe's top attractions), ports of embarkation for the Transatlantic Slave Trade in Senegal and Ghana, and the killing fields of Cambodia. In a sense, these attractions are more authentic substitutes for the waxworks of Madame Tussaud, and thus nothing new. Tourism is driven in part by the quest for authenticity.

Of course, most visitors to thanatouristic sites would strenuously deny that they have come for cheap thrills. Their presence is sublimated as memorialization or learning from history to avoid repetition. Why do visitors come in millions, however, even from families and ethnic groups who have not been affected by the atrocities? Unlike many memorials that are sanitized, thanatouristic sites often include displays of gruesome photographs, mountains of abandoned shoes and suitcases, and even stacks of skulls. Thus, their attractiveness is far from self-evident. Indeed, many visitors exhibit or report acute stress on these sites. Could it be that, in societies that have banned many displays of cruelty, such as public executions, the "demand for cruelty" gets sublimated and ennobled in "never again" thanatourism? Clearly, the behavior and motivation of visitors to such sites begs investigation.

Explaining human cruelty

Nick Zangwill

13 Langland Gardens, London NW3 6QD, United Kingdom.
nickzangwill@yahoo.com **http://users.ox.ac.uk/~scat2183/**

Abstract: I ask four questions: (1) Why should we think that our hominid ancestor's predation is not just a causal influence but the main causal factor responsible for human cruelty? (2) Why not think of human cruelty as a necessary part of a syndrome in which other phenomena are necessarily involved? (3) What definitions of cruelty does Nell propose that we operate with? And (4) what about the meaning of cruelty for human beings?

Nell argues that human cruelty has its origin in "predatory adaptation from the Middle Cambrian to the Pleistocene" (sect. 1). He says that this explains the widespread and ingrained nature of human cruelty. There is probably some truth in this speculation. However, I have worries about whether the evidence he cites supports the speculation, and I have worries about the content of the speculation. I put four questions.

1. Nell describes the multifarious and widespread phenomena of animal and human cruelty. And he makes it plausible that the nature, frequency, and distribution of cruelty should be given *an* evolutionary explanation. However, I cannot see that Nell has shown that his particular evolutionary speculation is better supported by the data than other possible rival evolutionary hypotheses. It is true that predation involves many of the features of human cruelty and it is thus plausibly seen as *a* historical source of human cruelty. But why should it be seen as the *unique* source? Our ancestors of the Cambrian to Pleistocene era did much else besides predation. They also fought, fled, and fornicated. In particular, human beings and many other species spend an awful lot of time and effort fighting and even killing members of their *own* species. Predation, by contrast, is typically is directed at *other* species. Quite a lot of fighting within a species has to do with hierarchies, which are central in mating strategies. Some fighting within species may have to do with competition between groups for resources. Wrangham and Peterson (1996, Ch. 1) describe groups of chimpanzees killing chimpanzees from other groups. But much fighting within species, particularly between males, only aims at establishing hierarchies and does not involve death. It does nevertheless often involve pain and blood. So, such fighting is also a possible alternative source of current human cruelty. Moreover, there may be other possible contenders, perhaps in addition to the rival one that I have just mentioned. So, the first question I'd like to ask Nell is this: Although I am persuaded that there is causal *influence* from our hominid ancestor's predation to

human cruelty, why should we think that this causal influence is the *main causal factor*? Why is it not just one factor among others?

2. I am unhappy with Nell's *atomism* about the phenomena of cruelty. The worry applies equally to human and animal cruelty, but we can make the point most vividly for human cruelty. The point is one that Nietzsche makes (Nietzsche 1886/1973, sect. 259 and elsewhere). Nietzsche would ask: To what extent is human cruelty a necessary part of a syndrome in which other apparently different phenomena are necessarily involved? Nietzsche thought that a world without human cruelty would also be a world without many things that we do or should value. In particular, he thought that the barbarism of human cruelty is holistically intertwined with many of the highest achievements of "Western high culture." To simplify, Nietzsche would have said: No cruelty, no creative genius. For Nietzsche, the urge to human cruelty is irretrievably locked together with many admirable things in human life; creative and destructive urges are necessarily linked so that one cannot have one without the other. (Freud's later view was different because he separated creative and destructive urges, and he thought that one or the other was usually dominant [Freud 1930/1994]; for Nietzsche, by contrast, the two urges are necessarily tied together.) So my second question to Nell is: Why the atomism?

3. Although the phenomenon (or phenomena) of human cruelty may have animal origins, it is overlaid and transformed by cultural and ideological meaning; so it is not clear how far we are entitled to think of animal and human cruelty as instances of the same phenomena. This worry is partly, but not wholly, a pedantic one about what we are to mean by the word "cruelty." Let us start there, however. Cruelty is surely not merely "the deliberate infliction of physical or psychological pain on a living creature" (sect. 1). A doctor might deliberately inflict physical pain on a patient in the course of an operation, and a therapist might inflict psychological pain in the course of therapy that is intended to help a patient. Doctors or therapists might even take delight in causing pain if they think that it means that the cure is working. However, the doctor or therapist does not pursue or take pleasure in pain for its own sake; rather, the pain is thought to be a by-product or necessary means to what they do want for its own sake. Nell seems to recognize this, but only when we are already quite a long way into the target article; and he simply puts such cases to one side (sect. 2). But it is unsatisfactory simply to exclude these kinds of cases by fiat without modifying the definition deployed elsewhere. One cannot carry on working with the unsatisfactory definition, which does not fit the human phenomena that we call *cruel*. This matters because Nell needs a notion of cruelty that applies to both human beings and animals and which will allow him to draw conclusions about human cruelty from evidence about animals. I am not saying that this cannot be done, only that caution is in order – great caution. A proper conceptualization of human cruelty is essential to drawing any such conclusion. So, my third question for Nell is: What definitions of cruelty does he propose that we operate with?

4. I am not denying that it is possible, and perhaps plausible, that our animal natures are part of the explanation of human cruelty. But there is an enormous danger that the social or religious significance of human cruelty, in the *minds* of those who perpetrate it and suffer it, will be overlooked or underestimated. It is not clear how much we can learn from evolutionary theory alone when we consider the great human significance of blood, and therefore of the spilling of it. Consider bullfighting and foxhunting. In both, the pain-blood-death scenario of the animal is invested with a complex array of meanings by the (human) participants. (See Hemingway 1932/1996 on the meaning of bullfighting; and see Scruton 1998 on the meaning of foxhunting.) And consider Christianity, in which one person's pain-blood-death scenario is invested with huge metaphysical, moral, and social significance. Indeed, the fate of the entire cosmos is sometimes supposed to rest on the pain-blood-death scenario of one man: Jesus. And believing in that significance is supposed to have the power to deliver profound spiritual and metaphysical "salvation." Perhaps the meaning of Jesus's pain-blood-death in Christianity has more to do with suffering than cruelty. Nevertheless, it illustrates the transfiguration of pain-blood-death by complex meanings. There is a general issue lurking here about the relation between the human and social sciences, on the one hand, and disciplines such as biology and neurophysiology, on the other. Consider eating or sex: It is true that both animals and humans do it. But human beings invest these activities with social, moral, and religious significance, and they surround the activities with complex rituals. Human beings transfigure animal phenomena by investing them with meaning. It is not clear how much of the original animal phenomena will be recognizable in the sophisticated human phenomena. So, my fourth and last question for Nell is: Given the layers of meaning that, for perpetrators and sufferers are part of what human cruelty involves, is there enough in common between human and animal "cruelty" to forge a strong explanatory link between them?

Author's Response

Cruelty and the psychology of history

Victor Nell

Institute for Social and Health Sciences, University of South Africa, Pretoria, South Africa. Correspondence to: West Hill House, 6 Swains Lane, Highgate, London N6 6QS, United Kingdom. **psychology@victornell.co.uk**

Abstract: This response deals with seven of the major challenges the commentators have raised to the target article. First, I show that the historical-anecdotal method I have followed has its roots in sociology, and that there is a strong case for the development of a "psychology of history." Next, the observational data suggesting that intentional cruelty cannot be restricted to humans is rebutted on the grounds that cruelty requires not only an intention to inflict pain, but to do so *because* that pain would cause the victim to suffer – which requires a theory of mind. Third, in the light of the commentaries, I recognise that not only predation but also intraspecific aggression contributes to the development of cruelty. Fourth, I contrast nativists and environmentalists, the former regarding cruelty as a universal human capacity and the latter holding the view that cruelty is acquired through social learning, and argue that there is an otherworldly quality to the environmentalist view. I then show (the fifth challenge) that the target article does generate testable hypotheses. Sixth is a consideration of the implications of the target article for the re-admission of the concept of evil to the psychological lexicon; and seventh, a consideration of the commentaries which note that the cultivation of compassion is a tool for the prevention of cruelty. The last section of the response replies to questions of detail and rebuts some misrepresentations of my argument.

Publishing in *BBS* is not for the faint-hearted. It has forced justification of what had seemed to me to be self-evident (as with my historical-anecdotal method), reconsideration of what had appeared to be strong lines of argument (as with recognising the centrality of intraspecific aggression for the development of cruelty); allowed me to follow the encouragement given by commentators in elaborating half-articulated issues (as with the pull of evil); and

produced new approaches to the primary prevention of violence – which had been a principle motivation for soliciting commentary.

R1. A psychology of history

The historical method of my article has been roundly criticised. My arguments are based "on a flood of examples implying universality in humans" **(Schuster)**; my evidence "is largely in terms of biblical quotations, anecdotes, descriptions of ancient Greek practices, medieval carnivals, and arena spectacles" **(Bandura)**; half of the references "are works of art, moral philosophy, anecdotes" and contain "antique historians, poets, and religious texts," and "only about 20% are empirical studies," complains **Kotchoubey.**

My "anecdotal" method, which is theory building by the accretion of behavioural specimens, is well-known in sociology: the behavioural histories of Ariès (1960/1962; 1981) and Elias (1939/2000) proceed through the analysis of historical documents that range from myth and legend to manuals of table manners or the conduct that befits the bereaved, and from these documents a psychology of history is constructed. Psychologists, on the other hand, though attentive to the (very brief) history of psychology, have created no psychology of history, and do not regard the range of values or emotions that were proper to an iron age hunter, to audiences at the Roman arena or at an animal baiting in early nineteenth century England or America, as significant areas of psychological enquiry. These values and emotions are in fact important to psychology because, in order to determine which behaviours flow from the core of human nature, remaining stable across historical time, and which are transient, this historical method, the construction of a psychology of history, is the only available tool. There is no pre-existing body of empirical work on cruelty, so a research agenda must be created. I have done so by means of anecdote: Each of these historical vignettes, separately or together, has the potential to generate testable hypotheses, and, as many of the commentaries show, has succeeded in doing so. This analysis is thus "a promissory note to be cashed out through future research" **(Panksepp)**.

R2. Theories of mind, or, are animals capable of cruelty?

I preface this section with an account of a field observation by Michael Wilson (personal communication, April 24, 2001) that relates to territorial aggression in the Kibale Forest Reserve in 2000: An adult male chimpanzee had been attacked by nine males from another troop on a border patrol and held down by all four limbs. All the wounds were ventral, inflicted by bites and tearing with the hands. The trachea had been torn out, and the testicles were ripped off and found nearby. The next day the attackers returned and were seen beating on the dead body.

In this light, **van den Berghe**'s assertion that "almost every claim for human behavioral uniqueness has bitten ethological dust" is telling. Similarly, **Behrendt** points to the capacity of macaques to learn how to avoid punishment from other members of the group, and that unprovoked aggression to group members in animals is analogous to cruelty in humans. **Dallman** observes that I have boxed myself in by specifying that cruelty is only a human endeavour, ignoring "a considerable literature that documents 'cruelty' in subhuman primates and other mammals."

I am not persuaded. The question is whether the intentionality that is evident in these and other examples, or that chimpanzees are capable of social manipulation (Byrne & Whiten 1988), amounts to a theory of mind (ToM) that enables these demonic males to not only formulate an intention to inflict pain, but to do so *because* that pain would cause the victim to suffer.

Ainslie and **Panksepp,** both reflecting on cat-and-mouse play, share this reservation: "since a real Tom has no ToM, he is presumably not imagining his victim's suffering, much less trying to induce it," writes Ainslie; while Panksepp observes that an animal's ability to reflect on other minds is rudimentary, and its behaviour reflects aroused action tendencies that are not reflectively guided. So, the objections notwithstanding, I hold to the view that animal "cruelty" is more parsimoniously to be interpreted as an extreme form of aggression rather than cruelty. For this reason, I do not think that behaviours such as animal neglect or hoarding (**Herzog & Arluke)** are cruel: They certainly cause suffering, but the intention is absent.

R3. Predation, intraspecific aggression, and cruelty

The commentaries in this group have made me rethink the exclusivity I accorded to predation as cruelty's precursor. Thus, **Zangwill** accepts the predation-cruelty link, but challenges its exclusivity, suggesting that predation may not be the main causal factor, but one among others. I agree. There are likely to be multiple evolutionary pathways leading to cruelty. **Potts'**s comment that something more than the rewards of a predatory animal is needed to explain the scale and universality of human cruelty links with **Potegal'**s suggestion that this something more may be intraspecific aggression (IA), which has deeper roots in animal and human evolution than predation.

A number of commentaries link aggression and cruelty (**de Aguirre**, **Kosloff, Greenberg, & Solomon [Kosloff et al.]**, **Kotchoubey**, **Mouras**, **Ruocco & Platek**), suggesting in effect that cruelty is a special case of aggression; as, for example, **Panksepp**, who writes that cruelty's neuro-causal underpinnings might lie in "intense human and animal aggression." **Behrendt** argues that ritualised intraspecific aggression, not cruelty, is the principle means for the accretion of social power. **Kosloff et al.** go further, claiming that my definition of cruelty is virtually identical to psychological definitions of aggression, that is, behaviour that has the intent to harm another. To say that this is "virtually identical" with my definition of cruelty is inaccurate: The deliberate infliction of pain on a living creature certainly has the intent to harm, but to conflate cruelty with aggression is not helpful for the study of cruelty as a specific subtype of aggression. There are, however, implications for prevention in determining whether or not there is an aggression–cruelty continuum and what this might be in

behavioural terms, as with the link between cruelty and aggressive-sadistic personality disorder (SPD) proposed by Ruocco & Platek.

R4. Nativists, environmentalists, and otherworldliness

There are sharp divisions between the *nativists*, who regard cruelty as an innate, universal human capacity (**Dallman**, **Kraemer**, **Stein**, **Tiger**, and, indirectly, **Herzog & Arluke**), and the *environmentalists*, who see it as a behaviour acquired through social learning (**Bandura**, **Behrendt**, **Haritos-Fatouros**, **Kosloff et al.**, **Tapper**). This debate has profound implications for the prevention of cruelty.

R4.1. Nativists

The nativist view was elegantly put a century ago by William James, whose intuitions about the instincts deserve to be better known by evolutionary psychologists: Those who reason from above downwards, he writes, as if by inference and associations,

> have missed the root of the matter. Our ferocity is blind, and can only be explained from *below*. . . . The boys who pull out grasshoppers' legs and butterflies' wings and disembowel every frog they catch have no thought at all about the matter. The creatures tempt their hands to a fascinating occupation, to which they have to yield. (James 1890/1998, p. 414)

There is empirical support for this assertion: **Herzog & Arluke** note that childhood animal cruelty may be more common than is usually recognized, with one study reporting that two-thirds of male undergraduates had participated in animal abuse, while **Kraemer** echoes James: "in their play with toys, siblings, friends, and pets," even infants show that they are readily capable of inflicting pain on others, and continues, "Curiosity may be one driver – a wish to find out how much damage the victim can stand, or simply to dismantle it and see what it is made of."

Dallman suggests that cruelty may be a by-product of the need to reduce arousal after the high stress of predation, and return to a sustainable state: "this may occur in both animals and humans by employing aggression [and] real or potential cruelty, to available conspecifics" that reduces the level of stress-induced glucocorticoids.

Tiger writes that a species committed to predation would clearly have the required emotional and physiological correlates, with neurophysiological factors underlying our "chronic interest in accident [and] death. . . . A large precinct of the academy is devoted to claiming that cruelty and its cousins exist mainly because a few bad people contrive to dragoon many people into bad schemes." **Stein** agrees, writing that cruelty and evil "cannot merely be relegated to those who are 'abnormal' or otherwise marginal."

R4.2. Environmentalists

Bandura is representative of the environmentalists, writing, for example, that "extensive training and a multitude of social structural influences are needed to produce cruel perpetrators." Thus also **Haritos-Fatouros,** who holds that human behaviour is also greatly influenced by cognitive processes, and by the resulting situations produced – but goes on to say (as her co-author Zimbardo has shown; cf. Haritos-Fatouros & Zimbardo 2005; Zimbardo 2003) that "torturers do not have to have a certain kind of personality, only exposure to certain kinds of psychological, social, and political conditions," which is squarely nativist (see sect. 6.2 of the target article). **Tapper** acknowledges that predation may help account for the prevalence of cruelty, but is too restrictive: Cruelty also draws on other reinforcers, many of which may stem from resource competition.

Ainslie, **Behrendt**, and **Kosloff et al.** propose a variety of cognitive processes to account for the reward value of cruelty. Behrendt writes that enjoyment of media cruelty is not reinforced by "emotional circuits" adapted to predation, but represents transient relief from culturally determined inhibition of aggression. Similarly, Kosloff et al., citing their terror management theory, suggest that "cruelty stems from the desire to defend one's cultural worldview and to participate in a heroic triumph over evil." Ainslie also suggests that cruelty might be an anxiety reduction mechanism: "There are people with traits that we fear in ourselves. . . . [and] cruelty toward these people might be the handiest way to reduce our sense of potential seduction."

Finally, there is **de Aguirre**'s pathologising view that sees cruelty as a symptom of psychiatric illness, with aggression and cruelty as its symptoms. This fits with a long psychiatric tradition of medicalising problematic human behaviours such as aggression, violence, and cruelty (see, e.g., Filley et al. [2001] in which I am a dissenting voice), thus removing them from the proper ambit of the social sciences (see the views of **Stein** and **Tiger** in the preceding section).

R4.3. Otherworldliness

I am troubled by the otherworldly quality of much of the foregoing, as, for example, **Ainslie'**s contention that psychological cruelty is the only kind seen in everyday life, or **Rowan'**s that sadistic cruelty is a rare occurrence. Whether or not cruelty is a universal human propensity, the evidence from the historical record – from the International Court of Justice in The Hague and, everywhere in the world, from hospital emergency rooms and mortuaries (where I have had the misfortune to spend rather too much time: Brown & Nell 1992; Butchart et al. 1991; Nell & Butchart 1989) – is that cruelty, often tipping into sadism, makes a large contribution to the sum of human and animal misery; and that this cruelty is perpetrated, as I attempted to show, by manifestly normal and decent people who have not been the subjects of intensive learning or socialisation processes in order to become cruel. Rather, an opportunity or provocation was there, and with no training, this decent person did appalling things. Psychologists and sociologists who argue for elaborate training or an evil predisposition as a precondition for cruelty fail in my opinion to give sufficient weight to this real-world evidence.

Cruelty is no less deserving of careful scientific study than substance abuse or aggression: If my central assertion, that a capacity for cruelty is a universal human propensity, is disproved, then so much the better. But the

research needs to be done, and to treat the topic as an unwelcome intruder to the behavioural science agenda is a disservice to the victims of cruelty.

R5. Hypothesis testing

I am puzzled by the charge **(Kotchoubey**, **Schuster)** that my theory lacks testable hypotheses: I haven't counted, but as **Haritos-Fatouros** kindly remarks, there is "an abundance" of these. The two pillars of the research programme I proposed are to listen to the voices of perpetrators, daunting though this programme is, and, using these materials, to develop a Cruelty Readiness Questionnaire (CRQ; sect. 6.4). **Panksepp** writes that "once we have a good Cruelty Readiness scale, we surely will find genetic factors that facilitate cruelty."

Van den Berghe notes cruelty's seemingly negative correlation with age because of its apparent linkage with testosterone, sex, and dominance and suggests a test of this hypothesis. I am also grateful to **Schuster** for proposing additional hypotheses, among them "to measure and validate the kinds of behaviors that can serve as markers for positive affect associated with acts of cruelty," and to determine whether conditioned pain-blood-death (PBD) stimuli in an animal can provide reinforcement that is additional to the primary reinforcer.

R6. Evil and its pull

Zangwill asks, Why the atomism? Why do I treat cruelty in isolation, ignoring its centrality to the human condition? Well, let's take the next step and relate cruelty to its superordinate category, evil (see also **Stein)** – a term that is absent from modern psychology, though it should not be. Though I avoided using the word *evil*, many passages in the target article point to the contribution cruelty and evil have made to culture and history, though not to the sum of happiness. So I don't believe that I have been atomist, and again, with approval, cite William James:

> May not the claims of tender-mindedness go too far?. . . . Is the last word sweet? Is all "yes, yes" in the universe? Doesn't the fact of "No" stand at the very core of life? Doesn't the very "seriousness" that we attribute to life mean that ineluctable noes and losses form a part of it, that there are genuine sacrifices somewhere, and that something permanently drastic and bitter always remains at the bottom of its cup? (James 1907/2000, p. 129)

To go further along the road to which **Zangwill** has pointed: I tried to indicate in my article that it is impossible to understand cruelty without acknowledging its seductiveness and the strength of the pull we all feel (but shrink from acknowledging) to the "other side," to darkness and evil. Taking **Ainslie's** notion of "negative empathy" a step further, there is a need for a "negative psychology" as a balance to the mandatory optimism of current Western (and especially American) psychology that holds to Enlightenment notions of an inexorable march to perfection, and blocks serious empirical research on, yes, evil, and refuses to acknowledge that this dark study is in fact a human welfare imperative. So, I couldn't agree more with the preambles to Zangwill's questions 3 and 4.

In this context, **van den Berghe's** notion of thanatourism is provocative because it opens the way to some thoughts about how evil creeps in at the back door when it has been locked out of the front: I agree that beneath the "memorialisation" lurks the *frisson* of approaching a scene of pain and bloodshed. Thus in the 1830s, in the first decade the American Abolitionism, "the gruesome tribulations of the body" (Clark 1995, p. 465) became a staple of antislavery literature: "Speakers [at antislavery rallies] often righteously denied any intention to 'harrow up' an audience's feelings before going on to dwell enthusiastically on atrocities" (Clark 1995, p. 467). So, for the respectable citizens of the nineteenth century, as for those who flocked to the exhibition of horrifying torture instruments that toured Europe from 1983 to 1987 (Held 1985), these atrocity tales served as crypto-pornography, disguised by an overlay of moral fervour. *The Tortures and Torments of the Christian Martyrs* by the Roman priest Antonio Gallonio, published in Italian in 1591, is a hagiography that went through many editions, of which the strangest was its revival as a sadomasochistic cult book in 1980 by a pornography publisher in Los Angeles, who had it illustrated by Charles Manson, leader of the "family" of serial murderers that killed Sharon Tate (cf. Gallonio 1591/1989). Good citizens can comfortably go to bed with Held or Gallonio because there is no moral taint – as with thanatourism.

R7. Compassion and prevention

Swain reviews the neurochemistry of maternal deprivation in rat models from infancy to adulthood, raising the possibility that early trauma may shape long-term mental health in humans. He writes that experience-dependant chromatin plasticity offers a hope that older children and adults, already damaged by child neglect and abuse, might be treated by targeting these molecules; more radically, he believes that cruelty would be prevented through the elimination of child abuse. Likewise, **de Aguirre** addresses the neurobiology of maternal care and its impact on adult behaviour. **Ruocco & Platek** recommend that rehabilitation professionals be aware of the specific neurocognitive deficits associated with antisocial personality disorder (APD) and aggressive-sadistic personality disorder (SPD) and address the ways in which they affect treatment and social reintegration.

Panksepp speculates that the wide psychological scope of dopamine-driven exploratory behaviours may explain why juvenile play-fighting and inter-male aggression "can be as rewarding as predatory stalking and chasing," leading to the suggestion that childhood rough-and-tumble play, under empathic supervision (which links with **Tapper's** observation that school aggression may be reinforced by onlooker responses), could be a means toward the nurturing of more prosocial brains. This is in effect a call for the cultivation of empathy **(Potegal)**, which is in turn a manifestation of compassion. Similarly, **Dallman** advocates formal programs that foster affiliative behaviour that "might, if widely available, result in reduction of the amount of pleasure seeking directed toward cruel behaviors"; **Fox** glosses compassion to mean loving-kindness, "the desire to see the other flourish," as in the humane education movement, which

aims to enhance children's natural tendency to compassion; and **Potts** observes that if cruelty is linked to the evolution of male coalitional aggression, anything enhancing women's role in society "is likely to promote a . . . less cruel society."

I agree with **Potter** that shame is an inappropriate method for cruelty prevention and respond that I did not advocate its use, but rather, a reinforcement of the "automatic, blindly functioning apparatus of self-control," described by Elias (1939/2000, p. 368). Potter goes on to ask whether prevention would be served by listening to the voices of perpetrators: It is certainly true that those who do terrible things misrepresent their motives to themselves and others. But the probe questions I have suggested are not about motives, but gratifications. Though torturers may also block access to the emotions they experienced, this approach cannot be dismissed a priori until there has been a serious attempt to interview perpetrators under conditions of clinical confidentiality and empathy.

R8. Rebuttals

Ainslie doubts if human hunters are rewarded by the suffering of their prey: suffering is an emotive word, and it diverts attention from the question I attempted to answer, which is whether hunters are rewarded by the *death* of their prey – which is necessarily accompanied by blood and pain. I believe that they are – though in hunting, pain, blood, and death are the accompaniments of a different goal-directed activity, which is the death of the prey for nutrition or as a trophy. In cruelty, the goal is pain in itself, for which this evolutionarily old set of reinforcers, the PBD complex, is available. Ainslie also asks whether cat-and-mouse play is cruel, or a challenging game: In terms of my contention that Toms do not have a ToM (to borrow his word-play), this game cannot be cruel (it is not, by the way, a game that is restricted to cats: I have watched a puppy batting a beetle from paw to paw, letting it escape, and pouncing again to continue playing).

Bandura asks why motorcycle racing is a vestige of the pain-blood-death complex. I could equally have cited any number of spectacles in which the risk of injury or death is present: Circus high-wire and trapeze acts without a safety net are paradigmatic of the audience appeal of entertainments over which injury and death hover. And the functional value to the competitors of winning prizes has nothing to do with my argument, which is about the audience appeal of life-threatening displays.

I agree with **Bandura** that the third stage of cruelty requires the most detailed theoretical specification, which, within the *BBS* space limitations given, it gets. So I don't think he is correct in saying that I give surprisingly little attention to the social uses of power; nor do I think that the link from predation to cruelty is enigmatic. I don't think that my argument for the beauty of war can be taken as a dismissal of its horrors and the psychological scars it leaves; but it is also necessary to acknowledge that entire populations can be seduced by the glamour of war. With regard to the gratifications of remote killing, which Bandura doubts, a missile designer once showed me a video of a rocket homing in on a drone and exploding: His pleasure was tangible. Similarly, newspaper accounts of pilots interviewed on their return from high-altitude bombing missions in the Persian Gulf, in which the bomb damage is unseen, speak with exultance of "being effective." Anecdotes, certainly – but again, there is a clear need for research on the psychology of remote killing.

Finally, that cruelty is male gendered (**Herzog & Arluke** observe that animal cruelty is a predominantly male enterprise) does not mean that all males are cruel or violent all the time, as Bandura seems to suggest, or that women are incapable of cruelty; and I don't think that my text suggests either of these outcomes.

I agree with **Behrendt** that pain and blood are unlikely to represent rewards for the sake of which the animal kills. My argument is that pain and blood become attached to the gratification of feeding, and provide some of the reinforcers needed to sustain the heavy time and energy demands of predation.

Kotchoubey's intemperate commentary is remarkable (to quote from his epigraph) for its fury, and repeatedly misrepresents my argument. I didn't suggest that hyenas and lions were cruel or that they "torment" their victims, and I can't follow how he has arrived at this serious misreading of my text despite my definitional restriction of cruelty to hominids. His rebuke that the papers by Haney et al. (1973) and Milgram (1969/1974) are not "examples of empirical work on cruelty" is another misreading: the text there is that these papers show the ease with which situations can overwhelm values and, therefore, can elicit cruelty in otherwise decent people. Why is Milgram's work unrelated to the theme of the target article? – on the contrary, situational press is central to my argument. I am not offended by the suggestion that I am an armchair philosopher or that I write *belles lettres* (which is elegantly aesthetic literature), but I certainly am offended by the accusation that my article is "propaganda": In what cause does Kotchoubey think I might be disseminating deceptive or distorted information?

His most egregious misrepresentation is of my paragraph on the dangers of studying cruelty. The comparison with Freud is apposite, because a universal potential for cruelty in the twenty first century, like infantile sexuality in the nineteenth, is a taboo subject. But how **Kotchoubey** gets from this parallel to the absurd conclusion, quite unrelated to my text, that I am pre-emptively devaluing any criticism of my work, is beyond me. The evidence, if any is needed, is in the number and vigour of the commentaries, including his own.

The most interesting aspect of **Kotchoubey**'s commentary is the dichotomy he sets up between science and cultural analysis. Indeed, he is paradigmatic of a hard science approach, arguing that only the evaluation of empirical results can "describe the truth about cruelty," or, presumably, any other psychological topic. This is a view explicitly rejected by *BBS*, which in its publication criteria includes articles "dealing with social or philosophical aspects of the behavioral and brain sciences." I don't believe that that a dogmatic empiricism, reminiscent of the excesses of behaviourism, is appropriate to psychology, which stands with one foot in the laboratory and the other in phenomenology (the investigation and description of the plenitude of conscious experience). Any value my article may have derives

from the vigorous pursuit of a historico-phenomenological approach.

As an executive of a humane society, **Rowan** is in a strong position to comment on my animal-baiting materials. However, I would urge caution in generalising from the findings of the South African study that sadistic cruelty was rare: Organised dogfights in empty swimming pools and incidents of animal torture are reported from time to time in the South African press, but take place behind a veil of secrecy that is not penetrated by animal lovers or humane societies. The true extent of sadistic cruelty to animals may be greater than we would like to think.

I am puzzled by **Zangwill**'s objections to my definition of cruelty, and suspect that he may have left his argument unfinished. His first objection is that one cannot exclude certain cases by fiat, as, for example, in medical treatment. But surely it is in the nature of taxonomies not only to define, but also to exclude? He goes on to write that my definition does not fit the human phenomena we call cruel because I need "a notion of cruelty that applies to both human beings and animals." This is not so, because I have carefully excluded animals on the grounds that they may be aggressive but cannot be cruel.

ACKNOWLEDGMENT

I am grateful to the very many friends and colleagues who have, since 1995, reviewed (and listened to) earlier versions of this article, and to the *BBS* referees and commentators (in particular to the referees who became commentators), for helping make the target article – which now incorporates their reviews – and this response what they have become.

References

[The letters "a" and "r" before author's initials stand for target article and response references, respectively.]

Abel, G. G., Barlow, D. H., Blanchard, E. B. & Guild, D. (1977) The components of rapists' sexual arousal. *Archives of General Psychiatry* 34:895–908. [AB]

Adair, J. (1736/2005) *The History of the American Indians*, ed. K. E. Holland Braund. University of Alabama. [GA]

Aiello, L. C. & Wheeler, P. (1995) The expensive tissue hypothesis: The brain and the digestive system in human and primate evolution. *Current Anthropology* 36:199–221. [aVN]

Ainslie, G. (2001) *Breakdown of will*. Cambridge University Press. [GA]

(2005) Précis of *Breakdown of will. Behavioral and Brain Sciences* 28(5):635–50. [GA]

(2006) What good are facts? The "drug" value of money as an examplar of all non-instrumental value. *Behavioral and Brain Sciences* 29(2):176–77. [GA]

Alberts, B., Bray, D., Lewis, J., Raff, M., Roberts, K. & Watson, J. D. (1989) *Molecular biology of the cell*, 2nd edition. Garland. [aVN]

Alland, A., Jr. (1972) *The human imperative*. Columbia University Press. [AB]

Alvarez, A. & Phillips, A. (1998) The importance of play; a child psychotherapist's view. *Child Psychology and Psychiatry Review* 3:99–103. [SKr]

Amato, P. & Fowler, F. (2002) Parenting practices, child adjustment and family diversity. *Journal of Marriage and Family* 64:703–16. [SKr]

American Heritage Dictionary (1992) *The American heritage dictionary of the English language.* Houghton Mifflin. [MFD]

(2000) *American heritage dictionary of the English language*, 4th online edition. Available at: www.education.yahoo.com/reference/dictionary/. [MAF]

American Psychiatric Association. (2000) *Diagnostic and statistical manual of mental disorders, 4th edition. Text Revision.* American Psychiatric Association. [HH]

Anderson, C. A., Deuser, W. E. & DeNeve, K. M. (1995) Hot temperatures, hostile affect, hostile cognition, and arousal: Tests of a general model of aggression. *Personality and Social Psychology Bulletin* 21:434–48. [SKo]

Andreae, B. (1978) *The art of Rome.* Macmillan. [aVN]

Anonymous (1999) *Taking animal welfare seriously: Minimizing pain and distress in research animals.* A Report by the Animal Research Issues Section; Humane Society of the United States, Washington, DC. [ANR]

Applbaum, A. I. (1995) Professional detachment: The executioner of Paris. *Harvard Law Review* 109:458–86. [aVN]

Apter, M. J. (1979) Human action and theory of psychological reversals. In: *Aspects of consciousness*, ed. G. Underwood & R. Stevens. Academic Press. [aVN]

Archer, J. (1988) *The behavioural biology of aggression.* Cambridge University Press. [aVN]

(1995) What can ethology offer the psychological study of human aggression? *Aggressive Behavior* 21:243–55. [KT]

Ardrey, R. (1961) *African genesis.* Atheneum. [LT]

Ariès, P. (1960/1962) *Centuries of childhood: A social history of family life.* Knopf. [arVN]

(1981) *The hour of our death.* Allen Lane. [arVN]

Aristotle (1985) *Nicomachean ethics*, trans. T. Irwin. Hackett. [NNP]

Arluke, A. (2002) Animal abuse as dirty play. *Symbolic Interaction* 25:405–30. [HH]

(2004) *Brute force: Animal police and the challenge of cruelty*. Purdue University Press. [HH]

(2006) *Just a dog: Understanding animal cruelty and ourselves*. Temple University Press. [HH]

Arluke, A., Levin, J., Luke, C. & Ascione, F. (1999) The relationship of animal abuse to violence and other forms of antisocial behavior. *Journal of Interpersonal Violence* 14:963–75. [HH]

Arluke, A. & Luke, C. (1997) Physical cruelty toward animals in Massachusetts, 1975–1996. *Society and Animals* 5:195–204. [HH, ANR]

Arsuaga, J. (2002) *The Neanderthal's necklace: In search of the first thinkers*. Four Walls Eight Windows. [MPott]

Ascione, F. R. (2001) Animal abuse and youth violence. *Juvenile Justice Bulletin* (September issue):1–15. [HH]

Attili, G. & Hinde, R. A. (1986) Categories of aggression and their motivational heterogeneity. *Ethology and Sociobiology* 7:17–27. [MPote]

Bailey, K. G. (1995) The sociopath: Cheater or warrior hawk? *Behavioral and Brain Sciences* 18:542–43. [aVN]

Bandura, A. (1973) *Aggression: A social learning analysis*. Prentice Hall. [AB, MH-F]

(1986) *Social foundations of thought and action: A social cognitive theory*. Prentice Hall. [AB]

(1990) Mechanisms of moral disengagement. In: *Origins of terrorism: Psychologies, ideologies, theologies, states of mind*, ed. W. Reich, pp. 161–91. Cambridge University Press. [MH-F, aVN]

(1999) Moral disengagement in the perpetration of inhumanities. *Personality and Social Psychology Review* 3:193–209. [AB]

Baron, R. A. (1971a) Exposure to an aggressive model and apparent probability of retaliation from the victim as determinants of adult aggressive behavior. *Journal of Experimental Social Psychology* 7:343–55. [AB]

(1971b) Magnitude of victim's pain cues and level of prior anger arousal as determinants of adult aggressive behavior. *Journal of Personality and Social Psychology* 17:236–43. [SKo]

(1971c) Reducing the influence of an aggressive model: The restraining effects of discrepant modeling cues. *Journal of Personality and Social Psychology* 20:240–45. [AB]

Barr, C. S., Newman, T. K., Shannon, C., Parker, C., Dvoskin, R. L., Becker, M. L., Schwandt, M., Champoux, M., Lesch, K. P., Goldman, D., Suomi, S. J. & Higley, J. D. (2004) Rearing condition and rh5-HTTLPR interact to influence limbic-hypothalamic-pituitary-adrenal axis response to stress in infant macaques. *Biological Psychiatry* 55(7):733–38. [JES]

Barry, C. T., Frick, P. J., DeShazo, T. M., McCoy, M. G., Ellis, M. & Loney, B. R. (2000) The importance of callous-unemotional traits for extending the concept of psychopathy to children. *Journal of Abnormal Psychology* 109:335–40. [MPote]

Barton, C. A. (1993) *The sorrows of the ancient Romans.* Princeton University Press. [aVN]

Basoglu, M., ed. (1992) *Torture and its consequences: Current treatment approaches.* Cambridge University Press. [aVN]

Bass, A. H. & McKibben, J. R. (2003) Neural mechanisms and behaviors for acoustic communication in teleost fish. *Progress in Neurobiology* 69:1–26. [MFD]

Baumeister, R. F. (1999) *Evil: Inside human violence and cruelty.* Owl Books. [DJS]

Becerra, L., Breiter, H. C., Wise, R., Gonzalez, R. G. & Borsook, D. (2001) Reward circuitry activation by noxious thermal stimuli. *Neuron* 32:927–46. [aVN]

Becker, E. (1973) *The denial of death*. Free Press. [SKo]

(1975) *Escape from evil*. Free Press. [SKo]

Becker, K. D., Stuewig, J., Herrera, V. M. & McCloskey, L. A. (2004) A study of fire setting and animal cruelty in children: Family influences and adolescent

outcomes. *Journal of the American Academy of Child and Adolescent Psychiatry* 43:905–12. [HH]
Bekoff, M. (1974) Social play and play-soliciting by infant canids. *American Zoologist* 14:323–40. [MPote]
Bekoff, M. & Byers, J. A. (1998) *Animal play: Evolutionary, comparative, and ecological perspectives*. Cambridge University Press. [RS]
Berkowitz, L. (1968) Impulse, aggression and the gun. *Psychology Today* 2:19–22. [SKo]
Berkowitz, L. & Geen, R. G. (1966) Film violence and the cue properties of available targets. *Journal of Personality and Social Psychology* 3:525–30. [SKo]
Bernstein, L, Garzone, P. D., Rudy, T., Kramer, B., Stiff, D. & Peitzman, A. (1995) Pain perception and serum beta-endorphin in trauma patients. *Psychosomatics* 36:276–84. [aVN]
Berridge, K. C. & Robinson, T. E. (1998) What is the role of dopamine in reward: Hedonic impact, reward learning or incentive salience? *Brain Research Reviews* 28:309–69. [R-PB]
Bersani, L. & Dutoit, U. (1985) *The forms of violence: Narrative in Assyrian art and modern culture.* Schocken. [aVN]
Bertalanffy, L. (1958) Comments on aggression. *Bulletin of the Menninger Clinic* 22:50–57. [SKo]
Bettencourt, B. A. & Kernahan, C. (1997) A meta-analysis of aggression in the presence of violent cues: Effects of gender differences and aversive provocation. *Aggressive Behavior* 23:447–56. [AB]
Bettencourt, B. A. & Miller, N. (1996) Gender differences in aggression as a function of provocation: A meta-analysis. *Psychological Bulletin* 119:422–47. [AB]
Bevans, K., Cerbone, A. B. & Overstreet, S. (2005) Advances and future directions in the study of children's neurobiological responses to trauma and violence exposure. *Journal of Interpersonal Violence* 20(4):418–25. [JES]
Bifulco, A., Brown, G. W. & Adler, Z. (1991) Early sexual abuse and clinical depression in adult life. *British Journal of Psychiatry* 159:115–22. [JES]
Binford, L. R. (1987) Were there elephant hunters at Torralba? In: *The evolution of human hunting*, ed. M. H. Nitecki & D. V. Nitecki, pp. 47–105. Plenum. [aVN]
Bjorkqvist, K., Lagerspetz, K. & Kaukianen, A. (1992) Do girls manipulate and boys fight? Developmental trends in regard to direct and indirect aggression. *Aggressive Behavior* 18:117–27. [KT]
Blair, R. J. (1997) A cognitive developmental approach to morality: Investigating the psychopath. In: *The maladapted mind: Classic readings in evolutionary psychopathology*, ed. S. Baron-Cohen, pp. 85–114. Psychology Press. [aVN]
Blair, R. J. R. (2004) The roles of orbital frontal cortex in the modulation of antisocial behavior. *Brain and Cognition* 55:198–208. [MIdA]
Blake, P. & Grafman, J. (2004) The neurobiology of aggression. *Lancet* 364:12–13. [ACR]
Blanchard, D., Spencer, C., Weiss, R. L., Scott, M., Blanchard, S. C., McEwen, R. J., Sakai, B. & Randall, R. (1995) Visible burrow system as a model of chronic social stress: Behavioral and neuroendocrine correlates. *Psychoneuroendocrinology* 20:117–34. [aVN]
Blanchard, R. J., Flannelly, K. J. & Blanchard, D. C. (1988) Life span studies of dominance and aggression in established colonies of laboratory rats *Physiology & Behavior* 43:1–7. [MPote]
Boesch, C. (1994) Hunting strategies of Gombe and TaV chimpanzees. In: *Chimpanzee cultures*, ed. R. W. Wrangham, W. C. McGrew, F. B. M. de Waal & P. G. Heltne, pp. 77–92. Harvard University Press. [aVN]
Bohstedt, J. (1994) The dynamics of riots: Escalation and diffusion/contagion. In: *The dynamics of aggression: Biological and social processes in dyads and groups*, ed. M. Potegal & J. F. Knutson, pp. 257–306. Erlbaum. [MPote]
Bourke, J. (1999) *An intimate history of killing*. Basic Books. [GA]
Boyle, J. (1977) *A sense of freedom.* Pan. [aVN]
Brady, K. T. & Sinha, R. (2005) Co-occurring mental and substance use disorders: The neurobiological effects of chronic stress. *American Journal of Psychiatry* 162:1483–93. [MIdA]
Brain, C. K. (1981) *The hunters or the hunted: An introduction to African cave taphonomy.* University of Chicago Press. [aVN]
(2001) *Do we owe our intelligence to a predatory past?* (James Arthur Lecture on the Evolution of the Human Brain.) American Museum of Natural History. [aVN]
Brain, C. K., ed. (1993) *Swartkrans: A cave's chronicle of early man.* Transvaal Museum Monograph (no. 8). [aVN]
Bremner, J. D., Krystal, J. H., Southwick, S. M, & Charney, D. S. (1996) Noradrenergic mechanisms in stress and anxiety: II. Clinical studies. *Synapse* 23(1):39–51. [JES]
Brett, L. P. & Levine, S. (1979) Schedule-induced polydipsia suppresses pituitary-adrenal activity in rats. *Journal of Comparative Physiology and Psychology* 93:946–56. [MFD]
Brown, D. S. O. & Nell, V. (1992) Diffuse traumatic brain injury in Johannesburg: A concurrent prospective study. *Archives of Physical Medicine and Rehabilitation* 73:758–70. [rVN]
Brown, G. R. & Anderson, B. (1991) Psychiatric morbidity in adult inpatients with childhood histories of sexual and physical abuse. *American Journal of Psychiatry* 148(1):55–61. [JES]
Browning, C. R. (1993) *Ordinary men: Reserve Police Battalion 101 and the Final Solution in Poland.* Harper. [aVN]
Bufkin, J. L. & Luttrell, V. R. (2005) Neuroimaging studies of aggressive and violent behavior: Current findings and implications for criminology and criminal justice. *Trauma, Violence and Abuse* 6:176–91. [BK]
Buford, B. (1992) *Among the thugs: The experience, and seduction, of crowd violence*. W. W. Norton (original work published in 1990). [MPote, MPott]
Burkert, W. (1983) *Homo necans: The anthropology of ancient Greek sacrificial ritual and myth.* University of California Press. [SKo]
Butchart, A., Nell, V., Yach, D., Johnson, K. & Radebe, B. (1991) The epidemiology of non-fatal trauma in Johannesburg-Soweto. I. Methodology and materials; II. Incidence and determinants. *South African Medical Journal* 78:466–79. [rVN]
Buss, D. M. (1999) *Evolutionary psychology: The new science of the mind.* Allyn & Bacon. [aVN]
(2005) *The murderer next door: Why the mind is designed to kill*. The Penguin Press. [aVN]
Byrne, R. (1995) *The thinking ape: Evolutionary origins of intelligence.* Oxford University Press. [RS]
Byrne, R. W. & Whiten, A. (1988) Tactical deception of familiar individuals in baboons. In: *Machiavellian intelligence: Social expertise and the evolution of intellect in monkeys, apes, and humans*, ed. R. W. Byrne & A. Whiten. Oxford University Press. [rVN]
Campbell, M. & Potts, M. (2003) Important step for global security. *The Lancet* 362:76. [MPott]
Chagnon, N. (1988) Life histories, blood revenge and warfare in a tribal population. *Science* 239:985–92. [MPott]
Chagnon, N. A. (1983) *Yanomamö: The fierce people*, 3rd edition. Holt, Rinehart and Winston. [aVN]
Chambers, R. A., Taylor, J. R. & Potenza, M. N. (2003) Developmental neurocircuitry of motivation in adolescence: A critical period of addiction vulnerability. *American Journal of Psychiatry* 160:1041–52. [DJS]
Chen, T. J., Blum, K., Mathews, D., Fisher, L., Schnautz, N., Braverman, E. R., Schoolfield, J., Downs, B. W. & Comings, D. E. (2005) Are dopaminergic genes involved in a predisposition to pathological aggression? Hypothesizing the importance of "super normal controls" in psychiatric genetic research of complex behavioral disorders. *Medical Hypotheses* 65(4):703–707. [HM]
Choca, J. (2004) *Interpretive guide to the Millon Clinical Multiaxial Inventory*. American Psychological Association. [ACR]
Chrousos, G. P. (1995) Seminars in medicine of the Beth Israel Hospital, Boston: The hypothalamic-pituitary-adrenal axis and immune-mediated inflammation. *New England Journal of Medicine* 332:1351–62. [MIdA]
Clark, E. B. (1995) "The sacred rights of the weak": Pain, sympathy, and the culture of individual rights in antebellum America. *Journal of American History* 82:463–93. (September issue.) [rVN]
Coetzee, J. M. (1974) *Dusklands.* Ravan Press. [R-PB, SKo, aVN]
(2003) *Elizabeth Costello: Eight lessons*. Secker & Warburg. [aVN]
Cole, P. M. & Zahn-Waxler, C. (1992) Emotional dysregulation in disruptive behavior disorders. In: *Rochester Symposium on Developmental Psychopathology, vol. 4: Developmental perspectives on depression*, ed. D. Cicchetti & S. L. Toth, pp. 173–209. University of Rochester Press. [MPote]
Coleman, K. M. (1990) Fatal charades: Roman executions staged as mythological enactments. *Journal of Roman Studies* 80:44–73. [aVN]
(1993) Launching into history: Aquatic displays in the early empire. *Journal of Roman Studies* 83:48–74. [aVN]
Conner, R. L., Vernikos-Danellis, J. & Levine, S. (1971) Stress, fighting and neuroendocrine function. *Nature* 234:564–66. [MFD]
Conroy, J. (2000) *Unspeakable acts, ordinary people: The dynamics of torture*. Knopf. [NNP]
Costello, J. (1985) *Love sex and war: Changing values 1939–45*. Collins. [MPott]
Crick, N. & Grotpeter, J. (1995) Relational aggression, gender and social-psychological adjustment. *Child Development* 66:710–22. [KT]
Daly, M. & Wilson, M. (1988) *Homicide.* De Gruyter. [aVN]
Dart, R. A. (1953) The predatory transition from ape to man. *International Anthropological and Linguistic Review* 1:201–19. [aVN]
(1957) *The osteodontokeratic culture of Australopithecus prometheus.* Transvaal Museum Memoir, No. 10. [aVN]
Darwin, C. (1872/1965) *The expression of the emotions in man and animals.* University of Chicago Press. [aVN]
Davidson, R. J., Jackson, D. C. & Kalin, N. H. (2000a) Emotion, plasticity, context, and regulation: Perspectives from affective neuroscience. *Psychological Bulletin* 126(6):890–909. [HM]
Davidson, R. J., Putman, K. M. & Larson, C. L. (2000b) Dysfunction in the neural circuitry of emotion regulation – A possible prelude to violence. *Science* 289:591–94. [MIdA]

De Bellis, M. D. (2005) The psychobiology of neglect. *Child Maltreatment* 10(2):150–72. [JES]

De Jong, J., ed. (2002) *Trauma, war, and violence: Public mental health in socio-cultural context.* Kluwer Academic. [aVN]

de Quervain, D. J., Fischbacher, U., Treyer, V., Schellhammer, M., Schnyder, U., Buck, A. & Fehr, E. (2004) The neural basis of altruistic punishment. *Science* 305:1246–47. [DJS]

de Waal, F. (1989) *Peacemaking among the primates.* Harvard University Press. [aVN]

(2000) *Chimpanzee politics*. Johns Hopkins University Press. [MFD]

de Waal, F. & Lanting, F. (1997) *Bonobo. The forgotten ape.* University of California Press. [MFD]

Defleur, A., White, T., Valensi, P., Slimak, L. & Crégut-Bonnoure, E. (1999) Neanderthal cannibalism at Moula-Guercy, Ardèche, France. *Science* 286(5437):128–31. [MPott]

Diamond, J. (1993) New Guineans and their natural world. In: *The biophilia hypothesis*, ed. S. R. Kellert & E. O. Wilson, pp. 251–71. Island Press. [HH]

(2005) *Collapse. How societies choose to fail or survive.* Allen Lane. [KT]

Diener, E. & DeFour, D. (1978) Does television violence enhance program popularity? *Journal of Personality and Social Psychology* 36:333–41. [AB]

Donald, M. (1993) Précis of *Origins of the modern mind: Three stages in the evolution of culture and cognition. Behavioral and Brain Sciences* 16:737–91. [aVN]

Duman, R. S. (2002) Pathophysiology of depression: The concept of synaptic plasticity. *European Psychiatry* 17:306–10. [MIdA]

Durant, W. (1950) *The age of faith.* Simon & Schuster. [aVN]

Edgerton, R. (2000) *Warrior women: The Amazons of Dahomey and the nature of war*. Westview Press. [MPott]

Edgerton, S. Y. (1985) *Pictures and punishment: Art and the criminal prosecution during the Florentine Renaissance.* Cornell. [aVN]

Eibl-Eibesfeld, I. (1989) *Human ethology*. de Gruyter. [BK]

(1996) *Love and hate*. de Gruyter. [BK]

Elias, N. (1939/2000) *The civilizing process: Sociogenetic and psychogenetic investigations*, trans. E. Jephcott. Blackwell. [arVN]

Ellis, B. E. (1991) *American psycho.* Vintage. [aVN]

Euripides (c. 406 BC/1970) *Bacchae*, trans. R. F. Kirk. Prentice-Hall. [aVN]

Eysenck, H. J. & Gudjonsson, G. (1989) *The causes and cures of criminality.* Plenum. [aVN]

Fanon, F. (1968) *Wretched of the Earth.* Grove. [aVN]

Felthous, A. R. & Kellert, S. R. (1987) Childhood cruelty to animals and later aggressive behavior against people: A review. *American Journal of Psychiatry* 144:710–17. [ANR]

Ferguson, T., Eyre, H. & Ashbaker, M. (2000) Unwanted identities: A key variable in shame-anger links and gender differences in shame. *Sex Roles* 42(3–4):133–57. [NNP]

Fiering, N. S. (1976) Irresistible compassion: An aspect of 18th century sympathy and humanitarianism. *Journal of the History of Ideas* 37:195–218. [aVN]

Filley, C. M., Price, B. H., Nell, V., Antoinette, T., Morgan, A. S., Bresnahan, J. F., Pincus, J. H., Gelbort, M. M., Weissberg, M. & Kelly, J. P. (2001) Toward an understanding of violence: Neurobehavioral aspects of unwarranted physical aggression. Aspen Neurobehavioral Conference Consensus Statement. *Neuropsychiatry, Neuropsychology, and Behavioural Neurology* 14:1–14. [rVN]

Finlay, J. M., Zigmond, M. J., & Abercrombie, E. D. (1995) Increased dopamine and norepinephrine release in medial prefrontal cortex induced by acute and chronic stress: Effects of diazepam. *Neuroscience* 64:619–28. [MFD]

Fish, E. W., DeBold, J. F. & Miczek, K. A. (2005) Escalated aggression as a reward: Corticosterone and GABA-A receptor positive modulators in mice. *Psychopharmacology*182:116–27. [MFD]

Foucault, M. (1975/1979/1986) *Discipline and punish: The birth of the prison.* Penguin/Vintage. [MH-F, aVN]

Fraser, A. (1996) *The gunpowder plot: Terror and faith in 1605.* Weidenfeld & Nicholson. [aVN]

Freud, S. (1917/1957) Mourning and melancholia. In: *The standard edition of the complete psychological works of Sigmund Freud, vol. 14*, ed. and trans. J. Strachey, pp. 237–58. Hogarth Press. [R-PB]

(1924/1985) The economic problem of masochism. In: *On metapsychology*, ed. A. Richards, pp. 409–26. Penguin. [aVN]

(1930/1994) *Civilization and its discontents.* Dover. [NZ]

Freyd, J. J., Putnam, F. W., Lyon, T. D., Becker-Blease, K. A., Cheit, R. E., Siegel, N. B. & Pezdek K. (2005) Psychology: The science of child sexual abuse. *Science* 308(5721):501. [JES]

Friedländer, L. J. (1871/1964) *Roman life and manners*, trans. J. H. Freese & L. A. Magnus. Routledge. [aVN]

Frison, G. C. (1998) Paleoindian large mammal hunters on the plains of North America. *Proceedings of the National Academy of Sciences USA* 24:14576–83. [aVN]

Fromm, E. (1973) *The anatomy of human destructiveness*. Holt, Rinehart and Winston. [BK, SKo]

Gallonio, A. (1591/1989) *Tortures and torments of the Christian martyrs*. Feral House. (Original work published in 1591). [rVN]

Gallup, G. (1982) Self-awareness in primates. *American Journal of Primatology* 2:237–48. [MPott]

Gardner, R. & Heider, K. G. (1969) *Gardens of war: Life and death in the New Guinea stone age.* Random House. [AB]

Gardo, M. L. (1987) *Confesiones para un genocidio.* Tae Editorial. [aVN]

Gargaglioni, L. H., Pereira, A. S. & Hoffmann, A. (2001) Basal midbrain modulation of tonic immobility in the toad *Bufo paracnemis. Physiology and Behavior* 72:297–303. [aVN]

Geen, R. G. (1970) Perceived suffering of the victim as an inhibitor of attack-induced aggression. *Journal of Social Psychology* 81:209–16. [AB, SKo]

Geen, R. G. & Stonner, D. (1973) Context effects in observed violence. *Journal of Personality and Social Psychology* 25:145–50. [SKo]

Gerard, M. S. & Higley, J. D. (2002) Evolutionary underpinnings of excessive alcohol consumption. *Addiction* 97:415–25. [DJS]

Gerbasi, K. (2004) Gender and nonhuman animal cruelty convictions: Data from Pet-Abuse.com. *Society and Animals* 12:359–65. [HH]

Gibbon, E. (1776/1903) *The decline and fall of the Roman Empire* (7 volumes). Henry Frowde. [aVN]

Gifford, B. & O'Connor, B. (1987) The interpersonal circumplex as a behavior map. *Journal of Personality and Social Psychology* 52:1019–26. [MPote]

Gilligan, J. (1996) *Violence: Reflections on a national epidemic*. Vintage Books. [NNP]

Goeders, N. E. (2003) The impact of stress on addiction. *European Neuropsychopharmacology* 13:435–41. [MIdA]

Goodall, J. (1986) *The chimpanzees of Gombe: Patterns of behavior*. Harvard University Press. [MPott]

(1990) *Through a window: Thirty years with the chimpanzees of Gombe.* Weidenfeld & Nicholson. [aVN]

Goranson, R. E. (1970) Media violence and aggressive behavior: A review of experimental research. In: *Advances in experimental social psychology, vol. 5*, ed. L. Berkowitz. Academic Press. [SKo]

Grandin, T. (1988) Behavior of slaughter plant and auction employees towards the animals. *Anthrozoos* 1:205–13. [ANR]

Gray, J. G. (1998) *The warriors: Reflections on men in battle*. University of Nebraska Press. [MPott]

Greenberg, J., Pyszczynski, T. & Solomon, S. (1986) The causes and consequence of a need for self-esteem: A terror management theory. In: *Public self and private self*, ed. R. F. Baumeister, pp. 189–207. Springer-Verlag. [SKo]

Greenberg, J., Pyszczynski, T., Solomon, S., Rosenblatt, A., Veeder, M., Kirkland, S. & Lyon, D. (1990) Evidence for terror management theory II: The effects of mortality salience on reactions to those who threaten or bolster the cultural worldview. *Journal of Personality and Social Psychology* 58:308–18. [SKo]

Grossman, D. (1995) *On killing.* Little, Brown. [GA]

(1996) *On killing: The psychological cost of learning to kill in war and society.* Little, Brown. [aVN]

Haller, J., Halasz, J., Mikics, E. & Kruk, M. R. (2004) Chronic glucocorticoid deficiency-induced abnormal aggression, autonomic hypoarousal, and social defeat in rats. *Journal of Neuroendocrinology* 16:550–57. [MFD]

Haller, J., Halasz, J., Mikics, E., Kruk, M. R. & Makara, G. B. (2000) Ultradian corticosterone rhythm and the propensity to behave aggressively in male rats. *Journal of Neuroendocrinology* 12:937–40. [MFD]

Hanawalt, B. (1976) Violent death in 14th and early 15th century England. *Comparative Studies in Society and History* 18:297–320. [aVN]

Haney, C., Banks, W. C. & Zimbardo, P. G. (1973) Interpersonal dynamics in a simulated prison. *International Journal of Criminology and Penology* 1:69–97. [arVN]

Haney, C. & Zimbardo, P. G. (1998) The past and future of U.S. prison policy: 25 years after the Stanford Prison Experiment. *American Psychologist* 53:709–27. [aVN]

Hanson, V. (1991) *Hoplites: The classical Greek battle experience.* Routledge. [MPott]

Haritos-Fatouros, M. (2003) *The psychological origins of institutionalized torture.* Routledge. [AB, MH-F, aVN]

Haritos-Fatouros, M., Huggins, M. & Zimbardo, P. G. (1994) *The official torturer under the military regime in Brazil (1964–1985): Final research report.* Stiftung für Fordering von Wissenschaft und Kultur. [aVN]

Haritos-Fatouros, M. & Zimbardo, P. (2005) The Iraqi torturers: A commentary and an analysis. Paper read at the International Society of Political Psychology (ISPP) Conference, Toronto, Canada. [MH-F, rVN]

Harlow, H. (1953) Mice, monkeys, men, and motives. *Psychological Review* 60:23–32. [RS]

Hawkes, K., O'Connell, J. F. & Blurton Jones, N. G. (2001) Hadza meat sharing. *Evolution and Human Behavior* 22:113–42. [aVN]

Hayes, S. C., Barnes-Holmes, D. & Roche, B. (2001) *Relational frame theory: A post-Skinnerian account of human language and cognition.* Kluwer Academic/Plenum. [KT]

Heilbroner, H. L. (1992) Economic systems. *The new Encyclopaedia Britannica* 17:906–13. [aVN]
Heim, C., Owens, M. J., Plotsky, P.M. & Nemeroff, C.B. (1997a) Persistent changes in corticotropin-releasing factor systems because of early life stress: Relationship to the pathophysiology of major depression and post-traumatic stress disorder. *Psychopharmacology Bulletin* 33(2):185–92. [JES]
(1997b) The role of early adverse life events in the etiology of depression and posttraumatic stress disorder: Focus on corticotropin-releasing factor. *Annals of the New York Academy of Sciences* 821:194–207. [JES]
Held, R. (1985) *Inquisition: A bilingual guide to the exhibition of torture instruments from the Middle Ages to the Industrial Era, presented in various European cities in 1983–87* Qua d'Arno. [arVN]
Hemingway, E. (1932/1996) *Death in the afternoon.* Simon & Schuster. [NZ]
(1939/1994) *Death in the afternoon.* Arrow. [aVN]
Herr, M. (1978) *Dispatches.* Pan. [aVN]
Herzog, H. A. (1985) Cockfighting in Southern Appalachia. *Appalachian Journal* 12:114–26. [HH]
Herzog, H. & Cheek, P. B. (1979) Grit and steel: The anatomy of cockfighting. *Southern Exposure* 7(2):36–40. [aVN]
Hirschman, A. (1977) *The passions and the interests*. Princeton University Press. [GA]
Hobbes, T. (1651/1996) *Leviathan.* Oxford University Press. [aVN]
Holmberg, A. R. (1950) *Nomads of the long bow: The Siriono of eastern Bolivia.* U.S. Government Printing Office. [aVN]
Holmes, S. J. & Robins, L. N. (1988) The role of parental disciplinary practices in the development of depression and alcoholism. *Psychiatry* 51(1):24–36. [JES]
Holt, S. E., Meloy, J. R. & Strack, S. (1999) Sadism and psychopathy in violent and sexually violent offenders. *Journal of the American Academy of Psychiatry and the Law* 27:23–32. [ACR]
Homer (c. 800 BC/1990) *The Iliad*, trans. R. Fagles. Penguin. [aVN]
Hoptman, M. J. (2003) Neuroimaging studies of violence and antisocial behavior. *Journal of Psychiatric Practice* 9(4):265–78. [HM]
Hori, N., Yuyama, N. & Tamura, K. (2004) Biting suppresses stress-induced expression of corticotropin-releasing factor (CRF) in the rat hypothalamus. *Journal of Dental Research* 83(2):124–28. [MFD]
Hornblower, S. & Spawforth, A. (1999) *The Oxford classical dictionary.* Oxford University Press. [aVN]
Horvitz, J. C. (2000) Mesolimbocortical and nigrostriatal dopamine responses to salient non-reward events. *Neuroscience* 96:651–56. [R-PB]
Hubbard, J., Smithmeyer, C. M., Ramsden S. R., Parker, E. H., Flanagan, K. D., Dearing K. F., Releya, N. & Simons, R. F. (2002) Observational, physiological and self-report measures of children's anger: Relations to reactive versus proactive aggression. *Child Development* 4:1101–18. [MPote]
Huggins, M. K. (2000) Legacies of authoritarianism: Brazilian torturers' and murderers' reformulation of memory. *Latin American Perspectives* 27:57–78. [aVN]
Huizink, A. C., Mulder, E. J. H. & Buitelaar, J. K. (2004) Prenatal stress and risk for psychopathology: Specific effects or induction of general susceptibility? *Psychological Bulletin* 130:115–42. [MIdA]
Humphreys, A. P. & Smith, P. K. (1987) Rough and tumble, friendship, and dominance in schoolchildren: Evidence for continuity and change with age. *Child Development* 58:201–12. [MPote]
Huot, R. L., Gonzalez, M. E., Ladd, C. O., Thrivikraman, K. V. & Plotsky, P. M. (2004) Foster litters prevent hypothalamic-pituitary-adrenal axis sensitization mediated by neonatal maternal separation. *Psychoneuroendocrinology* 29(2):279–89. [JES]
Hyde, J. S. (1984) How large are gender differences in aggression? A developmental meta-analysis. *Developmental Psychology* 20:722–36. [AB]
Ikemoto, S. & Panksepp, J. (1999) The role of nucleus accumbens DA in motivated behaviour: A unifying interpretation with special reference to reward-seeking. *Brain Research Reviews* 31:6–41. [R-PB, JP]
Ingle, D. (2004) Recreational fighting. In: *Encyclopedia of Recreation and Leisure in America: vol. 2*, ed. G. S. Cross, pp. 198–200. Scribner. [MPote]
Jackson, D. C., Malmstadt, J. R., Larson, C. L. & Davidson, R. J. (2000) Suppression and enhancement of emotional responses to unpleasant pictures. *Psychophysiology* 37(4):515–22. [HM]
Jackson, R. R. & Pollard, S. D. (1996) Predatory behavior of jumping spiders. *Annual Review of Entomology* 1:287–308. [aVN]
James, W. (1890/1998) *The principles of psychology: Vol. II.* Henry Holt. [rVN, JP]
(1907/2000) *Pragmatism and other writings.* Penguin. [rVN]
Johnson, A. W. & Earle, T. (1987) *The evolution of human societies: From foraging group to agrarian state.* Stanford University Press. [aVN]
Joseph, B. (1986) Envy in everyday life. *Psychoanalytic Psychotherapy* 2:13–22. [R-PB]
Kaminer, D. & Stein, D. J. (2001) Sadistic personality disorder in perpetrators of human rights abuses: A South African case study. *Journal of Personality Disorders* 15:475–86. [DJS]
Kaufman, G. (1985) *Shame: The power of caring*, 2nd edition. Schenkman Books. [NNP]
Kaufman, J. & Charney, D. (2001) Effects of early stress on brain structure and function: Implications for understanding the relationship between child maltreatment and depression. *Development and Psychopathology* 13(3):451–71. [JES]
Kaufman, J., Yang, B. Z., Douglas-Palumberi, H., Houshyar, S., Lipschitz, D., Krystal, J. H. & Gelernter, J. (2004) Social supports and serotonin transporter gene moderate depression in maltreated children. *Proceedings of the National Academy of Sciences USA* 101(49):17316–21. [JES]
Kavaliers, M. & Colwell, D. D. (1994) Parasite infection attenuates nonopioid mediated predator-induced analgesia in mice. *Physiology and Behaviour* 55:505–10. [aVN]
Kavaliers, M., Colwell, D. D. & Choleris, E. (1998) Sex differences in opioid and N-methyl-D-aspartate mediated nonopioid biting fly exposure induced analgesia in deer mice. *Pain* 77:163–71. [aVN]
Kellert, S. R. & Felthous, A. R. (1985) Childhood cruelty toward animals among criminals and noncriminals. *Human Relations* 38:1113–29. [HH]
Kelley, A. E. (2004) Memory and addiction: Shared neural circuitry and molecular mechanisms. *Neuron* 44:161–79. [MIdA]
Kiefer, O. (1938) *Sexual life in ancient Rome.* Routledge. [aVN]
Kimbrough, R., ed. (1972) *Heart of Darkness: An authoritative text, backgrounds and sources, criticism.* Norton. [aVN]
Klimley, A. P. (1994) The predatory behavior of the white shark. *American Scientist* 82:122–33. [aVN]
Klinger, E. (1971) *Structure and functions of fantasy.* Wiley. [aVN]
Krebs, J. R. & Davies, N. B. (1993) *An introduction to behavioral ecology*, 3rd edition. Blackwell. [RS]
Kropotkin, P. (1908) *Mutual aid: A factor of evolution*. Heinemann. (Originally published as essays 1890–96.) [MAF]
Krug, E. G., Dahlberg, L. L., Mercy, J. A., Zwi, A. B. & Lozano, R. (2002) *World report on violence and health.* World Health Organisation. [aVN]
Kruuk, H. (1972) *The spotted hyena: A study of predation and social behaviour.* University of Chicago Press. [aVN]
Kuhnen, C. M. & Knutson, B. (2005) The neural basis of financial risk taking. *Neuron* 47:1–8. [JP]
Ladd, C. O., Owens, M. J. & Nemeroff C. B. (1996) Persistent changes in corticotropin-releasing factor neuronal systems induced by maternal deprivation. *Endocrinology* 137(4):1212–18. [JES]
Lafaye, G. (1896) Gladiator. In: *Dictionnaire des antiquités Grecques et Romaines.* Librairie Hachette. [aVN]
Landau, M. J., Solomon, S., Greenberg, J., Cohen, F., Pyszczynski, T., Arndt, J., Miller, C., Ogilvie, D. M. & Cook, A. (2004) Deliver us from evil: The effects of mortality salience and reminders of 9/11 on support for President George W. Bush. *Personality and Social Psychology Bulletin* 30:1136–50. [SKo]
Lea, S. E. G. (1999) The background to hominid intelligence. In: *The descent of mind: Psychological perspectives on hominid evolution*, ed. M. C. Corballis & S. E. G. Lea. pp. 16–39. Oxford University Press. [aVN]
LeBlanc, S. & Register, K. (2003) *Constant battles: The myth of the peaceful, noble savage*. St. Martin's Press. [MPott]
Lee, R. B. (1968) What hunters do for a living, or, How to make out on scarce resources. In: *Man the hunter*, ed. R. B. Lee & I. DeVore. Aldine. [aVN]
(1984) *The Dobe !Kung.* Holt, Rinehart & Winston. [aVN]
(1979) *!Kung San: Men, women, and work in a foraging society.* Cambridge University Press. [aVN]
Lee, R. B. & DeVore, I., eds. (1968) *Man the hunter.* Aldine. [aVN]
Lena, I., Parrot, S., Deschaux, O., Muffat, S., Sauvinet, V., Renaud, B., Suaud-Chagny, M. F. & Gottesmann, C. (2005) Variations in the extracellular levels of dopamine, noradrenaline, glutamate and aspartate across the sleep-wake cycle in the medial prefrontal cortex and nucleus accumbens of freely moving rats. *Journal of Neuroscience Research* 81:891–99. [JP]
Lerner, J. S., Tiedens, L. Z. and & Gonzalez, R. M. (in press) Portrait of the angry decision maker: How appraisal tendencies shape anger's influence on cognition. *Journal of Behavioral Decision Making*, No. 2. [GA]
Levy, R. I. (1969) On getting angry in the Society Islands. In: *Mental health research in Asia and the Pacific*, ed. W. Caudill and T.-Y. Lin, pp. 358–80. East-West Center Press. [AB]
Lockwood, R. & Ascione, F. R. (1997) *Cruelty to animals and interpersonal violence: Readings in research and application.* Purdue University Press. [ANR]
Lorenz, K. Z. (1963/2002) *On aggression.* Harcourt/Routledge. [aVN, R-PB]
Lowe, C. G., Bray, R. N. & Nelson, D. R. (1994) Feeding and associated electrical behavior of the Pacific electric ray *Torpedo californica* in the field. *Marine Biology* 120:161–69. [aVN]
Luk, E., Staiger, P., Wong, L. & Mathai, J. (1999) Children who are cruel to animals: A revisit. *Australian and New Zealand Journal of Psychiatry* 33:29–36. [SKr]

Lutwak, N., Panish, J., Ferrari, J. & Razzino, B. (2001) Shame and guilt and their relationship to positive expectations and anger expressiveness. *Adolescence* 33(144):641–53. [NNP]

Macdonald, L. (1983) *Somme*. Dorset Press. [MPott]

Machado, C. J. & Bachevalier, J. (2003) Non-human primate models of childhood psychopathology: The promise and the limitations. *Journal of Child Psychology and Psychiatry* 44:64–87. [R-PB]

Machiavelli, N. (1513/1940) *The Prince.* Modern Library. [aVN]

Makara, G. B. & Haller, J. (2001) Non-genomic effects of glucocorticoids in the neural system. Evidence, mechanisms and implications. *Progress in Neurobiology* 65:367–90. [MFD]

Malatesta, C. Z. & Haviland J. M. (1982) Learning display rules: The socialization of emotion expression in infancy. *Child Development* 53:991–1003. [SKr]

Malcolmson, R. W. (1973) *Popular recreations in English society, 1700–1850.* Cambridge University Press. [aVN]

Manchanda, S. K., Poddar, A., Saha, S., Bhatia, S. C., Kumar, V .M. & Nayar, U. (1995) Predatory aggression induced by hypothalamic stimulation: Modulation by midbrain periaqueductal gray (PAG). *Neurobiology (BP)* 3:405–17. [aVN]

Manion, J. (2003) Girls blush, sometimes: Gender, moral agency, and the problem of shame. *Hypatia: A Journal of Feminist Philosophy* 18(3):21–41. [NNP]

McDougall, W. (1924) *An outline of psychology*, 2nd edition. Methuen. [R-PB]

McEwen, B. S. (2003) Early life influences on life-long patterns of behavior and health. *Mental Retardation and Developmental Disabilities Research Reviews* 9(3):149–54. [JES]

McGregor, H. A., Lieberman, J. D., Greenberg, J., Solomon, S., Arndt, J., Simon, L. & Pyszczynski, T. (1998) Terror management and aggression: Evidence that mortality salience motivates aggression against worldview-threatening others. *Journal of Personality and Social Psychology* 74:590–605. [SKo]

Mead, G. H. (1934) Mind, self, and society from the standpoint of a social behaviorist. In: *Works of George Herbert Mead, vol. 1.* University of Chicago Press. [MAF]

Mead, M. (1937) *Cooperation and competition among primitive peoples*. McGraw-Hill. [MAF]

Mealey, L. (1995) The sociobiology of sociopathy: An integrated evolutionary model. *Behavioral and Brain Sciences* 18:523–99. [aVN]

Meaney, M. J. & Szyf, M. (2005) Maternal care as a model for experience-dependent chromatin plasticity? *Trends in Neuroscience* 28(9):456–63. [JES]

Meloy, J. R. (1997) The psychology of wickedness: Psychopathy and sadism. *Psychiatric Annals* 27:630–33. [ACR]

Merz-Perez, L. & Heide, K. M. (2004) *Animal cruelty: Pathway to violence against people*. Altamira Press. [HH]

Mesquite, C. & Weiner, N. I. (1997) Male age composition and severity of conflicts. *Politics and the Life Sciences* 18:181–89. [MPott]

Milgram, S. (1969/1974) *Obedience to authority: An experimental view.* Harper & Row/Tavistock. [AB, MH-F, arVN, MPott]

Miller, A. L. & Olson, S. L. (2000) Emotional expressiveness during peer conflicts: A predictor of social maladjustment among high-risk preschoolers. *Journal of Abnormal Child Psychology*, 28:339–52. [MPote]

Miller, K. & Knutson, J. (1997) Reports of severe physical punishment and exposure to animal cruelty by inmates convicted of felonies and by university students. *Child Abuse and Neglect* 21:59–82. [HH]

Miller, W. I. (1993) *Humiliation and other essays on honor, social discomfort, and violence.* Cornell University Press. [aVN]

Millon, T., Davis, R. D. & Millon, C. (1997) *Millon Clinical Multiaxial Inventory-III manual*, 2nd edition. National Computer Systems. [ACR]

Mills, M. G. L. (1990) *Kalahari hyenas: Comparative behavioural ecology of two species*. Chapman & Hall. [aVN]

Mills, M. G. L. & Harvey, M. (2001) *African predators.* Struik. [aVN]

Milton, J. (1994) Abuser and abused: Perverse solutions following childhood abuse. *Psychoanalytic Psychotherapy* 8:243–55. [R-PB]

Mitani, J. C. & Watts, D. P. (1999) Demographic influences on the hunting behavior of chimpanzees. *American Journal of Physical Anthropology* 109:439–54. [aVN]

Mitchell, A., ed. (1997) *The Amazon journal of Roger Casement.* Anaconda. [aVN]

Miyake, A., Friedman, N. P., Emerson, M. J., Witzki, A. H., Howerter, A. & Wager, T. D. (2000) The unity and diversity of executive functions and their contributions to complex "frontal lobe" tasks: A latent variable analysis. *Cognitive Psychology* 41:49–100. [ACR]

Mock, D. W. & Parker, G. A. (1998) Siblicide, family conflict and the evolutionary limits of selfishness. *Animal Behaviour* 56:1–10. [MPote]

Moerk, E. L. (1995) Acquisition and transmission of pacifist mentalities in Sweden: Peace and conflict. *Journal of Peace Psychology* 1:291–307. [AB]

Moll, J., Zahn, R., de Oliveira-Souza, R., Krueger, F. & Grafman, J. (2005) The neural basis of human moral cognition. *Nature Review Neuroscience* 6:799–809. [BK]

Morgan, A. B. & Lilienfeld, S. O. (2000) A meta-analytic review of the relation between antisocial behavior and neuropsychological measures of executive function. *Clinical Psychology Review* 20:113–36. [ACR]

Moya-Albiol, L. (2004) Bases neurales de la violencia humana. *Revista de Neurología* 38:1067–75. [MIdA]

Musurillo, H. (1979) *The acts of the Christian martyrs.* Oxford University Press. [aVN]

National Geographic (1995) *The new chimpanzees.* National Geographic Films. [aVN]

Nell, V. (2004) Compassion. In: *Oxford companion to the mind*, 2nd edition, ed. R. Gregory, pp. 193–95. Oxford University Press. [aVN]

Nell, V. & Butchart, A. (1989) Studying violence in a South African city. *Critical Health* 28:44–49. [rVN]

Niehoff, D. (1999) *The biology of violence.* Free Press. [aVN]

Nietzsche, F. (1886/1973) *Beyond good and evil.* Penguin. [NZ]

Nissenbaum, L. K., Zigmond, M. J., Sved, A. F., & Abercrombie, E. D. (1991) Prior exposure to chronic stress results in enhanced synthesis and release of hippocampal norepinephrine in response to a novel stress. *Journal of Neuroscience* 11:1478–84. [MFD]

Nussbaum, M. (2004) *Hiding from humanity: Disgust, shame, and the law.* Princeton University Press. [NNP]

Ochsner, K. N. & Feldman Barrett, L. (2001) A multiprocess perspective on the neuroscience of emotion. In: *Emotions. Current issues and future directions*, ed. T. J. Mayne & G. A. Bonanno, pp. 38–81. Guilford Press. [ACR]

O'Connell, J. F., Hawkes, K. & Blurton Jones, N. G. (1999) Grandmothering and the evolution of Homo erectus. *Journal of Human Evolution* 36:461–85. [aVN]

Olsson, A., Ebert, J. P., Banaji, M. R. & Phelps, E. A. (2005) The role of social groups in the persistence of learned fear. *Science* 309:785–87. [MPott]

Ovid (c. 8 AD/1997) *Tales from Ovid: Twenty-four passages from the* Metamorphoses, trans. T. Hughes. Faber and Faber. [aVN]

Panksepp, J. (1971a) Drugs and "stimulus-bound" attack. *Physiology and Behavior* 6:317–20. [JP]

(1971b) The control of fighting between passive and aggressive rats. *Communications in Behavioral Biology* 6:233–35. [JP]

(1993) Rough-and-tumble play: A fundamental brain process. In: *Parents and Children Playing*, ed. K. B. MacDonald, pp. 147–84. SUNY Press. [JP]

(1998) *Affective neuroscience: The foundations of human and animal emotions.* Oxford University Press. [aVN, JP]

(2005) On the embodied neural nature of core emotional affects. *Journal of Consciousness Studies* 12:161–87. [JP]

Panksepp, J. & Burgdorf, J. (2003) "Laughing" rats and the evolutionary antecedents of human joy? *Physiology and Behavior* 79:533–47. [RS]

Panksepp, J., Jalowiec, J., DeEskinazi, F. G. & Bishop, P. (1985) Opiates and play dominance in juvenile rats. *Behavioral Neuroscience* 99:441–53. [JP]

Panksepp, J. & Panksepp, J. B. (2000) The seven sins of evolutionary psychology. *Evolution and Cognition* 6:108–31. [aVN]

Panksepp, J. & Zellner, M. (2004) Towards a neurobiologically based unified theory of aggression. *Revue Internationale de Psychologie Sociale/International Review of Social Psychology* 17:37–61. [JP]

Paolucci, E. O., Genuis, M. L. & Violato, C. (2001) A meta-analysis of the published research on the effects of child sexual abuse. *Journal of Psychology* 135:17–36. [DJS]

Pardon, M.-C., Gould, G. G., Garcia, A., Phillips, L., Cook, M. C., Miller, S. A., Mason, P. A. & Morilak, D. A. (2002) Stress reactivity of the brain noradrenergic system in three rat strains differing in their neuroendocrine and behavioral responses to stress: Implications for susceptibility to stress-related neuropsychiatric disorders. *Neuroscience* 115:229–42. [MFD]

Parkinson, J. A., Cardinal, R. N. & Everitt, B. J. (2000) Limbic cortical-ventral striatal systems underlying appetitive conditioning. *Progress in Brain Research* 126:263–85. [R-PB]

Patterson, G. R., Littman, R. A. & Bricker, W. (1967) Assertive behavior in children: A step toward a theory of aggression. *Monographs of the Society for Research in Child Development* 32:1–36. [KT]

Pedersen, C. A. (2004) Biological aspects of social bonding and the roots of human violence. *Annals New York Academy of Science* 1036:106–27. [MIdA]

Pellis, S. M. & Pellis, V. C. (1998) Play fighting of rats in comparative perspective: A schema for neurobehavioral analyses. *Neuroscience and Biobehavioral Reviews* 23:87–101. [MPote]

Pietrini, P., Guazzelli, M., Basso, G., Jaffe, K. & Grafman, J. (2000) Neural correlates of imaginal aggressive behavior assessed by positron emission tomography in healthy subjects. *American Journal of Psychiatry* 157(11):1772–81. [HM]

Pine, D. S., Mogg, K., Bradley, B. P., Montgomery, L., Monk, C. S., McClure, E., Guyer, A. E., Ernst, M., Charney, D. S. & Kaufman, J. (2005) Attention bias to threat in maltreated children: Implications for vulnerability to stress-related psychopathology. *American Journal of Psychiatry* 162(2):291–96. [JES]

Piper, H. (2003) The linkage of animal abuse with interpersonal violence: A sheep in wolf's clothing? *Journal of Social Work* 3:161–77. [HH]

Platt, J. R. (1964) Strong inference. *Science* 146(3642):347–53. [BK]

Plotkin, H. C. (1996) Nongenetic transmission of information: Candidate cognitive processes and the evolution of culture. *Behavioural Processes* 35:207–13. [aVN]

Plummer, T. & Stanford, C. B. (2000) Analysis of a prey bone assemblage made by wild chimpanzees in Gombe National Park. Unpublished paper. [aVN]
Plutarch (c.100 AD/1988) Lycurgus. In *Plutarch on Sparta*, ed. R. J. A. Talbert. Penguin. [aVN]
Popper, K. R. (1963) *Conjectures and refutations*. Routledge and Kegan Paul. [BK]
Potegal, M. (1979) The reinforcing value of several types of aggressive behavior: A review. *Aggressive Behavior* 5:353–73. [MPote]
(1994) Aggressive arousal: The amygdala connection. In: *The Dynamics of aggression: Biological and social processes in dyads and groups*, ed. M. Potegal & J. F. Knutson, pp.73–111. Erlbaum. [MPote]
Premack, D. (1988) "Does the chimpanzee have a theory of mind?" revisited. In: *Machiavellian intelligence: Social expertise and the evolution of intellect in monkeys, apes, and humans*, ed. R. W. Byrne & A. Whiten. Oxford University Press. [aVN]
Preston, S. D. & de Waal, F. B. M. (2002) Empathy: Its ultimate and proximate bases. *Behavioral and Brain Sciences* 25:1–20. [DJS]
Puppi, L. (1991) *Torment in art.* Rizzoli. [aVN]
Pyszczynski, T., Abdolahi, A., Solomon, S., Greenberg, J., Cohen, F. & Weise, D. (2006) Mortality salience, martyrdom, and military might: The great Satan versus the axis of evil. *Personality and Social Psychology Bulletin* 32(4): 525–37. [SKo]
Quinlisk, J. A. (1999) Animal abuse and family violence. In: *Child abuse, domestic violence, and animal abuse: Linking the circles of compassion for prevention and intervention*, ed. F. R. Ascione & P. Arkow, pp. 168–75. Purdue University Press. [ANR]
Raine, A., Buchsbaum, M. S., Stanley, J., Lottenberg, S., Abel, L. & Stoddard, J. (1994) Selective reductions in prefrontal glucose metabolism in murderers. *Biological Psychiatry* 36(6):365–73. [HM]
Raine, A., Meloy, J. R., Bihrle, S., Stoddard, J., LaCasse, L. & Buchsbaum, M. S. (1998) Reduced prefrontal and increased subcortical brain functioning assessed using positron emission tomography in predatory and affective murderers. *Behavioral Sciences and the Law* 16(3):319–32. [HM]
Rawls, J. (1971) *A theory of justice*. Cambridge University Press. [NNP]
Reich, W., ed. (1990) *Origins of terrorism: Psychologies, ideologies, theologies, states of mind.* Cambridge University Press. [AB]
Remage-Healey, L. & Bass, A. H. (2004) Rapid, hierarchical modulation of vocal patterning by steroid hormones. *Journal of Neuroscience* 24:5892–900. [MFD]
Richards, M. P., Pettitt, P. B., Trinkaus, E., Smith, F. H., Paunovic, M. & Karavanic, I. (2000) Neanderthal diet at Vindija and Neanderthal predation: The evidence from stable isotopes. *Proceedings of the National Academy of Sciences USA* 2097(13):7663–66. [aVN]
Ricks, T. (1998) *Making the corps*. Simon & Shuster. [MPott]
Ridley, M. (1993) *The Red Queen: Sex and the evolution of human nature.* Viking. [aVN]
Rind, B., Tromovitch, P. & Bauserman, R. (1998) A meta-analytic examination of assumed properties of child sexual abuse using college samples. *Psychological Bulletin* 124:22–53. [HH]
Robbins, R. H. (1960) *Encyclopaedia of witchcraft and demonology.* Crown. [aVN]
Rolls, E. T. (1999) *The brain and emotion.* Oxford University Press. [aVN]
Roozendaal, B., de Quervqin, E.-F., Ferry, B., Setalo, G. & McGaugh, J. L. (2001) Basolateral amygdala-nucleus accumbens interactions in mediating glucocorticoid enhancement of memory consolidation. *Journal of Neuroscience* 21:2518–25. [MFD]
Rowan, A. N. (1999) Cruelty and abuse to animals: A typology. In: *Child abuse, domestic violence, and animal abuse: Linking the circles of compassion for prevention and intervention*, ed. F. R. Ascione & P. Arkow, pp. 328–34. Purdue University Press. [ANR]
Roy, A. (2005) Childhood trauma and impulsivity: Possible relevance to suicidal behavior. *Archives of Suicide Research* 9(2):147–51. [JES]
Ruocco, A. C. & Swirsky-Sacchetti, T. (in press) Personality disorder symptomatology and neuropsychological function in closed head injury. *The Journal of Neuropsychiatry and Clinical Neurosciences*. [ACR]
Sade, Marquis de (1798/1968) *Juliette.* Grove Weidenfeld. [aVN]
Sallustius (361 AD/1926) *Concerning the gods and the universe*, ed. A. D. Nock. Longmans. [aVN]
Salmivalli, C., Lagerspetz, K., Bjorkqvist, K., Osterman, K. & Kaukianen, A. (1996) Bullying as a group process: Participant roles and their relations to social status within the group. *Aggressive Behavior* 22:1–15. [KT]
Sanday, P. R. (1981) The socio-cultural context of rape: A cross-cultural study. *The Journal of Social Issues* 37:5–27. [AB]
Sandler, J. & Quagliano, J. (1964) Punishment in a signal avoidance situation. Paper presented at the Meeting of the Southeastern Psychological Association, Gatlinburg, TN. [AB]
Sapolsky, R. M. & Share, L. J. (2004) A pacific culture among wild baboons: Its emergence and transmission. *Public Library of Science, Biology* 2:0534–541. [MFD]
Scarry, E. (1985) *The body in pain: The making and unmaking of the world*. Oxford University Press. [NNP]
Schaller, G. B. (1972) *The Serengeti lion: A study of predator-prey relations*. University of Chicago Press. [RS]
(1973) *Serengeti: A kingdom of predators.* Collins. [aVN]
Schopenhauer, A. (1841/1965) *On the basis of morality*, trans. E. F. J. Payne. Bobbs-Merrill/Library of Liberal Arts. (First published in 1841.) [MAF]
Schuster, R. (1969) A functional analysis of conditioned reinforcement. In: *Conditioned reinforcement*, ed., D. P. Hendry, pp. 191–234. Dorsey Press. [RS]
Schuster, R. & Perelberg, A. (2004) Why cooperate? An economic perspective is not enough. *Behavioral Processes* 66:261–77. [RS]
Scriptores Historiae Augustae (c. 500 AD/1961). Heinemann. [aVN]
Scruton, R. (1998) *On hunting.* Yellow Jersey. [NZ]
Selby, D. (1995) *EarthKind: A teacher's handbook on humane education*. Trentham Books. [MAF]
Seligman, M. E. (1971) Phobias and preparedness. *Behavior Therapy* 2:307–20. [KT]
Shakur, S. (1993) *Monster: The autobiography of an L.A. gang member*. Atlantic Monthly Press. [MPott]
Silk, J. B. (2002) Practice random acts of aggression and senseless acts of intimidation: The logic of status contests in social groups. *Evolutionary Anthropology* 11:221–25. [MPote]
Sinha, R., Lacadie, C., Skudlarski, P. & Wexler, B. E. (2004) Neural circuits underlying emotional distress in humans. *Annals New York Academy Science* 1032:254–57. [MIdA]
Sinha, R., Talih, M., Malison, R., Cooney, N., Anderson, G. M. & Kreek, M. J. (2003) Hypothalamic-pituitary-adrenal axis and sympatho-adreno-medullary responses during stress-induced and drug cue-induced cocaine craving states. *Psychopharmacology* 170:62–72. [MIdA]
Skinner, B. F. (1953) *Science and human behavior*. Macmillan. [KT]
Skyrms, B. (1996) *Evolution of the social contract*. Cambridge University Press. [MAF]
Solomon, S., Greenberg, J. & Pyszczynski, T. (1991) Terror management theory of self-esteem. In: *Handbook of social and clinical psychology: The health perspective*, ed. C. R. Snyder & D. Forsyth, pp. 21–40. Pergamon. [SKo]
Soloviev, S. (2002) Russian society under Ivan the Terrible. In: *History of Russia: Vol. 12*, trans. T. A. Smith. Academic International Press. [BK]
Spillius, E. B. (1993) Varieties of envious experience. *International Journal of Psychoanalysis* 74:1199–212. [R-PB]
Sroufe, A. (1983) Infant-caregiver attachment and patterns of adaptation in preschool: The roots of maladaptation and competence. In: *The Minnesota symposium on child psychology, vol. 16*, ed. M. Perlmutter, pp. 41–83. Erlbaum. [MPote]
Stanford, C. B. (1999) *The hunting apes: Meat eating and the origins of human behaviour.* Princeton University Press. [aVN]
Stanford, C. B., Wallis, J., Mpongo, E. & Goodall, J. (1994) Patterns of predation by chimpanzees on red colubus monkeys in the Gombe National Park, 1982–1991. *American Journal of Physical Anthropology*, 94:213–28. [aVN]
Stein, D. J. (1996) The philosophy of psychopathy. *Perspectives in Biology and Medicine* 39:569–80. [DJS]
(2000) The neurobiology of evil: Psychiatric perspectives on perpetrators. *Ethnicity and Health* 5:305–15. [DJS]
(2005) Empathy: At the heart of the mind. *CNS Spectrums*.10:780–83. [DJS]
Stein, D. J., Harvey, B. H., Uys, J. & Daniels, W. (2005) Suffer the children: The psychobiology of early adversity. *CNS Spectrums* 10:612–15. [DJS]
Stein, D. J., Seedat, S. & Emsley, R. A. (2002) Violence in the world: What is a doctor to do? *South African Medical Journal* 92:789–90. [DJS]
Sternberg, J. (2005) *Infant observation at the heart of training.* Karnac Books. [SKr]
Stone, L. J. & Hokanson, J. E. (1969) Arousal reduction via self-punitive behavior. *Journal of Personality and Social Psychology* 16:319–28. [AB]
Suetonius (100 AD/1984) *The Twelve Caesars*, trans. R. Graves. Penguin. [aVN]
Tapper, K. & Boulton, M. J. (2002) Studying aggression in school children: The use of a wireless microphone and micro-video camera. *Aggressive Behavior* 28:356–65. [KT]
(2004) Sex differences in levels of physical, verbal and indirect aggression amongst primary school children and their associations with beliefs about aggression. *Aggressive Behavior* 30:123–45. [KT]
(2005) Observed victim and peer responses to physical, verbal, indirect and relational aggression amongst primary school children. *Aggressive Behavior* 31:238–53. [KT]
Tatar, M. M. (1995) *Lustmord: Sexual murder in Weimar Germany.* Princeton University Press. [aVN]
Taussig, M. T. (1986) *Shamanism, colonialism, and the wild man: A study in terror and healing.* University of Chicago Press. [aVN]
Taylor, G. T. (1977) Affiliation in highly aggressive domestic rats. *Journal of Comparative and Physiological Psychology* 91:1128–35. [MPote]

Tertullian (197 AD/1958) *Apology* and *De Spectaculis.* Harvard University Press. [aVN]
Tester, K. (1997) *Moral culture.* Sage. [aVN]
Tiger, L. (1992) *The pursuit of pleasure*. Little, Brown. [LT]
Timerman, J. (1981) *Prisoner without a name, cell without a number.* Knopf. [aVN]
Tomasello, M., Call, J. & Gluckman, A. (1998) Comprehension of novel communicative signs by apes and human children. *American Journal of Primatology* 46:85–101. [aVN]
Tremblay, R. E. & Nagin, D. S. (2005) The developmental origins of physical aggression in humans. In: *Developmental origins of aggression*, ed. R. E. Tremblay, W. W. Hartup & J. Archer, pp. 83-106. Guilford Press. [MPote]
Trinkaus, E. (1992) Neanderthals. *The new Encyclopaedia Britannica* 18:836–38. [aVN]
Ulrich, H. M., Randolph, M. & Acheson, S. K. (in press) Child sexual abuse: A reexamination of the meta-analytic examination of child sexual abuse by Rind, Tromovitch, and Bauserman (1998). *Scientific Review of Mental Health Practice.* [HH]
Vaca-Guzman, M. & Arluke, A. (2006) Normalizing cruelty: The excuses and justifications of animal horders. *Anthrozoös* 18:338–57. [HH]
Valentino, R. J., Foote, S. L. & Aston-Jones, G. (1983) Corticotropin-releasing factor activates noradrenergic neurons of the locus coeruleus. *Brain Research* 270:363–67. [MFD]
Van Lawick, H. (1977) *Savage paradise: The predators of Serengeti.* Collins. [aVN]
Vermeulen, H. & Odendaal, J. S. J. (1993) A typology of companion animal cruelty. *Anthrozoos* 6:248–57. [ANR]
Victor, J. (1981) *Confesiones de un torturador.* Editorial Laia. [aVN]
Virgin, C. E. J. & Sapolsky, R. M. (1997) Styles of male social behavior and their endocrine correlates among low-ranking baboons. *American Journal of Primatology* 42:25–39. [MFD]
Volavka, J. (1999) The neurobiology of violence: An update. *Journal of Neuropsychiatry and Clinical Neurosciences* 11(3):307–14. [HM]
Volkow, N. D., Tancredi, L. R., Grant, C., Gillespie, H., Valentine, A., Mullani, N., Wang, G. J. & Hollister, L. (1995) Brain glucose metabolism in violent psychiatric patients: A preliminary study. *Psychiatry Research* 61(4):243–53. [HM]
Walker, P. L. (1989) Cranial injuries as evidence of violence in prehistoric southern California. *American Journal of Physical Anthropology* 80:313–23. [aVN]
Watt, D. F. (2005) Social bonds and the nature of empathy. *Journal of Consciousness Studies* 12:188–212. [JP]
Watts, D. P. & Mitani, J. C. (2001) Boundary patrols and intergroup encounters in wild chimpanzees. *Behaviour* 138:299–327. [RS]
Webster, M. (1963) *Webster's Seventh New Collegiate Dictionary*. Merriam Webster. [MFD]
Weinberg, J., Erskine, M. & Levine, S. (1980) Shock-induced fighting attenuates the effects of prior shock experience in rats. *Physiology and Behavior* 25:9–16. [MFD]
Weiner, S., Shaikh, M. B., Shaikh, A. B. & Siegel, A. (1991) Enkephalinergic involvement in periaqueductal gray control of hypothalamically elicited predatory attack in the cat. *Physiology and Behavior* 49:1099–1105. [aVN]
Weiss, F. (2005) Neurobiology of craving, conditioned reward and relapse. *Current Opinion in Pharmacology* 5:9–19. [MIdA]
White, T. D. (1985) *Acheulian man in Ethiopia's Middle Awash Valley: The implications of cutmarks on the Bodo cranium.* Netherlands Museum. [aVN]
Williams, J. L. (1999) Effects of conspecific and predator odors on defensive behavior, analgesia, and spatial working memory. *Psychological Record* 49:493–536. [aVN]
Wilson, E. O. (1975/2000) *Sociobiology: The new synthesis.* Harvard. [aVN]
Wilson, M. L., Hauser, M. D. & Wrangham, R. W. (2001) Does participation in intergroup conflict depend on numerical assessment, range location, or rank for wild chimpanzees? *Animal Behaviour* 61:1203–16. [aVN]
Wistrand, M. (1992) *Entertainment and violence in ancient Rome: The attitudes of Roman writers of the first century A.D.* Acta Universitatis Gothoburgensis. [aVN]
Wong, M. T., Fenwick, P. B., Lumsden, J., Fenton, G. W., Maisey, M. N., Lewis, P. & Badawi, R. (1997) Positron emission tomography in male violent offenders with schizophrenia. *Psychiatry Research* 68(2–3):111–23. [HM]
World Animal Net (n.d.) Humane education. Available at: http://worldanimal.net/humane-ed.html. [MAF]
Worsnop, J. (1990) A reevaluation of the "problem of surplus women" in nineteenth century England. *Women's Studies International Forum* 13:21–31. [MPott]
Worthman, C. M., & Kuzara, J. (2005) Life history and the early origins of health differentials. *American Journal of Human Biology* 17(1):95–112. [JES]
Wrangham, R. (1999) Evolution of coalitionary killing. *American Journal of Physical Anthropology* 29(Suppl.):1–30. [MPott]
Wrangham, R. & Peterson, D. (1996) *Demonic males: Apes and the origins of human violence.* Houghton Mifflin/Mariner. [aVN, MPott, RS, NZ]
Wüst, S., Federenko, I. S., Van Rossum, E. C., Koper, J. W., Kumsta, R., Entringer, S. & Hellhammer, D. H. (2004) A psychobiological perspective on genetic determinants of hypothalamus-pituitary-adrenal axis activity. *Annals of the New York Academy of Science* 1032:52–62. [MIdA]
Zimbardo, P. (1970) The human choice: individuation, reason and order versus deindividuation, impulse and chaos. In: *Nebraska Symposium on Motivation.* University of Nebraska Press. [MH-F]
(1972) Pathology of imprisonment. *Trans-Action* 9:4–8. [MPott]
Zimbardo, P. G. (2003) Foreword. In: *The psychological origins of institutionalized torture*, ed. M. Haritos-Fatouros, pp. xv–xviii. Routledge. [arVN]
(2004) A situationist perspective on the psychology of evil: Understanding how good people are transformed into perpetrators. In: *The social psychology of good and evil,* ed. A. G. Miller, pp. 21–50. Guilford Press. [AB]
Zimbardo, P. G. & White, G. (1972) *Stanford Prison Experiment Slide-Tape Show*. Stanford University. [SKo]
Zimrin, H. (1986) A profile of survival. *Child Abuse and Neglect* 10:339–49. [ANR]