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Play Theory of Hunter-Gatherer Egalitarianism

Peter Gray

Here's the puzzle. Almost everywhere we look, human beings, especially men, organize themselves into hierarchical social structures. We see hierarchical organization in prestate tribes headed by chiefs or "big men." We see it in the governments of all states and nations, with their top-down structures of power. We see it in businesses, where bosses tell employees what to do. We see it in schools, where principals tell teachers what to do and teachers tell students what to do. We see it in gangs and in many sorts of male gatherings, where boys or men jockey, sometimes violently, for status or dominance. We also see that most other species of primates live in hierarchically organized groups, with alpha individuals (generally males) at the top and frequent squabbling for status. And yet, there is one very significant cultural category of human beings where we don't see hierarchical organization. We don't see it in band hunter-gatherers (as defined in chapter 1).

In all band hunter-gatherer societies that have been studied, the dominant cultural ethos is one of individual autonomy, nonviolence, sharing, cooperation, and consensual decision making (Ingold, 1999). Their core value, which underlies all of the rest, is that of the equality of individuals. They do not have chiefs or other leaders of the type who tell others what to do; they make all group decisions through discussions aimed at consensus. If it is true that strivings for status and dominance are intrinsic to human nature, then hunter-gatherers somehow overcome that aspect of their nature and apparently have been doing so for a long, long time. How do they do it?

The writings of anthropologists make it clear that hunter-gatherers are not passively egalitarian; they are actively so. Indeed, in the words of anthropologist Richard Lee (1988, p. 264), they are "fiercely egalitarian." They do not tolerate anyone's hoarding food or other goods, boasting, putting on airs, or trying to lord it over others. On the basis of such observations, Christopher Boehm (1993, 1999) developed what he calls the *reverse dominance theory* of hunter-gatherer egalitarianism. His theory is that hunter-gatherers everywhere have learned to turn the dominance hierarchy upside down, so that the band as a whole acts in concert to

suppress any individuals who attempt to dominate them. They use ridicule, shunning, and threats of ostracism to counteract any budding alpha male behavior. At the extreme, they might banish a domineering person from the band. On the very rare occasions when even banishment doesn't work, where the offender continues to hang around and use violence to dominate others, they might, if it's the only solution, stop the perpetrator with capital punishment or the threat of it. They have, of course, no prisons, so they have no other way to stop someone who cannot be dissuaded from violence. Boehm presents a powerful case for this theory, and I have no doubt that he is correct. But, as a supplement to his theory, I have previously suggested what I call the *play theory* of hunter-gatherer egalitarianism (Gray, 2009a, 2012a), which I develop further and more explicitly in the present chapter.

In brief, the play theory is that hunter-gatherers have learned, over their long history, to foster the playful side of their human nature as a way to promote good will and egalitarian behavior within and across bands. In all mammals, social play is a form of behavior that requires cooperation, fairness, and the setting aside of dominance. Hunter-gatherers, I suggest, combat the tendency toward dominance by imbuing nearly all of their social life with a spirit of play. To develop the theory, I'll first discuss the role of play in promoting egalitarian behavior in nonhuman animals and then some of the many ways that hunter-gatherers seem to use play to maintain peace and equality (the latter part draws from and expands on my previous article on play as a foundation for hunter-gatherer social life—Gray, 2009a).

Play and Egalitarian Behavior in Nonhuman Mammals

WHY SOCIAL PLAY IS NECESSARILY COOPERATIVE AND EGALITARIAN

The young of nearly all mammals play with one another, most commonly by engaging in mock fighting and chasing. A play fight is in many ways the opposite of a real fight. It may include movements and postures resembling a real fight, but the goal is opposite.

While the goal of a real fight is to end the fight as quickly as possible by winning and driving off or asserting dominance over the other, the goal of a play fight is to keep the interaction going for the pleasure and, perhaps, the practice it provides. To keep it going, each animal must avoid hurting or threatening the other, that is, avoid winning or even appearing as if it wants to win. Play always requires the voluntary participation of both (or all) partners, so play is always an exercise in restraint and in retaining the other's good will. If one player fails at that, the other will quit and the play will end. Play very often involves animals that differ considerably in age, size, and strength. To keep the play going, the larger, stronger, or otherwise more dominant animal must continuously self-handicap, so as not to intimidate the other. Thus, play is always an egalitarian, cooperative activity.

Extensive research on play fighting in rats reveals that, for this species at least, the preferred positions generally are the more vulnerable defensive ones, such as the belly-up position (Pellis, 2002; Pellis and Pellis, 1998). Apparently, one evolutionary function of such play is to practice getting out of such positions. The animals more or less take turns at this. The stronger one must not exert full strength against the weaker one when on top because only when the weaker one breaks out of a pin can the stronger one get a turn at being in the vulnerable position. This, too, makes a play fight opposite to a real fight. In a real fight, of course, the preferred position is the dominant, attack position, and no rat in a real fight would voluntarily relinquish that position unless the other signaled defeat. Voluntary acceptance or choice of the vulnerable position distinguishes play fighting from real fighting in other species as well (Bekoff, 2004).

Similarly, in playful chasing, the preferred position for at least many species of animals is that of being chased rather than that of chasing, just as it is in human games of tag. Again, the preferred position is the more vulnerable one, the one that would normally be that of the subordinate or loser (in a fight) or the prey (in a predatory encounter), not that of the dominant animal. So, play reverses the preferences of serious life; in play it is better to be subordinate and vulnerable than to be dominant and invulnerable. (An exception to this occurs in the chasing play of some predatory animals, including wolves and dogs, that run down their prey. For them, chasing play appears to serve as practice in predation, and the position of pursuer appears to be at least as valued as that of being pursued.)

Marc Bekoff (2001, 2004) has pointed out that, in play, animals exhibit behaviors that are considered to be core elements of morality when they occur in humans. These include making a deal (a social contract), trusting, behaving fairly, apologizing, and forgiving. The play starts with some sort of signal, given by one and returned by the other, which essentially says, "Let's not fight, mate, or ignore one another right now; let's play." For dogs, wolves, and other canids, the common signal for play is the play bow, in which each animal crouches down on forelimbs and elevates on hindlimbs. For primates, it is the relaxed open-mouth display, or play face, which is homologous to playful laughing and smiling in humans. That's how the deal is initiated and sealed. Then, during the play, each animal must play fairly, which means abiding by the rules of not hurting or threatening the other while going through the motions of fighting or chasing in ways that at least partly resemble patterns of real fighting and chasing. If one animal accidentally hurts another, perhaps by nipping too hard in a moment of excitement, an apology is due. The apology may take the form of backing off and again manifesting the play signal, perhaps repeatedly. Forgiveness is manifested if the nipped animal accepts the apology and rejoins the play.

According to Bekoff (2004), who has spent a long career studying play in canids, animals rarely cheat in play, which would occur if they sealed the contract to play and then broke it by seriously attacking when the other was in a vulnerable position. Those few who do cheat—as Bekoff observed very rarely in young coyotes—tend

to become social isolates and have shortened lives because others avoid them. One function of play in animals might be to test one another's willingness and capacity to stick to a social agreement.

It is important to distinguish play fighting from ritualized aggression. Many species of animals engage in nonviolent ritualized contests as means of establishing dominance without risking injury (Natarajan and Caramaschi, 2010). Depending on the species, they may puff themselves up while facing one another, paw the ground, butt horns, pound their chests, screech, hiss, or show their teeth or other weapons in postures of mutual threat until one or the other backs off or until the confrontation escalates into violence. These are competitive, not cooperative interactions. They are closely related to real fighting, not to play. Some of the intense competitive games played by humans in our culture, where winning has real-world consequences, might be regarded as blends of play and ritualized aggression (Gray, 2009b), but there is little if any evidence that such blends occur in other species.

In all mammals, play is more common in the young than in adults. That is part of the evidence that a major evolutionary function of play is to provide practice in skills that the young must develop for their long-term survival. The skills that appear to be practiced include physical skills, such as those needed for fighting, preying, and fleeing; social skills, such as restraint, cooperation, and sensitivity to other's signals; and emotional skills, such as the ability to regulate or minimize fear and anger in close encounters with conspecifics (e.g., LaFreniere, 2011; Pellis and Pellis, 2011; Pellis, Pellis, and Bell, 2010).

Play among adults is rare or nonexistent in many species but is relatively common in others. Some research with primates suggests that adult play is more common for species that live in relatively loosely structured groups, where individuals are not regularly in close contact, than for those that live in more tightly structured groups (Pellis and Iwaniuk, 2000). In these cases, play may be a way of reasserting affiliation upon contact and testing one another's willingness to get along without fighting. A good portion of the adult-adult play in such species is cross sex, and in that case it is often a prelude to mating. Other research suggests that adult-adult play is also relatively common in pack-hunting animals such as wolves, which, like human hunters, must cooperate in killing large game (Cordoni, 2009). Still other research (described next) suggests that primates that live in relatively egalitarian social groups engage in more adult play, and play differently as juveniles, compared with primates that live in steeply hierarchical groups.

PLAY RELATED TO EGALITARIAN SOCIAL ORGANIZATION IN MACAQUES

All species of macaque monkeys live in multi-male, multi-female social colonies. For some species, most notably Japanese macaques (*Macaca fuscata*), these colonies are steeply hierarchical, characterized by sharp power differences between

dominants and subordinates, frequent unidirectional attacks, prominent submissive signals, and relative lack of friendly interactions among non-kin. At the other extreme, Tonkean macaques (*Macaca tonkeana*) and crested macaques (*Macaca nigra*) live in relatively egalitarian colonies, where individuals are relatively unconcerned with rank, rarely attack one another, do not have formal signals of submission, and engage often in friendly interactions with non-kin as well as with kin (Ciani, Dall'Olio, Stanyon, and Palagi, 2012; Matsumura, 1999; Thierry, 2000). These differences apply to relationships among females as well as among males, and to relations between females and males.

In observations of captive colonies living in semi-natural conditions, Ciani and colleagues (2012) found much more play, both among juveniles and among adults, in the egalitarian Tonkean macaques than in the more despotic Japanese macaques. The difference in adult play, however, was accounted for entirely by differences in play among females. Female Tonkeans played extensively with one another, whereas female Japanese did not play at all with one another. There was no difference between the two species in amount of play observed among adult males. The researchers suggest that adult play may serve different functions for male and female macaques. Males must leave their natal colony and join a new one when they reach adulthood, so play for them may be a way of establishing new relationships, a function that may be as important in steeply hierarchical species as in egalitarian ones. For females, who stay in their native colony, adult play may be primarily a means of maintaining egalitarian relationships among long-term friends, which is crucial to the Tonkean macaque way of life but not to the Japanese macaque way of life.

Other research indicates that the manner of play for the more egalitarian species differs from that for Japanese macaques (Petit, Bertrand, and Thierry, 2008; Reinhart et al., 2010). Young Tonkean and crested macaques commonly wrestle while lying on their sides or backs, in a manner that bears little resemblance to real fighting, and often engage in group play, with multiple partners, in which they cluster into "writhing masses of bodies." In contrast, young Japanese macaques play-fight almost entirely in dyads, in which they adopt defensive postures and play-bite in ways that mimic the postures and attacks of real fighting. These observations suggest that the young of the egalitarian species are practicing different sets of skills in their play than are the young of the hierarchical species. The former appear to be practicing social skills that enable close contact without fighting or fleeing, whereas the latter appear to be practicing fighting and may also be gaining information about one another's strengths and weaknesses for use in dominance struggles to come.

PLAY RELATED TO EGALITARIAN BEHAVIOR IN BONOBOS

Bonobos and chimpanzees are our two closest animal relatives. We are equally related to the two species; the branch of ape ancestry that led to both chimpanzees and bonobos split off from that which led to us approximately 6 million years ago

(Corballis, 1999). Bonobos and chimps look quite similar to one another and in some ways have similar social structures, but bonobos are much more egalitarian than are chimpanzees or any of the other apes. Bonobos are also the most playful of all apes, especially in adulthood (Palagi, 2008).

Male bonobos do form dominance hierarchies, but their hierarchies are subtler and involve less fighting than is the case for chimpanzee male hierarchies (Surbeck, Deschner, Schubert, Weltring, and Hohmann, 2012). The most striking social difference between the two species, however, is that female bonobos are generally dominant over males (Parish and de Waal, 2000), whereas chimpanzees show the more typical primate pattern of male dominance over females, which is sometimes quite violent (Muller, Kahlenberg, and Wrangham, 2009).

Female bonobos are dominant over males even though they are smaller and weaker than them. They achieve dominance because they form close social bonds with one another and come to one another's aid in aggressive encounters with males (Parish and de Waal, 2000). Male bonobos, in contrast, do not help one another in encounters with females. As part and parcel of their capacity to cooperate, female bonobos maintain highly egalitarian, friendly relationships with one another (Palagi, 2011). Their capacity to form and maintain such relationships is all the more striking given that bonobos (like chimpanzees, but opposite from macaques) practice female exogamy—the females, not the males, leave their natal group and join a new one upon reaching adulthood. Thus, the bonds formed among female adult bonobos are generally among individuals that are not close relatives and were not raised together. The females apparently build and maintain these relationships at least partly through play (Palagi, 2011).

In one study, Palagi (2006) compared the social behaviors of a captive group of bonobos with those of a captive group of chimpanzees, both housed in semi-natural conditions. As expected, she observed far more egalitarian behavior in the bonobos than in the chimps. The bonobos showed fewer one-way attacks and fewer bared-teeth displays and other signals of fear or submission than did the chimps. She observed equivalent amounts of play among immature animals for the two species, but far more adult–adult play among bonobos than among chimps. Adult chimps often played with immature chimps, but almost never with one another. Among the adult bonobos, females played with other females more often than with males and far more often than males played with one another. In further research focused just on adult bonobos, Palagi and Paoli (2007) found that rough-and-tumble contact play (as opposed to noncontact forms of play such as pirouetting) was much more common in female–female dyads than in female–male dyads and was completely absent in male–male dyads. That study also revealed a significant correlation between play and other signs of affiliation. Females that played frequently together also often groomed one another and sat in physical contact with one another.

Palagi and her colleagues also found evidence that adult bonobos use play to prevent or reduce agonistic encounters in stressful situations. In one study, play

was most frequent during the prefeeding period, a time when tension in the group is especially high because of anticipated competition for food (Palagi, Paoli, and Tarli, 2006). In another study, play signals and noncontact forms of play among adults increased significantly when the animals were temporarily restricted to relatively crowded indoor quarters (Tacconi and Palagi, 2009).

How Hunter-Gatherers Use Play to Promote Peace and Equality

The research just described suggests that play may help animals to establish and maintain friendships, reduce aggression, and cooperate. Humans, when free to do so, play more than any other primate, and the capacity for play extends into adulthood for humans even more than for bonobos. Moreover, for humans, unlike bonobos, adult play is at least as common among males as it is among females.

My thesis here is that a major evolutionary reason for the extension of human play into adulthood—that is, a major reason for the natural selection of adult playfulness in humans—was that it enabled the high degree of cooperation and sharing essential to the hunter-gatherer way of life. Bands of humans that played together were more likely to stick together, cooperate, and share—and thereby to survive—than bands that did not play together. This is a group selection explanation, but I also suggest an individual-selection explanation. If hunter-gatherer groups expelled domineering, aggressive people (as implied by Boehm's reverse dominance theory) or in other ways reduced their participation in the gene pool, this would have contributed to genetic selection for playfulness, if playfulness reduces the tendency toward aggression and dominance. Sexual selection might also have played a role. The more fully a culture shunned aggressive men, the greater would be the likelihood that women would shun them as mating partners. So, we have here the possibility of a conjoining of cultural and biological evolution. The more a culture promoted play as a value and devalued aggression, the more selection there would be for the genetic capacity for adult play. In turn, more genetic capacity for adult play would allow hunter-gatherers to add ever-greater degrees of playfulness to their cultural practices.

The rest of this chapter is primarily about the playfulness of hunter-gatherer cultural practices and the apparent roles of play in promoting the egalitarian values of these cultures. But first, a few words about the general nature of human play.

THE NATURE OF HUMAN PLAY AND PLAYFULNESS

Play, both in animals and in humans, is generally characterized by researchers as behavior that is (1) *self-chosen* (voluntary) and (2) *intrinsically motivated* (conducted apparently for its own sake, for pleasure, rather than for some end outside of itself)

(Bekoff and Byers, 1981; Burghardt, 2011; Gray, 2012b). As is often acknowledged by play researchers, characteristic 2 presents a challenge from an evolutionary perspective because the ubiquity of play suggests that it must serve some useful, survival purpose or purposes. A route around this seeming contradiction is to elaborate on the meaning of “intrinsically motivated” so that it refers to behavior that is not motivated by a drive state other than a hypothesized play drive and is not oriented toward some end that naturally terminates the behavior. The behavior may resemble fighting, predation, fleeing, or mating (or any or all of these mixed together) in some ways, but is not motivated by hostility, hunger, fear, or sexual drive and does not result in the consummatory ends that those drives are oriented toward. Unlike behaviors motivated by other drives, play has no apparent goal, if goal is defined as some specific consequence that naturally terminates the behavior.

Researchers who focus on human play commonly add further characteristics, beyond the two just mentioned, to their full definition of play—characteristics that would be difficult to apply in observations of animals. Elsewhere, I have elaborated on a five-characteristic definition of human play, derived from combining the definitions of many play scholars (Gray, 2012b). By this definition, play is activity that is (1) *self-chosen and self-directed*; (2) *intrinsically motivated* (not motivated by a drive other than a hypothesized play drive and not oriented toward ends that terminate it); (3) *guided by mental rules* (which give structure to the activity, but which also permit creativity within that structure); (4) *imaginative* (in some way separate, in the players’ minds, from real-world, serious activity); and (5) *conducted in an active, alert, but relatively nonstressed frame of mind*. People who study animal play tend to see play as categorical, all or none, perhaps because it generally is all-or-none in animals, or perhaps because it is difficult to identify gradations of play in animals’ behavior. But people who study human play see it as existing in all possible gradations. An activity is seen as more or less playful to the degree that it has all five of the characteristics just listed.

In their writings about hunter-gatherers, anthropologists and other observers often refer to the “good nature,” “cheerfulness,” and “humor” of the people they observed, but do not often use the specific terms “play” or “playful” in describing their activities. One researcher, in response to my question about that, suggested that anthropologists may avoid these terms at least partly because they could be interpreted as derogatory—a way of suggesting that the people are “childish” or irresponsible. From my perspective, play ranks among the supreme human activities, so I have no hesitation in using “play” and “playful” to describe admirable activities and qualities of a cultural group. In fact, elsewhere I have suggested that the play drive is equivalent to what humanistic psychologists refer to as the self-actualization drive, which lies at the top of Maslow’s hierarchy of human motives (Gray, 2011, p. 579). In my examination of anthropologists’ writings on hunter-gatherers, I have used the five-part definition, above, to identify activities as playful, regardless of whether the writer specifically referred to them as “play” or “playful” (Gray, 2009a). What follows is a summary of the results of that examination.

GAMES AS COOPERATIVE, BONDING ACTIVITIES

One of the most surprising discoveries about hunter-gatherers—especially to those indoctrinated in the Hobbesian view that life in prestate societies is “solitary, poor, nasty, brutish, and short”—is that they have a lot of free time, and they use much of that time for activities that most of us would call play. Indeed, one researcher (Sahlins, 1972) famously referred to hunter-gatherer cultures in general as “the original affluent society”—affluent not because they have so much, but because they want so little. They can satisfy those wants with relatively little work, and, as a result, they have a lot of free time. One study of the Ju/'hoansi revealed that on average men spend about 2.7 hours per day and women about 2.1 hours per day at food-getting (hunting and gathering), and about 3 hours more on subsistence-related tasks around camp, such as food preparation, cooking, and making tools (Lee, 1984). In the words of another researcher who studied the Ju/'hoansi (Shostak, 1981, p. 10), the people spend the rest of their waking time at such activities as “singing and composing songs, playing musical instruments, sewing intricate bead designs, telling stories, playing games, visiting, or just lying around and resting.” Observations of other hunter-gatherer groups have produced similar conclusions (Rowley-Conway, 2001; Sahlins, 1972).

A striking aspect of the games that hunter-gatherers play is that they are rarely if ever competitive. In a cross-cultural analysis conducted many years ago, Roberts and colleagues concluded that the only societies that regularly lack competitive games are hunter-gatherer societies (see Sutton-Smith and Roberts, 1970). In a survey of 10 anthropologists who had observed play in seven different hunter-gatherer cultures, which Ogas and I conducted some years ago, only two said they had seen competitive play, and they said they had seen it rarely (Gray, 2009a). Even when hunter-gatherers play games such as soccer, which they learn from outsiders and are played competitively by outsiders, they find ways to play noncompetitively. Consistent with their egalitarian ethos, hunter-gatherers choose to avoid any assertion of superiority over others, in games as in any other activities. As a result, their games are more clearly and fully played than are our games, which are confounded by the motive to win. Their group games generally involve a high degree of coordination and cooperation among the players, and many are dancelike.

The most extensive account of games for any hunter-gatherer group is that provided by Lorna Marshall (1976) concerning the Ju/'hoansi. One game she describes is a line game, played by women and girls, in which the players toss a melon (or a ball if they have one) over their heads, to the person behind them, so that it keeps moving from one to another in a fluid motion, in time to music as the players sing and dance in unison. Many different songs are used in this game, and mothers often play with babies on their backs.

Another game, played by men and boys, is called (for unknown reasons) the porcupine game. This game is superficially competitive, but, according to Marshall, nobody keeps score or cares, beyond a moment or two, who “wins” a given bout. The players

form two lines (teams), and on each bout one player from each team steps forth and challenges one from the other. In response to a cue from the chanting of the whole group, each one thrusts out either of his two hands toward the other—one of which holds an imaginary axe and the other of which holds an imaginary assegai. The game is a bit like rock, paper, and scissors. If both thrust out the same arm, the challenger wins, otherwise he loses. According to Marshall, the winner pantomimes great joy, and the loser sorrow, but in reality nobody cares who wins or loses, and no cumulative score is kept. The other players in the lines chant or sing the whole time, and musical instruments may be played to accompany the actions. The fun lies in the drama they create.

Although some games, such as the above two, are played just by one sex or the other, many others are played by both together. In general, the games involve as many players as wish to participate and often include children and adults together. The games seem to focus on rhythm, coordination, and joining together as if they were a single entity. Whether intentionally or not, they clearly seem to be activities that help to unite the band.

In his writings about the Mbuti, Turnbull (1982, pp. 142–143) described how these people play ceremonial games of tug-of-war that seem to mock the idea of competition. Men and boys take one side of a vine rope, women and girls take the other, and they sing in antiphony as they pull. In Turnbull's words:

“[When the men and boys start to win], one of them will abandon his side and join the women, pulling up his bark-cloth and adjusting it in the fashion of women, shouting encouragement to them in a falsetto, ridiculing womanhood by the very exaggeration of his mime. . . . [Then, when the women and girls start to win], one of them adjusts her bark clothing, letting it down, and strides over to the men's side and joins their shouting in a deep bass voice, similarly gently mocking manhood. . . . Each person crossing over tries to outdo the ridicule of the last, causing more and more laughter, until when the contestants are laughing so hard they cannot sing or pull any more, they let go of the vine rope and fall to the ground in near hysteria. Although both youth and adults cross sides, it is primarily the youth who really enact the ridicule. . . . The ridicule is performed without hostility, rather with a sense of at least partial identification and empathy. It is in this way that the violence and aggressivity of either sex 'winning' is avoided, and the stupidity of competitiveness is demonstrated.”

THE PLAYFUL, EGALITARIAN NATURE OF HUNTER-GATHERER RELIGIONS

The idea that religion is an extension of play is not new. For example, Miller (1970, p. 168), in his *Gods and Games: Toward a Theology of Play*, contends that faith arises from “being gripped by a story, a ritual (game). It is being seized . . . by a pattern of meaning that affects one's life pattern, that becomes a paradigm for the way one sees the world. . . . Faith is make-believe. It is playing as if it were true.” Faith,

by anyone's definition, is belief that does not require empirical proof; it is belief that people choose to accept. That, logically, is make-believe. The idea that religions, in all their diversity, originated and evolved culturally because they helped to promote the cohesion and survival of the groups that practice them is also not new; it is, for example, a theme of Wilson's (2002), *Darwin's Cathedral: Evolution, Religion, and the Nature of Society*.

Combining the idea of religion as play with the idea that religions promote group survival, I suggest that religions help groups survive partly because they provide a life narrative, a story that enables individuals to regulate their own behavior in group-promoting rather than egoistic ways. By entering into the story and living it out, people turn all of life into something of a group game, wherein all are playing by the same broad set of rules. The story gives meaning and purpose to the norms, rules, and values of the social group, and in doing so it also gives meaning and purpose to each person's life. From this point of view it makes sense that religions that arise at any given time and place reflect—and thereby help guide—the predominant modes of human life at that time and place.

It makes sense that Judaism, Christianity, and Islam—which arose in hierarchical societies and reached their apogees in feudal times—all posit a steeply hierarchical spiritual cosmos. When most people are slaves, servants, or serfs, a religion espousing the virtues of servitude to lords and masters—and ultimately to an all-powerful god, who is king of kings—gives meaning to a life of servitude and helps maintain the earthly hierarchies. Similarly, in hunter-gatherer societies, where group cohesion and survival depend on cooperation and sharing among equals, a religion in which the spirit world consists of many gods or spirits who are all relatively equal to one another and must find ways to get along makes sense. It also makes sense that hunter-gatherer religions would be more obviously playful than the hierarchical religions that followed them because play and hierarchy are incongruous.

Hunter-gatherer religions are playful beyond the ways that all religions are in the sense that they (1) are nondogmatic, (2) involve gods and spirits who are playful, and (3) involve ceremonies that are carried out in a spirit of play and creativity rather than one of somber worship or repetitive ritual. Here I'll summarize evidence for these three claims, one at a time.

Researchers who write about hunter-gatherer religions commonly emphasize their nondogmatic nature (e.g., Endicott, 1979; Guenther, 1999; Kent, 1996; Tsuru, 1998). In part because they have no writing to solidify the stories and no authorities to enforce doctrine, the stories and ceremonies vary from band to band within any given hunter-gatherer culture and from time to time within any given band. In some cases the variations contradict one another, but nobody is bothered by the contradictions. When children reach adulthood and marry into another band, where they adopt different religious beliefs and practices, parents are unfazed. The people move freely from one set of religious beliefs to a somewhat different set just as you

and I might move freely from one game to another that is played by a somewhat different set of rules.

Although hunter-gatherers find meaning in their religious stories and beliefs, they apparently do not confound them with empirical reality. Thomas (2006) reports that when the Ju/'hoansi she observed used religious stories to explain natural phenomena, they did so in a light-hearted manner. For example, in a religious context, a man explained, in story-telling mode, that the stars disappear during the daytime because they are ant lions, who come out at night and crawl back into their sandy pits at dawn. But later, when the same man was asked the same question in a nonreligious context, he responded, matter-of-factly, that the stars remain in the sky all day but can't be seen because the sun is too bright.

Researchers also report that hunter-gatherers are generally practical people, who ground their decisions in experience, not in magic or superstition. For example, according to Kirk Endicott (1979, p. 22), "[The Batek] go about their daily lives with few of the signs of those 'irrational' behaviors that cry out 'religion' to the anthropologist. . . . They seem to believe that they can succeed at such projects [as hunting and fishing] if they just do them correctly and take proper care." Similarly, Thomas (1959, p. 152) describes how the/Gwi people (hunter-gatherer neighbors to the Ju/'hoansi) have a rain dance, not to bring on rain, but to rejoice when they can see from the sky that rain is coming. Living in the desert, where water is the limiting factor for life, they would certainly dance to bring on rain if they thought it would work, but they do not believe they have such power. They can, however, dance to lift their own spirits and prepare for the rain and the bounty to follow. Gould (1969, p. 128) makes the same point regarding the Yiwara, of the Australian Desert, stating: "[They] do not seek to control the environment in either their daily or sacred lives. Rituals of the sacred may be seen as efforts of man to combine with his environment, to become 'at one' with it." From the perspective of this chapter, it is a small step to suggest that in such ceremonies hunter-gatherers turn natural phenomena into playmates, thereby uniting with nature as they unite among themselves.

Researchers also often contrast the playful, whimsical gods and spirits of hunter-gatherers with the more fearsome gods and spirits of nearby farmers. According to Endicott (1979), for example, the hunter-gather Batek do not generally believe, as the agricultural Malays do, that the environment is populated with evil spirits, which must be continuously avoided, combated, or propitiated. Likewise, Turnbull (1968) contrasts the playful religious practices of the Mbuti with the more severe and often fearful practices of the nearby villagers.

A common character in hunter-gather religions is that which mythologists call the "trickster," a morally ambivalent deity or semi-deity who often interferes with the best laid plans of others (Guenther, 1999). Accounts of hunter-gatherer religions suggest that the trickster might be best thought of, not as a single individual, but rather as a character trait of many if not most hunter-gatherer deities. The gods are whimsical and are not particularly concerned with human morality. They may

hurt or help a person just because they feel like it, not because they are dishing out justice or trying to make people more moral. Consistent with their egalitarian world-view, hunter-gatherers don't see morality as something that is imposed top-down; they see it as something that they have to take care of themselves. The gods, like the weather and other natural phenomena that they may represent, have their own agendas.

Nearly all hunter-gatherer religions include shamanic ceremonies as a foundation. Shamanism involves techniques for attaining an altered state of consciousness, or trance, for the purpose of interacting with the spirit world. What appear to be shamanic practices are depicted in Upper Paleolithic cave art (Rossano, 2006). According to one possible scenario (hinted at by Rossano, 2006), the pre-Upper Paleolithic precursors to hunter-gatherer religions may have involved ecstatic ceremonies of drumming, singing, and dancing that induced trance states and hallucinations, some of which may have involved encounters with otherworldly spirits. Eventually stories about these spirits would develop, which could be recounted even in nontrance states, to complement the trance experiences. The stories would be shaped to fit the daily experiences and needs of the group. Among modern hunter-gatherers, the most common immediate purpose of shamanic ceremonies is healing, but the ceremonies also enable band members to interact personally, in all sorts of ways, with the spirit world.

Those who enter into trance states (the shamans) assume the properties of and/or communicate with specific deities. In the words of Mathias Guenther (1999, pp. 427–428):

“Often the shaman is a showman who employs rich poetic imagery and histrionics. He may sing and dance, trembling and shrieking, and speak in strange languages. He may also employ prestidigitation and ventriloquism. . . . Shamanic séances are very much performance events, not infrequently with audience feedback. They involve the shaman in role playing, engaging in dialogue with various spirits, each of whose counter-roles he plays himself.”

Each shamanic event is a new creation. In the séances, the people interact with spirits much as they interact with one another—joking, arguing, singing, dancing, sharing, and asking for help and advice (Bird-David, 1999).

Some hunter-gatherer researchers have commented that, in general, the religious ceremonies of the group they studied are indistinguishable from play (see Tsuru, 1998). The ceremonies typically involve the kinds of self-determined, imaginative, joyful, yet rule-guided actions that fit the definition of play. While other games bind hunter-gatherers to one another as equals, religious ceremonies bind them also to spiritual and natural entities outside of themselves, again as equals.

THE PLAYFUL NATURE OF HUNTER-GATHERER "WORK"

In our culture we commonly think of "work" and "play" as opposites; one is what we have to do, the other is what we want to do. By all accounts, hunter-gatherers don't make that distinction. Many hunter-gatherer groups don't even have a word for work as toil (unpleasant activity that one must do), or, if they do, it applies to what non-hunter-gatherers do (Gould, 1969; Gowdy, 1999). Lee (1993, p. 39) noted that the group he observed sang a song that went, "Those who work for a living, that's their problem." Clearly, hunter-gatherers must hunt, gather, process foods, cook, make tools, build huts, care for infants, and so on in order to survive and maintain their way of life, but they don't think of those activities as burdensome. They think of them as voluntary and fun, not different from play. For the rest of this discussion, to avoid confusion, I'll use the term *work* to refer to sustenance activities, whether pleasant or unpleasant, and *toil* to refer to activities that are undesired. With these definitions, toil cannot be play, but work can be play.

What is it about hunter-gatherers' approach to work that makes it play to them rather than toil? My reading of the accounts of hunter-gatherer sustenance activities suggests several factors. First, as I said before, hunter-gatherers don't spend long hours working, and certainly don't spend long hours at any given task, so the tasks do not become tedious.

Second, most hunter-gatherer sustenance activities require a high degree of skill, knowledge, and intelligence. To hunt successfully, hunters must be extraordinarily skilled not just at making and using the tools of hunting, such as bows and arrows or blowpipes and darts, but also at tracking (Kaplan, Hill, Lancaster, and Hurado, 2000; Liebenberg, 1990). As they track, hunters continuously develop and test hypotheses about such matters as the size, sex, physical condition, speed of movement, and time of passage of the animal they are tracking, based on the subtlest of clues—tiny dents in the sand, or a few bent blades of grass. Successful gathering likewise requires much knowledge and skill. Gatherers must know which of the countless varieties of roots, tubers, nuts, seeds, fruits, and greens in their area are edible and nutritious, when and where to find them, how to dig them (in the case of roots and tubers), how to extract the edible portions efficiently (in the case of grains, nuts, and certain plant fibers), and in some cases how to process them to make them edible or more nutritious than they otherwise would be. These abilities include physical skills, honed by years of practice, as well as the capacity to remember, use, add to, and modify an enormous store of culturally shared verbal knowledge (Bock, 2005; Kaplan et al., 2000). In our culture and everywhere, people who make their living through work that requires knowledge, skill, intelligence, and continuous learning are much more likely to enjoy their work and call it "play" than are those who make a living at repetitive, mind-numbing or back-breaking tasks (Kohn, 1980).

A third reason that hunter-gatherer work is play is that it is almost always highly social. Men usually hunt in ways that require teamwork, and women usually forage

in groups. Regarding the latter, one researcher (Wannenburgh, 1979, p. 30) wrote, "In our experience all of the gathering expeditions were jolly events. With the [Ju/'hoansi's] gift of converting chores into social occasions, they often had something of the atmosphere of a picnic outing with children." We humans everywhere are social beings, inclined to enjoy activities we do with others, especially those we do with our friends.

The fourth reason, and I think ultimately the main reason why hunter-gatherer work is play, is that it is voluntary and self-directed. Hunter-gatherers have developed, to what in our culture may seem to be a radical extreme, an ethic of personal autonomy. They deliberately avoid telling one another how to behave, in work as in other contexts. It is up to each person to decide what he or she wants to do. On any given day a person might choose to hunt, or gather, or hang around camp, or begin a journey to visit a neighboring band. Endicott (1979, p. 16) has described how decisions are made on a typical day: "Three women agree to dig tubers together. . . . Two of the men decide to go hunting. . . . Four young men and two adolescent girls decide to go after Malacca cane. . . . They may be entirely different groups from the previous day, for the Batek like variety both in their work and their companions." Because food is shared, there is no direct relationship, as far as the individual is concerned, between productive effort and reward. This, of course, violates a basic principle of Economics 101 in our culture. The man who stays in his hammock will get the same food at the end of the day as the ones who go out hunting. From the individual's perspective, you don't hunt for food; you hunt because you want to. An advantage of this is that nobody goes out hunting or gathering begrudgingly, which would hold others back and dampen everyone's spirits.

Hunter-gatherers don't seem to be concerned, as we Westerners automatically are, about the free-rider problem. In one recorded case, a single man acquired nearly 80% of the meat for the entire camp for a month while four other men did no hunting at all, yet those four were apparently not excluded or criticized (Hawkes, 1993). In the system of hunter-gatherer ethics there is great social pressure to share, but not to produce. The genius of this is that it keeps the activities of production within the realm of play by disassociating them from extrinsic rewards. Ultimately, of course, hunting and gathering are crucial to the band's survival. Everyone knows that, and that no doubt influences people's choices of what to do. My guess is that if the hunter who brought in 80% of the meat one month had been less successful, others would have gone out and picked up the slack. But for the most part, on any given day, the decision of what to do is each person's choice, freely made, with no pressure.

THE USES OF HUMOR TO MAINTAIN PEACE AND PROMOTE EQUALITY

Anthropologists regularly describe the hunter-gatherers they study as good-natured people who laugh and joke frequently as they go about their daily activities. The

kind of humor I'll focus on now, however, is that which in our culture is labeled as teasing, or making fun of, or, in the extreme, ridiculing—humor that is not always completely friendly.

Teasing, by definition, entails some sort of humorous pointing out of a flaw or non-normative behavior or attribute of the target of the tease (Keltner, Horberg, and Oveis, 2006). Teasing among friends can be a good-natured way of demonstrating that they are well aware of one another's flaws and quirks, but that they accept one another anyway and may even find the flaws and quirks endearing. By all accounts, hunter-gatherers engage in a great deal of that kind of teasing, which no doubt helps to bind them emotionally together.

But teasing can also be serious criticism in the guise of humor, and hunter-gatherers apparently use it quite regularly for that purpose. For example, Turnbull (1968, p. 114) wrote: "[The Mbuti] are good-natured people with an irresistible sense of humor; they are always making jokes about one another, even about themselves, but their humor can be turned into an instrument of punishment when they choose." Thomas (2006) makes the same point concerning the Ju'hoansi, and illustrates it with an example involving two women who argued loudly with one another, disturbing the whole band, until others made up a song about them and sang it when they began arguing. The song made them feel ashamed, and they stopped arguing.

Hunter-gatherers do not criticize one another directly because that violates their principle that people should not tell others what to do or act in any way suggesting that one is superior to the other. But they do criticize indirectly through humor. Such humor seems to be a way of criticizing without raising oneself up on a moral plane above the other. It is both play and not play at the same time. The playful element implies equality, even as the critical element implies a request for behavioral change. Moreover, teasing of this sort may be more effective than direct criticism, even for us Westerners. Direct criticism tends to provoke argument and defensiveness. In contrast, teasing acts at an emotional level that bypasses verbal defensiveness, and it gives targets a choice of how to respond. They can laugh along with the teasers, thereby acknowledging the ridiculousness of what they have done, which appears to be the most common hunter-gatherer way of responding. This keeps the entire interaction within the realm of play, even as the targets implicitly indicate their intent to change. Or they can feel and express shame, likewise expressing the intent to change. Or they can stew for a while in resentment, but then eventually come around. Or, in the very rare case in which it is a serious matter and the targets have no intention to change and the ridicule becomes extreme, they might leave and join another band or start a new one of their own.

Teasing of all sorts is also a means of promoting humility, and that may be its most crucial function in hunter-gatherer bands. Even the friendliest teasing promotes humility because it reminds people of their flaws. Beyond friendly teasing, hunter-gatherers deliberately use ridicule to deflate the ego of anyone who, even in an incipient way, seems to express superiority over others in the band. They

recognize that the human tendency toward arrogance is a threat to their means of existence, and they are constantly on guard to nip it in the bud. They are particularly vigilant about arrogance in young men.

For example, hunter-gatherers often engage in a practice that anthropologists refer to as “insulting the meat” (Lee, 1988). When a hunter brings a fat antelope or other prize kill back to the band, for everyone to share, he must act humbly about it. He must say that the animal is skinny, hardly worth bothering with. He must say that he killed it through sheer luck, or because of the fine arrow that someone else had made and lent him, or because it was sickly and an easy mark, or all of these things. If he acts even the slightest bit arrogant about his hunting, others will mock both him and the meat he has brought them. The men and women alike, especially the grandmothers, will complain that the antelope is nothing but a bag of bones and hardly worth cooking. They might make up a song about the man’s flaws and about how he thinks he is such a “great hunter” but is really a weakling. They might mockingly call him “chief” or “big man.” In a culture that doesn’t have chiefs or big men and values equality, this is one of the greatest insults that can be hurled.

The man who is insulted in this way knows what is happening, but the insults nevertheless work. He knows that he has crossed a line that hunter-gatherers must not cross, and he must immediately make amends by expressing great humility about the meat and himself. He must join the others now in taunting himself. If he doesn’t, he knows that the taunting will escalate and could, in the extreme, even lead to ostracism or banishment from the band. Such taunting is a form of teasing. It has all the elements of teasing, including humor. But it is teasing with a very serious and deliberate purpose. When Lee (2003, p. 53) asked a wise healer in the hunter-gatherer group he was studying to explain this practice of insulting the meat, the healer replied: “When a young man kills much meat, he comes to think of himself as a big man, and he thinks of the rest of us as his inferiors. We can’t accept this. We refuse one who boasts, for someday his pride will make him kill somebody. So we always speak of his meat as worthless. In this way we cool his heart and make him gentle.”

THE PLAY-FILLED CHILDHOODS OF HUNTER-GATHERERS

I’ll be brief in this section because I discussed the play life of hunter-gatherer children extensively in the previous book in this series (Gray, 2012a) and in a recent trade book (Gray, 2013). Children in hunter-gatherer cultures are generally free to play from dawn to dusk, every day, from early childhood on into the teenage years. In their play they practice the activities they observe in the social world around them, such as hunting, gathering, tool making, dancing, and singing, and in that way become skilled at the sustenance and artistic activities essential to successful hunter-gatherer adulthood (see also Hewlett, Fouts, Boyette, and Hewlett, 2011; Hewlett and Lamb, 2005). More central to the point of this chapter, however, they

also, in their play, necessarily practice the values and social skills essential to successful hunter-gatherer adulthood. That is because those values and skills are the same as those required for social play—autonomy, equality, cooperation, sharing, resolving disputes, reaching consensus. Without these, players quit, and the game ends.

Hunter-gatherer adults treat children in essentially the same way that they treat other adults. They trust children to run their own lives and make their own decisions, just as they trust adults to do so. Because it is hard for Western readers to believe that children anywhere would be so trusted, I feel compelled to insert quotations from observers who have seen it first hand. Here are three, from different researchers concerning different hunter-gatherer societies (on three different continents):

- “Hunter-gatherers do not give orders to their children; for example, no adult announces bedtime. At night, children remain around adults until they feel tired and fall asleep. . . . Parakana adults do not interfere with their children’s lives. They never beat, scold, or behave aggressively with them, physically or verbally, nor do they offer praise or keep track of their development.” (Gosso, Otta, de Lima, Ribeiro, and Bussab, 2005, p. 218.)
- “Infants and young children [among Inuit hunter-gatherers of the Hudson Bay area] are allowed to explore their environments to the limits of their physical capabilities and with minimal interference from adults. Thus if a child picks up a hazardous object, parents generally leave it to explore the dangers on its own. The child is presumed to know what it is doing.” (Guemple, 1988, p. 137.)
- “Foragers value autonomy and egalitarianism, so parents, older children or other adults are not likely to think and feel that they know what is best or better for the child and are generally unlikely to initiate, direct, or intervene in a child’s social learning.” (Hewlett et al., 2011, p. 1173, regarding the Aka, but also regarding hunter-gatherers in general.)

In this trustful environment, children play with one another independently of adult direction and practice the values and skills of play, which are the values and skills of their culture, as they learn to get along with one another as equals. It is worth noting also that just as the games of adults (and those of adults and children together) are noncompetitive, so are the games of hunter-gatherer children (Gray, 2009a; Marshall, 1976). Children play in ways that allow them to build their own skills and harmonize their behavior with others, not in ways designed to show off or defeat others.

THE HUNTER-GATHERER BAND VIEWED AS A PLAYGROUP

Sometimes hunter-gatherer bands are characterized as kinship groups, but they are not really that. People move from band to band, so those in a band are not all close

relatives, and any given person may have more relatives in other bands than in his or her own. It may be more useful to think of hunter-gatherer bands as playgroups—if not literally, then at least by analogy. The band is a group of individuals who have come together voluntarily to play out their lives with one another, at least for a period of time.

The most basic individual right in social play is the right to quit. If you can't quit, your participation is not voluntary, and it's not play. That right provides the foundation for the egalitarian, cooperative nature of play. Every player knows that the others can quit at any time and will quit if they are bullied or if their needs and desires aren't taken into account. Therefore, every player knows that they must treat the others respectfully, share, make rules by discussion and consensus rather than fiat, find ways to resolve arguments, and take care not to lord it over others if they want to keep the game going with the present group.

As many hunter-gatherer researchers have pointed out, freedom to leave the band—to join another band or to start a new one—is the ultimate foundation for hunter-gatherer egalitarianism. If people feel oppressed, they leave. Because hunter-gatherers have few possessions, do not own land, and do not live in permanent dwellings, they can leave the band at a moment's notice, just as someone in a pickup game of baseball who feels put upon can quit at any moment. In the words of Woodburn (1982, p. 435), "Individuals are not bound to fixed areas, to fixed assets, or to fixed revenues. They are able to move away without difficulty and at a moment's notice from constraint which others may seek to impose on them and such possibility of movement is a powerful leveling mechanism, positively valued like other leveling mechanisms in these societies." Regarding the group he studied, Endicott (1988, p. 122) wrote, "There is nothing to constrain Batek from moving to another camp if someone tries to force them to do something they do not want to do, and movement to avoid potential or real conflict is common." And, in Turnbull's (1968, p. 137) always-poetic words, regarding the Mbuti, "It is plain in each case the process of fission and fusion [splitting up and reformation of bands] follows lines of dissent rather than descent, and the major function is conflict resolution." To ensure that they can leave at any time, hunter-gatherers frequently visit friends and relatives in other bands to maintain their welcome there.

Although hunter-gatherers treasure their freedom to move from one band to another, they also no doubt find value in a stable band—a band of friends who know one another intimately and have had much experience cooperating together. Therefore, they are motivated to treat one another well, to keep the playgroup together.

Conclusion and Implications for Modern Societies

Human beings are endowed with all sorts of conflicting drives and tendencies. People differ across cultures because cultures differentially nurture some of these

drives and tendencies and not others. The focus of this chapter has been on the opposition between our natural drive toward dominance and our natural drive to play with one another.

Social play requires that individuals set aside their concern for dominance. In primates, natural selection has apparently enlarged the drive and capacity to play and extended it into adulthood in species—such as bonobos and the “egalitarian” species of macaques—that have evolved a relatively egalitarian mode of social existence. Human cultures differ greatly in the degree to which they are hierarchically structured or egalitarian. Hunter-gatherer cultures are the most egalitarian of all. They are egalitarian not because hunter-gatherers are genetically different from other people, but because they have developed cultural practices that promote egalitarian behavior. The thesis here is that these egalitarian-promoting practices are suffused with play. Hunter-gatherer games, dances, religious practices, and work are highly playful. Even their means of criticizing one another for the purpose of altering behavior are playful. The young educate themselves through play; they grow up in the spirit of play. By maintaining a playful mood, I contend, hunter-gatherers more or less continuously suppress the urge to dominate one another. Of course, it works the other way, too: by suppressing dominance, they promote play.

Many of our modern Western cultural practices, in contrast, seem deliberately designed to suppress play and promote competition and struggles for dominance. We suppress children’s natural playful ways of learning by requiring them to “work” in school, believing that this is for their own good. We put children into competitions with one another beginning at a young age, in our schools, where they vie for grades and status, and in games and sporting events, which we call “play” but which are not fully play because of the focus on winning. We reward people with praise and higher pay for climbing the hierarchy in our hierarchically organized workplaces. Our religious institutions contain hierarchies carried over from feudal times, and our stories of the heavens emphasize hierarchy and top-down control and judgment. Even our use of the word “equality,” in describing our democratic principles, has connotations of competition. We think of equality as equality of opportunity, which means fair competition; we don’t so often think of it as sharing. This is not the place to argue one way or the other whether we would be better off if we became more egalitarian; but it is interesting to contrast our relatively nonplayful, competitive, nonegalitarian cultural practices with the highly playful, noncompetitive, egalitarian practices of hunter-gatherers.

References

- Bekoff, M. (2001). Social play behavior: Cooperation, fairness, trust, and the evolution of morality. *Journal of Consciousness Studies*, 8, 81–90.
- Bekoff, M. (2004). Wild Justice and fair play: Cooperation, forgiveness, and morality in animals. *Biology and Philosophy*, 19, 489–520.

- Bekoff, M., & Byers, J. A. (1981). A critical reanalysis of the ontogeny of mammalian social and locomotor play: An ethological hornet's nest. In K. Immelmann, G. W. Barlow, L. Petrivoich, & M. Main (Eds.), *Behavioral development: The Bielefeld interdisciplinary project* (pp. 296–337). New York: Cambridge University Press.
- Bird-David, N. (1999). "Animism" revisited: Personhood, environment, and relational epistemology. *Current Anthropology*, 40, S67–S91.
- Bock, J. (2005). What makes a competent adult forager? In B. S. Hewlett & M. E. Lamb (Eds.), *Hunter-gatherer childhoods: Evolutionary, developmental, and cultural perspectives* (pp. 109–128). New Brunswick, NJ: Transaction.
- Boehm, C. (1993). Egalitarian behavior and reverse dominance hierarchy. *Current Anthropology*, 34, 227–254.
- Boehm, C. (1999). *Hierarchy in the forest: The evolution of egalitarian behavior*. Cambridge, MA: Harvard University Press.
- Burghardt, G. M. (2011). Defining and recognizing play. In A. D. Pellegrini (Ed.), *The Oxford handbook of the development of play* (pp. 9–18). Oxford, UK: Oxford University Press.
- Ciani, F., Dall'Olio, S., Stanyon, R., & Palagi, E. (2012). Social tolerance and adult play in macaque societies: A comparison with different human cultures. *Animal Behaviour*, 84, 1313–1322.
- Corballis, M. C. (1999). Phylogeny from apes to humans. In M. C. Corballis & S. E. G. Lea (Eds.), *The descent of mind: Psychological perspectives on hominid evolution*. Oxford, UK: Oxford University Press.
- Cordoni, G. (2009). Social play in captive wolves (*Canis lupus*): Not only an immature affair. *Behaviour*, 146, 1363–1385.
- Endicott, K. (1979). *Batek Negrito religion: The world-view and rituals of a hunting and gathering people of Peninsular Malaysia*. Oxford, UK: Clarendon Press.
- Endicott, K. (1988). Property, power, and conflict among the Batek of Malaysia. In T. Ingold, D. Riches, & J. Woodburn (Eds.), *Hunters and gatherers 2: Property, power, and ideology*. Oxford, UK: Berg.
- Gosso, Y., Otta, E., de Lima, M., Ribeiro, F. J. L., & Bussab, V. S. R. (2005). Play in hunter-gatherer societies. In A. D. Pellegrini & P. K. Smith (Eds.), *The nature of play: Great apes and humans* (pp. 213–253). New York: Guilford.
- Gould, R. A. (1969). *Yiwara: Foragers of the Australian desert*. New York: Charles Scribner.
- Gowdy, J. (1999). Hunter-gatherers and the mythology of the market. In R. B. Lee & R. Daly (Eds.), *The Cambridge encyclopedia of hunters and gatherers*. New York: Cambridge University Press.
- Gray, P. (2009a). Play as a foundation for hunter-gatherer social existence. *American Journal of Play*, 1, 476–522.
- Gray, P. (2009b). The biological distinction between play and contest, and their merging in modern games. Blog at Psychology Today: Freedom to Learn, Nov. 4, 2009, online at <http://www.psychologytoday.com/blog/freedom-learn/200911/the-biological-distinction-between-play-and-contest-and-their-merging-in-m>.
- Gray (2011). *Psychology* (6th ed.) New York: Worth.
- Gray, P. (2012a). The value of a play-filled childhood in development of the hunter-gatherer individual. In D. Narvaez, J. Panksepp, A. Schore, & T. Gleason (Eds.), *Evolution, early experience and human development: From research to practice and policy* (pp. 352–370). New York: Oxford University Press.

- Gray, P. (2012b). Definition of play. In *Encyclopedia of play science*, online at http://www.scholarpedia.org/article/Encyclopedia_of_Play_Science.
- Gray, P. (2013). *Free to learn: Why unleashing the instinct to play will make our children happier, more self-reliant, and better students for life*. New York: Basic Books.
- Guemple, L. (1988). Teaching social relations to Inuit children. In T. Ingold, D. Riches, & J. Woodburn (Eds.), *Hunters and gatherers 2: Property, power, and ideology* (pp. 130–149). Oxford, UK: Berg.
- Guenther, M. (1999). From totemism to shamanism: Hunter-gatherer contributions to world mythology and spirituality. In R. B. Lee & R. Daly (Eds.), *The Cambridge encyclopedia of hunters and gathers* (pp. 426–433). Cambridge, UK: Cambridge University Press.
- Hawkes, K. (1993) Why hunter-gatherers work: An ancient version of public goods. *Current Anthropology*, 34, 341–361.
- Hewlett, B. S., Fouts, H. N., Boyette, A., & Hewlett, B. L. (2011). Social learning among Congo Basin hunter-gatherers. *Philosophical Transactions of the Royal Society B*, 366, 1168–1178.
- Hewlett, B. S., & Lamb, M. B. (Eds.) (2005). *Hunter-gatherer childhoods: Evolutionary, developmental, and cultural perspectives*. New Brunswick, NJ: Transaction.
- Ingold, T. (1999). On the social relations of the hunter-gatherer band. In R. B. Lee & R. H. Daly (Eds.), *The Cambridge encyclopedia of hunters and gatherers* (pp. 399–410). Cambridge, UK: Cambridge University Press.
- Kaplan, H., Hill, K., Lancaster, J., & Hurado, A. M. (2000). A theory of life history evolution: Diet, intelligence, and longevity. *Evolutionary Anthropology*, 9, 156–185.
- Keltner, D., Horberg, E. J., & Oveis, C. (2006). Emotional intuitions and moral play. *Social Justice Research*, 19, 208–217.
- Kent, S. (1996). Cultural diversity among African foragers: Causes and implications. In S. Kent (Ed.), *Cultural diversity among twentieth-century foragers: An African perspective* (pp. 1–18). New York: Cambridge University Press.
- Kohn, M. L. (1980). Job complexity and adult personality. In N. J. Smelser & E. H. Erikson (Eds.), *Theories of work and love in adulthood* (pp. 193–210). Cambridge, MA: Harvard University Press.
- LaFreniere, P. (2011). Evolutionary functions of social play: Life histories, sex differences and emotion regulation. *American Journal of Play*, 3, 464–488.
- Lee, R. B. (1984). *The Dobe !Kung*. New York: Holt, Rinehart & Winston.
- Lee, R. B. (1988). Reflections on primitive communism. In T. Ingold, D. Riches & J. Woodburn (Eds.), *Hunters and gatherers 1* (pp. 252–268). Oxford, UK: Berg.
- Lee, R. B. (1993). *The Dobe Jul'hoansi*. Orlando, FL: Harcourt Brace.
- Lee, R. B. (2003). *The Dobe Jul'hoansi* (3rd ed.) Belmont, CA: Wadsworth.
- Liebenberg, L. (1990). *The art of tracking: The origin of science*. Clairmont, South Africa: David Philip.
- Marshall, L. (1976). *The !Kung of Nyae Nyae*. Cambridge, MA: Harvard University Press.
- Matsumura, S. (1999). The evolution of “egalitarian” and “despotic” social systems among macaques. *Primates*, 40, 23–31.
- Miller, D. L. (1970). *Gods and games: Toward a theology of play*. New York: World Publishing.
- Muller, M. N., Kahlenberg S. M., & Wrangham, R. W. (2009). Male aggression against females and sexual coercion in chimpanzees. In M. N. Muller & R. W. Wrangham

- (Eds.), *Sexual coercion in primates and humans* (pp. 184–217). London: Harvard University Press.
- Natarajan, D., & Caramaschi, D. (2010). Animal violence demystified. *Frontiers in Behavioral Neuroscience*, 4. Online at http://www.frontiersin.org/Behavioral_Neuroscience/10.3389/fnbeh.2010.00009/full.
- Palagi, E. (2006). Social play in bonobos (*Pan paniscus*) and chimpanzees (*Pan troglodytes*): Implications for natural social systems and interindividual relationships. *American Journal of Physical Anthropology*, 129, 415–426.
- Palagi, E. (2008). Sharing the motivation to play: The use of signals in adult bonobos. *Animal Behaviour*, 75, 887–896.
- Palagi, E. (2011). Playing at every age: Modalities and potential functions in non-human primates. In A. D. Pellegrini (Ed.), *The Oxford handbook of the development of play* (pp. 70–82). Oxford, UK: Oxford University Press.
- Palagi, E., & Paoli, T. (2007). Play in adult bonobos (*Pan paniscus*): Modality and potential meaning. *American Journal of Physical Anthropology*, 134, 219–225.
- Palagi, E., Paoli, T., & Tarli, S. B. (2006). Short-term benefits of play behavior and conflict prevention in *Pan paniscus*. *International Journal of Primatology*, 27, 1257–1269.
- Parish, A. R., & de Waal, F. B. (2000). The other “closest living relative”: How bonobos (*Pan paniscus*) challenge traditional assumptions about females, dominance, intra- and intersexual interactions, and hominid evolution. *Annals of the New York Academy of Sciences*, 907, 96–113.
- Pellis, S. M. (2002). Keeping in touch: Play fighting and social knowledge. In M. Bekoff, C. Allen, & G. M. Burghardt (Eds.), *The cognitive animal: Empirical and theoretical perspectives on animal cognition* (pp. 421–427). Cambridge, MA: MIT Press.
- Pellis, S. M., & Iwaniuk, A. N. (2000). Adult-adult play in primates: Comparative analysis of its origin, distribution and evolution. *Ethology*, 106, 1083–11104.
- Pellis, S. M., & Pellis, V. C. (1998). The structure-function interface in the analysis of play fighting. In M. Bekoff & J. A. Byers (Eds.), *Animal play: evolutionary, comparative, and ecological perspectives* (pp. 432–441). Cambridge, UK: Cambridge University Press.
- Pellis, S. M., Pellis, V. C. (2011). Rough and tumble play: Training and using the social brain. In A. D. Pellegrini (Ed.), *The Oxford handbook of the development of play* (pp. 245–259). Oxford, UK: Oxford University Press.
- Pellis, S. M., Pellis, V. C., & Bell, H. C. (2010). The functions of play in the development of the social brain. *American Journal of Play*, 2, 278–296.
- Petit, O., Bertrand, F., & Thierry, B. (2008). Social play in crested and Japanese macaques: Testing the covariation hypothesis. *Developmental Psychobiology*, 50, 399–407.
- Reinhart, C. J., Pellis, V. C., Thierry, B., Gauthier, C-A., VanderLaan, D. P., Vasey, P. L., & Pellis, S. M. (2010). Targets and tactics of play fighting: Competitive versus cooperative styles of play in Japanese and Tonkean Macaques. *International Journal of Comparative Psychology*, 23, 166–200.
- Rossano, M. J. (2006). The religious mind and the evolution of religion. *Review of General Psychology*, 10, 346–364
- Rowley-Conwy, P. (2001). Time, change and the archaeology of hunter-gatherers: How original is the “Original Affluent Society”? In C. Panter-Brick, R. H. Layton, &

- P. Rowley-Conwy (Eds.), *Hunter-gatherers: An interdisciplinary perspective* (pp. 39–72). Cambridge, UK: Cambridge University Press.
- Sahlins, M. (1972). *Stone age economics*. Chicago: Aldine-Atherton.
- Shostak, M. (1981) *Nisa: The life and words of a !Kung woman*. Cambridge, MA: Harvard University Press.
- Surbeck, M., Deschner, T., Schubert, G., Weltring, A., & Hohmann, G. (2012). Mate competition, testosterone and intersexual relationships in bonobos, *Pan paniscus*. *Animal Behaviour*, 83, 659–669.
- Sutton-Smith, B., & Roberts, J. M. (1970). The cross-cultural and psychological study of games. In G. Lüschen (Ed.), *The cross-cultural analysis of sport and games* (pp. 100–108). Champaign, IL: Stipes.
- Tacconi, G., & Palagi, E. (2009). Play behavioural tactics under space reduction: Social challenges in bonobos, *Pan paniscus*. *Animal Behaviour*, 78, 469–476.
- Thierry, B. (2000). Covariation and conflict management patterns across macaque species. In F. Aureli & F. B. M. de Waal (Eds.), *Natural conflict resolution* (pp. 106–128). Berkeley, CA: University of California Press.
- Thomas, E. M. (1959). *The harmless people*. New York: Knopf.
- Thomas, E. M. (2006). *The old way*. New York: Farrar, Straus & Giroux.
- Tsuru, D. (1998). Diversity of ritual spirit performances among the Baka Pygmies in south-eastern Cameroon. *African Study Monographs, Suppl.* 25, 47–83.
- Turnbull, C. M. (1968). *The forest people*. New York: Simon & Schuster.
- Turnbull, C. M. (1982). The ritualization of potential conflict between the sexes among the Mbuti. In E. G. Leacock & R. B. Lee (Eds.), *Politics and history in band societies* (pp. 133–155). Cambridge, UK: Cambridge University Press.
- Wannenburgh, A. (1979). *The bushmen*. New York: Mayflower Books.
- Wilson, D. S. (2002). *Darwin's cathedral: Evolution, religion, and the nature of society*. Chicago: University of Chicago Press.
- Woodburn, J. (1982). Egalitarian societies. *Man*, 17, 431–451.