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THE COGNITIVE COMPLEXITY OF THE GRIZZLY
BEAR

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Introduction

The grizzly bear was regarded with awe by Native American Indians and, in some tribes, with reverence. The bear's complex life and capacities have also been the subject of pioneer explorer's reports and have been documented by contemporary researchers. Early hunter-naturalists and contemporary scientists alike report very complex behavior. Many noted characteristics of the grizzly bear suggest that this species should be studied carefully by comparative psychologists. The bear may be as complex or even more complex than some primates. Scientists' own thinking may have to become more complex, to keep up with the bear.

His skin to gett I have all y[e] means I can He is mans food and he makes food of man His skin they would not me it preserve But said it was a god and they should Starve Henry Kelsey, 1691

From the above, the report of presumably the first white man to see a grizzly bear (the North American *Arctos ursus*), we learn that the grizzly is very difficult to apprehend and that native Indian tribes attributed unusually great capacity to this bear. That any native tribe should have regarded the bear as "a god" is in itself of interest, since the native human populations were in frequent contact with this species and had many opportunities to observe it at some length. Unfortunately, very little is known about what these people observed. They left no written record and their oral history has been blurred where not discontinued entirely.

The Early Records of Grizzly Behavior

Of the white explorers who may have had similar opportunities, few could (or would) write reports. Most whites were primarily concerned with killing the bear for meat, fat, skins, or to rid an area of a danger to their livestock or themselves. It is not until James Capen ("Grizzly") Adams that a white man became closely

acquainted with grizzly bears and wrote about them. Adams trained captured grizzlies, using frequent "trouncings" with a "good stout cudgel" to "lay the foundation of an education." Adams remarked that grizzly bear behavior "may be modified and improved to such a degree as to be a wonder..." (See Haynes and Haynes, 1979, pp. 101- 103). Adams died as a result of a blow to his head by one of his grizzlies. The blow removed part of his skull.

The next detailed study of grizzly bear behavior was undertaken by a later pioneer inspired as a child by "Grizzly" Adams' book. William Wright (1909) became a hunter of grizzlies. He found that grizzlies were very skilful at avoiding him, so he began to study them. He wrote:

In the beginning, I studied the grizzly bear in order to hunt him...[then] I came to hunt him in order to study him. I laid aside my rifle. (p. 11)

Wright became a self-educated field naturalist of considerable skill. Noted grizzly researcher Frank Craighead, in the foreword to the 1977 re-issue of Wright's book, says that Wright's observations are accurate and informative.

Wright's comments are, frequently, comments about the grizzly's "cunning" and "shrewdness."

...he is particularly cunning in guarding himself against danger from the rear, and his senses are at least matched by his shrewdness. (p. 77)

Self-Awareness

Grizzlies, according to Wright and to later scientific observers, are particularly adept at self-concealment. Wright reports one instance in which a grizzly "...crawled in between the rocks and had covered the entrance so completely that, though we passed it twice at least, we never saw it." (p. 76). He believed that grizzlies came to use the protective cover of darkness as a learned response to widespread hunting (p. 142), and he commonly mentioned how difficult it is to find or approach the grizzly bear.

Another early naturalist, Enos Abija Mills (1919), also noted that the grizzly is particularly skillful at self-concealment. Mills points out that this skill can create great danger to the hunter since the bear sometimes will "...conceal himself and lie in an ambush in wait for his pursuer...all grizzlies are scouts of the first order; they are ever on guard." Some kind of self-awareness of self-consciousness is a prerequisite to any successful self-concealment.

Mills recounts a remarkable experience he had when "trailing" a grizzly bear; the bear appeared to deliberately leave a trail that would — it did — confuse the bear's human pursuer. Mills states that "...the grizzly is the only animal I know who appears to be fully aware that he is leaving telltale tracks." (See Mills, 1919, pp. 119-135, for a detailed account of an intriguing incident.)

At first appearance, attributing an animal with the capacity to "know" that it is leaving tracks may seem anthropomorphic. However, to make an a priori assumption that grizzly bears could *not* have this capacity may, on the other hand, be anthropocentric. Recent research suggests strongly that the grizzly bear is highly intelligent.

Contemporary Biologist's Accounts

The first large-scale scientific study of grizzly bears was conducted in Yellowstone National Park by Frank and John Craighead. (e.g., Craighead, F., 1963, 1965, 1973) The Craigheads studied grizzlies carefully for nearly two decades. Their research and the research of other trained observers has resulted in a wealth of documentation of the complexity of the grizzly bears. Grizzlies are complex on a variety of dimensions.

Grizzlies are large and powerful mammals. Possibly in part due to their size, people who are unfamiliar with them misperceive them as "clumsy." However, they are extremely quick and highly dexterous. Craighead (1979) observes that "...the bear can rotate its forearm and grasp and hold objects with its dextrous front claws, almost as if they were fingers." (p. 1). This neuromuscular capacity of the grizzly has so far not been directly compared to the dexterity of primate species. It would probably compare favorably, and may surpass that of some primates. For instance, Jonkel (1982) has said that a grizzly can pit a peach with a single motion, using a single claw, as swiftly or swifter than a human using a knife. Neuromuscular response is a measure of human intelligence at birth.

Grizzly bears' manual complexity is matched or exceeded by their social complexity. Whenever bears congregate (at productive food sites) "social hierarchies" develop. These social interactions are highly evolved among grizzly bears. (Jonkel, 1978). The bears know and remember each other as individuals, and have memories that span many years. Grizzly bears communicate with each other by means of a variety of vocalizations and postures. Little is known about the range and meaning of grizzly bear communication, however.

Although grizzlies are not monogamous, and although their mating period lasts only during June and July, their mating behavior is also fairly complex. Naturalists and biologists have commonly reported seeing grizzly pairs nuzzle each other prior to copulation. Wright reported an instance of a grizzly bear male

"caressing" a female, although he did not elaborate. (Wright, 1977, p. 35). Murie observed one prolonged (several hour) incident including considerable "fondling," touching of noses, "sparring," and other "maneuvering," including an unspecified period of time when the male "put an arm around" the female. (Murie, 1981, p. 88- 89). Murie and Craighead both report instances when grizzly pairs copulated as long as one hour. Herrero (1977) also observed the courtship and sexuality of mating grizzlies.

The complexity of behavior between adults is matched by complexity of interactions of adults with young bears. For example, while all bear mothers establish strong ties with their young, grizzly families endure longer than, say, black bears. (Jonkel, 1978, p. 231).

The grizzly bear's considerable dexterity and complex social interactions are significant in their own right. Most people, probably including most animal behaviorists, comparative psychologists, and other scientists do not realize just how complex the grizzly is. Scientists prone to anthropocentrism may most underestimate the "cunning" and "shrewdness" noted by the early hunter-naturalists. The grizzly appears to have highly complex cognitive capacity.

The Track of the Grizzly

Jonkel (1978) describes bears as "...highly evolved, intelligent animals with both genetic and 'culturally inherited' or learned abilities..." (p. 277). Craighead compares grizzly bears to humans by observing that the grizzly's reflexes are faster, that the grizzly can swim better, and that the grizzly can "...travel in uncanny silence and stealth." (p. 1).

The stealth of grizzlies may involved a form of self-awareness uncommon in animals. Like humans, grizzlies may actually be aware that they leave tracks. This hypothesis is difficult to prove or disprove, but some evidence suggests that it merits consideration.

Only two contemporary scientific references to grizzlies and their tracks exist. In one, Murie notes that "...a bear takes no pains to accommodate one with clear tracks. One day on the Toklat River bar, I saw a mother and yearling cross the river and move up along the bar. I followed to look for tracks, but even though there were many moist patches of mud scattered about, ideal for track impressions, they had all been avoided and not one track was seen." (p.26).

Falling snow, especially in robust storms, can obliterate tracks quickly. Craighead (1979) reports that this condition made it extremely difficult to follow grizzlies to their dens. "They lost us by travelling rapidly and far in falling snow...We had followed grizzly tracks through deep snow in heavy timber, only to lose them in open meadows where the blizzard's full force fused land and

sky. The falling snow moved horizontally, not vertically, and tracks vanished in a matter of minutes.” (p. 64). The Craigheads commonly found black bear dens by following tracks, but never found a grizzly den until they attached radio transmission collars to the bears. (Craighead, 1979).

Conclusions

Animal behavior has been consistently oversimplified by scientists. Any reference to complexity has been dismissed as anthropomorphic, but this errs in the opposite, anthropocentric direction, because it assumes that only we humans are complex. This anthropocentric error is being systematically unravelled by contemporary scientists such as Donald Griffin (1984), whose book, *Animal Thinking*, can help mature scientists clarify their own thinking. And Paul Shepard’s (1985) book, *The Sacred Paw*, specifically explores human thinking about bears, down through the centuries. We have much to learn about bears, and about ourselves, in an ongoing dialectic of consciousness.

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