

1987 Reply to R. J. Blumenschine's
 "Characteristics of an early hominid scavenging niche,"
Current Anthropology 28(4), 399-400.

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The notion that scavenging played a determining role in the subsistence strategy of Plio/Pleistocene hominids has become fashionable, with some authors proposing "scavenging as a distinct and important adaptation" that preceded any substantial practice of hunting and was even the selective agent responsible for the emergence of bipedality (e.g., Shipman 1986). Blumenschine's careful and painstaking investigations are a welcome and important contribution to this discussion, providing much of the empirical groundwork necessary to assess the nature of the foraging opportunity presented to hominids by scavenging. His evidence indicates that the opportunities for scavenging are severely circumscribed: marrow, brain, and head pulps from medium-sized felid prey and (rarely) flesh from large carcasses, primarily confined to dry-season riparian habitats.

In assessing the significance of scavenging, it is important to distinguish (1) whether scavenging opportunities could have constituted a more important selective agent than hunting activities from (2) whether scavenging played a significant role in the creation of the faunal assemblages associated with hominid activity. Ecological considerations and comparative evidence make it likely that the answer to the first question is no, even while the answer to the second could well be yes.

Modern studies have shown that the traditional division of mammalian meat eaters into predators and scavengers is unjustified, and it is unfortunate that this false dichotomy has now been imported into the discussion of hominid diet in the form of "hunting versus scavenging" viewed as alternative hypotheses (Shipman 1986). Scavenging is an activity engaged in by some predators and so is most accurately viewed as—at most—an accompaniment to predation for animals with predatory abilities. The central fact about scavenging, confirmed by Blumenschine in this study, is the inherent limitations of the resource base: ecologically, the refuse of predators at the top of the food chain is necessarily scarce, explaining why no mammal derives the majority of its diet from scavenging (Houston 1979). This limited resource base is further broken up by the competitive specializations various species use to deal with the dangerous and difficult problems posed by scavenging.

The recent surge of interest in scavenging is tacitly predicated on the assumption that hunting is an advanced, difficult, and dangerous attainment, dependent on sophisticated abilities unlikely to appear until late in hominid evolution. Scavenging appears to be viewed as "easy" compared to hunting and putatively therefore a natural first step on the road to meat eating for inept

early hominids. However, almost nothing about the ecology of scavenging supports this view: the stringent and specialized requirements of scavenging are met by few mammals, all of them predators, and for only a minority of their nutrition; a far wider variety of species are able to meet the requirements of predation and supply from predation a far larger proportion of their diet. It is not hunting with supplementary scavenging but *preponderant scavenging without hunting* that is the burdensome hypothesis.

An examination of hunting by primates indicates that its prevalence is determined more by opportunity than by lack of capability. Adult male anubis baboons have been observed over the course of a year to procure enough meat through hunting to supply 22% of their caloric requirements (Strum 1981, Hill 1982), the operative factor in this surge of predation being an increase in available game. Studies of carnivore and primate predation demonstrate that despite long-standing beliefs about the evolution of human hunting, hunting does not require advanced communication, advanced cognitive skills, tool use, or even much cooperation (though cooperative behavior can in the right circumstances greatly increase efficiency). The primary requirement appears to be opportunity, which depends on the productivity of the habitat and relative body size of predator and prey (as additionally impacted by the number of cooperating predators and the effectiveness of any natural or artificial weaponry). Hominids were among the largest primates to penetrate the productive open woodland and savannah habitats, and if they hunted they would have been one of the larger predators (Tooby and DeVore 1987) and certainly would have had greater cognitive capacities than anubis baboons. Habitats in which hominids would have encountered scavengeable carcasses would have been *habitats that exposed them to many more direct encounters with living prey*. Selection follows capability, comparative opportunity, and payoff, and the opportunities to scavenge would have been, by the nature of the ecological conditions, far less abundant than the opportunities to hunt.

It seems implausible and inconsistent with foraging theory to posit that hominids would have transported lithic materials across large distances and manufactured stone tools exclusively to exploit relatively unrewarding and rare scavenging opportunities while ignoring far more abundant hunting opportunities that, although requiring equal or less cognitive ability and arguably less risk, returned far more. However, for hunting hominids already processing animal tissues with manufactured tools, supplementation of their diet with less common but regularly encountered scavengeable animal tissues is consistent with foraging theory. If this view is correct, evidence of tool-based scavenging would be diagnostic of hunting as well rather than evidence for a competing way of life.

Consequently, although the role of scavenging in human evolution appears likely to have been selectively minor (i.e., a supplementary adjunct to hunting), its role in the creation of faunal assemblages may have been

substantial because of the differential preservation bias of larger animal remains—those, according to Blumenschine's research, most likely to have been worth scavenging and also, because of their large size, least likely to have been acquired through hunting by Plio/Pleistocene hominids.

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Blumenschine provides welcome documentation of the opportunities for scavenging, thus contradicting the prevailing idea that this is a miserable existence. The life of a scavenger might even be better than that: perhaps we need not assume that our early ancestors, had they been scavengers, would have had to wait for the lions and hyenas to finish before they got anything to eat. My own experience with game scouts in Kruger Park, South Africa, was that they could drive lions from a kill by shouting and whistling; they could also climb trees to take down stored leopard kills. I did not record their success rate, but I got the impression that they were doing quite well ahead of the hyenas and vultures. Perhaps early hominids could have been equally successful.

Reply

ROBERT J. BLUMENSCHINE

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I thank the respondents for their thoughtful and thought-provoking comments. Two major themes seem to me to encapsulate most of the interesting and valid points raised: the food returns from the scavenging opportunities I describe and ways of extending my analysis.

My description has elicited polarized interpretations of the quality and quantity of food returns from scavenging. Some consider the opportunities good. Van der Merwe is most explicit, stating that my data contradict "the prevailing idea that [scavenging] is a miserable existence." Others interpret the same data to suggest that scavenging is minimally viable. The most explicit statement on this side is Tooby's: the "evidence indicates that the opportunities for scavenging are severely circumscribed." The disparity between these conclusions is of more than passing interest. Theoretically, it signals the persistence of the fundamental and influential assumption that hunting was *the* prime mover in human evolution. Practically, it is critical for the testing of the implicit predictions of my model and thus for the archaeological identification of scavenging and its distinction from hunting.

The idea that the scavenging opportunity I describe is minimally viable is based on the explicit assumption that the consumption of animal tissues was a critical