

Home erectus, “persistent hunting” and Evolution

With Homo erectus see the first examples of “**deliberate and purposeful**” hunting, with Australopithecines oriented toward “scavenging,” acquiring what randomly come across, be it a dying animal or one just killed by another predator and chasing it off.

See expressed in what is called “**persistence hunting.**” Observed in ethnographic accounts of contemporary gatherer-hunters. Typically involving one hunter, who approaches a herd of animals, because he can not out run them, makes self conspicuous and seen by the herd (not stealth), and herd takes off. But typically only runs about 100 yards or so at most, then continues grazing or watering. With a fast walk augmented with paced run, hunter again makes self known to herd at which time it runs off again. But each time the herd breaks/runs a shorter distance. Hunter continues, with herd eventually fragmenting, the less able members (young, old, sick) languishing further behind, until eventually the hunter can walk right up to and relatively easily spear. – literally “**run to death**”

Could transverse up to 25 to 30 miles and last multiple days.

E.g., California Indians practiced but with final blow come with neck braking so hides would not be damaged with an arrow or spear.

Persistent hunting part of the evolutionary natural selection process that gave selective advantage to certain biological and cultural changes occurring in the species – it was predicated upon but also helped encourage the following changes:

1. **bipedal locomotion.**

- facilitated running after herd;
 - allowed you to see herds over savanna grasses and in turn be seen by herd;
 - with freed hands, could carry weapons, food and water during chase, as well as acquired meat from hunt back to camp;
 - and of course with freed hands, manufacture weapons and then use them on the animal
- so while bipedal locomotion facilitated this form of hunting, there was also a selective advantage in those hunters who possessed these characteristics as good hunters to pass them onto their children.

2. **Increased cranial capacity** – brain (brain cells 10 times metabolically more important than standard cells). Going from average of 500 cc brain for the Australopithecines to an average of 1,000 cc average with range from 850 cc and 1,800 cc.

- could manipulate stone, bone and wood materials more effectively, having “learned” techniques of manufacture and use of weapons and produce more efficient and powerful tools – dependent upon skills of learning and remember, communications between members, and abstraction (visualizing a precise weapon in a cobble stone)

- facilitated conceptual ability to remember past animal behavior and tracking techniques, and anticipate the future events
- know the behavioral characteristics of the animal when chased and/or injured
- know the territory you're traveling, water, shelter, animal trails, way back to camp
- allowed “goal oriented” behavior, i.e., given that the chase occurred during hottest part of day and during night, keep the goal always in mind and keep on pursuit (other chase animals, like wolf or tiger, would typically stalk their game, but if didn't get on first run after herd, would give up)

- so while larger brains facilitated the hunt, hunting and acquiring meat also facilitated growth of larger brains by providing needed high concentrations of protein and amino acids vegetable foods didn't provide. Successful hunters provided their offspring with the nutritional needs necessary to encourage brain growth.

- given that males are the hunters, this is not to negate the role of women in evolution. While meat obtained via male hunting essential for this evolutionary jump, women still contributing the bulk of the dietary needs, with a typical 70% plant foods provided by women and 30% animal foods from male hunters.

3. **Cooling System.** Most efficient of all mammals. Hominids are not particularly physically specialized and have adaptive advantages over other animals – can not run very fast (chicken faster), not particularly stronger, can not climb trees rapidly, do not have powerful claws or jaws to fight with – but what do have is a great ability to **walk/run tremendous distances** – better than almost any other animal – they can not cover the same distances. To do this not only need bipedal location to carry water and food, but also two physiological attributes selected for:

- a. We are the **sweatiest** of all mammals – able to process our body heat and disperse it by sweating, the elaboration taking the heat from our bodies – no other animal sweats as much

 - b. We have the **thinnest layer of epidermis/skin** of all primates and mammals – thin as a sheet of paper – allows blood vessels close to surface and thus loose bodily heat flowing through blood

 - c. In association with less body hair (better for cooling) and upright posture (smaller surface area directly exposed to sun).
- with this cooling system, can sustain “**persistent hunting**” strategy and out run your herd animals because can dissipate bodily heat more effectively.