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Large predators: them and us!

We pay close attention to large predators. We do so because we evolved as prey. It was our ancient fate to be killed and eaten, and our primary goal to escape such. Our instincts are still shaped that way.

There is thus a reason why the bloody carnage on our highways is a mere statistic, but the mauling of a person by a grizzly is news. It's not only that so many fossilized remains of our ancient ancestors are meals consumed by large predators in secluded caves or rock niches, but also that we speciated like large herbivores. That is, our pattern and timing of forming species, of adapting to landscapes, mimics and coincides with that of deer, antelope or cattle, but not that of large carnivores. And that despite our fondness for meat, despite "man the hunter", and despite the fact that at least one species of humans, Neanderthal man, grew into a super predator.

Large herbivores readily form new species and show a pattern of strong speciation from the equator to the poles, terminating in the cold, glaciated latitudes as "grotesque ice age giants". Large predators do not. They evolve no grotesque ice age giants comparable to the woolly mammoths among elephants, or the massive-antlered giant deer among deer, the giant sheep, or anything else for that matter as grotesque as ourselves. Is there a more grotesque animal than man? And we did it twice, once as Neanderthal and once as Modern Man. Moreover, herbivores readily form dwarf species under poor ecological conditions such as in rainforests, deserts or predator-free oceanic islands, and they differentiate rapidly into new subspecies as they disperse geographically into new habitats. Predators form no dwarfs, on islands or otherwise. Nor do they segregate sharply into swarms of regional subspecies. Large herbivores do that - and so do humans. Also, our bursts of speciation coincide in time with those of African antelope.

Humans grow small canine teeth, not the large combat-canines typical of apes. Canine reduction is a signature of a common anti-predator adaptation, called the "selfish herd". In such unrelated individuals cluster together in the open as protection against predation. Herbivores form "selfish herds", predators do not. Herbivores may "evolve away" huge combat-canines, as shown not only by us, but by deer, horses, rhinos and half a dozen extinct families of large mammalian plant eaters. Carnivores reduce no canines!

Our ancient herbivore root is still reflected in our taste preferences, for when we eat meat we flavor it liberally with plant poisons (pepper, chili, sage, thyme, curry etc). Apparently

meat does not really taste “good” till it tastes of “plant”! We also have the herbivore’s craving for salt. So, watch what you reach for next time you get a sizzling steak!

While we may have evolved as hunters, we did not evolve like predators.

We have a very special relationship to large predators because, of all the primates, we are the only species that is able to survive large predators on the ground, away from trees. All other primates are tied to trees to escape predation. We alone can face predators on the ground day or night and we have done so despite being all but blind at night, despite snoring sleepers, crying babies or lusty lovers, or all that bone debris we collected in our campsite from scavenging and hunting. And we did this despite being loaded down with babies or with game we hunted. And we did this for over two million years. And without the ability to defy large predators on the ground there would have been no human dispersal into the treeless steppe where so many of our attributes were formed, there would have been no dispersal “out of Africa” or the incredible phenomenon of human civilization we currently experience.

Without being able to survive large predators on the ground we would never have tapped into the huge protein biomass of large herbivores. There would never have been “man the hunter”. Moreover, a species can only be as abundant as the amount of protein in its food. Gorillas can never outnumber humans, as the protein supply in their plant food is very limited.

There is excitement in anthropology about the great leap forward by humans globally about 40,000 years ago, and there is indeed much to be excited about. However, the miracle of human evolution began about two and a half million years ago at the edge of the African savannah where the trees give way to the treeless thorn-steppe, when our first ancestors, small, weak, defenseless and blind in the darkness outwitted large predators on the ground. Surrounded by nocturnally active lions, leopards, hyenas and saber-toothed cats they lived to see the sunrise. From then on hominids began to lose the morphological adaptations in our shoulder girdle for climbing, although we are still pretty good at it, as I can vouch for personally, having been treed by a grizzly bear. Developing a security strategy radically different from that of other large apes was the first step towards becoming human.

We are great killers, of course, but note: we do not kill like predators with tooth and claws. We kill with tools specialized as weapons. That is unique. And so is the mental and emotional psychic structure that flows from that. With weapon in hand we are brave, daring, dangerous. Without it we may be not. And predators sense that. United with others in bravery we become frightening, especially since we can do something no other primate can. We can mimic sounds and adjust such to the occasion. We can roar, growl and scream, and match our voices to the occasion, to the predator confronted. And mimicking sound is the biological root of language and music. It came first, courtesy predation!

It helps being big and black. Large herbivores that confront predators are notoriously big and black! And *Homo erectus*, our parent species, was as big as or bigger than we are and almost certainly as black as any African today.

Large predators are hypochondriacs – and need to be! They cannot afford wounding as it decreases their efficiency in hunting, and may also trigger an attack by a pack member followed by a cannibalistic feast. A realistic vocal threat, consequently, impresses, even more so a blow with a weapon, but also the touch of thorns. African predators are very “thorn-shy” as we now know from some beautiful experiments. They avoid thorns. And that’s the secret to nightly survival: a thorn covered ground-nest. It helps to reinforce such with a growl, and if worst comes to worst with a sharp jab with a stick. However, the ability to form a covered thorn nest on the ground, a “booma”, requires a long history of building tree-nests in ever smaller savannah trees, till such formed a part of dense thorn bushes. It requires beyond that considerable manual and tool-using skills to build a sturdy, densely-thorned shelter. It requires close observation of elders and visual mimicry to succeed, which also came courtesy of predation. The rise of humanity depended first and foremost on survival in sea of large, hungry African predators - in the absence of trees.

It affected our psyche. During the day, one needs firm discipline when sighting a predator, as running away is suicidal! We cannot outrun predators! One must fake supreme fearlessness, especially when “man the hunter” bagged and carried home a prey. How does one discourage hungry predators at that time, as predators readily abrogate prey from one another? There would have been no “Man the Hunter” without an ability to successfully defend the prey we killed and brought home without a string of predators following! And we had to be good enough at intimidating predators so that women and children could go out foraging. And we had to be good enough to spook off predators despite meat and bones at the campsite at night.

Enter big brain, enter “planning” based on foresight, shared experiences and imagination. One must use one’s experience, as well as that of others, to minimize encounters with predators. One learns to avoid times and spaces where predators congregate and cannot be readily defeated, and one needs to pass this on to family. One needs to exploit opportunities to chase away a predator, and teach it to do likewise next time. The next step is to develop systematic harassment and punishment of predators so as to instill in them an aversion to anything human. The next step is to know when to systematically kill their helpless young so as to keep down their numbers. All this is still practiced in Africa and elsewhere, and it has been effective enough, as over two million years of human history demonstrates. We did not escape being prey, we merely changed priority. We went from being a tasty, defenseless morsel to a nasty creature of very low priority, in fact, the last in line. And that, given a rich array of prey species, is not all that bad! We thus became a prey that was smarter than the predators, which happens to be unique! Normally, it’s the other way around!

There have been failures, even massive ones!

When our lineage came “out of Africa” it spread westward along the coast of Asia and colonized Australia, repeatedly, some 60,000 years ago. That could only have been done by people possessing boat technology, and it happened quite rapidly. *And then it took almost 50,000 years before North America was colonized!*

What prevented us from entering North America in that enormous time span?

Humans even entered South America before North America, judging from the antiquity of archeological dates. The undisputed fact is that human colonization coincided with the collapse of the unique North American native megafauna beginning about 12,900 years ago. As long as North America’s native megafauna remained intact all through the late Pleistocene, there was no human settlement of North America. However, once the megafauna crumbled there were repeated human entries. Moreover, other members of the Siberian fauna also moved into the ecological vacuum here, such as grizzly bear, gray wolf, wolverine, elk, and moose.

How could this be?

North America’s megafauna differed substantially from that of Eurasia and Africa. It was characterized by a multitude of highly specialized, often gigantic predators and prey. Moreover, the fossil record shows a surprising amount of crushed, broken, but healed bones in the predators, as well as excessive wear and breakage of teeth. Injuries in current African predators are minimal by comparison. North American native predators were thus confronted by herbivores that were exceedingly able to defend themselves. Not only the broken bones, but the very specializations of the predators speak of the demanding life they experienced. So do the extreme anti-predator specializations of the herbivores. North America during the Pleistocene was thus a predator hell-hole compared to Eurasia or Africa! There was a predacious bear about seven feet at the shoulder, the short-faced bear, *Arctodus simus*. And it was assertive and not very clever, as its numerous remains in natural trap sites testify to. If a camel or horse fell down a natural hole, all sort of short-faced bears jumped in after - and perished! Grizzly bears and black bears did not do that! There was the common lion, only it was twice the mass of the African one. So was the American cheetah, compared to the Old World species. There were three species of short-faced bears, there were dire wolves larger than gray wolves, there were massive saber-toothed tigers and large, elegant, speedy dirk-toothed cats and large panthers, as well as black bears, cougar, red wolf and large coyotes. Life was hard for these predators, and they were all too willing to take risks for a meal, as sadly testified to not only in natural trap caves but also the tar pits at Rancho la Brea.

If you were to land on the shores of North America, spear in hand, what would you do when those big, assertive predators approached you for a closer look? And how would you hunt the scarce, highly alert gigantic prey? The herbivores were not only highly specialized in evading predation, but their organs of food acquisition and processing remained exceedingly primitive. That means that the fierce predation kept them way below the potential carrying capacity of the land, so that they were able to feed only on the best, most digestible, low-fiber vegetation. There was simply no selection for more

efficient feeding organs. And that means that prey populations were kept at very low density. And if you were able to kill a large herbivore, how would you defend it against these diverse, huge predators?

Our abilities to deal with African and Eurasian predators were thus likely much too limited to deal with the full array of native North American predators. They kept the continent free of humans for nearly 50,000 years, till – for reasons still disputed – America’s megafauna declined, and over about 6000 years went largely extinct. Even then the increase in humans, as tracked by the number of hearth discovered per 1000 years, increases very slowly. Moreover, it is inversely related to the number of genera of megafauna still alive. It thus took some 6,000 years of hard, very dangerous living by human colonizers to create in North America a landscape reasonably safe for people.

The few remaining native American species show to this day the predation pressure of the past. White-tailed deer, great experts at hiding and rapid escapes, are totally incompetent food competitors and do very poorly in the presence of Old World deer – which are food competitors! Ditto for mule deer and elk. Pronghorn still run faster than anything on Earth! And native predators such as black bear, cougar, coyotes, and raccoons are thriving in our presence, compared to their Siberian counterparts which migrated into North America in the Recent, the grizzly bear, gray wolf and wolverine. The Americans are very adaptable, the ex-Siberians are not. It’s about the ex-Siberians we happen to worry most.

We may be the clever, industrious prey that turned the table on carnivores, but our relationship to large predators has remained precarious. Our ability to co-exist depends on us exploiting their fears - and woe if they call our bluff! The man-killing lions of Tsavo are but one example of predators learning how easy it is to hunt man as prey. Jim Corbet’s tales of man-eating leopards and tigers, or of lions preying on modern-day refugees in Krueger National Park or Somalia, are others. Native people had quite sophisticated means of keeping safe from predators, but ultimately made recourse to killing offending predators should one transgress against humans. Still, high-density populations of big grizzly bears in California kept native people out of productive low-land sites, until Spaniards killed off the grizzlies. On the Pacific Coast natives designated certain salmon streams for the use by bears and harassed such away from others. In Greenland early this century areas occupied by wolves were free of native people, and attempts to provision weather stations by dogsled failed because of wolf attacks. I was told that traditionally wolves were kept down in numbers by destroying dens, a method praised as most effective in Russia.

The history of wolves is deeply troubling, even though to all appearances grizzly bears, black bears and cougars are more dangerous, having killed far more people in recent North America. In order to understand what wolves can do, provided the conditions are right, we have to go to Eurasia. It’s conditions that count! We must know these well as we have already enacted legislation here and in the European Union that are based on false biological premises. And such arose from errors in scholarship. And we must know

these errors, as the prestige of science and scholarship are again and again invoked to push flawed conclusions about wolves as well as flawed legislation.

The problem in North America is that specialists in wolf biology did not recognize how to use historical Eurasian information about wolves, but dismissed such as irrelevant to an understanding of wolves. They equated all such information as a result of ignorance about and malice towards wolves by an ignorant populous. It escaped them that as scientists they were ill equipped to research such matters, as this field of study resides squarely in the academic domain of history.

We can know historically of the peoples' plight through the centuries only indirectly as we are dealing in Europe and Asia largely with illiterate populations. Illiterate people cannot leave first-hand accounts of their troubles! They can at best convey their concerns to their masters. Consequently, we have to look for summaries of their problems, be it in church records or administrative accounts. Unfortunately, tracing church records or administrative accounts can be less than fruitful as such have been usually burned by the unending warfare of centuries past. This leaves summaries of such matters, as well as the evidence for actions taken by the rulers to deal with large predators, most often with wolves. An example is the detailed encyclopedic work on hunting and wildlife management by Friedrich von Flemming published in Leipzig, Saxony, in 1719 and addressed to his Mighty Sovereign and Master, Friedrich Augusto, King of Poland, followed by a second volume in 1724. It's sobering! The depredation by wolves led in some regions to great efforts on the part of feudal rulers to rid their land of this menace. The rulers may have been less concerned with plight of their subjects than with concerns about taxation and the welfare of their wildlife. Miles upon miles of netting were strung to corral wolves. Special horse carriages and sheds were required to transport and house the netting. Several villages at a time were forced to drive wolves and other wildlife into nets. Professional hunters and trappers were employed to trap wolves. However, recurring wars brought back wolves, and when people are helpless, large predators are quick to know and to exploit such logically.

And it's not only the central European experience that is sobering, so is research into this matter in Russia, Finland, France, Turkey, Iran, Afghanistan, India and Korea. Tragedy resulted again and again from political systems that disarmed and disenfranchised their citizens. Wolves exploited that helplessness. Compared to bears, wolves were hated and with excellent reason. Not only did they destroy livestock in the fields, but they found means and ways to break into stables in villages and kill the precious family cow or sheep indoors. Children are a primary target of wolves. Rabies was not uncommon, and a rabid wolf running amuck biting horses, cattle, people and in modern days machinery in rapid succession was a death angel if there ever was one! The bite by a rabid wolf is lethal and the bitten person died of rabies. A bitten person could only be cured since the rise of modern medicine. Before that any bite by a rabid wolf was a death sentence, and such an animal could bite dozens of people before it was killed or ran off and died.

Wolf packs came out of the "wilderness" which was detested as source of evil. The frequent wars brought wolf troubles. After the 30 year war in central Europe it took

decades before some landscapes were resettled – courtesy wolves. The fairy tale by the brothers Grim of Little Red Riding Hood is thus not based on ignorance and malice towards wolves but on very real and desperate experiences. Those experiences drove the costly and wearying attempts to exterminate wolves throughout the ages right into the last century in Europe.

We may decry today the extermination of wolves in the American West, but there was reason for it, and modern studies confirm how efficient wolves can become in killing off livestock. And that confirms the European historical experience. Even in modern times Wolves have been a trouble to disarmed populations, most recently in areas where they are again re-colonizing such as in Finland, Sweden and even modern Germany. Ditto in New Mexico where wolves are legally protected! Historically there is no place where wolves and people have coexisted, except where wolves were kept under strict control and were hunted, and prey was, consequently, abundant.

And that's one lesson from the North American experience we need to take very seriously. Modern research has shown that wolves switch to alternative prey species only very slowly, and that they do not target humans as long as there is prey or livestock between them and us. Moreover, wolves targeting humans and urban coyotes targeting children do so in the same manner. Surprising? Hardly! Surprising is only the argument that wolves pose no danger to people, a myth that has killed here highly educated persons that trusted science. It is timely to reassess conservation of large predators and make such safe for them and us. And that will be the subject of a future essay.