

David P. Barash

Introduction and Early Conclusion

It seems likely that specialists in international negotiation and mediation are optimists about the potential of human beings to reach lasting and peaceful agreements. Otherwise, they would be wise to look for an alternative career! On the other hand, I wouldn't be at all surprised to learn that even within so self-selected a group, questions and doubts occasionally arise, especially when negotiations reach a rough patch and—more dire yet—when violence or even the serious threat of violence might arise.

After all, there has of late been a serious intellectual undercurrent, almost like a small devil whispering in the public ear, to the effect that *Homo sapiens* is an inherently violent and war-prone species for whom peaceful conflict resolution is unnatural, rendering peace not only exceptionally difficult to achieve but necessarily unstable at best. It is challenging to pursue peace if all around, voices are suggesting that it is fundamentally beyond our collective reach.

This chapter is an attempt to provide reassurance, if it is needed, and further confirmation, if it is not, intended for current mediators and negotiators, as well as for people interested in pursuing these mat-

ters. I shall briefly review the rather sordid history of humanity's assessment of its own nature with respect to violence and war and then explore the fraught but intellectually rewarding question of what—if anything—evolutionary biology can tell us about the human penchant for organized violence. Since this chapter is not intended to generate suspense, I'll give away the punch line here and now: Our species-wide bequest from evolution is neither that of a naturally war-lusting, violence-embracing species of killer apes nor of peaceful, conflict-avoiding, wonderfully nonviolent flower children.

As Theodore Geisel (“Dr. Seuss” 1990) advises in *Oh, the Places You'll Go!*:

“You have brains in your head.
You have feet in your shoes.
You can steer yourself any direction you choose.”

A Human Capacity for Peace, War, and in Between

When it comes to violence in particular, we have what can be described as an “open program,” which is to say that we are biologically endowed with both behavioral inclinations toward violence (individual as well as group organized) as well as toward peace (including various mechanisms of nonviolent conflict resolution). Moreover, I urge negotiators and mediators to avoid the widespread error of extrapolating from nonhuman primates to *Homo sapiens*, as well as generalizing to

D.P. Barash (✉)
Professor of Psychology, University of Washington,
Box 351525, Seattle, WA 98185, USA
e-mail: dpbarash@uw.edu

“human beings” findings derived from one or a small number of non-technological human societies.

To be sure, Shakespeare’s Hamlet admires human beings, asking “What a piece of work is a man, how noble in reason, how infinite in faculties, in form and moving how express and admirable, in action how like an angel, in apprehension how like a god! the beauty of the world, the paragon of animals ...” And there are numerous historical and contemporary references, especially in the Judeo-Christian tradition, to our species having been made in the image of God. Nonetheless, there seems to be a special pleasure derived by many observers when it comes to criticizing human beings, especially when it comes to our presumed penchant for aggression and violence.

The Perverse Appeal of Identifying a “War Instinct”

It may be that some of this comes from a paradoxically pleasant *frisson* associated with pointing out the worst in one’s fellow humans, which might itself derive from a peculiar payoff that comes from showing one’s self to be especially hardheaded and “realistic,” hence nobody’s fool and therefore, perhaps, not susceptible to being personally taken advantage of. This seductive tendency may well be not unlike the motivation of certain political scientists and specialists in international relations when they proudly adhere to *Realpolitik* in preference to more “soft-headed” attempts at benefitting the human condition. I also suspect that men in particular succumb to yet another seductive aspect of this intellectual stance, deriving perhaps from a secret thrill that comes with pointing out the very worst in human violence, thereby somehow burnishing—or even, indirectly bragging about—their own testosterone levels.

In any event, here is South African anthropologist Raymond Dart, who discovered the first australopithecine fossil in 1924. Dart wasn’t shy about concluding that these early hominins were

“Confirmed killers: carnivorous creatures that seized living quarries by violence, battered them to death, tore apart their broken bodies, dismembered

them limb from limb, slaking their ravenous thirst with the hot blood of the victims and greedily devouring living writhing flesh.” (Dart 1953)

Of course, even this lurid perspective had its antecedents, notably in certain branches of Christian doctrine. “The mind of man,” according to the zealous Protestant theologian John Calvin (2012):

has been so completely estranged from God’s righteousness that it conceives, desires, and undertakes, only that which is impious, perverted, foul, impure and infamous. The human heart is so steeped in the poison of sin, that it can breathe out nothing but a loathsome stench.

My present concern is more secular, however. Although it is bad enough for substantial numbers of people to be convinced of humanity’s irrevocable sinfulness—to be paid for, presumably, in the afterlife—it may well be even worse when those who claim to speak for science promote a perspective that has threatened to become a self-fulfilling prophecy, right here on Earth. Thus, in his widely influential book, *African Genesis* (1961), playwright Robert Ardrey picked up Dart’s suitably pointed perspective and announced:

We are Cain’s children. ... Man is a predator whose natural instinct is to kill with a weapon. It is war and the instinct for territory that has led to the great accomplishments of Western Man. Dreams may have inspired our love of freedom, but only war and weapons have made it ours.

This assertion, in addition to being scientifically inaccurate, has been downright pernicious when it comes to impacting the often unconscious attitudes of people concerned about practical policy concerning war and peace. At the risk of belaboring the obvious, why seek to pursue nonviolent solutions to pressing international political problems when such solutions have already been ruled irrelevant or—worse yet—simply impossible?

Self-Fulfilling Prophecies

In his book, *Beyond Freedom and Dignity*, psychologist B. F. Skinner (1971) wrote that “no theory changes what it is a theory about. Man remains what he has always been.” This is certainly true with respect to our knowledge of the

physical world. Before Copernicus, Galileo, and Kepler, when many serious thinkers believed in the Ptolemaic model of a geocentric universe, their error did not impact the astrodynamics of the solar system itself, which was then and has continued to be heliocentric, regardless of what theories human beings applied to it. This is similar for gravity before and after Newton, relativity before and after Einstein, and so forth.

Strictly speaking, the same applies to the theories of human nature, too: People's ostensible "instinct" for violence and war should remain whatever it is, regardless of what we think about it. But when it comes to such matters, the connection between expectation and reality becomes complex, with a risk that theories of human nature feed directly into the behavior of humans themselves, who in turn are liable to modify their behavior—if not their "nature"—as a result. Consider the militarists in country A, who may be convinced that inhabitants of country B are caught in the grip of unshakeable, instinct-driven war proneness. As a result, country A refuses to engage in serious negotiations, preferring to arm itself; the leaders of country B, observing these actions (and equally convinced that country A is composed of people with an irrevocable proclivity for war), do the same. Each side points to the other as justifying its bellicosity while at the same time confirming their often unspoken assumption that war is both natural and inevitable.

The danger, in short, of assuming that *Homo sapiens* has a "natural instinct" for war is that it can become a highly destructive self-fulfilling prophecy, not only closing off possible avenues of peaceful conflict resolution but actually making war more likely. Nonetheless, a purportedly scientific view of anything—humanity's presumed instinct for warfare included—must stand or fall not on its social and political consequences but on its scientific credentials. And here, the "war is in our genes" perspective is scientifically invalid.

Misleading Animal Parallels

Let us look first at the pseudo-evolutionary claim that *Homo sapiens'* war-promoting instinct can be inferred from our animal relatives, specifically

the nonhuman primates. It warrants mention that research on the social behavior of even highly social primates has looked overwhelmingly at aggression and competition rather than at strategies of conflict resolution. In the early days of naturalistic primate studies, savannah baboons constituted the most frequent research subjects, mostly because they were easy to access, to watch, and to habituate to the presence of human observers. As it happens, baboons are also somewhat unusual in the degree to which their social behavior is ruled by rigid dominance hierarchies and high levels of agonistic behavior.

Our closest living relatives, however, aren't baboons but the great apes, which include chimpanzees, bonobos, gorillas, and orangutans, as well as the so-called lesser apes, the gibbons and siamangs. None of these species demonstrate social behavior directly parallel or comparable to that of human beings. Gibbons and siamangs practice a kind of "solitary monogamy," in which mated pairs remain more or less isolated from others (except for occasional extra-pair copulations). Orangutans are more solitary yet, with male and female associating only very briefly, to mate. Gorillas live in multi-female, multi-male troops with a strict age-graded hierarchy in which a single "silverback" male essentially maintains a harem.

This leaves the chimpanzees and bonobos. When field studies of these animals were in their infancy, the former were initially described as experiencing a socially chaotic but basically benevolent lifestyle; more recently, however, chimpanzees have been observed to engage in far more violence than had been reported, complete with "search and destroy" missions that are worrisomely similar to that seen in human warfare. No less a pro-chimpanzee advocate than Jane Goodall has reported, in her classic book *The Chimpanzees of Gombe*, that "as a result of a unique combination of strong affiliative bonds between adult males on the one hand and an unusually hostile and violently aggressive attitude toward nongroup individuals on the other," the chimpanzee "has clearly reached a stage where he stands at the very threshold of human achievement in destruction, cruelty, and planned intergroup conflict." Numerous other field reports have confirmed this description.

Looking only at chimpanzees, therefore, it is tempting to presume that human beings have inherited a chimp-like predisposition for war. But wait! Today's living chimpanzees are definitely not our ancestors; rather, we share a common ancestor with the living great apes such that we are no more descended from any of them than they are descended from us. Moreover, what about the bonobos? These animals—sometimes inaccurately labeled “pygmy chimpanzees”—are renowned for their peaceful and nonviolent ways, characteristically avoiding conflict by engaging in intense bouts of hetero- and homosexual activity; i.e., they “make love, not war.” The problem is that modern human beings have not evolved from either chimpanzees or bonobos; rather, we share a common ancestor with these two ape species. Moreover, DNA analysis has found that *Homo sapiens* is no closer, genetically, to either species. The most accurate conclusion to be drawn from an examination of our closest animal relatives is that ... no conclusion can be drawn!

The Prehistoric Human Condition?

Since we cannot derive insights into the fundamentals of human behavior from examining the other extant great apes, what about looking at other human beings? Here, the situation is fraught and potentially misleading. Part of the allure of anthropology has long been the assumption that “primitive” (i.e., stateless, non-technological, and, where possible, precontact) human societies represent a reasonable approximation to the prehistoric human condition. Once again, however, there are several obstacles to any clear conclusions. For one thing, just as we are descended from neither chimps nor bonobos, current human societies, too, are not ancestral to those of us who currently live in state-based, technological human communities. We have no “contemporary ancestors.”

On the other hand, given that our Pleistocene pre-hominin ancestors almost certainly lived as hunter-gatherers on the early African savannah, it seems reasonable that such people, currently alive, would offer at least a glimpse of those early humans from whom we are all descended.

But even in this case, there are problems, of which the greatest is probably—once again, as with our brief and somewhat aborted survey of the great apes—the fact that the range of observed behaviors is very great, while no basis exists for identifying one “primitive” human society as somehow more representative of *ur*-humanity than is any other.

In fact, the difficulties are greater yet, because even beyond the problem of distinguishing among numerous human groupings with regard to which are the most accurate exemplars of untrammelled, natural humanity, today's scientists have themselves been significantly biased in their choice of subjects from which to generalize. As with the bifurcation between chimpanzees and bonobos, there are dramatic differences between societies widely recognized to be pacific and conflict avoidant and those that have traditionally been violent and war prone. Once again, which shall we designate as exemplars when it comes to expressing “natural” human nature?

Not surprisingly, there are substantial sources of bias, notably involving the ease of gathering empirical data, the literal safety or danger experienced by field workers, the availability of research funds, and—perhaps most important although most obscured—the sociopolitical, ideological, and even emotional bias of the researchers themselves. Thus, some archaeologists and anthropologists have been criticized for “pacifying the past” by focusing excessively on those societies known to be comparatively gentle and nonviolent, whereas others—currently, it seems, in the majority—could equally be called to account for “warmongering the world” by developing global theories about the war-prone nature of human nature as a whole based on a small number of dramatically violent human societies.

Generalizing from the Famously “Fierce” Yanomamo

Notable in this regard has been the widely reported findings of anthropologist Napoleon Chagnon (1968), who conducted multi-decade field research among the Yanomamo of the

Venezuelan/Brazilian Amazon. His findings led to identifying the Yanomamo as “the fierce people,” prone to violent quarrels and inter-village raids that offer a close approximation to early, non-technological human warfare. Especially striking was Chagnon’s discovery that Yanomamo men—“*unokais*”—who have killed other men, have fathered significantly more offspring than have non-killers. This direct correlation between perpetrating lethal violence and evolutionary fitness provides a clear empirical basis for concluding that natural selection has favored a predilection for killing other human beings.

Professor Chagnon’s research results have been immensely influential, widely read by college students as well as being cited repeatedly by other scholars (including, I must acknowledge, myself). There are probably two major reasons for this selective attention to Yanomamo violence. For one, the available data comports nicely with a theoretical perspective derived from evolutionary biology, whereby selection is likely to have favored whatever contributes to fitness, with successful violence being almost a textbook case. For another, and as already noted, I suspect that there is a paradoxical appeal derived by many—especially men—in describing human nature as violence and war prone. Not surprisingly, this perspective is likely to be especially favored by men, who—for understandable biological reasons—are particularly inclined to emphasize their “macho” qualities and to minimize any presumption that they might be personally naïve.

It must be emphasized, in addition, that there is no reason to consider the Yanomamo as in any way “more human” or more accurately representative of “natural” humanity than is any other group of people. And although the Yanomamo do indeed appear to be at the violent and warlike end of the human continuum, there are numerous other human societies that are strikingly peace loving and that eschew war. These include, but are in no way limited to, the Batek of Malaysia, the Hadza of Tanzania, the Mardu of Australia, a half-dozen or more indigenous South Indian forager societies, and numerous others, each of which is no less human than those such as the

Yanomamo who are regularly trotted out to “prove” our inherent war proneness.

Let me be clear: I don’t think there is any doubt about the validity and value of Chagnon’s findings. The fault, or problem, dear reader, is not in Dr. Chagnon but in ourselves (i.e., myself and many of my fellow evolutionists), insofar as we may well have generalized excessively from Chagnon’s extraordinary research findings, thereby conveying a likely misleading impression about the “inherent aggressiveness,” “violent tendencies,” and “warlike inclinations” of “natural human beings,” whatever and whoever they may be.

The reality is that the public in general and students in particular are highly susceptible to messages from the scientific community as to the underlying predispositions of *Homo sapiens*, a susceptibility that becomes especially acute—and potentially dangerous—when they are taken to paint a picture of our own species as irrevocably and unavoidably violent and warlike. All too often, as a result, we encounter (and help generate) assertions to the effect that war is inevitable because our species is hardwired this way. Such problems don’t arise, for example, among scholars concerned with Renaissance harpsichord music.

Also worth noting: One of the consistent differences between a right-wing and left-wing political orientation is that the former generally takes a dark view of human nature and the inevitability of crime and warfare (which leads, in turn, to enthusiasm for law enforcement and a vigorous military, often to the exclusion of governmental programs of social betterment), while the latter espouse a more benign vision of human potential—leading, when possible, to more social investment and reduced reliance upon the use of force. I am *not* arguing that we should orchestrate our scientific work around data sets that support our particular political profile, but, rather, we should acknowledge that our decisions in this regard not only reflect these preferences (often unwittingly), they also influence the attitudes of those who follow and seek to generalize from our research. I agree with Dr. Chagnon that with respect to the Yanomamo, “blood is their argument.” But what is ours?

Which People, If Any, Are More “Fundamentally Human”?

At this point, my biologist colleagues in particular might be tempted to quote Darwin, who pointed out in *Sexual Selection and The Descent of Man* that “we are not here concerned with hopes or fears, only with the truth as far as our reason permits us to discover it ...” Fair enough. Let’s stick to the truth—something that Napoleon Chagnon, I am entirely convinced, has done (even as the same cannot be said of his critics). Nonetheless, a fair-minded—not to say, scientifically accurate and politically sensitive—perspective must ask whether it is “the truth” that the fierce Yanomamo are necessarily the best or, in the worst case, the only models for generalizing about the fundamentals of human nature.

Note: I am *not* claiming that the Yanomamo are inappropriate exemplars of pre-technological human nature, just that data derived from their ethnographies aren’t necessarily more relevant than that associated with other social groups. There are also numerous nonwarring societies, such as the Machiguenga swidden farmers of Peru, the Batek of Malaysia, the Mardu of aboriginal Australia, the Ladakhi and Lepcha of Asia, the Pemon and Piaroa of South America, and so forth. And I would bet that Napoleon Chagnon’s most vigorous supporters and defenders (among whom I include myself) would agree that there is little if any reason for seeing the Yanomamo as being somehow more indicative of evolution’s behavioral bequest to *Homo sapiens* than are the Mardu, the Machiguenga, and so forth (Fry 2013).

The Fallacy of Platonic “Types”

In the early days of evolutionary biology, taxonomists used to identify a “type species” within each genus, seeing it as somehow representing a kind of platonic archetype. Fortunately, we have moved well beyond these phony and arbitrary idealizations. Are we now to have “type societies”? And if so, how are we to decide which ones qualify?

I fear that to an extent most evolutionists do not realize or acknowledge, there has been a tendency to fix upon certain human groups as especially and uniquely revelatory, and not simply because the data are convincing but rather (at least in part) because the stories are riveting and the data are consistent with our preexisting expectations and biases—or even, just plain fun to talk about, especially for men.

An additional reason, moreover, why the Yanomamo have received special attention may well be because they are “poster children” for a particular perspective on human nature (and one, incidentally, that I generally share and have promoted, sometimes—I now realize—excessively). It must be acknowledged that the consequences of adopting a limited model for human aggressiveness, violence, or war proneness can readily go beyond helping to make a persuasive case for the relevance of evolutionary analysis generally to the point of influencing and even subtly constraining our sense of the boundaries of human potential, thereby possibly becoming self-fulfilling prophecies.

I feel strongly that ideology (whether antiwar or prowar) should not be permitted to color scientific research and the conclusions derived from such study. At the same time, we need to be alert to the prospect of subtle and unintentional bias, especially when one or a few human societies are taken as indicative of an entire species. It is fair to conclude that when I write or lecture about the social behavior and reproductive strategies of different marmot species—the animals that have occupied much of my research effort in behavioral ecology and evolution—no sociopolitical implications are involved; however, when I write or lecture about violence, aggression, and/or war making among human beings, it makes a huge difference whether I describe the fierce Yanomamo or the pacific Lepcha.

To repeat: Napoleon Chagnon did what he was supposed to do and then some. He deserves honor and commendation. He was and is not at fault, but many of the rest of us are, insofar as fascination with his findings, and especially with the remarkably clear correlation between Yanomamo violence and male fitness that have,

I believe, blinded us to the full range of human nonviolence along with violence, realms of peacemaking, and patterns of war making.

The Janus Face of Human Nature

Much as the human mind is drawn toward simple either/or statements, reality is more nuanced, complex, and Janus faced, named for the Roman god who looked simultaneously in two opposed directions (hence, January as the month that looks backward to the previous year as well as forward to the one just beginning). The Janus nature of our evolutionary bequest applies particularly to the seemingly simple question of whether human beings are “naturally” or “instinctively” aggressive or violent, as opposed to peaceful and cooperative. In the past, popular treatments of human beings as “killer apes” have clearly been misguided in their single-mindedness, ditto for others purporting to demonstrate that we are uniformly cooperative and pacific. Our human nature is neither Rousseauian nor Hobbesian; instead, both a devil and an angel perch on our shoulders, whispering evolutionary predilections in competing directions.

The archaeological record appears to confirm that human warfare—in the sense of organized, group-level, lethal violence—became widespread in the Neolithic, roughly 10,000 years ago, in association with several factors, including the development of agriculture (which generated material of surplus value that could be obtained via warfare and that could, in turn, also be defended), along with a tribal/chieftain level of political organization, which enabled a transition from interpersonal revenge or acquisitiveness among egalitarian societies to violence on an essentially impersonal and larger scale, orchestrated by state-level societies about 5,000–6,000 years ago. Although there is a reason to assume that prehistoric, ancestral hominins engaged in personal aggression and occasional violence, there is no convincing evidence that anything approximating “war” occurred in our more remote and formative past. This is important, because for war to be “in our genes,” it

would require a much longer historical pedigree than merely a few thousand years.

Moreover, current scholarship strongly suggests that a species-wide stage of nomadic foragers/hunters/scavengers preceded the invention of agriculture, and what we know of such nomadic societies is that although their members are endowed with the usual human capacity to get angry and even to fight, they typically do not engage in anything resembling warfare.

Adaptations Versus Capacities

For some, an “evolutionary analysis” of any phenomenon involves reconstructing its likely phylogenetic history. For most evolutionists, however, it requires assessment of the relevant selective pressures that acted in the past as well as those currently underway. It also requires recognizing the difference between an adaptation (something generated by natural selection as a result of the selective advantage acquired by its possessors) and a capacity (a trait that can be acquired, or left unattained, depending on experience and building upon one or more existing adaptations). Thus, language is a human *adaptation*, providing individual *Homo sapiens* with the *capacity* to learn English, Urdu, Japanese, and so forth, but without biasing the specific outcome. Walking and running are human adaptations, shared by all healthy, normal *Homo sapiens*; cart-wheels or handstands are capacities that some people develop, while others don’t.

Aggressiveness and violence—under certain circumstances—are human adaptations. They would likely be very resistant to elimination. War, involving as it does coordinated group-level violence, is a capacity and therefore something that recent human history reveals as unquestionably within our behavioral range, but that can also be prevented. Peace scholar Kenneth Boulding promulgated what he called “Boulding’s First Law” that anything that exists is possible: The transition of Switzerland, for example, from one of the most feared war-prone people of Europe into a model of armed but war-avoidant neutrality serves as an excellent example, as does

the Iroquois Great League of Peace, which, in historical time, united the Cayuga, Mohawk, Oneida, Onondaga, and Seneca tribes (eventually joined by the Tuscarora), thereby ending a bloody history of endemic raiding.

One of the most stringent requirements for establishing an ethos of peace, however, is to overcome the widespread but erroneous belief that war is as natural to human beings as is individual aggressiveness.

Fortunately, a strong case exists that nomadic social systems in particular predispose *against* violent intergroup competition. For one thing, the population structure of extant groups suggests that individuals often have close genetic relatives in neighboring groups, which would mitigate against violent conflict. For another, when they do arise, conflicts between nomadic foragers are nearly always interpersonal—between two men, for example, over a woman—rather than among groups. In addition, it is common for competition over variable and limited resources to result in agreements for reciprocal sharing and cooperation rather than prototypical warfare.

We can safely conclude that although individual human beings have long been equipped with a capacity for individual-level aggression and even violence, peace is every bit as much “in our genes” as is war. And since war isn’t part of our deep past, it need not be part of our future.

Neither Inherently Peacemaking nor Warmongering

By this point, it should be clear that from both the animal and anthropological record, human beings are not destined to war. This does not mean, however, that we are destined for peace. Indeed, just as *Homo sapiens* cannot be convicted of being inherent murderers, we also cannot conclude that we are a uniquely and especially peaceful primate. Our bequest from biological evolution is no more one of instinctive peacemaking than of warmongering. Anyone hoping to derive a simple, straightforward, and unitary behavioral vector from evolution is doomed to disappointment. We must live, instead, with what may seem like an

oxymoron: a dualistic, bidirectional momentum, under the influence of two-faced Janus rather than Mars, the god of war, or Irene, the less well-known goddess of peace.

When it comes to evolution’s influence upon human war and peacemaking, nearly every identifiable factor works in two contradictory and seemingly confounding directions. If anything, however, there has been a tendency to misinterpret an evolutionary view of human nature as essentially synonymous with a description—even, an endorsement—of violent competition. This error derives in part from a common misunderstanding of evolution by natural selection, which was encouraged by some unfortunate late-nineteenth-century verbalisms. Thus, “survival of the fittest,” a phrase initiated by Herbert Spencer but regrettably employed later by Darwin, suggests that natural selection operates by conveying benefits to those who survive, often at the cost of others’ survival.

To this, the British poet Alfred Tennyson contributed the unfortunate verbal construct of “nature red in tooth and claw,” further emphasizing a presumably gory process whereby evolution works its way. Biological reality is quite different. The most meaningful quick and dirty definition of natural selection is “differential reproduction,” which is to say that the evolutionary process operates by the deceptively simple fact that some individuals—more precisely, some genes constituting those individuals—are more successful than others in getting themselves projected into the future. Such genes are thus “selected for,” relative to alternative packets of DNA, competing for representation on future chromosomes.

It is important to note that when it comes to evolutionary implications of human behavior, inferences from our closest biological relatives are only one way of proceeding. And since this avenue is blocked—or rather, it leads in multiple directions, no one of which is more promising or likely to be objectively valid than another—let us explore another evolutionary perspective, namely, that which derives from considering the dynamics of natural selection itself. In short, how, precisely, does evolution by natural selection

influence us when it comes to predispositions for violence and war?

The answer is complex and quite unsatisfying for anyone seeking simple yes or no answers.

On the Visibility of Violence

Adding to the complexity is the fact that people generally pay considerable more attention to violence and war than to nonviolence and peace. Consider, for example, that desert-dwelling Bedouin have more than 100 words for “camel,” including not only whether it is male or female but if a given animal is gentle or vicious, fast or slow, strong or weak, easily mastered or stubborn, etc. Similarly, the Inuit (“Eskimos”) are said to have more than ten different words for what in English is simply designated “snow.” The take-home message is that when something is considered important or especially interesting, people become quite specific when designating it.

Now, consider that there are many different phrases used to identify various wars: We have the Peloponnesian War, the Hundred Years’ War, the American Civil War, the Vietnam War, and so forth, ad nauseam. By contrast, the English language doesn’t even have a plural form—“peaces”—to match its intensive focus upon different wars, even though, for example, the peace that obtained in Europe between the Franco-Prussian War (1872) and the onset of World War I was presumably quite different from that occurring in the interim between World War I and World War II. Peace, in short, is widely treated as a comparatively uninteresting, unimportant, and mostly inconsequential homogeneous interregnum between what really matters: wars.

In itself, this isn’t surprising. After all, given the biological as well as the social import of such episodes, it is reasonable that we might be especially attentive to such events. By the same token, consider the journalist’s chestnut “If it bleeds, it leads.” You are unlikely, for example, to encounter a headline or Internet posting that announces “France and Great Britain Did Not Go To War

Today,” although a bloody encounter—even involving a mere handful of participants—will probably be breathlessly covered.

Mohandas Gandhi (1951) recognized this asymmetry of attention pointing out that the daily reality of personal nonviolent conflict resolution is something that we take for granted:

History is really a record of every interruption of the working of the force of love or of the soul. Two brothers quarrel; one of them repents and reawakens the love that was lying dormant in him; the two again begin to live in peace; nobody takes note of this. But if the two brothers, through the intervention of solicitors or some other reason, take up arms ... their doing so would be immediately noticed by the press, they would be the talk of their neighborhood and would probably go down in history. And what is true of families and communities is true of nations ... History, then, is a record of an interruption of the course of nature.

On the Adaptive Significance of Peace

It can reasonably be argued that human society itself owes its very existence to our species’ pro-social inclinations and thus, to some extent, our innate capacity for nonviolent conflict resolution. Nonetheless, by a process of selective awareness of the sort that Gandhi warned about, warlike societies—including but not limited to the Yanomamo—have generated attention from scholars and the public alike, out of proportion to their actual significance as exemplars of the untrammelled human condition. And the danger is that out of such selective attention (which might well be adaptive in itself, in view of the importance of such uncommon but consequential events), there arises a distinctly maladaptive assumption that such violence is the human norm.

There are many routes whereby evolutionary success is achieved, of which aggressiveness and violence represent only one potential axis and one that is actually more restricted than is widely believed. Imagine, for example, a bull elk that spends much of his time and energy threatening and fighting with other bulls; his aggressive disposition is itself very much a product of natural

selection, which rewarded his ancestors who behaved intolerantly and often violently toward competing bulls. Those who came out ahead in the resulting head-to-head or rather antler-to-antler contests were the ones who projected their gene-influenced violent inclinations to their progeny. Score one for evolution-inspired violence.

And yet, these violence-prone individuals would not necessarily be selected for, at least not when they carried their intolerant aggression too far. It has been observed, for example, that in such cases, peripheral “sneaky” males, who are unaggressive, often succeed in copulating with females while the harem master is otherwise engaged.

Among birds, the phenomenon of “aggressive neglect” has been reported, whereby individuals—once again, typically males—spend so much time interacting aggressively with their territorial neighbors that they are insufficiently attentive when it comes to provisioning their own offspring. Such inappropriately violence- and threat-prone individuals are literally less fit than others whose agonistic behavior is less pronounced.

Predation Is Not War

Another common misunderstanding of the role of evolution with regard to aggression and violence concerns the extent to which predation can and should be generalized. To be sure, predation involves violence, but it should be sharply distinguished from the threats, aggression, and violence that often occur within a species. Thus, predation is an *interspecies* phenomenon that is quite different from the *intraspecies* behaviors that characterize our concern for human violence and war. A leopard that is hunting zebra, for example, typically makes itself inconspicuous and, if successful, performs its predatory act promptly, efficiently, and without any indication that it is in any way “angry.” By contrast, that same leopard, when defending its hunting territory from possible encroachment by another leopard, will manifest a variety of postures and vocalizations that make it more conspicuous, rather than less, and its behavior as reflected in its facial expressions and body posture will be much

closer to what human beings readily interpret as “angry” indeed. The brain regions involved in interspecies predation and intraspecies aggression are also quite distinct.

The upshot of this with respect to human violence is that regardless of the validity of the popular image of early human evolution as being based upon “man the hunter,” there are no direct implications for “man the war maker.” In addition, although natural selection often mandates competition among individuals of the same species (leopards with other leopards, squirrels with other squirrels, etc.), an enormous contribution of evolutionary relevance comes from the impact of many other traits: an individual’s success in establishing himself or herself within a larger social unit; in attracting and keeping a suitable mate; in rearing successful offspring, not to mention success in resisting disease; in dealing with various non-biological environmental factors (drought, floods, etc.); and so forth. Head-to-head competition is only one among many other considerations when it comes to how natural selection influences the behavior of all living things, human beings not least.

Making things even more ambiguous, there is a viable converse of the “Man the Hunter” trope, namely, “Man the Hunted.” Perhaps we weren’t shaped so much by the differential success of ancestral hunters than by our predecessors’ ability to avoid becoming victims of other creatures that hunted us. As Paul Trout (2012) makes clear in his fascinating *Deadly Powers: Animal Predators and the Mythic Imagination*, the important distinction, from a human point of view, is not between animals and humans but between animals that we eat and those that eat us. And in this regard, too, there are many different narratives. On the one hand, perhaps primitive humans harvested their group-focused predatory skills in the service of group-focused, intraspecific violence (i.e., early war). Or maybe we were victims more than initiators. It is also possible that even as victims, our early species-wide experience as such may have set the stage for various adaptations that migrated from anti-predator, interspecific defense to anti-competitor, intraspecific warfare, as suggested by Barbara

Ehrenreich in her fascinating book, *Blood Rites: origins and history of the passions of war* (Ehrenreich 1998). Given our present state of knowledge, the only safe conclusion is that we may to some extent be endowed by evolution with a capacity for group violence, or maybe not!

The Paradox of Altruism

Another example of the Janus-faced impact of evolution upon human peacefulness versus violence concerns the complex question of altruism. For biologists, altruism is not a matter of subjective intentionality—doing good by conscious decision—but, rather, a result of the objective consequences of certain behavior. Thus, it has long been theoretically troublesome (at least for evolutionists) that some individuals, animals as well as human beings, regularly engage in actions that reduce the personal reproductive success of the individual in question while increasing that of someone else. From a straightforward (and, we now realize, naïve) perspective, such behavior is genuinely paradoxical since it should be strongly selected against; any individual who altruistically benefits other individuals along with their genes should be less fit than one who selfishly looks out only for his or her genetic success. In short, genuine altruism should not exist.

And yet, altruism abounds in nature, and not only among human beings. Prairie dogs give alarm calls when they spot a coyote, even though doing so subjects the alarmist to greater risk of predation than if it simply kept quiet and allowed the other members of the prairie dog colony to suffer the consequences of their relative inattentiveness. Many flock-dwelling birds give a specialized “food call” when they locate a nutritious payload, even though doing so means that their discovery will then be shared, resulting in fewer calories for the discoverer than if she had selfishly remained silent. Given the starkly nonethical algorithms that underlie evolution by natural selection, such altruistic, selfless behavior—if it arose, say, by mutation—should promptly have disappeared, having been selected against.

Most challenging was the long-standing recognition that certain insects in particular (the social wasps, bees, and ants) practice an extreme form of altruism in that whole castes of “workers” remain nonreproductive, laboring instead for the breeding success of another individual, the queen.

These paradoxes have largely been solved with the stunning realization that since evolution by natural selection proceeds via the differential reproduction of genes, those genes that predispose their bodies toward seemingly altruistic acts can readily be favored so long as they ultimately provide sufficient benefit to identical copies of themselves, housed in other bodies, to compensate for the cost incurred by the altruist. As a result, what appears to be an altruistic behavior at the level of organisms is often selfish, at the level of the genes in question. An alarm-calling prairie dog is actually behaving in a way that enhances the fitness of its alarm-calling genes when by virtue of its “altruistic” act, it conveys sufficient benefit to identical copies of itself, present in those other prairie dog bodies that are enabled to survive and reproduce by virtue of the warning they receive. By the same token, food calling, although it often reduces the nutritional payoff to the caller, can “pay for itself” at the genetic level insofar as it delivers enough benefit to genes that generate food calling within the bodies of those who hear and respond, even if the caller herself is less reproductively successful as a result.

Even the so-called eusocial (“perfectly social”) insects conform to this explanatory model, in that they are notably “haplodiploid,” with haploid males developing from unfertilized eggs, whereas females are diploid. As a result, worker bees, ants, and wasps are actually more closely related to their full-sib sisters (by a factor of .75), than to their own offspring (.50), were they to reproduce. Accordingly, such workers and their constituent genes are more fit staying home and helping their mother, the queen, to reproduce, than they would be if they attempted to rear a family of their own.

The underlying insight in such cases is known as “inclusive fitness,” the maximization of which is recognized by most evolutionary biologists as

the fundamental driving force of evolution by natural selection. When Richard Dawkins coined the phrase “selfish gene,” he was speaking metaphorically, as though genes had personalities and intentionality, which of course they don’t. It would have been equally accurate—although less attention grabbing—had “altruistic gene” been used instead. In any event, the important point for our purposes is that evolutionary pressures do not operate unilaterally in a simplistic way, promoting selfishness and its more physically vigorous cousin by extension, violence. Once again, our bequest from evolution no more favors simple selfishness than it mandates altruism, just as it is no more convivial to violence than to peace.

Neither War nor Peace Is “More Natural”

This hints at yet another example of how an evolutionary perspective has often been mistaken to privilege aggression and violence over conflict avoidance/resolution and peace. It is widely assumed that the former is necessarily biological and the latter cultural; thus, that aggression and violence are closer to our “natural” inclinations as opposed to peaceful motivations, which are often considered to be more “artificial,” having been superficially and artificially imposed upon a ravening core of innate violence. (This harkens back, in a sense, to Freud’s view of the id, as a more deeply seated, biologically generated core of violence and sex, as opposed to the ego and especially the superego, which is generated by cultural pressures and is therefore more vulnerable to disruption.)

Biological reality, however, is quite different. Many animals engage in behaviors that turn down the violence thermostat, using numerous techniques of reconciliation and peacemaking. And human beings are no exception. It is often the case—perhaps even overwhelmingly so—that various nonviolent tactics (avoidance, subordination displays, reassurance activities, as well as nonviolent competitions such as singing duels) contribute more to the ultimate fitness of their

practitioners than do recourse to violence, with its risk of injury and potential lethality. It cannot be emphasized too strongly that such behaviors are no less biological, and no less “natural,” than are their more blood-stained alternatives.

To some extent, we are indeed naturally selfish and, on occasion, naturally violent, but it is no less true that we are also naturally altruistic and, on occasion, naturally peaceful. There is, in short, no basis for an evolutionary-derived pessimism about the human potential for peace.

Cultural Evolution and Brain Evolution

That potential, along with the ability to choose, must of course somehow exist within the biological organ that most distinguishes *Homo sapiens* from other animals: the human brain. During the evolution of our species, our brain—especially the part devoted to higher cognitive functions, the cerebral hemispheres—increased dramatically in size, strongly implicating selection for increase brainpower. We know, in short, that we are smart and that our smartness is a deep part of our humanity. What we don’t know, however, is how our ancestors achieved this distinctness: What drove the rapid increase in human brain size and capacity. Not surprisingly, interpretations vary, and once again, there are potential lessons to be drawn on both sides of the war/peace and violence/nonviolence debate.

One perspective suggests that human beings owe their big brains to war, or more precisely, to intergroup violence. A case can indeed be made that the greatest threat to our primitive hominin ancestors came from other primitive hominins. It is exceedingly likely that by the mid-Pleistocene, our apelike forebears lived in coherent social groups. Early in our shared evolutionary past, we also developed primitive but effective tools, including hunting implements as well as limited control of fire. With likely competition for resources—territories for hunting and gathering, safe sleeping trees and/or suitable caves, access to good water sources, as well as access to fertile

mates—it is plausible that having largely succeeded in ecologically dominating other large mammals, it came to pass that the greatest threats to the survival and success of australopithecines as well as early members of the genus *Homo* were other similar creatures.

Given that our early cultural evolution would have reduced, at least somewhat, the fitness payoff of sheer size and strength, selection would also likely have been influenced by the comparative abilities of competing prehuman bands to make and wield tools (especially weapons), along with the capacity to communicate within each group so as to coordinate actions. The rather depressing consequence of such a scenario is that to a substantial degree, we may owe our large brains to successful intergroup warfare.

Once again, however, there are alternative narratives, which point in a diametrically opposed direction (Barash 2012). For one thing, effectiveness in waging war—even its non-technological predecessors—depends on communication and coordination within the warring group. Even accepting the hypothesis that intergroup war was a major (perhaps even *the* major) driver of human brain evolution, therefore placing substantial emphasis on peaceful, pro-social virtues. More significant is the competing hypothesis that brain evolution derived from the adaptive significance of effective and complex social communication and coordination, irrespective of anything remotely resembling early war. Psychologists and primatologists have been emphasizing, for example, the likely selective pressures generated by the “Machiavellian intelligence” required to influence the perceptions and behavior of other group members, as well as the powerful benefits of achieving effective theory of mind, which enables accurate predictions about the actions of others and which, in turn, requires substantial brainpower on the part of a successful “theorist.”

Compared to other savannah-dwelling animals, hominins are notably weak bodied, something that was even more pronounced among our more immediate predecessors, whose evolutionary success doubtless relied heavily—if not entirely—on their ability to employ tools not

only to obtain prey but also to drive scavenging creatures from kills, prepare food, dig efficiently for tubers, carry food back to camp, construct shelters, and so forth. These activities would almost certainly convey a reproductive advantage to those of our ancestors who were especially adroit, and not simply as warriors.

Moreover, as life became more complicated, it would doubtless have become increasingly important to convey knowledge of all sorts to one’s offspring, who had a lot to learn. The fact that human young are remarkably helpless compared to nearly all mammals, requiring many years of protection as well as instruction, would lend adaptive significance to those parents who were intelligent enough to be effective teachers, not to mention the ultimate payoff obtained by those youngsters who were smart enough to be good learners.

The bottom line with regard to brain evolution, once again, is that although it could have been facilitated and accelerated by early war, it also might not have been!

Condemned to Be Free

At this point, readers looking to evolution for guidance can be forgiven if they feel confused, even frustrated by the not-so-simple fact that our biological heritage is so ambiguous or—if you prefer—ambivalent. Either way, although it is definitely worthwhile to interrogate our evolutionary background for indications as to our predilections, the answers lead us to Jean-Paul Sartre’s famous formulation that human beings are “condemned to be free.” Whether devotees of peace choose to be relieved that we are not biologically obliged to war or to be distraught that by the same token, we are not unilaterally predisposed, through our biology, to peace, we are all stuck with an obligation (if not necessarily a predisposition) to respond to Sartre’s simple, daunting, existentialist challenge: “You are free. Choose.”

And so, even as we choose to support untrammelled, data-based, ideologically unmoored

empirical and theoretical inquiry into everything—including the nature of human nature—we would also do well to keep in mind that these choices have consequences, and not just with respect to our science. I have heard the following story, said to be of Native American origin (ostensibly Cherokee), but have been unable to confirm it. Whether “true” or not—in the sense of being a genuine folktale—it is certifiably true for my purposes, as a statement of the human condition and something that supporters as well as critics of Napoleon Chagnon’s research might be well advised to take into account. A young child was greatly frightened by her dream, in which two wolves fought viciously, growling and snapping their jaws. Hoping for solace, she described this dream to her grandfather, a wise and highly respected elder. The grandfather explained that, “There are two wolves within each of us, one of them benevolent and peace-loving, the other malevolent and violent. They fight constantly for our souls.”

At this, the child found herself more frightened than ever and asked her grandfather which one wins. He replied, “The one you feed.”

References

- Ardrey, R. (1961). *African genesis: A personal investigation into the animal origins and nature of man*. New York: Macmillan.
- Barash, D. P. (2012). *Homo mysterious: Evolutionary puzzles of human nature*. New York: Oxford University Press.
- Calvin, J. (2012). *The complete biblical commentary collection of John Calvin*. Seattle, WA: Amazon Digital Services.
- Chagnon, N. (1968). *Yanomamo: The fierce people*. New York: Holt McDougal.
- Dart, R. A. (1953). The predatory transition from ape to man. *International Anthropological and Linguistic Review*, 1, 201–217.
- Ehrenreich, B. (1998). *Blood rites: Origins and history of the passions of war*. New York: Holt.
- Fry, D. P. (Ed.). (2013). *War, peace and human nature: The convergence of evolutionary and cultural views*. New York: Oxford University Press.
- Gandhi, M. K. (1951). *Non-violent resistance*. New York: Schocken Books.
- Geisel, T. (“Dr. Seuss”). (1990). *Oh, the places you’ll go*. New York: Random House.
- Skinner, B. F. (1971). *Beyond freedom and dignity*. New York: Knopf.
- Trout, P. (2012). *Deadly powers: Animal predators and the mythic imagination*. Amherst, NY: Prometheus.