

IT AIN'T NECESSARILY SO

When Rudyard Kipling first published his fables about how the camel got his hump and the rhinoceros his wrinkly folds of skin, he explained that they would lull his daughter to sleep only if they were always told “just so,” with no new variations. The “Just So Stories” have become a byword for seductively simple myths, though one of Kipling’s turns out to be half true.

The Leopard and the Ethiopian were hungry, the story goes, because the Giraffe and the Zebra had moved to a dense forest and were impossible to catch. So the Ethiopian changed his skin to a blackish brown, which allowed him to creep up on them. He also used his inky fingers to make spots on the Leopard’s coat, so that his friend could hunt stealthily, too—which now seems to be about right, minus the Ethiopian. A recent article in a biology journal approvingly quotes Kipling on the places “full of trees and bushes and stripy, speckly, patchy-blatchy shadows” where cats have patterned coats. The study matched the coloring of thirty-five species to their habitats and habits, which, together with other clues, is hard evidence that cats’ flank patterns mostly evolved through natural selection as camouflage. There are some puzzles—cheetahs have spots, though they prefer open hunting grounds—but that’s to be expected, since the footsteps of evolution can be as hard to retrace as those of a speckly leopard in the forest.

The idea of natural selection itself began as a just-so story, more than two millennia before Darwin. Darwin belatedly learned this when, a few years after the publication of “On the Origin of Species,” in 1859, a town clerk in Surrey sent him some lines of Aristotle, reporting an apparently crazy tale from Empedocles. According to Empedocles, most of the parts of animals had originally been thrown together at random: “Here sprang up many faces without necks, arms wandered without shoulders . . . and eyes strayed alone, in need of foreheads.” Yet whenever a set of parts turned out to be useful the creatures that were lucky enough to have them “survived, being organised spontaneously in a fitting way, whereas those which grew otherwise perished.” In later editions of “Origin,” Darwin added a footnote about the tale, remarking, “We here see the principle of natural selection shadowed forth.”

Today’s biologists tend to be cautious about labelling any trait an evolutionary adaptation—that is, one that spread through a population because it provided a reproductive advantage. It’s a concept that is easily abused, and often “invoked to resolve problems that do not exist,” the late George Williams, an influential evolutionary biologist,

warned. When it comes to studying ourselves, though, such admonitions are hard to heed. So strong is the temptation to explain our minds by evolutionary “Just So Stories,” Stephen Jay Gould argued in 1978, that a lack of hard evidence for them is frequently overlooked (his may well have been the first pejorative use of Kipling’s term). Gould, a Harvard paleontologist and a popular-science writer, who died in 2002, was taking aim mainly at the rising ambitions of sociobiology. He had no argument with its work on bees, wasps, and ants, he said. But linking the behavior of humans to their evolutionary past was fraught with perils, not least because of the difficulty of disentangling culture and biology. Gould saw no prospect that sociobiology would achieve its grandest aim: a “reduction” of the human sciences to Darwinian theory.



“You’d tell me if I was genetically modified?”

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This was no straw man. The previous year, Robert Trivers, a founder of the discipline, told *Time* that, “sooner or later, political science, law, economics, psychology, psychiatry, and anthropology will all be branches of sociobiology.” The sociobiologists believed that the concept of natural selection was a key that would unlock all the sciences of man, by revealing the evolutionary origins of behavior.

The dream has not died. “Homo Mysterious: Evolutionary Puzzles of Human Nature” (Oxford), a new book by David Barash, a professor of psychology and biology at the University of Washington, Seattle, inadvertently illustrates how just-so stories about humanity re-

main strikingly oversold. As Barash works through the common evolutionary speculations about our sexual behavior, mental abilities, religion, and art, he shows how far we still are from knowing how to talk about the evolution of the mind.

Evolutionary psychologists are not as imperialist in their ambitions as their sociobiologist forebears of the nineteen-seventies, but they tend to be no less hubristic in their claims. An evolutionary perspective “has profound implications for applied disciplines such as law, medicine, business and education,” Douglas Kenrick, of Arizona State University, writes in his recent book “Sex, Murder and the Meaning of Life.” The latest edition of a leading textbook, “Evolutionary Psychology: The New Science of the Mind,”

by David Buss, of the University of Texas at Austin, announces that an evolutionary approach can integrate the disparate branches of psychology, and is “beginning to transform” the study of the arts, religion, economics, and sociology.

There are plenty of factions in this newish science of the mind. The most influential sprang up in the nineteen-eighties at the University of California, Santa Barbara, was popularized in books by Steven Pinker and others in the nineteen-nineties, and has largely won over science reporters. It focusses on the challenges our ancestors faced when they were hunter-gatherers on the African savanna in the Pleistocene era (between approximately 1.7 million and ten thousand years ago), and it has a snappy slogan: “Our modern skulls house a Stone Age mind.” This mind is regarded as a set of software modules that were written by natural selection and now constitute a universal human nature. We are, in short, all running apps from Fred Flintstone’s not-very-smartphone. Work out what those apps are—so the theory goes—and you will see what the mind was designed to do.

Designed? The coup of natural selection was to explain how nature appears to be designed when in fact it is not, so that a leopard does not need an Ethiopian (or a God) to get his spots. Mostly, it doesn’t matter when biologists speak figuratively of design in nature, or the “purpose” for which something evolved. This is useful shorthand, as long as it’s understood that no forward planning or blueprints are involved. But that caveat is often forgotten when we’re talking about the “design” of our minds or our behavior.

Barash writes that “the brain’s purpose is to direct our internal organs and our external behavior in a way that maximizes our evolutionary success.” That sounds straightforward enough. The trouble is that evolution has to make compromises, since it must work with the materials at hand, often while trying to solve several challenges at once. Any trait or organ may therefore be something of a botch, from the perspective of natural selection, even if the creature as a whole was the best job that could be done in the circumstances. If nature always stuck to simple plans, it would be easier to track the paths of evolution, but nature does not have that luxury.

In theory, if you did manage to trace how the brain was shaped by natural selection, you might shed some light on how the mind works. But you don’t have to know about the evolution of an organ in order to understand it. The heart is just as much a product of evolution as the brain, yet William Harvey figured out how it works two centuries before natural selection was discovered. Neither of the most solid post-Darwinian accounts of mental mechanisms—Noam Chomsky’s work on language and David Marr’s

on vision—drew on evolutionary stories.

Going by what Barash has to say about religion, Darwinian thinking isn't likely to transform our understanding of it anytime soon. We do not even know why we are relatively hairless or why we walk on two legs, so finding the origin of religious belief is a tall order. Undaunted, Barash explores various ways in which religion might have been advantageous for early man, or a consequence of some other advantageous trait. It might, for example, have been a by-product of our curiosity about the causes of natural phenomena, or of our desire for social connection. Or maybe religious beliefs and practices helped people coordinate with others and become less selfish, or less lonely and more fulfilled. Although he does not endorse any of these ideas—how could he, given that there's no possible way to know after all this time?—Barash concludes that it is “highly likely” that religion owes its origin to natural selection. (He does not explain why; this conclusion seems to be an article of faith.) He also thinks that natural selection is probably responsible for religion's “perseverance,” which suggests that his knowledge of the subject is a century out of date. Historians and social scientists have found quite a lot to say about why faith thrives in some places and periods but not in others—why, for the first time in human history, there are now hundreds of millions of unbelievers, and why religion is little more than vestigial in countries like Denmark and Sweden. It is hard to see what could be added to these accounts by evolutionary stories, even if they were known to be true.

One problem with trying to reconstruct the growth of the mind from Pleistocene materials is that you would need to know what varieties of mental equipment Stone Age minds already possessed. Even if a plausible-sounding story can be told about how some piece of behavior would have helped early hunter-gatherers survive and reproduce, it may well have become established earlier and for different reasons. Darwin underlined the temptations here when he wrote about the unfused bone in the heads of newborn humans and other mammals, which makes their skulls conveniently elastic. One might conclude that this trait evolved to ease their passage through a narrow birth canal, but it seems to result from the way vertebrate skeletons develop. Birds and reptiles hatch from eggs, yet they, too, have these sutures.

Textbooks in evolutionary psychology have proposed the hypothesis that the fear of spiders is an adaptation shaped by the mortal threat posed by their bites. In other words, we are descended from hominid wusses who thrived because they kept away from spiders. The idea is prompted by evidence that people may be innately primed to notice

and be wary of spiders (as we seem to be of snakes). Yet there is no reason to think that spiders in the Stone Age were a greater threat to man than they are now—which is to say, hardly any threat at all. Scientists who study phobias and dislikes have come up with several features of spiders that may be more relevant than their bites, including their unpredictable, darting movements. Natural selection would have played some role in the development of any such general aversions, which may have their origins in distant species, somewhere far back down the line that leads to us. But that's another story, one that evolutionary psychologists have less interest in telling, because they like tales about early man.

It would be good to know why some people love spiders—there is, inevitably, a Facebook group—while others have a paralyzing phobia, and most of us fall somewhere in between. But, with one large exception, evolutionary psychology has little to say about the differences among people; it's concerned mainly with human universals, not human variations. Perhaps this is why most psychologists, who tend to relish unusual cases, aren't yet rushing to have their specialties “integrated” by an evolutionary approach.

The exception is the differences between men and women: evolutionary psychologists are greatly concerned with sex, and with women's bodies. Barash speculates at length on why women don't have something similar to chimps' bright-pink sexual swellings to advertise their most fertile time of the month. There are several ways, he thinks, in which female hominids could have boosted their reproductive success by concealing their time of ovulation. Perhaps it was a game of “keep him guessing to keep him close”: if a male could not tell when his mate was fertile, he would have to stick around for more of the month to insure that any offspring were his and thereby, perhaps, provide better parental care. Among the other possibilities considered—some rejected, many not—are that concealed ovulation gave females more freedom in their choice of mates, perhaps by reducing the frenzy of male competition.

This is all quite entertaining—almost as entertaining as Barash's romp through eleven evolutionary theories about the “biological pay-off” of the human female orgasm, which unfittingly comes to no gratifying conclusion. But “concealed” ovulation seems to be an example of what George Williams called a nonexistent problem. Barash dismisses, on flimsy grounds, the idea that it is the florid advertisements of chimps that need explaining, and not our lack of them. Yet chimps are the exceptional ones in our family of the great apes, and there's reason to think that the most recent common ancestor of chimps and humans displayed, at most, only slight swellings around the time of

ovulation.

The simplest theory is that these swellings dwindled to nothing after our ancestors began to walk upright, because the costs of advertising ovulation in this way came to outweigh any benefits. Swellings could have made it harder to walk for several days each month, could have required more energy and a greater intake of water, and would be of less use as a signal when you were no longer clambering up trees with your bottom in males' faces.

A larger difficulty vexes evolutionary psychologists' sexual speculations in general. Especially on this topic, work in psychology can unwittingly accommodate itself to the folk wisdom and stereotypes of the day.

Darwin built the prejudices of Victorian gentlemen into his account of the evolution of the sexes. He wrote that man reaches "a higher eminence, in whatever he takes up, than woman can attain—whether requiring deep thought, reason, or imagination, or merely the use of the senses and hands," and he looked to the struggle for mates and the struggle for survival to explain why. He also noted that some of the faculties that are strongest in women "are characteristic of the lower races, and therefore of a past and lower state of civilization."

These days, what evolutionary psychologists have mainly noted about the sexes is that they look for different things in a mate. The evolutionary psychologists have spent decades administering questionnaires to college students in an effort to confirm their ideas about what sort of partner was desirable in bed before there were beds. "Men value youth and physical attractiveness very highly, while women value wealth and status (though they don't mind physical attractiveness too)," Dario Maestripieri, a behavioral biologist at the University of Chicago, bluntly summarizes in his new book, "Games Primates Play." It is also said that men are much more interested in casual sex; that sexual jealousy works differently for men and women (men are more concerned with sexual fidelity, and women with emotional fidelity); and that all these differences, and more, can be explained as the traces of behavior that would have enabled our distant ancestors to leave more descendants. Many such explanations arise from the idea that males have more to gain than females do by seeking a large number of mates—a notion that is ultimately based on experiments with fruit flies in 1948.

It's not inconceivable that in a hundred and fifty years today's folk wisdom about the sexes will sound as ridiculous as Darwin's. It will surely look a bit quaint. Sexual mores

can shift quickly: American women reared during the nineteen-sixties were nearly ten times as likely as those reared earlier to have had sex with five or more partners before the age of twenty, according to a 1994 study. As for women's supposedly inborn preference for wealth and status in a mate, one wonders how much can be inferred from behavior in a world that seems always to have been run by and for men. Although it is, in some places, now easier than ever for a woman to acquire power without marrying it, economic inequality has not disappeared. Even in the most egalitarian countries, in Scandinavia, the average earnings of male full-time workers are more than ten per cent higher than those of their female counterparts; and more than ninety per cent of the top earners in America's largest companies are men.

A study of attitudes toward casual sex, based on surveys in forty-eight countries, by David Schmitt, a psychologist at Bradley University, in Peoria, Illinois, found that the differences between the sexes varied widely, and shrank in places where women had more freedom. The sexes never quite converged, though: Schmitt found persistent differences, and thinks those are best explained as evolutionary adaptations. But he admits that his findings have limited value, because they rely entirely on self-reports, which are notoriously unreliable about sex, and did not examine a true cross-section of humanity. All of his respondents were from modern nation-states—there were no hunter-gatherers, or people from other small-scale societies—and most were college students.

Indeed, the guilty secret of psychology and of behavioral economics is that their experiments and surveys are conducted almost entirely with people from Western, industrialized countries, mostly of college age, and very often students of psychology at colleges in the United States. This is particularly unfortunate for evolutionary psychologists, who are trying to find universal features of our species. American college kids, whatever their charms, are a laughable proxy for *Homo sapiens*. The relatively few experiments conducted in non-Western cultures suggest that the minds of American students are highly unusual in many respects, including their spatial cognition, responses to optical illusions, styles of reasoning, coöperative behavior, ideas of fairness, and risk-taking strategies. Joseph Henrich and his colleagues at the University of British Columbia concluded recently that U.S. college kids are “one of the worst subpopulations one could study” when it comes to generalizing about human psychology. Their main appeal to evolutionary psychologists is that they're readily available. Man's closest relatives are all long extinct; breeding experiments on humans aren't allowed (they would take far too long, anyway); and the mental life of our ancestors left few fossils.

Perhaps it shouldn't matter whether evolutionary psychologists can prove that some trait got incorporated into human nature because it was useful on the African savanna. If they were really in the history business, they wouldn't spend so much time playing Hot or Not with undergraduates. A review of the methods of evolutionary psychology, published last summer in a biology journal, underlined a point so simple that its implications are easily missed. To confirm any story about how the mind has been shaped, you need (among other things) to determine how people today actually think and behave, and to test rival accounts of how these traits function. Once you have done that, you will, in effect, have finished the job of explaining how the mind works. What life was really like in the Stone Age no longer matters. It doesn't make any practical difference exactly how our traits became established. All that matters is that they are there.

Then why do enthusiasts for evolutionary psychology insist that politicians and social scientists should pay attention to the evolutionary roots of behavior? In theory, historical conjectures might point to useful patterns that hadn't been noticed before, though convincing examples are hard to come by.

One much discussed study, from the early nineteen-eighties, by the Canadian psychologists Martin Daly and Margo Wilson, suggests that parents are more likely to abuse stepchildren than to abuse their own offspring. They reasoned that our distant ancestors would have left more descendants by focussing their care on their own children, with the result that people today would on the whole feel less love for stepchildren than for biological ones. Daly and Wilson found, by analyzing child-abuse data, that men are indeed much more likely to murder their stepchildren than to murder their natural children. After thirty years, this rare gem is still advertised as a triumph for evolutionary psychology.

"Hamlet" and "David Copperfield" notwithstanding, wicked stepmothers are more common in folklore and literature than wicked stepfathers, so perhaps it did come as news that the latter can be villains in real life. (This is one up for Rossini, who presciently switched the roles in his version of "Cinderella" and gave her a wicked stepfather instead.) But whether these findings are useful for detecting or preventing violent abuse is another question, even putting aside the issue of whether the evolutionary explanation is right. Most children don't have stepfathers, most stepfathers don't abuse anyone, and many more children suffer at the hands of their natural fathers. Studies that assess a large number of the risk factors for violent abuse or neglect—as a study at Columbia University did in 1998—consistently find that the presence of a stepfather isn't a signifi-

cant marker of risk. (The presence of a stepfather *is* a significant marker for the sexual abuse of girls. But Daly and Wilson's theory makes no prediction about this, and it's a well-known phenomenon.)

Evolutionary psychologists point to other studies that they claim have practical significance. Mating strategies are thought to help explain why young men are much more violent than old women, which has led researchers to chart the ages of killers around the world. (The theory is that young men in ancestral environments would have got the best reproductive results by taking dangerous risks to compete for mates and status.) A knowledge of these patterns may be useful one day. Still, when a youth is knifed outside a night club, no cop needs evening classes in evolutionary psychology to realize the folly of rounding up grannies. It has also been claimed, in an academic journal, that books of tips by pickup artists show how the insights of evolutionary psychology can pay off in real life, or at least in bars. Field research into this is no doubt ongoing.

Barash muses, at the end of his book, on the fact that our minds have a stubborn fondness for simple-sounding explanations that may be false. That's true enough, and not only at bedtime. It complements a fondness for thinking that one has found the key to everything. Perhaps there's an evolutionary explanation for such proclivities. ♦