

## A BOZO OF A BABOON

### A Conversation with Robert Sapolsky

[June 2003]

*For the humans who would like to know what it takes to be an alpha man—if I were 25 and asked that question, I would certainly say competitive prowess is important—balls, translated into the more abstractly demanding social realm of humans. What's clear to me now at 45 is, screw the alpha male stuff, go for an alternative strategy. Go for the social affiliation, build relationships with females, don't waste your time trying to figure out how to be the most adept socially cagy male-male competitor. Amazingly enough, that's not what pays off in that system. Go for the affiliative stuff and bypass the male crap. I could not have said that when I was 25.*



#### Introduction

While an undergraduate at Harvard, Robert Sapolsky asked himself: "Am I a neurobiologist? Am I a zoologist?" He has spent the past 25 years reconciling his interest in being a lab scientist using "a very reductive approach to figure out how the brain works" with his work in figuring out primate physiology and social behavior in East Africa.

These areas come together in his thesis that "moral development is very heavily built around...the frontal cortex." According to Sapolsky, this is "the part of the brain that keeps us from belching loudly during the wedding ceremony, or telling somebody exactly what we think of the meal they made, or being a serial murderer. It's the part of the brain that controls impulsivity, that accepts the postponement of gratification, that does constraint and anticipation, and that makes you work hard because you will get into an amazing nursing home one day if you just keep pushing hard enough. It's all about this very human realm of holding off for later."

His ideas run counter to what he terms "a dogma of neural development...that by the time you're a couple of years old, you have your maximal number of neurons, and all of them are wired up and functioning." He maintains that "we make new neurons throughout life, and parts of the brain don't come fully online until later. And, amazingly, the last area to do so is the frontal cortex, not until around age 30 or so. It's the last part of the brain to develop, and thus it's the part whose development is most subject to experience, environment, reinforcement, and the social world around you. That is incredibly interesting."

So what does this have to do with "a wonderful guy I named Benjamin. A total Bozo of a baboon"? Read on...

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ROBERT SAPOLSKY is a professor of biological sciences at Stanford University and of neurology at Stanford's School of Medicine. He is also a research associate at the National Museum of Kenya. While his primary research, on stress and neurological disease, is in the laboratory, for 23 years he has made annual trips to the Serengeti of East Africa to study a population of wild baboons and the relationship between personality and patterns of stress-related disease in these animals. He is the author of *Behave*, *Why Zebras Don't Get Ulcers*, *The Trouble with Testosterone*, *A Primate's Memoir*, and *Monkeyluv*.

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## A BOZO OF A BABOON

ROBERT SAPOLSKY: As a 20-year-old doing field research in Africa, my sense of manly competence was not terribly well-glued into shape. One baboon was

there from the very first year, a wonderful guy I named Benjamin. A total Bozo of a baboon, he was my equivalent out there. He was not pulling off the male-male competition very effectively; he was not pulling off the male-female affiliation stuff very well. His hair was almost as disheveled and unkempt as mine, and he was the first baboon in the troop who ever interacted with me. For some bizarre reason he was interested in me, and I utterly bonded with him. Unfortunately, in his prime adult years he spent about a year being a complete jerk, but he fell out of that soon enough. We even named our six-year-old son after him, but he's considerably more socially gifted than Benjamin, the baboon.

Once in the middle of the open savannah, a troop of about a hundred baboons was foraging over a couple of square miles, where they would come together at the end of the day. When you're foraging you get really hot, and so you sit under a bush and take a nap for a while. I was doing a 30-minute observational sample on Benjamin, and during that time he fell asleep. As I sat there watching what was not one of the more riveting samples I've ever had, the rest of the troop wandered off.

Benjamin eventually woke up, right around the time I was finishing the sample. I realized I had no idea where the other baboons were and he had no idea either. He climbed a tree and gave a loud vocalization call. It's a two-syllable wahoo call, and you can hear it for a mile in any direction, and usually somebody yells back. But they were too far away to hear his wahoos. He was up in the top of the tree, and getting anxious, so I climbed on top of my vehicle with my binoculars and finally spotted the baboons three hills over, and moving away really fast. And we had one of those things—God help my Joe scientist credentials here—but we looked at each other, and I got into the car and started driving and he trotted alongside.

I waited for him, and at one point he crossed a stream and I had to go a half mile up to another point to cross, and he waited for me. Together we found the baboons. As far as I could tell nobody gave a shit that he had been away, and they didn't seem particularly pleased to see me either. But it was like in the Diane Fossey movie, when she touched fingers with Digit for the first time. I understand how intense it was for her. This was the nearest I had gotten to a baboon—a baboon is not a gorilla, unfortunately—that first instant when he waited for me to get back from crossing the stream. The unsentimental interpretation is Benjamin realized I knew where the troop was: this guy has got more information than I do so I'd better stick with him, but I'm going to dump him first chance. The irresistible more sentimental interpretation was that Benjamin and I had bonded across the species.

Years afterward, when I'd be sitting on a log, observing somebody else, Benjamin was always the most likely baboon in the troop to come over and sit down, not quite next to me, maybe four or five feet away. Being close enough to hear a baboon's stomach rumbling is an amazing experience, but he was the only one that would do that consistently.

So, how did I get from Brooklyn to hanging out with this Bozo of a baboon in a national park in East Africa?

I've noticed that about three-quarters of the people who wind up doing zoological fieldwork grew up in the field; their parents were researchers or missionaries, and they inherited the family business. The other quarter grew up in some total hell-hole of an urban neighborhood and at some point managed to stumble into the Natural History Museum. They became captivated by the first glass case they saw and decided that they would study geckoes or horseshoe crabs forever. My experience happened to focus on non-human primates. I grew up in a horrendous neighborhood in Brooklyn that's mostly famous for the worst tribal violence west of Kosovo. The notion that there are places where you can learn about natural history and that you can actually get the hell out of Brooklyn was very appealing to me.

I became interested in natural history when I was eight years old. My parents saw it as a passing phase—and still do. It's an annual question from my mother: "Does that mean you're not going back to Africa, now that you have a Ph.D.?" or "...now that you have a faculty job?" or "...now that you're married and have kids?"

My father was an architectural historian, so I was pulled into archaeology and an obsession with Egyptology very early. I could easily have gone the dinosaur route, but instead absolutely turned to primatology. George Schaller's book, *The Year of the Gorilla*, documenting the first fieldwork with gorillas he did over six months in the '50s, convinced me. Today people do 30-year-long studies, but at the time this was a landmark. The idea that you can live in hiking shoes in a tent with a population of primates was galvanizing to me. By the time I was 10, I was sending fan letters to primatologists. I still run into some of them at meetings, and although they're all retired now, they remember the crayon-scrawled letters that they'd get from me now and then.

By the time I got to Harvard, I was all set to do nothing but primatology. I was studying bioanthropology in the fall of my freshman year when E. O. Wilson published *Sociobiology* and it was the required text in four out of five of my classes. This was the period of Gould, Trivers, Lewontin, Skinner, and Chomsky all battling with each other, and there were amazing intellectual fireworks.

It was a totally fascinating period, because it was just incredibly contentious stuff. Richard Herrnstein was there at the time doing his IQ heritability stuff in the middle of the Cyril Burt scandal. Burt had done all of the classic studies on IQ heritability for 50 years in the UK, almost single-handedly created a stratified educational system in Britain, and had died a few years before. He had been knighted, and was as honored as you could possibly be, but right around that time it became fairly convincing that he had fabricated a large percentage of his life's work.

This wasn't just fudging a number or cleaning up the data—he invented nonexistent collaborators and co-authors. All his research hammered on the point that IQ is highly heritable. It was a very contentious period. Every evening all of us would be screaming at each other at the dinner table over subjects like this, and there were dormitory lecture series by various gray beards and various fights running. One week Chomsky would come and we would spend the next week being Chomskyites, and the next week B. F. Skinner would come and we'd be Skinnerians the week after. We eventually got a sense of the sheer personalities of these people.

Richard Lewontin was fascinating. He was one of the most ideologically consistent people I've ever seen, in terms of his leftist views, ones that I agree fairly heavily with. It takes a lot of work to do abstract basic science in such a way that every step clearly reflects your notion of what the world is like and what aspects need to be remedied.

At some point my house at Harvard was looking for a new housemaster. The usual deal was to get someone appointed who promised new carpets or some such improvement. A bunch of us decided that we needed to seize control and select our next housemaster and decided that it was going to be Lewontin. I was actually sent to interview him, and he came up with all these crazy, wonderfully communalist schemes. He was going to set up a repository of term papers in the house so that anybody could consult any paper and copy it, for example. Word eventually trickled down from on high that he was most certainly not going to be the next housemaster, and that we should just forget about it. It was not clear he had any desire to be our housemaster, or if this was more nose-thumbing, but he was a formidable political presence, and one of the radiating bodies on the scene there.

A lot of those fires have cooled down. Herrnstein had a last salvo with *The Bell Curve* just before he died, but the most contentious neo-'60s intellectual scientific debates in the '70s died down. There are still spurts, but in a lot of ways it became fairly clear at the far left end that it's a pretty optimistic endeavor to think that

science is going to do a whole lot of social good. Most of the steam has come out of that idea.

Meanwhile people on the sociobiological end figured out how to repackage themselves. They got rid of that label because it had so many bad connotations and reinvented themselves as evolutionary psychologists. They did it at a time when everybody else was more interested in hostile takeovers or cashing in on the '80s, so somehow it didn't ignite as a lightning rod. They're a perfectly respectable discipline, which means they have as many people saying they make no sense as do the literary analysts. Somehow they've reinvented themselves that way, and so a lot of the furor has died down.

A critical juncture in my own career occurred in my freshman year of college. I went to study with Irwin DeVore. He was the grand old man of baboon research and had done the first studies of baboons in the wild. During my freshman year he had a minor heart attack and canceled his classes. So, on a whim, I took an introductory neurobiology class and was blown away by the possibility of getting at some of the issues I'd been thinking about—complex social behaviors and individual personality differences—instead of an evolutionary model of explanation.

From this angle you could begin to understand what's going on in the brain.

That generated a crisis in me for the rest of college. I asked myself, "Am I a neurobiologist? Am I a zoologist?" If I was going to spend the rest of my life in a tent in hiking shoes, what was I doing pipetting stuff in a lab at two in the morning and oscillating between lab and primate research. Still uncertain at the end of college, I delayed graduate school in neurobiology for a year and a half to go out and start this baboon field project. It looked like I was heading in the direction of neurobiology, and I wanted to get at least one shot out there in the field. But I came back realizing there was no way in hell that this was going to be my only time out in the field. Ever since I have been dealing with an intellectual tension that vacillates between the two ends.

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Sometimes it's as interesting to study primate researchers as it is to study the apes, baboons, and monkeys. There's something of a caste system at work. There's a definite envy among the people who study monkeys of the folks who study the big glamor picture apes.

You feel as if you've crossed this species barrier divide and all of that, and the least you can wind up doing is getting something that makes tools. The monkey researchers feel subordinated by the ape researchers, but at least there's all these prosimian researchers we can dump on, making these snotty taxonomic arguments as to whether prosimians even count as primates.

If anything, the hierarchy usually runs within species. It's the style that at one extreme you've got excessive reductive types who are quantifying the number of blades of grass per hour that their species eats, and do time budget analyses as a function of the thickness of the ozone layer and their papers are total hard-ass science: it's math and it's equations, and often horrendously boring, at least to me. At the other extreme you have the people who have no idea how to do any quantitative science and they come back with the most amazing observations of stuff that strikes home. You've got cultural transmission and you've got tool use and you've got what appear to be psychiatric disorders and primates' grief, but all in this really unscientific framework. And each camp is utterly contemptuous of the other.

In terms of the two extremes, I'll just be nice enough to say that the reductionists tend to be behavior ecologist types, people who get in the pattern of counting numbers of leaves and are kind of stuck in that pattern for much of the rest of their life—it's a data-heavy end.

Then there's the "Oh, my God, these people have no numbers in their papers except the page numbers and the volumes, but what they're doing is interesting."

Admittedly, the latter is the crowd that changes our perception of ourselves as a species. Jane Goodall of course is the goddess of this realm. When you look at the people in between, the best example is Frans de Waal, who has brought rigorous, quantitative science on which can do bigtime statistical analysis, but he's looking at amazing questions of primate politics, and political behavior and coalitional stuff.

In that regard he has wedded the two traditions better than anyone. He's definitely the 600-pound gorilla in the field, as well he should be, but it depends heavily on whether or not you're a primate ecology type, the folks that are actually out there getting shot at by poachers—they get tremendous moral currency for what they're doing—versus the folks that are more vivisection oriented, working with captive primates. In some ways it's a very scattered community, utterly divided between hard-nosed scientific research basic science folks, versus the conservation folks versus the sentimentalist story tellers. It's a very odd community. And, as it turns out, it's a very un-housebroken community.

I've always been interested in figuring out how to assimilate being a basic lab scientist—locked up with a bunch of rats or a bunch of neurons growing in a dish, and using a very reductive approach to figure out how the brain works—with my alternative life of the past 25 years which has involved looking at primate physiology and social behavior in East Africa. It's been this process of trying to figure out how to bridge the bottom-up lab approach and the top-down field approach to begin to get a sense of where our individual differences come from, how experience shapes the brain, and how adverse experiences in the form of stress shape the brain. Not surprisingly, I don't feel as if I've merged the two halves very effectively.

In the last couple of years, I've realized where I want to take this in the next decade or so. This is one of those ideas that requires having kids since suddenly you find development to be fascinating. I've got a three-year-old and a six-year-old and what I'm finding most interesting right now is the realm of moral development. This interest is probably right on schedule for a parent of a kid in a certain range.

Moral development is very heavily built around a part of the brain I used to ignore because you don't find much of it in a lab rat: the frontal cortex. The frontal cortex is an incredibly interesting part of the brain, since it's the nearest thing we've got to a super-ego. It's the part of the brain that keeps us from belching loudly during the wedding ceremony, or telling somebody exactly what we think of the meal they made, or being a serial murderer. It's the part of the brain that controls impulsivity, that accepts the postponement of gratification, that does constraint and anticipation, and that makes you work hard because you will get into an amazing nursing home one day if you just keep pushing hard enough. It's all about this very human realm of holding off for later.

The most amazing thing is that there is a dogma of neural development. The dogma is that by the time you're a couple of years old, you have your maximal number of neurons, and all of them are wired up and functioning. But it turns out that we make new neurons throughout life, and parts of the brain don't come fully online until later. And, amazingly, the last area to do so is the frontal cortex, not until around age 30 or so. It's the last part of the brain to develop, and thus it's the part whose development is most subject to experience, environment, reinforcement, and the social world around you. That is incredibly interesting.

To put this in personal terms, my six-year-old might do something appallingly horrible and selfish and age appropriate to one of my three-year-old's toys. As a parent you swoop in and say, "This is not acceptable and you cannot do that." But just as I (or my wife who is a clinical nurse-psychologist, and so, pathetically, we



actually speak like this at home) am saying this, the other will say, "He can't help it; he doesn't have a frontal cortex yet," to which the first inevitably responds, "But how else is he going to get one?"

The concept of there being consequences to your actions is second nature to people who think about child development, and certainly about moral development in kids, but how does that get translated down to this nuts-and-bolts level of the brain? How does "How else is he going to learn about it?" turn into a frontal cortex that allows him someday to do the right thing even though it's the harder thing, and even though everybody else is doing something else? How does someone learn when it is important to step away from the crowd at the critical moment? This question is turning into the one that really fascinates me, and it's not a terribly easy problem to go after.

There's a famous passage in which Richard Dawkins responds to the argument that intrinsic to his metaphor of the selfish gene is an imperative: If genes are really selfish, the difference between "is" and "ought" is what life is about. He defends himself by saying that sometimes our genetic roots will lead us to less than appealing behaviors, but we have to learn to resist these imperatives. But somewhere in this philosophical critique is the question of where the "we" is in that sentence. Where's the "we" separate from our genes? In this case where's the "we" separate from the question of whether you have eleven neurons in your frontal cortex or two times eleven neurons, or a set of materialistic nuts and bolts serving as building blocks of the whole system. Where's the volition?

Bridging my interests in the lab and in the field winds up being hard because of this question of where we get the elements of personality that turn into impulsivity control. It's a couple of levels higher than what I typically do in my lab, which is to try to understand what stress does to a single neuron in a dish, and what that might have to do with depression or anxiety. At the same time it's a couple of levels below what I do with the baboons, which involves looking at who is successful in the highly competitive, back-stabbing baboon societies and what this has to do with physiology. You see the link when you observe at them for a week and realize that success is all about impulsivity control.

On the one hand there's the view of someone like Robert Ardrey that primate social competition is all about, who's got the biggest canines, the most muscle, and the biggest balls. This view is straight-ahead and deterministic. Later, a much more p.c. version came along that held that competition is all about social intelligence, forming coalitions, and being nice in your game theory. But what really happens is that you'll get some baboon that's absolutely physically adept and by Ardrey's logic should be doing just fine. He also knows how to use social

intelligence to form coalitions, and so by Howard Gardner's reckoning he should also be doing fine. However, at a critical moment he just can't stop himself from doing something stupid, impulsive, and disinhibited. Amid the physical prowess and the social intelligence, you look at the baboons that are most successful, and not coincidentally pass on more copies of their genes, and they simply have more impulsivity control.

Here's an example: When baboons hunt together, they'd love to get as much meat as possible, but they're not very good at it. The baboon is a much more successful hunter when he hunts by himself than when he hunts in a group because they screw up every time they're in a group. Say three of them are running as fast as possible after a gazelle, and they're gaining on it, and they're deadly. But something goes on in one of their minds—I'm anthropomorphizing here—and he says to himself, "What am I doing here? I have no idea whatsoever, but I'm running as fast as possible, and this guy is running as fast as possible right behind me, and we had one hell of a fight about three months ago. I don't quite know why we're running so fast right now, but I'd better just stop and slash him in the face before he gets me." The baboon suddenly stops and turns around, and they go rolling over each other like Keystone cops and the gazelle is long gone because the baboons just became disinhibited. They get crazed around each other at every juncture.

A typical male baboon is too impulsive and can't possibly do the disciplined thing. Baboons are far less disciplined than chimps and when you map their brain anatomy you notice that they don't have a whole lot of frontal cortical function. Even though there are tremendous individual differences among the baboons, they're still at this neurological disadvantage, compared to the apes, and thus they typically blow it at just the right time. They could be scheming these incredible coalitions, but at the last moment, one decides to slash his partner in the ass instead of the guy they're going after, just because he can get away with it for three seconds. The whole world is three seconds long—they're very pointillist in their emotions.

Baboons know what they're doing; they can play chess in their social landscape almost as well as chimps in terms of moving the right pieces around, but at the critical moment they simply can't stop themselves from doing the impulsive thing. I once watched a Frans de Waal film, *Chimpanzee Politics*, at a primate conference, and I was sitting next to another baboonologist. There is a scene where some chimp had just pulled off a brilliant Machiavellian maneuver, and the guy next to me turned and said, "Christ, that is what a baboon would be like if it had a shred of discipline or gratification-postponement." You're watching a species where most of their social complexity and social misery is built around the

fact that at every logical juncture there's a pretty good chance that they're not going to have enough frontal neurons to do the prudent thing, and instead they blow it. It's amazing to study.

In the future, the reductive scientific aspect of this will be to get some handle on the neurobiology of how we turn into moral, or less than moral, adults. This sounds grandiose, so a more obvious way to translate it is to ask what experience has to do with frontal development. But the undercurrent is trying to understand how we develop at the neurobiological level and how we do the difficult thing when it's the right thing to do. I suspect this project will wind up involving baboons, my children, and neurons growing in dishes, assuming that somehow it will be possible to link those levels.

This is extremely hard to get at neurobiologically, but is quite essential. When I think about it, however, I realize that this doesn't begin to match up to a much harder problem. We have a pretty good sense of reward, punishment, and the neurochemistry of anticipation in the brain by now. We know how to train a rat or a human to perform a behavior in exchange for a reward. We understand exactly what is happening during the interim between having performed a behavior and knowing that a reward is going to come. We know that a burst of dopamine has much to do with the anticipation of pleasure and reward. Building on our understanding of how to make synapses change over time as the result of experience, learning, and memory, it's not hard to imagine how to put those two pieces together to begin to get experience training the system so that the length of time you are willing to wait for the reward gets longer and longer.

Knowing that studying like crazy will give you amazing MCAT scores is one example of gratification postponement. We understand that the brain's basic structure enables it to do the right thing because it gets a reward, giving it the metaphorical backbone, the robustness, if you will, to do the right thing and to wait for the reward. If we can understand this there's going to be a great amount of good for the world. If we can get brains to be better at gratification postponement—because ultimately altruistic behavior is about reciprocity—it's eventually going to pay off.

The neo-cortex is one of the parts of the brain that ages dramatically and has something to do with personality disinhibition in old age. An example of this occurs when suddenly Grandma is pissing off her teenage granddaughter by telling her exactly what she thinks of that new outfit. In a sense, understanding that problem, either at the level of baboons or humans, is going to be worth the trouble. It will address questions like: How do we get reinforced? How do we socially construct gratification postponement, down to the level of neurology?

How does experience make for a frontal cortex that's more robustly able to make you hold your breath?

This neurological science also has political implications and even concerns sociopathic con-men. It relates to the question of how we understand that there are other organisms out there with different world views and emotions. It is very intrinsic to empathy. Sociopathic con-men have spectacular theories of mind. They're extremely good at exploiting somebody else's knowledge and emotions, as are most cult leaders, and the really good ones have frontal cortices that make them very disciplined.

The problem that strikes me as totally impossible is one step beyond that, and requires a certain amount of extrapolation. It is one thing to say, "Do the right thing you get the reward right now." It is another to say, "Do the right thing and you will get the reward in 60 years," or "Do the right thing and you will get the reward in your afterlife." That's fine and interesting, but the most challenging moral quandaries arise because of circumstances where there is no chance you're going to be rewarded, where, in fact, you will be punished for your stance.

For example, think of civil disobedience. Are you willing to sacrifice yourself to do the right thing? There are many realms of martyrdom for what you perceive to be the right thing and for which there is no reward. What do you do if you have a non-theological framework and you can't content yourself with afterlife? It can't have anything to do with the frontal cortex.

The minute you're in the realm of Sister Helen Prejean, the nun featured in the movie *Dead Man Walking* you have left the primates far behind. How can someone spend all the time ministering to the most deplorable, scum-of-the-earth people? Prejean says that what has to be the case is that the less lovable they are the more you have to love them. The less likelihood of reward, the more you have to be willing to do the right thing and get punished. This is the realm where Kierkegaard said that Christians need to be able to contain two contradictory facts in their head simultaneously, where the more explicitly faith is challenged, the more irrefutably it is negated, the more there must be faith. Nothing in primatology or in your dopamine reward pathways can explain that. This is off the edge of the cliff into a completely different realm.

Incredibly few people live lives where they get no reward. This behavior is certainly maladaptive, since by definition you're not going to be passing on copies of your genes, and neither is your kin line. You can't come up with any sort of adaptive argument that involves doing the incredibly self-sacrificial right thing, and getting punished for it.

The typical male baboon career trajectory is to fight your way to the top while building some good coalitional skills. When you're relatively high-ranking and if you're going to stay up there, you switch from physical prowess to psychological intimidation and social skills. But eventually it catches up with you and you finally get into a key fight and get killed or crippled or are utterly defeated and you crash way down. However, every decade you'll get some guy who's fought his way up, and six months into his ascendancy suddenly decides, "Who needs this?" and voluntarily walks away from it. They seem to have some sort of epiphanal mid-life crisis and go on to spend the rest of their lives hanging out with infants and forming social attachments with females.

Ten years ago, the evolutionary community would have had a derisive response to this, saying that while this may be terrific, it's not a very successful adaptive strategy because this guy is walking away from the competitive world of maximizing his reproductive success. Now, however, genetic studies are beginning to show that these guys out-reproduce the slash-and-burn competitive guys, because they last for years afterward without getting seriously injured and form this female affiliate. This is what happened to Benjamin, my bozo of a baboon, who during his brief ascendancy became a jerk. A terribly unlikely civil war had broken out in the troop and it was in the aftermath of every plausible candidate having been done in that he actually managed to stumble into the alpha position for about and was as incompetent as he could be.

He had no idea what he was doing, he was anxious, and displacing aggression onto every possible innocent bystander. Then he had an experience that demonstrated exactly the cognitive limits in a baboon. They're smart, but they're not chimps. Benjamin was leading a procession as they were coming back at the end of the day along a path and through some bushes. He's leading the way, proud as hell of himself. But the fact is alpha male baboons do not lead processions because they just joined the troop a couple of years ago and they have no idea where anybody's processing—the 20-year-old matriarchs do.

But Benjamin just happened to be in front of the troop, heading toward the forest, marching along, never looking back. Unbeknownst to him, the matriarch, who's two steps behind him, veers off into the bushes to the right, and 80 baboons follow her while he continues walking going straight forward. Eventually Benjamin stops, looks back and freaks out. His hair stands up, and he starts his wahoo calling, which is how he spent a large part of his adult life: "Where is everybody?!" And he then has a moment where you know exactly what he's thinking. He walks over to my Jeep and looks underneath, like—are 60 baboons hiding under there waiting to surprise him? But no baboons. He sits down by the Jeep, looking really demoralized and vaguely humiliated. This is what he's alpha for? Eventually he

hears baboons burping nearby in the bushes and starts looking for them again—they're underneath the car! Once again, he goes over to the jeep and bends over—in this ridiculous position his head between his legs, looking for his fellow baboons. It was a fabulous moment.

For the humans who would like to know what it takes to be an alpha man—if I were 25 and asked that question, I would certainly say competitive prowess is important—balls, translated into the more abstractly demanding social realm of humans. What's clear to me now at 45 is, screw the alpha male stuff. Go for an alternative strategy. Go for the social affiliation, build relationships with females, don't waste your time trying to figure out how to be the most adept socially cagy male-male competitor. Amazingly enough that's not what pays off in that system. Go for the affiliative stuff and bypass the male crap. I could not have said that when I was 25.

According to an unexpected finding called female choice it turns out that females have a hell of a lot of control over who they're mating with, and, irrationally enough, they like to mate with guys that are nice to them! You see this dynamic when some guy from the male-male competitive world pops out and is supposed to be her mate. She wants to run off to the bushes with Alan Alda and manipulates the social situation to pull this off.

A handful of these guys simply walked away from it over the years. Nathaniel was one, and Joshua was another. They had the lowest stress hormone levels you've ever seen in male baboons, and outlived their cohorts. The fact that this alternative strategy is actually the more adaptive one is one of the good bits of news to come out of primatology in quite some time. If that's the future of primates, this planet is going to be in great shape in a couple of million years.

How much this pops up in other species—chimps, for example—is not as clear. Chimps intrinsically have a different version of being aggressive because whereas male baboons change troops at puberty—meaning that all the adult males in a troop are unrelated—male chimps spend their whole lives in the same group. It's the females who change troops. A group containing big adult males who've known each other their whole lives, being related to some degree, is a prescription for dangerous males, and the building block of organized warfare. And that's exactly what chimps do; they patrol their borders. It's a very similar demographic pattern to what is seen in patrilocal nomadic pastoralist cultures, the folks who invented warrior classes.

These pastoralist societies try to increase the sense of relatedness amongst the warriors, melding them together, creating a pseudo-kinship among young men

who feel like they've known each other long enough to be willing to put their necks on the line for each other. That is one hell of a prescription for trouble for the neighbors. You sure decrease the homicide rate within the group and you've virtually invented genocide, and chimps were the first ones to get this one going. It's a scary combination.

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