

# Chapter 43

## *The Biology of Violence*

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*Is inner-city violence a response to the social ravages of poverty, or a biochemical syndrome that may be remedied with drugs? Fallout from that debate derailed the Bush Administration's Violence Initiative, but a school of new Darwinians is proposing an answer that will unsettle both sides.*

Frederick Goodwin has learned a lot during a lifetime of studying human behavior, but no lesson is more memorable than the one driven home to him over the past three years: becoming known as someone who compares inner-city teenagers to monkeys is not a ticket to smooth sailing in American public life. As of early 1992, Goodwin's career had followed a steady upward course. He had been the first scientist to demonstrate clinically the antidepressant effects of lithium, and had become known as a leading, if not the leading, expert on manic-depressive illness. He had risen to become head of the Alcohol, Drug Abuse and Mental Health Administration, the top position for a psychiatrist in the federal government, and was poised to be the point man in a policy that the Bush Administration was proudly unveiling: the Federal Violence Initiative. The idea was to treat violence as a public-health problem--to identify violently inclined youth and provide therapy early, before they had killed. The initiative held the strong support of the Secretary of Health and Human Services, Louis Sullivan, and Goodwin planned to make it his organization's main focus.

Then, in early 1992, while discussing the initiative before the National Mental Health Advisory Council, Goodwin made his fateful remarks. Speaking impromptu--and after a wholly sleepless night, he later said--he got off onto an extended riff about monkeys. In some monkey populations, he said, males kill other males and then, with the competition thus muted, proceed to copulate prolifically with females. These "hyper-aggressive" males, he said, seem to be also "hypersexual." By a train of logic that was not entirely clear, he then arrived at the suggestion that "maybe it isn't just a careless use of the word when people call certain areas of certain cities jungles." Goodwin elaborated a bit on his obscure transition from monkeys to underclass males, but no matter; these few fragments are what came to form the standard paraphrase of his remarks. As the *Los Angeles Times* put it, Goodwin "made comparisons between inner-city youths and violent, oversexed monkeys who live in the wild."

As if a few seemingly racist quotes weren't enough of a public-relations bonanza for opponents of the Violence Initiative, Goodwin also injected what some took to be Hitlerian overtones. He talked about "genetic factors" inclining human beings toward violence, and suggested that one way to spot especially troublesome kids might be to look for "biological markers" of violent disposition. Within months, the Violence Initiative was abandoned, amid charges of racism. And Goodwin, facing the same charges, was reassigned to head the National Institute of Mental Health--not a huge demotion, but a conspicuous slap on the wrist. Finally, last year, he left that job for a position in academe after intermittent coolness from the Clinton Administration. Though no Clinton official ever told him he was a political liability, Goodwin found himself no longer invited to meetings he had once attended--meetings on violence, for example.

Goodwin is a victim of a vestigial feature of the American liberal mind: its undiscerning fear of the words "genetic" and "biological," and its wholesale hostility to Darwinian explanations of behavior. It turns out, believe it or not, that comparing violent inner-city males to monkeys isn't necessarily racist, or even necessarily right wing. On the contrary, a truly state-of-the-art comprehension of a comparison yields what is in many ways an archetypally liberal view of the "root causes" of urban violence. This comprehension comes via a young, hybrid academic discipline known as evolutionary psychology. Goodwin himself actually has little familiarity with the field, and doesn't realize how far to the left one can be dragged by a modern Darwinian view of the human mind. But he's closer to realizing it than the people whose outrage has altered his career.

As it happens, the nominally dead Federal Violence Initiative isn't really dead. Indeed, one of the few things Goodwin and his critics agree on is that its "life" and "death" have always been largely a question of labeling. Goodwin, who recently broke a thirty-month silence on the controversy, makes the point while dismissing the sinister aims attributed to the program. "They've made it

sound like a cohesive new program that had some uniform direction to it and was directed by one person--namely, me," he told me. "The word 'initiative,' in bureaucratese, is simply a way of pulling stuff together to argue for budgets. In effect, that's what this was--a budget-formulation document, at Sullivan's request." Goodwin's critics look at the other side of the coin: Just as the bulk of the Violence Initiative predated the name itself, the bulk of it survived the name's deletion. Thus the war against the violence initiative--lower case--must go on.

The person who was most responsible for turning Goodwin's monkey remarks into a life-changing and policy-influencing event is a psychiatrist named Peter Breggin, the founder and executive director of the Center for the Study of Psychiatry, in Bethesda, Maryland, just outside Washington. The center doubles as Breggin's home, and the center's research director, Ginger Ross Breggin, doubles as Breggin's wife. (Goodwin says of Peter Breggin, in reference to the center's lack of distinct physical existence, "People who don't know any better think he's a legitimate person.") Both Breggins take some credit for Goodwin's recent departure from government. "We've been all over the man for three years," Ginger Breggin observes.

Goodwin and Peter Breggin interned together at SUNY Upstate Medical Center in the 1960s. Both took a course taught by Thomas Szasz, the author of *The Myth of Mental Illness*, which held that much of psychiatry is merely an oppressive tool by which the powers that be label inconvenient behavior "deviant." Szasz had formed his world view back when the most common form of oppression was locking people up, and Breggin, since founding his center, in 1971, has carried this view into the age of psychopharmacology. He fought lithium, Goodwin's initial claim to fame. He fought the monoamine-oxidase inhibitors, a somewhat crude generation of antidepressants, and now he fights a younger, less crude generation of them. *Talking Back to Prozac*, written in collaboration with his wife and published last June, is among the antipsychopharmacology books he has recently churned out. So is *The War Against Children*, published last fall, in which the Breggins attack Goodwin, the Violence Initiative, and also the drug Ritalin. In Breggin's view, giving Ritalin to "hyperactive" children is a way of regimenting spirited kids rather than according them the attention they need--just as giving "anti-aggression" drugs to inner-city kids would be an excuse for continued neglect. And Breggin is convinced that such drugs will be used in precisely this fashion if the Goodwins of the world get their way. This is the hidden agenda of the Violence Initiative, he says. And Goodwin concedes that pharmacological therapy was a likely outcome of the initiative.

Breggin's all-embracing opposition to psychopharmacology has earned him a reputation among psychiatrists as a "flat-earther." Some, indeed, go further in their disparagement, and Breggin is aware of this. "I am not a kook," he will tell a reporter whether or not the reporter has asked. People try to discredit him, Breggin says, because he is a threat to their interests--to the money made by drug companies, which insidiously bias research toward chemical therapy, and to the power of Goodwin and other "biological psychiatrists," who earn their status by "medicalizing" everything they see. "How is it that some spiritually passionate people become labeled schizophrenic and find themselves being treated as mental patients?" he asks in a 1991 book, *Toxic Psychiatry*.

Breggin says he is struck by the parallels between the Violence Initiative and Nazi Germany: "[T]he medicalization of social issues, the declaration that the victim of oppression, in this case the Jew, is in fact a genetically and biologically defective person, the mobilization of the state for eugenic purposes and biological purposes, the heavy use of psychiatry in the development of social-control programs." This is the sort of view that encouraged some members of the Congressional Black Caucus to demand that Goodwin be disciplined; it also helped to get Breggin on Black Entertainment Television, and led to such headlines in black newspapers as "PLOT TO SEDATE BLACK YOUTH."

Breggin's scenario, the question of its truth aside, did have the rhetorical virtue of simple narrative form. ("He made a nice story of it," Goodwin says, in a tone not wholly devoid of admiration.) There has lately been much interest in, and much federally funded research into, the role that the neurotransmitter serotonin plays in violence. On average, people with low serotonin levels are more inclined toward impulsive violence than people with normal levels. Since Goodwin was co-author of the first paper noting the correlation between serotonin and violence, he would seem to have a natural interest in this issue. And, since the "serotonin-reuptake inhibitors," such as Eli Lilly's Prozac, raise serotonin levels, there would seem to exist a large financial incentive to identify low serotonin as the source of urban ills. Hence, from Breggin's vantage point it all fell into place--a confluence of corporate and personal interests that helped make serotonin the most talked-about biochemical in federal violence research. But, Breggin says, we mustn't lose sight of its larger significance: Serotonin is "just a code word for biological approaches."

It was in the late seventies that Goodwin and several colleagues stumbled on the connection between serotonin and violence, while studying servicemen who were being observed for possible psychiatric discharge. Since then, low serotonin has been found in other violent populations, such as children who torture animals, children who are unusually hostile toward their mothers, and people

who score high for aggression on standardized tests. Lowering people's serotonin levels in a laboratory setting made them more inclined to give a person electrical shocks ( or, at least, what experimenters deceived them into thinking were electrical shocks).

It isn't clear whether serotonin influences aggression per se or simply impulse control, since low serotonin correlates also with impulsive arson and with attempted suicide. But serotonin level does seem to be a rough predictor of misbehavior—a biological marker. In a study of twenty-nine children with "disruptive behavior disorders," serotonin level helped predict future aggression. And in a National Institutes of Health study of fifty-eight violent offenders and impulsive arsonists serotonin level, together with another biochemical index, predicted with 84 percent accuracy whether they would commit crimes after leaving prison.

It doesn't take an overactive imagination to envision parole boards screening prisoners for biological markers before deciding their fate—just as Goodwin had suggested that using biological markers might help determine which children need antiviolence therapy. These are the kinds of scenarios that make Breggin worry about a world in which the government labels some people genetically deficient and treats them accordingly. In reply, Goodwin stresses that a "biological" marker needn't be a "genetic" one. Though NIH studies suggest that some people's genes are conducive to low serotonin, environmental influences can also lower serotonin, and federal researchers are studying these. Thus a "biological" marker may be an "environmental" marker, not a "genetic" one. To this Breggin replies, "It's not what they believe, it's not in a million years what they really believe." This attempt to cast biological research as research into environment "shows their desperation, because this was never their argument until they got attacked," he says. "It's a political move."

In truth, federal researchers, including Goodwin, were looking into "environmental influences" on biochemistry well before being attacked by Breggin. Still, they do often employ a narrower notion of the term's meaning than Breggin would like. When Goodwin talks about such influences, he doesn't dwell on the sort of social forces that interest Breggin, such as poverty and bad schools. He says, for example, that he has looked into "data on head injuries, victims of abuse, poor prenatal nutrition, higher levels of lead," and so on.

In other words, he is inclined to view violence as an illness, whether it is the product of aberrant genes or of pathological—deeply unnatural—circumstances, or both. This is not surprising, given his line of work: He is a psychiatrist, a doctor; his job is to cure people, and people without pathologies don't need curing. "Once I learned that 79 percent of repeated violent offenses were by 7 percent of youth, it began to look to me like a clinical population, a population that had something wrong with it that resulted in this behavior," he says. Other federal researchers on violence tend to take the same approach. After all, most of them work at one of the National Institutes of Health, whether the National Institute of Mental Health, the National Institute on Alcohol Abuse and Alcoholism, or some other affiliate. For the Violence Initiative to be successful in the pragmatic aims that Goodwin acknowledges—as a way "to argue for budgets" for the Department of Health and Human Services—it pretty much had to define violence as a pathology, characteristic of inner-city kids who have something "wrong" with them.

Breggin would rather depict violence as the not very surprising reaction of normal people to oppressive circumstances. A big problem with biological views of behavior generally, he says, is that they so often bolster the medical notions of "deviance" and "pathology"—and thus divert attention from the need to change social conditions.

But "biological" views don't have to be "medical" views. This is where the field of evolutionary psychology enters the picture, and modern Darwinian thought begins to diverge from Goodwin's sketchier and more dated ideas about human evolution. Evolutionary psychologists share Goodwin's conviction that genes, neurotransmitters such as serotonin, and biology more generally are a valid route to explaining human behavior; and they share his belief in the relevance of studying nonhuman primates. Yet they are much more open than he is to the Bregginesque view that innercity violence is a "natural" reaction to a particular social environment.

To most NIH researchers, evolutionary psychology is terra incognita. Goodwin, for one, professes only vague awareness of the field. But the field offers something that should intrigue him: a theory about what serotonin is, in the deepest sense—why natural selection designed it to do the things it does. This theory would explain, for example, the effect that Prozac has on people. More to the point, this theory would explain the link that Goodwin himself discovered between low serotonin and violence.

The two acknowledged experts on human violence within evolutionary psychology are Martin Daly and Margo Wilson, of McMaster University, in Ontario. Their 1988 book, *Homicide*, barely known outside Darwinian-social-science circles, is considered a classic within them. Listening to Margo Wilson talk about urban crime is like entering a time warp and finding yourself chatting with Huey Newton or Jane Fonda in 69. "First of all, what's a crime?" she asks. It all depends on "who are the rule-makers, who's in power. We call it theft when somebody comes into your house and steals something, but we don't call it theft when we get ripped off by political agendas or big-business practices." And as for gang violence: "It's a coalition of males who are mutually supporting each other to serve their interests against some other coalition. How is that different from some international war?"

To hear this sort of flaming liberal rhetoric from a confirmed Darwinian should surprise not just Peter Breggin but anyone familiar with intellectual history. For much of this century, many people who took a Darwinian view of human behavior embraced the notorious ideology of social Darwinism. They emphatically did not view social deviance as some arbitrary and self-serving designation made by the ruling class; more likely, crime was a sign of "unfitness," of an innate inability to thrive legitimately. The "unfit" were best left to languish in jail, here they could not reproduce. And "unfit" would-be immigrants—those from, say, Eastern Europe, who were congenitally ill equipped to enrich American society—were best kept out of the country.

What permits Margo Wilson to sound a quite different theme is two distinguishing features of evolutionary psychology. First, evolutionary psychologists are not much interested in genetic differences, whether among individuals, or among groups. The object of study is, rather, "species-typical mental adaptations"—also known as "human nature." A basic tenet of evolutionary psychologists is that there *is* such a thing as human nature—that people everywhere have fundamentally the same minds.

A second tenet of evolutionary psychologists is respect for the power of environment. The human mind, they say, has been designed to adjust to social circumstances. The vital difference between this and earlier forms of environmental determinism is the word "designed." Evolutionary psychologists believe that the developmental programs that convert social experience into personality were created by natural selection, which, to say that those programs lie in our genes. Thus, to think clearly about the influence of environment we must think about what sorts of influences would have been favored by natural selection.

If, for example, early social rejection makes people enduringly insecure, then we should ask whether this pattern of development might have had a genetic payoff during evolution. Maybe people who faced such rejection saw their chances of survival and reproduction plummet unless they became more socially vigilant—neurotically attentive to nourishing their social ties. Thus genes that responded to rejection by instilling this neurotic vigilance, this insecurity, would have flourished. And eventually those genes could have spread through the species, becoming part of human nature.

These two themes—universal human nature and the power of environment—are related. It is belief in the power of environment—of family milieu, cultural milieu, social happenstance—that allows evolutionary psychologists to see great variation in human behavior, from person to person or from group to group, without reflexively concluding that the explanation lies in genetic variation. The explanation lies in the genes, to be sure. Where else could a program for psychological development ultimately reside? But it doesn't necessarily lie in differences among different people's genes. This is the perspective that Martin Daly and Margo Wilson bring to the subject of violence. They think about genes in order to understand the role of environment. And one result of this outlook is agreement with Peter Breggin that inner-city violence shouldn't be labeled a "pathology." In a paper published last year Daly and Wilson wrote, "Violence is abhorrent. ...Violence is so aversive that merely witnessing an instance can be literally sickening. ..." There is thus "but a short leap to the metaphorical characterization of violence itself as a sort of 'sickness' or 'dysfunction.'" But, they insisted, this leap is ill advised. Violence is eminently functional—something that people are designed to do. Especially men. From an evolutionary point of view, the leading cause of violence is maleness. "Men have evolved the morphological, physiological, and psychological means to be effective users of violence," Daly and Wilson wrote. The reason, according to modern evolutionary thought, is simple. Because a female can reproduce only once a year, whereas a male can reproduce many times a year, females are the scarcer sexual resource. During evolution, males have competed over this resource, with the winners impregnating more than their share of women and the losers impregnating few or none. As always with natural selection, we're left with the genes of the winners—in this case, genes inclining males toward fierce combat. One reflection of this history is that men are larger and stronger than women. Such "sexual dimorphism" is seen in many species, and biologists consider it a rough index of the intensity of male sexual competition. To say that during evolution men have fought over women isn't to say that they've always fought directly over women, with the winner of a bout walking over and claiming his nubile trophy. Rather, human beings are somewhat like our nearest relatives, the chimpanzees; Males compete for status, and status brings access to females. Hence skills conducive to successful status competition would have a "selective advantage"—would be favored by natural selection. As Daly and Wilson have put it, "if status has persistently contributed to reproductive success, and a capacity for controlled violence has regularly contributed to status, then the selective advantage of violent skills cannot be gainsaid."

It's easy to find anecdotal evidence that status has indeed tended to boost the reproductive success of males. (It was Kissinger, who said that power is an aphrodisiac, and Representative Pat Schroeder who observed that a middle-aged congresswoman doesn't exert the same animal magnetism on the opposite sex that a middle-aged congressman does.) But more telling is evidence drawn from hunter-gatherer societies, the closest thing to real-life examples of the preagrarian social context for which the human mind was designed. Among the Ache of Paraguay, high-status men have more extra-marital affairs and more illegitimate children than low-status men. Among the Aka pygmies of central Africa, an informal leader known as a *kombeti* gets more wives and offspring than the average Aka. And so on. The Aka, the Ache, and Henry Kissinger all demonstrate that violence against other men is hardly the

only means by which male status is sought. Being a good hunter is a primary route to status among the Ache, and being a wily social manipulator helps in all societies ( even, it turns out, in chimp societies, where males climb the status ladder by forging "political" coalitions). Still, in all human societies questions of relative male status are sometimes settled through fighting. This form of settlement is, of course, more prevalent in some arenas than others—more in a bikers' bar than in the Russian Tea Room, more in the inner city than on the Upper East Side. But, as Daly and Wilson note, one theme holds true everywhere: Men compete for status through the means locally available. If men in the Russian Tea Room don't assault one another, that's because assault isn't the route to status in the Russian Tea Room.

According to Daly and Wilson, a failure to see the importance of such circumstances is what leads well-heeled people to express patronizing shock that "trivial" arguments in barrooms and ghettos escalate to murder. In *Homicide* they wrote, " An implicit contrast is drawn between the foolishness of violent men and the more rational motives that move sensible people like ourselves. The combatants are in effect denigrated as creatures of some lower order of mental functioning, evidently governed by immediate stimuli rather than by foresightful contemplation." In truth, Daly and Wilson say, such combatants are typical of our species, as it has been observed around the world: "In most social milieus, a man's reputation depends in part upon the maintenance of a credible threat of violence." This fact is "obscured in modern mass society because the state has assumed a monopoly on the legitimate use of force. But wherever that monopoly is relaxed—whether in an entire society or in a neglected underclass—then the utility of that credible threat becomes apparent." In such an environment, "a seemingly minor affront is not merely a 'stimulus' to action, isolated in time and space. It must be understood within a larger social context of reputations, face, relative social status, and enduring relationships. Men are known by their fellows as... "people whose word means action and people who are full of hot air."

That a basic purpose of violence is display—to convince peers that you will defend your status—helps explain an otherwise puzzling fact. As Daly and Wilson note, when men kill men whom they know, there is usually an audience. This doesn't seem to make sense—why murder someone in the presence of witnesses?—except in terms of evolutionary psychology. Violence is in large part a performance.

Thus the dismay often inspired by reports that a black teenager killed because he had been "dissed" is naive. Nothing was more vital to the reproductive success of our male ancestors than respect, so there is nothing that the male mind will more feverishly seek to neutralize than disrespect. All men spend much of their lives doing exactly this; most are just lucky enough to live in a place where guns won't help them do it. These days, well-educated men do their status maintenance the way Goodwin and Breggin do it, by verbally defending their honor and verbally assailing the honor of their enemies. But back when dueling was in vogue even the most polished of men might occasionally try to kill one another.

This view from evolutionary psychology in some ways jibes with a rarely quoted point that Goodwin made during his rambling remarks on monkeys: that inner-city violence may be caused by a "loss of structure in society"; in an environment where violence is deemed legitimate, the male inclination for violence may reassert itself. Of monkeys, Goodwin had said, "that is the natural way of it for males, to knock each other off," and the implicit comparison was supposed to be with all human males, not just black ones; his point was that many black males now live in neighborhoods where social restraints have dissolved. This is the sense in which Goodwin says he meant to compare the inner cities to jungles, and the transcript of his remarks bears him out. His poor choice imagery still haunts him. "If I had said that in the Wild West, where there was no structure, there was a hell of a lot of violence, no one would have noticed."

There is a crucial difference between this emphasis on social milieu as rendered by Goodwin and as rendered by evolutionary psychologists; namely, they don't abandon it when they start thinking about the interface between biology and environment. Whereas pondering this interface steers Goodwin's thoughts toward "pathology"—the biological effects of malnutrition, or brain damage due to child abuse—evolutionary psychologists try to figure out how normal, everyday experience affects the biochemistry of violence.

Consider serotonin. In particular, consider an extensive study of serotonin in monkeys done by Michael McGuire, an evolutionary psychologist, and his colleagues at UCLA. Vervet monkeys have a clear male social hierarchy: Low-status males defer to high-status males over access to limited resources, including females. McGuire found that the highest-ranking monkeys in the male social hierarchy have the highest serotonin levels. What's more, the lower-ranking males tend to be more impulsively violent. Other studies have linked low serotonin to violence in monkeys even more directly.

At first glance, such findings might appear to be what Peter Breggin, and many liberals, would consider their worst nightmare. If this biochemical analogy between monkeys and human beings is indeed valid, the lesson would seem to be this: Some individuals are born to be society's leaders, some are born to be its hoodlums; the chairman of IBM was born with high serotonin, the urban gang member was born with low serotonin. And what if it turns out that blacks on average have less serotonin than whites do?

There certainly is evidence that some sort of analogy between the social lives of monkeys and human beings is in order. McGuire has found that officers of college fraternities have higher serotonin levels than the average frat-house resident, and that college athletes perceived as team leaders have higher levels than their average teammate. But grasping the import of the analogy requires delving into the details of McGuire's monkey research.

When McGuire examines a dominant male monkey before he becomes a dominant-before he climbs the social hierarchy by winning some key fights with other males-serotonin level is often unexceptional. It rises during his ascent, apparently in response to sometimes inconspicuous social cues. Indeed, his serotonin may begin to creep upward before he physically challenges any higher-ranking males; the initial rise may be caused by favorable attention from females (who play a larger role in shaping the male social hierarchy than was once appreciated). When, on the other hand, a dominant male suffers a loss of status, his serotonin level drops.

What's going on here? There is no way to look inside a monkey's mind and see how serotonin makes him feel. But there is evidence that in human beings high serotonin levels bring high self-esteem. Raising self-esteem is one effect of Prozac and other serotonin boosters, such as Zoloft. And, indeed, high-ranking monkeys-or, to take a species more closely related to us, high-ranking chimpanzees-tend to behave the way people with high self-esteem behave: with calm self-assurance; assertively, yes, but seldom violently. (This subtle distinction, as Peter Kramer notes in "Listening to Prozac," is also seen in human beings. Prozac may make them more socially assertive, but less irritable, less prone to spontaneous outbursts.) To be sure, an alpha-male chimp may periodically exhibit aggression-or really, a kind of ritual mock-aggression-to remind everyone that he's the boss, but most alphas tend not to be as fidgety and perturbable as some lower-ranking apes, except when leadership is being contested.

All this suggests a hypothesis. Maybe one function of serotonin-in human and nonhuman primates-is to regulate self esteem in accordance with social feedback; and maybe one function of self-esteem is, in turn, to help primates negotiate social hierarchies, climbing as high on the ladder as circumstance permits. Self-esteem (read serotonin) keeps rising as long as one encounters social success, and each step in this elevation inclines one to raise one's social sights a little higher. Variable self-esteem, then, is evolution's way of preparing us to reach and maintain whatever level of social status is realistic, given our various attributes (social skills, talent, etc.) and our milieu. High serotonin, in this view, isn't nature's way of destining people from birth for high status; it is nature's way of equipping any of us for high status should we find ourselves possessing it. The flip side of this hypothesis is that low self-esteem (and low serotonin) is evolution's way of equipping us for low status should our situation not be conducive to elevation.

This *doesn't* mean what an earlier generation of evolutionists would have thought: that Mother Nature wants people with low status to endure their fate patiently for "the greater good." Just the opposite. A founding insight of evolutionary psychology is that natural selection rarely designs things for the "good of the group." Any psychological inclinations that offer a way to cope with low status provide just that-a way to cope, away to make the best of a bad situation. The purpose of low self-esteem isn't to bring submission for the sake of social order; more likely, its purpose is to discourage people from conspicuously challenging higher-status people who are, by virtue of their status, in a position to punish such insolence.

And what about the antisocial tendencies, the impulsive behavior linked with low serotonin in both human beings and monkeys? How does evolutionary psychology explain them? This is where the demise of "good of the group" logic opens the way for especially intriguing theories. In particular: Primates may be designed to respond to low status by "breaking the rules" when they can get away with it. The established social order isn't working in their favor, so they circumvent its strictures at every opportunity. Similarly, inner-city thugs may be functioning as "designed": Their minds absorb environmental input reflecting their low socioeconomic standing and the absence of "legitimate" routes to social elevation, and incline their behavior in the appropriately criminal direction.

The trouble with breaking rules, of course, is the risk of getting caught and punished. But, as Daly and Wilson note by quoting Bob Dylan, "When you ain't got nothin', you got nothin' to lose." In the environment of our evolution, low status often signified that a male had had little or no reproductive success to date; for such a male, taking risks to raise status could make sense in Darwinian terms. In hunter-gatherer societies, Daly and Wilson write, "competition can sometimes be fiercest near the bottom of the scale, where the man on track for total [reproduc- tive] failure has nothing to lose by the most dangerous competitive tactics, and may therefore throw caution to the winds." Even as low self-esteem keeps him from challenging dominant males, he may behave recklessly toward those closer to him on the social ladder. Thus may the biochemistry of low status, along with the attendant states of mind, encourage impulsive risk-taking.

This theory, at any rate, would help make sense of some long-unexplained data. Psychologists found several decades ago that artificially lowering people's self-esteem-by giving them false reports about scores on a personality test-makes them more likely to cheat in a subsequent game of cards. Such risky rule-breaking is just the sort of behavior that makes more sense for a low- status animal than for a high-status animal.

To say that serotonin level is heavily influenced by social experience isn't to say that a person's genetic idiosyncrasies aren't significant. But it is to say that they are at best half the story. There are not yet any definitive studies on the "heritability" of serotonin level-the amount of the variation among people that is explained by genetic difference. But the one study that has been done suggests that less than half the variation in the population studied. came from genetic differences, and the rest from differences in environment. And even this estimate of heritability is probably misleadingly high. Presumably, self-esteem correlates with many other personal attributes, such as physique or facial attractiveness. Impressive people, after all, inspire the sort of feedback that raises self-esteem and serotonin. Since these attributes are themselves quite heritable-traceable largely to a person's distinctive genes- some of the "heritability" estimate for serotonin may reflect genes not for high serotonin per se but for good looks, great body, and so on. (The technical term for this oblique genetic effect is "reactive heritability.")

At least some of the variation in serotonin level is grounded more directly in genetic difference. NIH researchers have identified a human gene that helps convert tryptophan, an amino acid found in some grains and fruits, into serotonin, and they have found a version of the gene that yields low serotonin levels. Still, there is no reason to believe that different ethnic groups have different genetic endowments for serotonin. Indeed, even if it turned out that American blacks on average had lower serotonin than whites, there would be no cause to implicate genes. One would expect groups that find themselves shunted toward the bottom of the socioeconomic hierarchy to have low serotonin. That may be nature's way of preparing them to take risks and to evade the rules of the powers that be.

This Darwinian theory integrating serotonin, status, and impulsive violence remains meagerly tested and is no doubt oversimplified. One complicating factor is modern life. People in contemporary America are part of various social hierarchies. An inner-city gang leader may get great, serotonin-boosting respect ("juice," as the suggestive street slang calls it) from fellow gang members while also getting serotonin-sapping signs of disrespect when he walks into a trendy jewelry store, or even when he turns on the TV and sees that wealthy, high-status males tend to bear no physical or cultural resemblance to him. The human mind was designed for a less ambiguous setting-a hunter-gatherer society, in which a young man's social reference points stay fairly constant from day to day. We don't yet know how the mind responds to a world of wildly clashing status cues.

Another hidden complexity in this Darwinian theory lies in the fact that serotonin does lots of things besides mediate self-esteem and impulsive aggression. Precisely what it does depends on the part of the brain it is affecting and the levels of other neurotransmitters. Overall serotonin level is hardly the subtlest imaginable chemical index of a human being's mental state. Still, though we don't yet fathom the entire biochemistry of things like self-esteem, impulsiveness, and violence, there is little doubt among evolutionary psychologists that the subject is fathomable-and that it will get fathomed much faster if biomedical researchers, at NIH and elsewhere, start thinking in Darwinian terms.

If evolutionary psychologists are right in even the broad contours of their outlook, then there is good news and bad news for both Frederick Goodwin and Peter Breggin. For Goodwin, the good news is that his infamous remarks were essentially on target: He was right to compare violent inner-city males-or any other violent human males-to nonhuman primates (though he exaggerated the incidence of actual murder among such primates). The bad news is that his Violence Initiative, in failing to pursue that insight, in clinging to the view of violence as pathology, was doomed to miss a large part of the picture; the bulk of inner-city violence will probably never be explained by reference to head injuries, poor nutrition, prenatal exposure to drugs, and bad genes. If violence is a public-health problem, it is so mainly in the sense that getting killed is bad for your health.

Evolutionary psychology depicts all kinds of things often thought to be "pathological" as "natural": unyielding hatred, mild depression, a tendency of men to treat women as their personal property. Some Darwinians even think that rape may in some sense be a "natural" response to certain circumstances. Of course, to call these things "natural" isn't to call them beyond self-control, or beyond the influence of punishment. And it certainly isn't to call them good. If anything, evolutionary psychology might be invoked on behalf of the doctrine of Original Sin: We are in some respects born bad, and redemption entails struggle against our nature. Many people, including many social scientists and biomedical researchers, seem to have trouble with the idea of a conflict between nature and morality. "I think this is a source of resistance to evolutionary ways of thinking," says John Tooby, a professor at the University of California at Santa Barbara, who along with his wife, Leda Cosmides, laid down some of the founding doctrines of evolutionary psychology. "There's a strong tendency to want to return to the romantic notion that the natural is the good." Indeed, "one modern basis for establishing morals is to try to ground them in the notion of sickness. Anything people don't like, they accuse the person doing it of being sick."

Thomas Szasz couldn't have said it better; Herein lies evolutionary psychology's good news for Peter Breggin: Yes, it is indeed misleading to call most violence a pathology, a disorder. The bad news for Breggin is that, even though the causes of violence are broadly environmental, as he insists, they are nonetheless biological, because environmental forces are mediated biologically-in

this case by, among other things, serotonin. Thus, a scientist can be a "biological determinist" or a "biological reductionist" without being a genetic determinist. He or she can say-as Daly and Wilson and Tooby and Cosmides do-that human behavior is driven by biological forces impinging on the brain, yet can view those forces largely as a reflection of a person's distinctive environment.

This confronts Breggin with a major rhetorical complication. Much of his success in arousing opposition to the Violence Initiative lay in conveniently conflating the terms "biological" and "genetic." He does this habitually. In suggesting that the initiative grew out of Goodwin's longstanding designs, Breggin says he has Baltimore *Evening Sun* articles from 1984 in which "Goodwin is talking about crime and violence being genetic and biological." In truth, these articles show Goodwin saying nothing about genes-only that violence has some biological correlates and might respond to pharmacological treatment. In Breggin's mind, "genetic" and "biological" are joined at the waist.

That these terms are not, in fact, inseparable-that something utterly biological, like serotonin level, may differ between two people because of environmental, not genetic, differences-poses a second problem for Breggin. The best way to illuminate the environmental forces he stresses may be to study the biological underpinnings of behavior, and that is a prospect he loathes. If serotonin is one chemical that converts poverty and disrespect into impulsiveness or aggression or low self-esteem, then it, along with other chemicals, may be a handy index of all these things-something whose level can be monitored more precisely than the things themselves. (Studies finding that blacks on average don't suffer from low self-esteem are based on asking black people and white people how they feel about themselves-a dubious approach, since expressions of humility seem to be more highly valued in white suburban culture than in black urban culture.)

That Breggin may be wrong in the way he thinks about biology and behavior doesn't mean that the unsettling scenarios he envisions are far-fetched. The government may well try to use biochemical "markers" to select violently inclined kids for therapy, or to screen prisoners for parole. (Then again, if these chemicals aren't simple "genetic markers," but rather are summaries of the way genes and environment have together molded a person's state of mind, how are they different from a standard psychological evaluation, which summarizes the same thing?) There may also be attempts to treat violently inclined teenagers with serotonin-boosting drugs, as Breggin fears. And, though some teenagers might thus be helped into the mainstream economy, these drugs could also become a palliative, a way to keep the inner city tranquil without improving it. The brave new world of biochemical diagnosis and therapy is coming; and, for all the insight evolutionary psychology brings, it won't magically answer the difficult questions that will arise.

The point to bear in mind is simply that less eerie, more traditionally liberal prescriptions for urban violence continue to make sense after we've looked at black teenagers as animals-which after all, is what human beings are. The view from evolutionary psychology suggests that one way to reduce black violence would be to make the inner cities places where young men have nonviolent routes to social status and the means and motivation to follow them. Better paying jobs and better public schools, for example, wouldn't hurt. Oddly enough, thinking about genes from a Darwinian standpoint suggests that inner-city teenagers are victims of their environment.