

The Genealogy Craze in America.

Strangled by Roots

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New technologies often have unforeseeable consequences. Michael Faraday could not have anticipated the rise of the electric guitar and its effects on our culture, nor did the inventors of the laser realize they had laid the ground for a thriving industry of tattoo removal. And it is safe to say that Watson and Crick could not have foreseen a day when an analysis of Oprah Winfrey's DNA would tell her that she was descended from the Kpelle people of the Liberian rainforest. "I feel empowered by this," she said upon hearing the news, overcoming her disappointment that her ancestors were not Zulu warriors.

A fascination with ancestry has long been part of the human condition, from the "begat's" of the Bible to the *Roots* miniseries and the restoration of Ellis Island. But with the advent of the Internet and genomic technology, genealogy has entered a new age. The past year has served up a series of high-profile revelations. The news that Barack Obama's ancestors owned slaves was a bit more surprising than the news that Strom Thurmond's did, but it was more surprising still to be told that among the Thurmond family's slaves were the ancestors of Al Sharpton. And Henry Louis Gates Jr., the host of the fascinating PBS series *African American Lives*, which explored the family trees of six prominent African Americans, was astounded to learn that half of his own ancestry was European, including Irish kinsmen on his father's side and two Jewish women on his mother's.

Few of us can expect that a search for ancestors will bring us an inheritance, a title, or a coat of arms: the rewards of genealogy are mostly psychological. As Winfrey put it, "Knowing your family history is knowing your worth." The sentiment, though, is dubious--not just on moral grounds but on biological ones. A closer look at the human drive to know one's family tree uncovers a number of tensions between our intuitions of kinship and the facts of kinship. Some of those facts show that the findings of the new genealogy should not have been surprising at all. And others, tacitly appreciated for millennia, have recently been neglected to our peril.

For all its fascination, kinship is a surprisingly neglected topic in the behavioral sciences. A Martian reading a textbook in psychology would get no inkling that human beings treated their relatives any differently from strangers. Many social scientists have gone so far as to claim

that kinship is a social construction with no connection to biology. But assuming the creationists are wrong and humans are products of evolution, it would be surprising if our species entirely escaped the powerful forces that shape organisms' behavior toward their kin. Genetics and evolutionary theory predict that the biology of kinship should have biased our thoughts and emotions about relatives in several ways.

The first is the simple fact that blood relatives are likely to share genes. To the extent that minds are shaped by genomes, relatives are likely to be of like minds. Close relatives, whether raised together or apart, have been found to be correlated in intelligence, personality, tastes, and vices. The discovery of an ancestor is thus felt to reflect on the descendant, who may feel he has an explanation for the kind of person he is, and who can claim to have a dose of the ancestor's praiseworthy traits. A promotional spot for Coca-Cola in *African American Lives* juxtaposes footage of African Americans with images of traditional Africans and says, "She has her great-great-great-grandmother's eye for adornment. He is fit and agile, like his forefathers."

The similarities among blood relatives mean that they are likely to share values, and shared values can lead to easy solidarity because of what ecologists call mutualism and economists call positive externalities. A pair of associates with the same interests can benefit each other just by being selfish--always the most painless route to altruism. If two roommates have similar tastes in music, each will benefit the other every time she brings home a new CD, and each has a reason to value the other's well-being. To identify a blood relative, then, is to identify a potential soul mate. Adoptees who track down their biological parents and siblings often report an instant solidarity as they quickly discover shared quirks and passions.

A more direct tug of shared genes on family emotions comes from the phenomenon that biologists call inclusive fitness, kin selection, and nepotistic altruism. The overlap of genes among relatives does more than make them similar; it alters the dynamics of natural selection. Over evolutionary time, any gene that predisposed a person to be nice to a relative would have had some chance of helping out a copy of *itself* inside that relative, and the gene would have been favored by natural selection and entrenched in the genome (as long as the average benefit to the relative, discounted by the probability that the gene is shared, exceeds the average cost to the favor-doer). A sharing of genes at the genetic level sets the evolutionary stage for feelings of solidarity and affection at the emotional level, and that in turn shapes much of human life. In traditional societies, genetic relatives are more likely to live together, work together, protect each other, and adopt each other's orphaned children, and are less likely to attack, feud with, and kill each other. Even in modern societies, which tend to weaken ties of kinship, studies have shown that the more closely two people are genetically related, the more inclined they are to come to each other's aid, especially in life-or-death situations.

Solidarity between pairs of relatives is further amplified by the fact that they have *other* relatives in common. My brother and I are close not just because each of

us has copies of genes in the other, but because we share a mother, a father, a sister, and nieces and nephews, so our genetic interests are yoked together. This triangular altruism also explains why non-blood relatives can feel various degrees of affinity--most dramatically in the case of a husband and wife, whose long-term genetic interests are fused in their children, and to a lesser extent in the case of step- siblings and in-laws, as long as they are not in zero-sum competition for the common relative's affections or resources.

But now comes a crucial bit of arithmetic. In sexually reproducing species, every organism has two parents, and every organism makes up half the parentage of each of its offspring. The result is that as people are separated by more generations, they are related to an exponentially greater number of people, and their genetic relatedness to any of them plummets, also exponentially. Going upward, you have two parents, with whom you share half your genes apiece; four grandparents, with whom you share one-quarter; eight great-grandparents; sixteen great-great-grandparents; and so on. Going downward, if you and your descendants have two children apiece, then you'll have four grandchildren, eight great-grandchildren, and so on. And going sideways, you share half your genes with your sibling, one-eighth with each of your first cousins, one-thirty-second with each of your second cousins, and so on.

Exponential functions quickly explode to unimaginable magnitudes or peter out to infinitesimal ones, and the inability of our intuition to keep track of them leads to many paradoxes of kinship. In an old Smothers Brothers routine, Tommy explained why the population explosion is a myth. We have two parents, he noted, and four grandparents, eight great-grandparents, sixteen great-great-grandparents, and so on. The further back you go, the more ancestors you have. So, he concluded, "The population isn't growing--it's tapering off!" Like many of their jokes, this one depends on a subtle truth. If you assume twenty-five years per generation, you can calculate that you had around three billion ancestors at the time of the signing of the Magna Carta, one hundred billion during the Norman invasion, two quintillion at the fall of the Roman Empire, and around 1,200,000,000,000,000,000,000,000 at the birth of Jesus. Needless to say, the Earth did not contain a fraction of that many people in those eras.

The paradox is resolved by the realization that our ancestors must have married their cousins of various distances and removes, so that vast numbers of the slots in one's family tree are filled by the same individuals. Imagine, in an extreme case, that your parents were first cousins. Then two of your great-grandparents on your mother's side would also be your great-grandparents on your father's side--you would have six great-grandparents instead of eight. Genealogists call this "pedigree collapse": the necessity that as you trace your family tree backward, it will fan out for a number of generations until it begins to encompass most of the people in the available population, whereupon it falls back on itself, coinciding with the original growth of that population. The rate of collapse depends on the size of the pool of potential mates and the average rate and closeness of cousin marriages. But the fact that our ancestors never covered the surface of the Earth ten deep shows that medium-distant-cousin marriages must have been the rule rather than the exception over most of human history. This chronic

incest, by the way, did not turn our ancestors into the cast of *Deliverance*. The degree of relatedness, and hence the risk that a harmful recessive gene will meet a copy of itself in a child, falls off a cliff as you move from siblings to first cousins to more distant cousins.

The same arithmetic that makes an individual's pedigree collapse onto itself also makes everyone's pedigree collapse into everyone else's. We are all related--not just in the obvious sense that we are all descended from the same population of the first humans, but also because everyone's ancestors mated with everyone else's at many points since that dawn of humanity. There aren't enough ancestors to go around for everyone to have a family tree of his or her own. So it is a mathematical necessity, not a surprise, that genealogy will turn up strange bedfellows. George W. Bush is a distant cousin of his electoral opponents Al Gore and John Kerry (as well as of Richard Nixon, Ernest Hemingway, Queen Elizabeth, and, through her, every European monarch). Gore, for his part, is a descendant of Charlemagne, and Kerry is a descendant of Mary, Queen of Scots--and presumably also (thanks to his recently-discovered-to-be-Jewish paternal grandfather) of rabbis, cantors, and medieval moneylenders. This brings up another corollary of the mathematics of kinship: a single mating between people from two ethnic groups results in all their descendants being related to both groups in perpetuity. So even occasional couplings across racial and ethnic lines can entangle family trees, explaining why humans, that peripatetic and sexually omnivorous species, are genetically fairly homogeneous, despite our worldwide distribution.

The genealogical ties connecting American presidents and European royalty are not a sign of some vast transatlantic ruling caste. *Every* noteworthy person is related to other noteworthy people (together, of course, with countless not-so-noteworthy people). One genealogist with too much time on his hands showed that the late Senator Alan Cranston was related to Emily Dickinson, George Plimpton, Margaret Mead, the actress Julie Harris, the Dow family of chemical fame, and Queen Geraldine of Albania. Another discovered that Tom Hanks, the star of *The Da Vinci Code*, has blood ties with many of the historical figures mentioned in the film, including William the Conqueror, Shakespeare, and Henry VIII. Also recently revealed is the fact that Paris Hilton is related to fellow celebrity jailbirds Zsa Zsa Gabor and G. Gordon Liddy. Finding kinship ties among famous people is shooting ducks in a barrel.

And before you brag about the talent or courage you share with some illustrious kinsman, remember that the exponential mathematics of relatedness successively halves the number of genes shared by relatives with every link separating them. You share only 3 percent of your genes with your second cousin, and the same proportion with your great-great-great-grandmother. It is important to remember that psychological traits are nowhere near completely heritable in the first place, so the chances that you got your eye for adornment from that ancestor in the gorgeous dashiki are rather small. Do not expect genetically inspired largesse from the rich relative uncovered by your genealogy service, either. A gift from a second cousin would have to result in a thirty-two-fold increase in the number of your

surviving descendants compared to his for a desire to bestow it upon you to have evolved. The relentless decimation of resources (both genetic and financial) across generations is the rationale behind the feudal practice of primogeniture, in which all the family estate was bequeathed to the eldest son. And it is why in modern times family fortunes can dissipate so quickly--"three generations from shirtsleeves to shirtsleeves," as Nicholas Murray Butler put it.

The geometric decay of relatedness also takes some of the fun out of two of the main tools used by genetic-ancestry services: the analysis of mitochondrial DNA (which is passed from mother to daughter) and of Y-chromosomes (which are passed from father to son). Since they trace ancestry only through the all-female or all-male branch of your family tree, they can identify only one tendril, which diminishes exponentially the further back you go. Winfrey's mitochondrial DNA does not show that she is a Kpelle, but rather that she is one-sixty-fourth (or perhaps even 1/128th or 1/256th) Kpelle. Many African Americans who seek their paternal ancestor, and therefore a sense of their African roots, via Y-chromosome analysis discover to their dismay that this root lies in Germany or Scotland.

If family ties are so biologically tenuous, why does kinship loom so large in the human psyche? One reason is that our intuitions about kinship evolved when we lived in villages and bands whose small size and limited mobility ensured that most marriages were between closer cousins, and hence the genetic overlap between relatives was close enough to be biologically significant. Today we project these feelings of affinity onto relatives who are far more distant--indeed, arbitrarily distant, thanks to the wonders of Internet and DNA genealogy.

But the other reason is that our sense of kinship is triggered not by relatedness itself, but by the perception of relatedness. After all, when we encounter a possible relative, we generally do not demand a cheek swab and analyze its DNA. Instead we rely on cues that in the evolutionary past tended to *correlate* with relatedness. Recent experiments by Debra Lieberman, John Tooby, and Leda Cosmides have shown that two kinds of life experience are crucial in triggering family feelings toward siblings (such as doing them favors and being willing to donate a kidney to them). One consists of observing the sibling being cared for by one's mother when it was an infant. The other is having grown up in the same household as the sibling. That is why children adopted at birth can be emotionally close to their parents and siblings despite the lack of genetic overlap: the early close association sets off everyone's kinship detectors, a kind of benign illusion. And because these experiences also trigger repugnance at the thought of having sex with the relative, incest avoidance is not perfectly correlated with biological relatedness. Unrelated children who are brought up together (like nursery-mates in kibbutzim) tend to shun each other as sexual partners in adulthood, as if they were siblings. And children who meet a parent or sibling for the first time in adulthood can find him or her sexually attractive, as the novelist Kathryn Harrison recounted in *The Kiss*, her memoir of a four-year affair with her father.

When it comes to individual people, then, kinship is in the mind of the beholder. That creates an opening through which manipulators can flood people's kinship sense with cues that mimic the signals of biological relatedness. This kind of mind control is a strong temptation to anyone who wants to foster cohesion among people who are not closely related. Contrary to a shibboleth of the American right, family values do not uphold religion and country; they subvert them. An extended family is a rival coalition to any other group, held together not by an ideology or social contract or common purpose but by brute genetic relatedness. And it is a coalition with an unfair advantage: relatives care for one another more than comrades do. Religions and political movements thus have to undermine family loyalties. Marxist collectivization and Moonie programming are obvious recent examples, but millennia before them Jesus momentarily declared, "A man's foes shall be they of his own household. He that loveth father or mother more than me is not worthy of me: and he that loveth son or daughter more than me is not worthy of me."

Successful coalitions often try to co-opt family feelings by tricking the brain into perceiving the coalition as kin. Though the most potent technique--forcing people to grow up in a single household--is impractical, other kinds of kinship illusion have repeatedly been invented. The anthropologist Alan Fiske notes that communal meals are one of the most common bonding rituals the world over, partly because they simulate family experiences, partly because people believe that you are what you eat, and so if you eat the same stuff you are the same stuff. Many tribes and coalitions (such as the Mafia) cut their fingers and rub them together to allow their blood to mingle, hence the expression "blood brothers." People also disfigure their bodies--by scarring, tattooing, piercing, hairstyling, and circumcision and other forms of genital mutilation--as if to make the group look like a separate race or species, biologically distinct from other human groups.

Language provides another way to co-opt the warm and fuzzy feelings people have toward their relatives. One common trick is the use of kinship metaphors: brethren, brotherhood, fraternity, sisterhood, sorority, the fatherland, the mother country, the family of man, and so on. These tactics are provably effective: experiments have shown that people are more convinced by a political speech if the speaker engages them with the language of kinship. Myths and ideologies are also commonly put to use. People are told that they are descended from a patriarch or a primeval couple, or that they are connected to a natal land, or that they came into being in the same act of creation, or that they are related to the same totemic animal.

In large part, the institutions of modernity depend on a dissolution of family ties. It is hard to run an effective organization if you cannot fire the knucklehead brother-in-law forced on you by your wife's family, nor can civil society function if the instruments of government are treated as the spoils of the most powerful local clan. Public safety is more effectively guaranteed by a disinterested police and court system than by a threat that your male relatives will avenge your murder, and national defense above all depends on the willingness of citizens to neglect the bonds of kinship. In *The*

Godfather: Part II

, Sonny Corleone upbraids

Michael for his sympathy with the men who enlisted after Pearl Harbor: "They're saps because they risk their lives for strangers. Your country ain't your blood. Remember that."

In the struggle between society and family, the exponential mathematics of kinship ordinarily works to the advantage of society. As time passes or groups get larger, family trees intertwine, dynasties dissipate, and nepotistic emotions get diluted. But families can defend themselves with a potent tactic: they can graft the twig tips of the family tree together by cousin marriage. If you force your daughter to marry her first cousin, then your son-in-law is your nephew, her father-in-law is your brother, your parents' estate will be worth twice as much per grandchild, and the couple will never have to bicker about which side of the family to visit on holidays. For these reasons, clans and dynasties in many cultures encourage first-or second-cousin marriage, tolerating the slightly elevated risk of genetic disease. Not only does cousin marriage amplify the average degree of relatedness among members of the clan, but it enmeshes them in a network of triangular relationships, with kinsmen valuing each other because of their many mutual kin as well as their own relatedness. As a result, the extended family, clan, or tribe can emerge as a powerfully cohesive bloc--and one with little common cause with other families, clans, or tribes in the larger polity that comprises them. The anthropologist Nancy Thornhill has shown that the prohibitions against incestuous marriages in most societies are not public-health measures aimed at reducing birth defects but the society's way of fighting back against extended families.

In January 2003, during the buildup to the war in Iraq, the journalist and blogger Steven Sailer published an article in *The American Conservative* in which he warned readers about a feature of that country that had been ignored in the ongoing debate. As in many traditional Middle Eastern societies, Iraqis tend to marry their cousins. About half of all marriages are consanguineous (including that of Saddam Hussein, who filled many government positions with his relatives from Tikrit). The connection between Iraqis' strong family ties and their tribalism, corruption, and lack of commitment to an overarching nation had long been noted by those familiar with the country. In 1931, King Faisal described his subjects as "devoid of any patriotic idea ... connected by no common tie, giving ear to evil; prone to anarchy, and perpetually ready to rise against any government whatsoever." Sailer presciently suggested that Iraqi family structure and its mismatch with the sensibilities of civil society would frustrate any attempt at democratic nation-building.

Outside a small family circle, the links of kinship are biologically trifling, vulnerable to manipulation, and inimical to modernity. For all that, the almost mystical bond that we feel with those whom we perceive as kin continues to be a potent force in human affairs. It is no small irony that in an age in which technology allows us to indulge these emotions as never before, our political culture systematically misunderstands them.

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*The Stuff of Thought:
Language as a Window
Into Human Nature*
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, will be published by Viking