BIOLOGICAL ARITHMETIC, CULTURAL ECONOMICS, AND THE AMERINDIAN TERMINATION DILEMMA

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According to family lore, my maternal grandfather's maternal grandmother was Cherokee, descended from one of the "Five Civilized Tribes" that in the 1830s had been coercively removed from their aboriginal homelands to Indian Territory. Planters had developed a lust for cotton land following Eli Whitney's 1793 invention of a low-cost way to separate the seeds from the fiber. Whitney's gin promised cotton so inexpensive that it might replace wool in the garb of the common folk, but that increased the demand for many interior acres that had previously been of modest agricultural value. Well-watered and fertile, about the best potential cotton land in the nation was occupied by the five tribes. Through a succession of treaties, the United States nibbled away at that territory.

The treaties the U. S. negotiated with the Cherokee entitled the tribe to punish U. S. citizens who violated the reservation boundary. [2] But organized bands of well-armed squatters often prevented the tribe from exercising that power along the reservation borders. As more and more squatters invaded, it would ultimately become hazardous for the Cherokee even to enter the margins of their own reservation. The border region having become of little practical use to the tribe, the U. S. would then negotiate still another treaty through which that territory would be ceded by the Cherokee.

There was nothing especially remarkable that the Cherokee gave up land. Eastern Hemisphere lands were still substantially more labor- and capital-intensive than those in the Western Hemisphere, so land was more valuable to the settlers than to the land-rich aboriginal tribes. What was reprehensible was that so much coercion was used by the militarily-superior settlers, and so little purely voluntary exchange. [3]

By the 1820s Cherokee territory, which had once lain in five states, was constricted to a part of north Georgia. There the Cherokee were finally overwhelmed after the 1827 Dahlonega gold strike.

The resulting gold rush, the nation's largest until '49, augmented the already festering political sentiment to move the indigenous peoples aside. Georgia seized the moment to legislate the Cherokee Nation out of existence in the view of state law, acting unilaterally to accomplish an unfulfilled promise that the national government would extinguish all sovereign Indian claims within the

state's borders. [4]

The tribe approached the U. S. Supreme Court as a foreign nation, demanding that the judiciary enforce Cherokee treaty rights (**Cherokee Nation v. Georgia**, 1831). While reviewing the breadth of its authority the Court found that

"[t]he third article of the constitution describes the extent of the judicial power. The second section closes an enumeration of the cases to which it is extended, with 'controversies' 'between a state or the citizens thereof, and foreign states, citizens, or subjects.' ... [Y]et it may well be doubted whether those tribes which reside within the boundaries of the United States can, with strict accuracy, be denominated foreign nations. They may, more correctly, perhaps, be denominated domestic dependent nations. ... If it be true that the Cherokee nation have rights, this is not the tribunal in which those rights are to be asserted."

The Cherokee petition presented a political question, requiring direct action by Congress. Unfortunately for the Cherokee, favorable Congressional action proved to be politically inexpedient.

Instead, Congress passed the Removal Act, signed by President Jackson in 1830, and the five tribes were strong-armed into an exchange of their shrunken territories for plots well beyond the Mississippi River, a region that they hardly knew. Notably, none of the tribes retired westward with enthusiasm, and terrible suffering and attrition accompanied them along the way. Well before century's end, large parts of the tribes' treaties had been abrogated by the U. S. government, and much of what had once been promised had in its turn been taken back.

My "trail-of-tears" heritage may surprise some associates, who reasonably will have concluded that by habit and appearance I more closely resemble a cowboy. And truth be told, I am far more cowboy than Indian. My father was a rancher on the western margin of Oklahoma, for one thing, nearly three hundred miles from the reservation that the Cherokee had been allotted. The Indians that I knew as a child were Kiowa or Comanche or Cheyenne (nomads native to that area), Apache (who had been forcibly removed there from Arizona), or were from Mexico. Each of those groups had been very different linguistically and culturally from "my people." The Apache seem even to have entered America during a much later wave of migration. By my childhood years, however, we all spoke English most if not all of the time, and went to the same schools and churches as the county's other residents.

Moreover, my father's heritage was, as far as we know, totally Appalachian. Appalachians are predominately of British stock, though I have never traced his lineage further east than Tennessee. Certainly English, Welsh, Irish, and

Scottish names are the only ones ever mentioned in surviving family records. Judging from his name, my maternal grandfather's other line -- up his father's side -- also was British at least in part, and possibly Appalachian as well. And my maternal grandmother was beyond question of German heritage -- her parents had arrived in Nebraska three years before her birth, and she was fluent only in German as she entered the first grade.

By a casual estimate, then, my genetic heritage seems to be about ten times as British and four times as German as it is Indian. And culturally I am just an Oklahoman, and proud enough of it. Yet if I documented my heritage I could likely enroll as an Indian in the eyes of the law. Nationally, the minimum many tribes impose on members is 1/16th Indian ancestry, sometimes even less, and for most purposes a tribe's determination is dispositive for federal questions.

But I am no Indian in any meaningful sense. Indeed, as I will demonstrate below, a statistically significant number of those of us who have 1/16th Indian ancestry nonetheless have absolutely no Indian genes. By merely looking in the mirror I cannot dismiss the conjecture that I have missed out. I regret the way that my Indian ancestors were treated, quite possibly by my Appalachian ancestors. But they are gone, all of them, and there is little to be done now but to remember the injustices that they suffered so that similar ones might be avoided in the future.

To be sure, many people live in Oklahoma and the rest of the nation whose genetic relationship with tribal ancestors is well above whatever tribal minimum applies in their case, and who follow at least a few ancient tribal customs, cultural practices of which I am profoundly ignorant. I begrudge them none of the meager unabrogated privileges that remain from those extracted by their Indian ancestors. If a state wants to end their special status, as states often do, it should stay out of Washington and negotiate with the tribes themselves.

But the idea that I might share (and dilute) that special place while my cousins on my father's side cannot is absurd. There is no rational way for my cousins to claim to be Indians, but there is no reasonable way that I can make such a claim either. Any cultural connection is nonexistent, the genetic one trivial if not broken entirely. In time a similar fate likely awaits all Amerindian lines.

Property is often retained within a family line and conveyed parent to child over many generations. Even when that property originated through a government grant, few would suggest that it should be confiscated merely because the present holder has little genetic or cultural connection with the ancestor who originally obtained it. Though their holdings are modest per capita, Indian tribes have a substantial amount of property in aggregate, much of it recognized through treaty. It is not suggested here that such property be treated in any extraordinary way.

But tribes were granted something else, sovereignty, that governments virtually never grant to ordinary citizens. That sovereignty was granted because both the tribes and the United States wanted Indians to be set apart to run their own affairs. But that raises the twin issues of which individuals should be entitled to claim that sovereignty today, and what becomes of it when there are no real Indians left? If there are no relevant living individuals left in a tribe, it is desirable that the sovereignty be terminated.

TRIBAL TERMINATION

"Tribal termination" has been a contentious term since it was coined during the Truman administration.[5] But that episode addressed other questions: Should tribal members, even those with substantial genetic and cultural ties to ancient aboriginal populations, be completely integrated into the general legal system? Should the sovereignty of tribal governments be ended? Did it matter what the Indians themselves thought? The question that I address here focuses only on populations without substantial genetic and cultural ties to their Indian ancestors, but who continue to be recognized as Indian through legal inattention.

One might imagine that the issue would fade as genetic and cultural integration continues. After all, Indians are the most impoverished group identified in the census. And they are often discriminated against in their communities. Why would anyone want to continue such a status if it were a pretense?

Neither poverty nor discrimination arises from tribal membership. Indian poverty arises from the typically scanty assets and human capital that individual Indians possess, not from their claim or denial that they are Indians. And discrimination is ordinarily predicated on a person's appearance, not tribal membership. People who look like Indians are apt to be discriminated against in some locales whether or not they are enrolled members of any tribe. Enrolled members of a tribe are unlikely to be discriminated against if they do not appear to be Indians.

But holding personal assets and appearance constant, there are benefits to being able to claim Indianhood, regardless of the logic of the claim. The benefits are usually modest, but occasionally impressive. For example, the sovereignty of the small Pequot tribe of Connecticut enables it to operate the most profitable casino in the world, though the state itself bans most gambling. The history of the Pequot tribe is illustrative of the matters addressed here.

New England colonial militias won a bloody war against the Pequot in 1637. Most of the Pequot survivors were sold into slavery, and no doubt some of their genes remain hidden and unrecognized among the progeny of those slave-

owners. A few survivors escaped into hiding, and were later given a small reservation. Over time those on the reservation became thoroughly intermingled with the surrounding population and the genetic and cultural connection with the original tribe eroded. Eventually most of them left the reservation.

Thus, we have two populations, one derived from the enslaved Pequot, one from the escapees. Every individual from each population has a modest probability of bearing a little Pequot genetic material. Neither population retains any significant cultural connection with the aboriginal tribe. Strangers would identify individuals from neither population as Indians. Yet the progeny of the escapees are entitled to operate a casino in Connecticut, while the progeny of those who were enslaved cannot, as that line was never part of a recognized tribal government. Some documentary evidence survives to link the progeny of the escapees to the aboriginal tribe, giving them a sovereignty more or less parallel to that of Connecticut, but the link was disrupted for those who were enslaved.

The enrolled members of the Pequot tribe are not asset poor today, and due to their appearance they would not be discriminated against by Indian-hating strangers. But they will continue to receive substantial revenues so long as they maintain tribal membership, providing their casino remains profitable. With continued intermarriage, however, their children will have only half the parents' Pequot ancestry. Maintaining the casino legacy for progeny, therefore, requires a periodic halving of membership criteria. But that is within the discretion of the tribe. Thus, one group with a positive but low probability of genetic relationship with the aboriginal Pequot are treated differently from another group with a positive but low probability of a similar genetic relationship.

Such a situation creates a potential for at least three sorts of inefficiency. First, individuals have an incentive to expend resources solely to establish and maintain a tenuous claim to Indianhood. Indeed, lawyers' salaries are a noteworthy item in the budget of the Pequot Tribe, with much of the lawyers' effort going to resist new claims to share the tribe's casino wealth. No claim can be rejected on the basis of appearance, as nobody on earth is more than a minor fraction Pequot. Nor can any claim be rejected on the basis of culture, as that is virtually extinct. And because the tribe had become moribund until **California v. Cabazon Band of Mission Indians** (1987) revived it by showing that tribal governments could conduct gambling in states where it was otherwise largely illegal, documentary evidence is scanty and unreliable.

Second, artificial distinctions between groups often prevent members from distributing themselves according to their comparative advantages. Certain progeny of the enslaved Pequot may well be better at administering gambling enterprises than the progeny of the escapees. But only the latter are in the entitled group. For that matter, people with no possible genetic relationship with the Pequot may have that comparative advantage.

Third, sovereigns within a sovereign alter the federal structure of our government. Federalism has been identified by Tiebout (1954), Weingast (1995), and others as an important foundation for our national well-being. Because political actions align imprecisely with citizen preference, sharing powers among the states has benefits. If through ignorance or politicians' avarice one state's government enacts legislation that is inferior to that of another, at least a few state citizens will take themselves and/or their assets to other jurisdictions with more favorable law. The transgressor must either correct its misguided policy or become less relevant in the national scheme. Having a system of overlapping sovereigns reduces the range of alternatives over which that interstate competition occurs.

TREATIES AS CONTRACTS

Along with other recognized Indian sovereigns, the Pequot enjoy certain tribal privileges that are not enjoyed by their neighbors. Such privileges are not, however, objectionable per se. They were not given gratuitously, but were exchanged for something that a colony, the Crown, or the United States valued, very often cession of a substantial portion of tribal territory. There was an offer, it was accepted, there was consideration: The treaty is a contract.

Private easements often enable one group to pursue activities that would amount to trespass if pursued by others; that is one reason for multi-page rather than multi-line sales contracts. Governments also grant easements that result in privileges being extended to some but denied to others. For instance, a plot that is occupied by a home but which a government wishes to add to a park or forest may be purchased with a stipulation that the seller can continue to occupy the home. Only those with an easement can live in such a reserve.

Thus distinctions between Indians and non-Indians seems unproblematic per se, given that the U. S. voluntarily agreed to grant the distinctions in exchange for the land that the government sought. Unless a mutually agreed sum is paid to tribes in exchange, treaty-based discriminatory treatment is to be condoned. [6]

But still the distinctions are between Indians and others, so hidden within are the twin issues raised earlier -- which individuals should be entitled to claim those distinctions today, and what happens when there are no real Indians left? Treaties are a form of contract, and the law has a way to analyze contracts. But that technique has never to my knowledge been applied to the determination of who is a member of a tribe, or to the issue of whether there are any tribal members left. But it can be.

When faced with a situation that was unforeseen in a contract, courts often

attempt as best they can to ascertain what stipulations the parties would have agreed to had the situation been foreseen. Then the court enforces that counterfactual contract. That is not by any stretch a perfect solution to contractual difficulties, but it seems to be about the best that anyone has yet devised. To reject an institution merely because it is imperfect, though no other is less so, has a name -- the Nirvana Fallacy (Demsetz 1969).

If one applies such a concept to Indian treaties, the question of what the ancient negotiators would have wanted for future generations becomes crucial. To approach that issue, assume the following hypothetical: In the early 19th century the Cherokee are negotiating with an envoy of the United States. The Cherokee reluctantly agree to give up a part of the tribal territory, but wish to retain a portion as a refuge from the squatters. All the issues seem to have been settled when the envoy asks if the Cherokee would be willing to include within their number some people who might be distantly related, though one cannot be entirely sure. If they are included they must be granted all the rights and privileges of the other Cherokee. Perhaps the tribal negotiators would have answered that if the individuals in question loved the Cherokee way of life and wanted to continue and enrich it, then they would be welcome. But the envoy replies that the people know next to nothing about the Cherokee way of life, and are unlikely ever to learn. It seems implausible that the Cherokee would willingly have agreed to accept the proposed tribal members.

Similarly, I would imagine that changing the time frame would have made little difference. I doubt that tribal negotiators would have harbored much interest in modern individuals whose probable genetic relationship was small or non-existent, and who had no substantial cultural connection. As matters have transpired, much of the eventual genetic and cultural dilution of the tribes has come via interactions with the progeny of the old tribe's oppressors. As I seem to be eight to ten times as much Appalachian as Cherokee, I may well fall into that category. Had they been asked, the Cherokee elders may have been hostile rather than indifferent to the prospect that someone like me could now claim Cherokee descent, and whatever modest privileges that implies. Ultimately there will be nobody in whom they might have had an interest.

The argument implies that genetic and cultural connections with the treaty-making tribes is the relevant criteria for determining whether one is properly to be consider to be of a tribe, and whether any tribe remains. Though there remain unresolved issues of appropriate cut-offs in what is ultimately a continuum, the mechanism by which cultures and gene pools evolve has to form the basis.

GENETIC AND CULTURAL EVOLUTION

Consider what it means to be, say, one-sixteenth Indian. As a first cut, it means superficially that the person is fifteen times as much non-Indian as Indian. And that, in turn, means that the one ancestor who was Indian, and whose people negotiated distinct status through treaties with the United States, has by today conferred that status not only on his or her own progeny but on the progeny of fifteen other people, very likely including some of the ancestral tribe's oppressors. To have benefited fifteen of the enemy for each of your own would seem a questionable tactic. Could that have been the tribal negotiators' intention?

Under more careful scrutiny, moreover, the genetic relationship becomes even more tenuous. A human has twenty-three pairs of chromosomes, with one member of each pair coming from the mother, and one from the father. Thus if one parent was a full-blood Indian and the other strictly Anglo, then one is in a simple quantitative sense exactly one-half Indian, because exactly one member of each of the twenty-three chromosome pairs came from the Indian parent. [7]

But a child of that half-blood cannot be literally one-quarter Indian in the same sense, because the child cannot have received eleven and one-half of the chromosomes that were passed to that parent from the full-blood grandparent. That number must be an integer. [8] It is reasonably likely that the child received eleven Indian chromosomes, and is nearly but not quite one-quarter Indian. It is equally likely that the child received twelve Indian chromosomes, and is a little more than one-quarter Indian. It is somewhat less likely, but still quite possible, that the child received ten Indian chromosomes, or thirteen, or nine, or fourteen ... .

Indeed, there is a tiny probability that all twenty-three chromosomes that were received from the half-blood parent were the twenty-three that had been passed from the full-blood grandparent. In that instance, the person would be a genetic half-blood though a quarter-blood by law. There is an equally tiny probability that the child received none of the Indian chromosomes.

After another generation of intermarriage, the probability of having received no Indian chromosomes is greater, and so on. In fact, the probability that one who legally is one-sixteenth Indian actually has no Indian genes is slightly greater than .05. [9] If this is unclear, consider the following: Since one has sixty-four ancestors six generations removed (ones great-great-great-great grandparents) but only forty-six chromosomes (twenty-three pairs), it is impossible to be genetically directly related to all sixty-four. You can be genetically related to no more than forty-six of them, and almost certainly fewer.

In fact, for a person who legally is 1/128 Indian, the best integer guess of the number of Indian genes is -- ZERO! The probability that such a person has received even one Indian chromosome has fallen below .5. Such a person most likely is the progeny exclusively of non-Indians.

At some point one must, it seems, conclude that the ancient tribal treaty negotiators could not have had in mind such a person. The tribal genes have not disappeared, but they have been dispersed through the population in such a way that they have become extremely diluted and practically untraceable.

Cultural dilution has eroded many tribes in a similar fashion, as with genetic dilution more commonly in the eastern United States than the western. A person with one Indian and one non-Indian parent will adopt some cultural habits from each (while other habits are amalgams, and still others are new innovations altogether). Similarly, that half-blood's child will adopt only some of the parent's cultural habits, and only some of those adopted will have come from the Indian grandparent.

Through such a process many tribal languages, religions, and folk ways have become extinct, and others are retained only among a few elderly members. [10] Some tribes are so dispersed that member children grow up completely isolated from other members of the tribe, and, despite their genetic makeup, their cultures are essentially non-Indian.

In brief, for some aboriginal tribes there remain no identifiable heirs, neither genetic nor cultural. Those tribes are gone. With the passage of years it seems inevitable that most other tribes will follow. Even a treaty right that was honestly intended to be perpetual dissolves when the line of inheritance is lost, just as the perpetual rights of fee simple ownership are lost when the heirship line becomes too attenuated. To ignore the extinction is to convey on one group of people of largely non-Indian ancestry and culture a special status that is not enjoyed by others of similar ancestry and culture.

CONCLUSION

One of this paper's implications is that the U. S. Supreme Court's attempt to homogenize the law that applies to intergovernmental relations involving tribes is misguided. Though it seems to have escaped notice, the tribes compete with one another when exploiting the various privileges of Indianhood. If one hundred tribes operate casinos, hunting lodges, or some similar enterprise, the profits per tribe will be lower than if only twenty tribes operate them. Each tribe, however, is at a unique point along its own logical path to termination -- some hardly started, others approaching the terminus. As a tribe nears the end of that path, the basis for retaining special status erodes. Judges ought to be made cognizant of how their decisions dilute the privileges of legitimate tribes if their courts insist on over-broad application.

Rational federal-tribal relations would distinguish tribes that survive in a meaningful way from those that are kept on life-support for opportunistic

reasons. Where a substantial genetic and cultural connection remains between present-day tribal members and those who negotiated treaties with the government of the United States a century ago or more, a moral argument at the least defends any special status that attaches to tribal membership; it was intended by the tribal negotiators. If that status has become so inconvenient that it must be terminated now, then do it by voluntary negotiation with the tribes involved. But if the special status continues until it becomes doubtful that any predictable connection remains between the remaining members and the ancient treaty negotiators, common sense dictates that the negotiators acted for nobody who is alive at that time and the distinctions should be dissolved.

To endow some members of an essentially non-Indian population with a special degree of sovereignty while denying their genetically- and culturally-similar neighbors the same right is arbitrary, inefficient, and lacks any coherent basis. It encourages individuals to expend resources merely to shore up specious claims on a transfer, not to increase what society has to share.

That intestate estates have no heirs who can be located reliably enough to avoid disruption of perpetual title calls for no celebration. Nor does the realization that a few tribes have in reality if not law disappeared from the face of the earth, and that many others will follow. But it is still fact. What is to happen when that time arrives? As it now stands, the resolution (when it eventually comes) will hinge on short-term political expediency rather than logic. This is neither to argue nor deny that any particular tribe has become extinct at this moment, an empirical matter that I have barely investigated. But that day will come. It might be well to ponder that inevitability now before insupportable interests and expectations become more rigidly entrenched.

NOTES

1. Professor of Law and Economics. I am extremely grateful to the Political Economy Research Center of Bozeman for providing a congenial, interactive atmosphere in which to write (it is hard to imagine a superior environment), and to the economists of PERC and Montana State University for probing questions and informative comments. The participants in the economic history workshop at Northwestern University pointed out a number of weaknesses in a subsequent draft.

I have also received essential assistance from colleagues on an informal basis. Chris Curran devised an algorithm for deriving extremely time-consuming probability computations upon which the project was threatening to founder. Terry Anderson pointed to a conundrum in an early draft that unsuccessfully applied property law to the problem considered here -- sovereignty is not an ordinary attribute of property, but it is a crucial element of tribal government. By

explaining that contract rather than property law was the better tool of analysis, Fred McChesney enabled me to cut through that conundrum. Deidre McCloskey suggested a number of improvements that make the argument flow more smoothly.

2.Article V of the Treaty of Hopewell, for instance, provided that "If any ... person not being Indian, shall attempt to settle on any of the lands ... allotted to the Indians ... such person shall forfeit the protection of the United States, and the Indians may punish him or not as they please."

3. Exercising military superiority is also costly, even against a weaker opponent (Umbeck 1981; Hirshleifer 1995) -- look at the cost of U. S. operations over Iraq. That many land transfers, both with the Cherokee and other tribes, were negotiated (Anderson & McChesney 1994; Getches, Wilkinson & Williams 1998) indicates that the expected military cost often exceeded the cost in trade goods.

4. Georgia extracted that promise in exchange for defining its western boundary at its present position, which required that it disavow claims of sovereignty over land further on. Britain had neglected to define the western extent of most of the thirteen colonies that coalesced into the United States, and some, including Georgia, aggressively laid sovereign claims stretching far into land occupied primarily by aboriginal tribes. The various claims, however, were frequently mutually-inconsistent. Ultimately, the budding interstate conflicts were resolved after much negotiation and bargaining, and the states grudgingly conceded their western claims to the national government.

5. Termination was an unfortunate word choice -- "terminated" tribes can and often do persist as voluntary associations, sometimes formally organizing as mutual corporations. Only the necessity for other governments to deal with them as fellow sovereigns is terminated, along with their automatic inclusion in congressional programs limited to recognized Indian tribes.

6. There may be externalities associated with governance of a single resource by two owners, but in a low transactions cost setting the problem can be dealt with through negotiation. Here there are only two parties, a tribe and a state, the stereotypical Coasean low transactions cost case (Coase 1960). An intergovernmental bargain would internalize the externalities, though one of the parties should pay the other, not demand a gift.

Similarly, ownership of the easement by a tribal government rather than individual members surely presents interesting public choice implications. But those problems arise from the ownership of anything by a government, and have no special relationship to the race of the citizens. That would be the topic of a different paper.

7. Since genes can be either dominant or recessive, pondering whether such a person is "really" one-half Indian is more intricate than it might seem. But that issue diminishes as it becomes less likely that a person possesses any Indian genes at all.

8. Again, I am taking a slight biological liberty; chromosomes can split and reform, sometimes leading to mutations (the vast bulk of which are either meaningless or deadly to the recipient fetus). Since it is rare, such recombination does not much affect the asymptotic probabilities discussed below.

9. I am indebted to Christopher Curran for helping to compute the relevant probability table. Or, more accurately, Curran discovered a mathematical shortcut and then computed the table after I had lamented my own inability to do so efficiently.

10. This is not to deny that cultural habits have also been lost through pressure from the Bureau of Indian Affairs, reformers, and so on. But even without such pressure cultural habits would eventually have been lost. Indeed, that is the history of culture -- it is, for instance, difficult to discern strictly Viking cultural habits today in Yorkshire, though at one time that area was conquered and occupied by those warriors. Indeed, it is difficult to discern strictly Viking cultural habits among modern Scandinavians, now among the most peaceable people on earth.

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