

Ultrasocial Darwinism

Cultural groups may call the evolutionary shots in modern societies

By BRUCE BOWER

Second of two articles

Fish gotta swim. Birds gotta fly. And people, it seems, gotta concoct a colossal array of cultural practices, group affiliations, and ethnic identities.

Over tens of thousands of years, we have acquired a special aptitude for tailoring ideas and innovations to the shifting needs of such groups, then passing the finished products on to the next generation. And in no time at all, on an evolutionary scale, urban societies and political states have become commonplace. Their astounding achievements and horrifying failures amass at an ever-quickenning, often overwhelming pace.

Modern civilization's paradoxical nature is expressed in the flexible adage, "We can send a man to the moon, so why can't we get rid of poverty (or stop the slaughter in Bosnia, or...)"

An evolutionary process unique to our species has molded societies capable of shooting astronauts to the moon and millions of designated enemies to death, assert Peter J. Richerson of the University of California, Davis and Robert Boyd of the University of California, Los Angeles. Cultural highs and lows alike spring from the human facility for coalescing into social units that extend far beyond family and friends, the two anthropologists argue.

In these assemblies, genetically unrelated folks band together by adopting cultural and ethnic practices that elicit mutual goodwill and good samaritanism. In contrast, small groups hold together through the return of favors between individuals and threats of punishment for selfish misdeeds.

Large cultural congregations dance to a peppier evolutionary tune than the traditional Darwinian waltz, in which genetic traits useful to a species slowly move to center stage, according to Richerson and Boyd. Instead, ideas and behaviors that give some cultural groups a survival edge over rival groups jitterbug to prominence, sometimes with a push from innate human instincts and sometimes on their own.

Richerson and Boyd's approach builds on the proposal—first described by

Richard Dawkins of Oxford University in England—that cultural evolution occurs through the widespread imitation of new ideas, fashions, and other innovations, known collectively as "memes."

"Only in the last few millennia have human societies begun to exceed, in numbers of individuals and degree of complexity, the societies of ants, termites, and corals," Richerson contends. "What's novel in the human case is our propensity for group selection driven by a cultural inheritance system that operates alongside and in interaction with genetic evolution."

In this scenario, certain cultural groups developed ideas that yielded organizational advantages over competing groups. Unprecedented levels of cooperation among hordes of genetic strangers then resulted in ultrasocial institutions and societies extending far beyond family and friends, argue Richerson and Boyd.

They presented their latest take on the evolution of ultrasocial groups in July at the annual meeting of the Human Behavior and Evolution Society in Santa Barbara, Calif.

The roots of cultural group selection theory extend back at least 15 years. New support for the concept has emerged at the same time that scientists have taken increasing note of genetic group selection, a related but separate process (SN: 11/18/95, p.328). The latter theory posits that natural selection sometimes preserves inherited physical and psychological traits that aid groups of organisms, even at the expense of individuals in those groups.

Cultural group selection represents an alternative to traditional notions of culture. Social scientists have long assumed that people living in different parts of the world fabricated unrelated cultural systems mainly in response to local circumstances. Most theories assume that a small number of genetically ingrained instincts, such as the hunger and sex drives, spawned a bevy of unique cultures throughout the world.

Boyd and Richerson's model introduces a broader view of the mind's innate workings into the consideration of how cultural groups may have taken

on an evolutionary life of their own.

Early support for cultural group selection came from studies inspired by population genetics. In their book *Cultural Transmission and Evolution: A Quantitative Approach* (1981, Princeton University Press), L. Luca Cavalli-Sforza and Marcus Feldman, both of Stanford University, modeled demographic changes sparked by the spread of new cultural values.

For instance, birth rates dropped dramatically in 19th century Europe shortly after the deaths caused by epidemics and famines had leveled off. Cavalli-Sforza and Feldman's statistical analysis suggests that, first, the educated, wealthy families opted for a smaller number of children; then, less-educated, poorer families followed suit.

The apparently conscious decision in both privileged and poor families to have fewer babies defied Darwinian imperatives to be fruitful and multiply one's genes. Falling birth rates and shrinking family sizes in successive social classes reflected the spread of new ideas about motherhood, such as the desirability of raising successful students rather than lots of kids, the Stanford scientists theorized.

Findings such as these inspired Boyd and Richerson to devise mathematical models of how cultural group selection might give rise to shared traditions and sentiments that draw people into ever-larger groups. At the same time, however, an individual's obligations to massive collective enterprises—ethnic groups, religions, and political parties, to name a few—often conflict with his or her small-scale loyalties to family and friends, they proposed.

One of their models assumed that people migrating from one distinct culture to another would tend to introduce useless, even harmful ideas derived from different environments. The model suggested that under these conditions, each culture maintains its integrity provided newcomers quickly identify and imitate critical cultural traits. Or, as the saying goes, "When in Rome, do as the Romans."

Even substantial migration between two simulated populations with newcomers who have relatively weak tendencies to conform to new cultural rules does not erase each group's distinctiveness, Boyd and Richerson argued.

In the real world of human cultures and societies, data in support of their theory has proven harder to come by. For instance, evidence that large groups inculcate traditions that replace those of genetic kinfolk comes mainly from a cross-cultural study of warfare published in 1968 by Keith F. Otterbein, an anthropologist at the State University of New York at Buffalo.

Otterbein found that societies based on small fraternal organizations of related men tend to experience warfare between internal factions. In contrast, societies that funnel a genetic assortment of warriors into large police or military institutions conduct most of their warfare against external enemies.

A more recent study, conducted by Richerson and Boyd with Joseph Soltis, also at UCLA, builds on this finding. It suggests that cultural group selection fueled a gradual expansion of social and political concerns over the past 50,000 years or more.

The researchers analyzed ethnographic records of the rate at which tribal groups in five parts of highland New Guinea dissolved because of warfare throughout much of the first half of this century, before extensive contact with Europeans. In each generation, between 10 percent and 20 percent of all communities in these areas broke apart and dispersed after losing wars with their neighbors, the scientists report in the June CURRENT ANTHROPOLOGY.

Victorious villages tended to take members of vanquished groups into the fold, a pattern that allows for the replacement of less successful group practices with those that better enhance community survival.

The New Guinea data indicate that cultural group selection can cause an initially rare innovation or institution that benefits group welfare to become common in about 500 to 1,000 years, or 20 to 40 generations, according to Richerson and his colleagues. This finding roughly matches what is known about the rate at which new political and social institutions took hold in various hunting, foraging, and farming communities before the rise of modern states, they contend.

In New Guinea, for instance, it took the Enga and Maring cultures about a millennium to evolve institutions for coordinating what are now relatively large societies. During that same period, however, many cultural differences flared up between the Enga and Maring that had nothing to do with improving group survival, the investigators hold.

Over tens of thousands of years, cultural group selection has yielded the ultrasocial arrangements of modern life, in their view. In fact, the scientists maintain, ethnographic evidence suggests that bands of hunter-gatherers and foragers have long maintained flexible "tribal" organizations of 500 to 1,500 people, in which geographically separate groups help one another at critical junctures and share the same language and traditions. Under these circumstances, collective adaptations could have accumulated even faster than every 500 to 1,000 years, Boyd and Richerson argue.

Cultural group selection now infuses the competition between modern political parties, business firms, and other institutions within states, as well as that between states, they contend.

Members of various ultrasocial groups need some kind of signaling system through which to elicit empathy and assistance from one another, Richerson and Boyd add. Family ties and the exchange of personal favors cannot forge cooperation on so grand a scale.

Instead, cultural collectives encourage their members to acquire symbolic traits that create a sense of solidarity, the scientists assert. Group badges of this type range from body ornaments and speech dialects to detailed religious beliefs and ritual behaviors.

Symbolic markers of group membership have flourished over the past 10,000 years, Richerson and Boyd assert. In that time, the development of agriculture has drawn people into permanent settlements and permitted huge societies to flourish. Common beliefs, communication styles, and other cultural badges have underwritten the cooperative feats of modern societies, such as the construction of road networks, irrigation systems, electronic information highways, and—seemingly without fail—armies.

Expanding civilizations fan conflict between humanity's ancient social instinct for living with relatives and friends in small groups and demands for entering into the cooperative efforts of complex cultural institutions, the researchers propose. It makes sense, they note, that ethnic identities forged over long periods still command stubborn loyalty from those living in political states of more recent origin.

Conflicts at the core of human ultrasocial groups, unlike the more smoothly run group enterprises of the honeybee hive and the termite nest, create recurring problems, Richerson contends. For instance, major political and religious institutions constantly work to suppress budding ideological heresies that vie for people's allegiances. Complex societies have often featured self-appointed god-kings, brutal inquisitions, forced conver-

sions, and other coercive methods to deal with these threats, he argues.

Utopian experiments in ultrasociality often use extreme coercion and a cult of personality surrounding leaders (for example, the former Soviet Union's Joseph Stalin) to minimize family ties, friendship, and ethnic loyalties, the Davis scientist asserts. Even in democratic societies, he holds, leaders generally take some personal advantage of their power.

Cultural group selection may indeed help to explain the evolution of the societies in which most people now live, remarks David Sloan Wilson, an evolutionary biologist at the State University of New York at Binghamton. But Richerson and Boyd neglect evidence suggesting that traits produced through genetic group selection underlie massive cooperative efforts, Wilson maintains.

For instance, an evolved capacity of cooperative individuals to pick out fellow cooperators and avoid deceptive, self-serving folk—which gives groups of cooperators a decided survival advantage over groups of deceivers—may have helped set the stage for ultrasocial endeavors, Wilson holds.

Boyd and Richerson's theory gets a cooler reception from evolutionary psychologists, who study innate brain mechanisms that evolved throughout the Stone Age to serve the interests of individuals. These researchers argue that culture has long been oversold as an explanation for behavior differences from one population to another.

A cornucopia of evolved instincts for thinking about important problems in Stone Age environments gets translated into different patterns of behavior, depending on local circumstances, theorize John Tooby and Leda Cosmides, both of the University of California, Santa Barbara. Human nature thus "evokes" different traditions and activities that achieve the status of cultural characteristics, they contend. Evolved brain mechanisms for handling specific aspects of the social world, such as choosing a mate or recognizing cheating in social transactions, then influence the spread of ideas in a culture, according to Tooby and Cosmides.

Cultural evolution feeds off human nature rather than transcending it, in their view.

Richerson stands by cultural group selection as a critical, if sketchily understood, force in the rise of ultrasocial living.

"Human social instincts are certainly not adapted to live in societies numbering in the millions organized by elites that establish a great social distance between themselves and ordinary citizens," he contends. "The means by which ancient social instincts and modern cultural institutions conspire to create complex societies remains to be told." □