MORE THAN BONES & STONES

Anthropology faculty explore links between evolution and human behavior.

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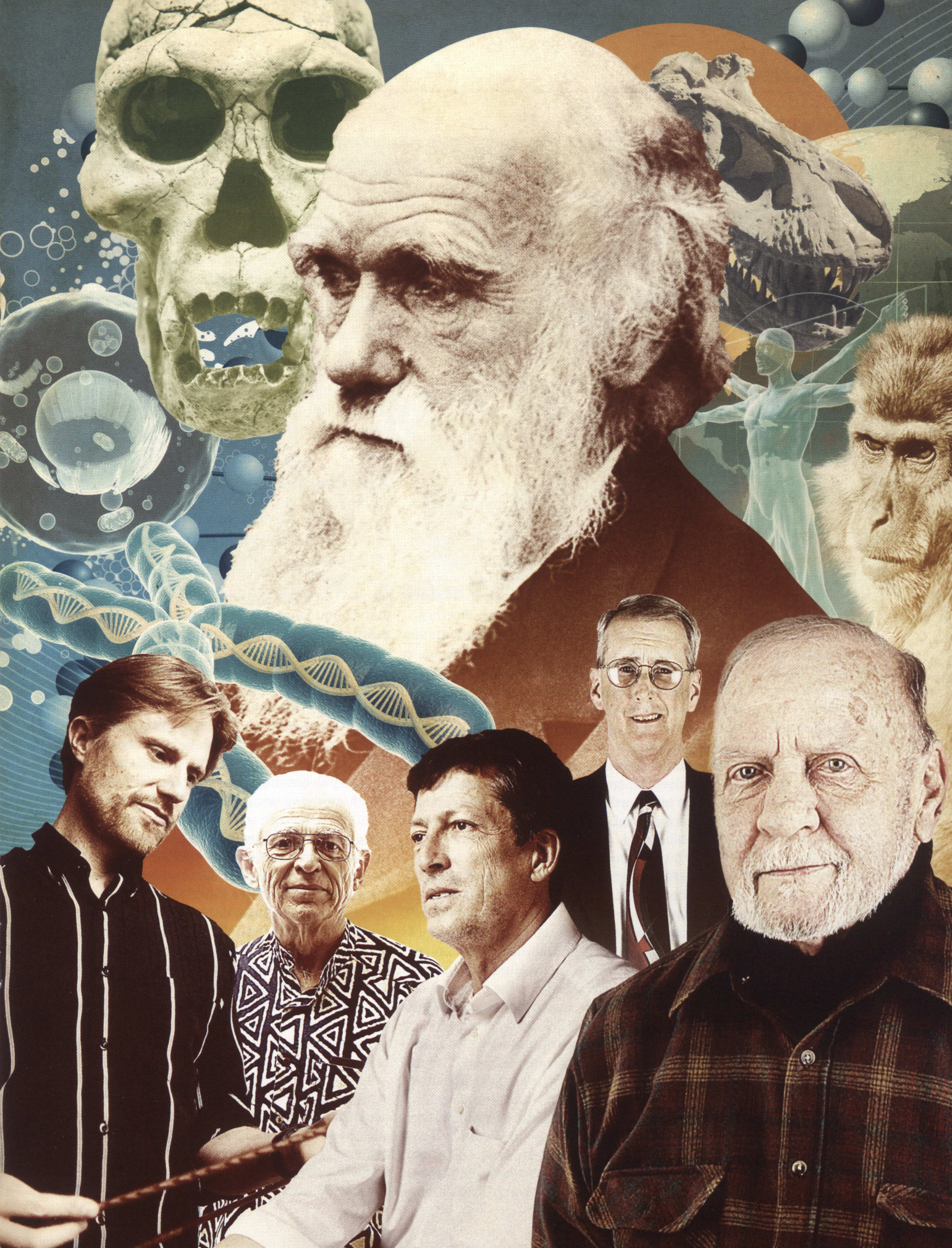


WHAT ACCOUNTS FOR HUMAN BEHAVIOR?

Is it nature or nurture? Biology or culture? Or is it both?

Old-school anthropologists believed human behavior was largely informed by culture. These days, a new school of anthropologists use not only cultural field studies but also research in biology, genetics, neuroscience and other areas. For these scientists, studying human behavior is not an either-or proposition.

In recent years, MU's Department of Anthropology has become a leader in this growing field, known as cultural evolutionary anthropology. The department has a lofty goal: the synthesis of evolution and human behavior. This requires crossing into many disciplines, a familiar practice for MU researchers because of the university's emphasis on interdisciplinary work. The department is integrated across campus with psychological, biological and anatomical sciences, as well as units including the School of Law and the Trulaske College of Business.

"The beauty of anthropology is that we have the opportunity to pull all this stuff together," says Mark Flinn, department chair, a fellow of the American Association for the Advancement of Science, and president of the Human Behavior and Evolution Society. "We have the opportunity for big-picture stuff that crosses into both the sciences and the humanities."

Transforming the department's focus from the cultural to the evolutionary biological took years. It was driven by Michael O'Brien, a professor of archaeology and dean of the College of Arts and Science; former department chair R. Lee Lyman; and Flinn. Strategic hiring added the talents and energy of junior faculty such as Robert S. Walker, Mary Shenk and Karthik Panchanathan. Rounding out the department are lauded research professors Martin Daly, an evolutionary psychologist and fellow of the Royal Society of Canada, and Napoleon A. Chagnon, a pioneer of evolutionary anthropology and member of the National Academy of Sciences. Chagnon, who joined MU Jan. 1, 2013, predicts the department "will soon be in the top five in the country, maybe the world" in cultural evolutionary anthropology.

Edward Liebow, executive director of the American Anthropological Association, says the MU anthropology faculty are moving the field forward by "tackling the root causes of complicated issues confronting us today."

But it didn't happen overnight. The department — and anthropology in general — first had to endure some growing pains.

The Great Schism

Although scientists since the Enlightenment have proposed theories to explain humankind's existence, Charles Darwin's work, particularly in *On the Origin of Species* in 1859, was the big bang of origin explanation. Today, nearly all scientists accept Darwinian evolution, with its premise that Homo sapiens are an evolved species who share a common ancestor with other higher primates. Fieldwork and technological advances have produced data that support and build upon Darwin's idea.

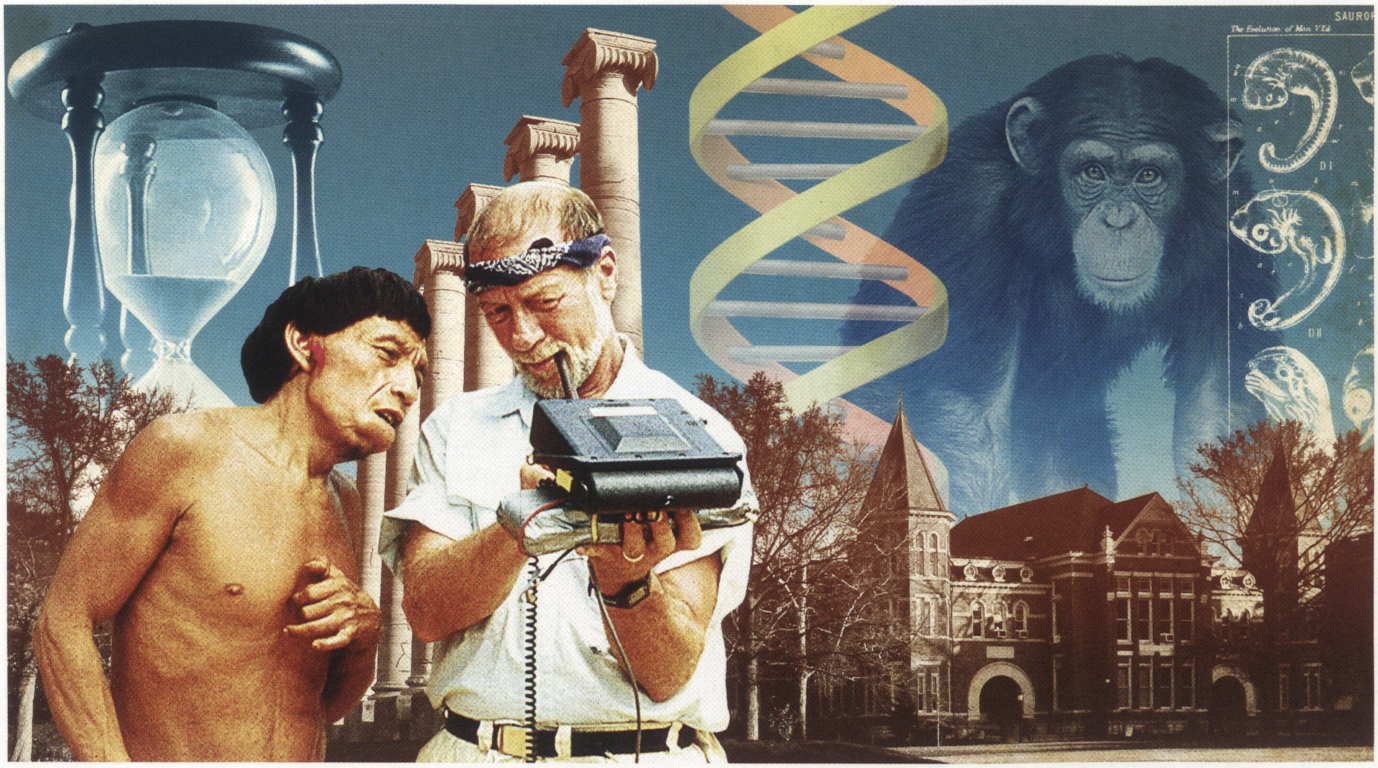
Even so, anthropologists have had a mixed response to evolutionary thought. At first, it was largely embraced. By the late 19th century, anthropologists were applying evolutionary concepts to paleontology (studying fossils) and primatology (studying nonhuman higher primates).

But the romance soured when evolutionary biology was co-opted by the eugenics movement, in which American scientists and those from other countries experimented to improve a society's gene pool. The movement reached its height in the 1920s and culminated in the Holocaust perpetrated by Nazi Germany during World War II.

Evolutionary ideas were fine when applied to neck-down science such as paleoanthropology. But the neck-up approach — applying evolution to culture and human behavior — was not only wrong scientifically, many anthropologists said. It was also dangerous. "Evolution was a four-letter word in anthropology," Lyman says.

Then, in the 1970s, maverick anthropologists such as Chagnon published papers that explained human behavior as a product of both culture and evolution. Chagnon based his conclusions on years of field studies of the Yanomamö people in the jungles of southern Venezuela. He chronicled a violent society where 30 percent of

← PREVIOUS SPREAD
Anthropological research can include neuroscience, genetics, biology, health science, functional anatomy, mathematics, history and psychology. Shown below Charles Darwin are, from left, anthropology faculty members Robert Walker, Martin Daly, Mark Flinn, Michael O'Brien and Napoleon Chagnon.



† Napoleon Chagnon, one of the first anthropologists to explain human behavior as a product of both culture and evolution, is pictured in 1990 showing an early GPS instrument to a Yanomamö headman. Scientific advances in the medical sciences have produced data that support and build upon ideas of Darwinian evolution.

male deaths were due to fights over women, and 10 percent of village women had been abducted from other villages during raids. His most controversial discovery was that men who killed the most Indians in raids also had the most wives and offspring. The young anthropologist couched his discussion in tenets of evolutionary thought. Aggressive behavior offered a survival advantage and more reproductive opportunities to pass on genes, he wrote. And stealing women widened a village's gene pool.

The pushback from colleagues was immediate. At the American Anthropological Association convention in 1976, Chagnon was scheduled to lead a session on biology and human behavior based on his Yanomamö field studies. Several scholars objected. "Impassioned accusations of racism, fascism and Nazism punctuated the frenzied business meeting that night," Chagnon wrote in his memoir, *Noble Savages: My Life Among Two Dangerous Tribes — The Yanomamö and the Anthropologists* (Simon & Schuster, 2013).

"Most anthropologists were reluctant until recently to assume the academic and philosophical position that human beings have an evolved nature as well as cultural nature," Chagnon says.

In the early 1980s, when the schism was still raw, O'Brien and H. Clyde Wilson, the late professor emeritus of anthropology, laid plans to ground MU's anthropology department in evolutionary biology. O'Brien said its time had come; Darwinian concepts were relevant to understanding human behavior. A devout Roman Catholic, O'Brien is also "a hard-core evolutionist. I'll fight to the death for evolution because it's a fact," he says.

Over decades, through attrition, retirement and strategic hiring of faculty, the MU department transformed itself. Today's 13 faculty members and two research professors perform studies and write papers on cultural, biological, archaeological and evolutionary issues, many times enriched through collaborations with other experts.

Applying Evolutionary Science

Anthropology is no longer just bones and stones. The ingredients in the recipe of anthropological research can include neuroscience, genetics, biology, health science, functional anatomy, mathematics, history, psychology and economics.

Flinn is a biomedical anthropologist. During the fall 2013 semester, he taught two nontraditional anthropology courses: Evolutionary Medicine and Evolution of Human Sexuality. His research focuses on people's hormonal responses to social situations.

For the past 24 years, Flinn has studied how stress influences children as they age into adulthood. He and colleagues — among them Barry England, a professor of pathology at the University of Michigan — regularly take saliva and urine samples from 314 participants living in a rural vil-

lage in the Caribbean. They monitor changes in the participants' hormones and immune function.

Understanding the physiological components of childhood stress has practical applications to developing medicines and psychological strategies to treat the conditions. But stress also presents an evolutionary puzzle, Flinn says, because it causes significant health problems. Why would natural selection favor it? Flinn is trying to answer this.

In another study, Flinn and two colleagues — Michael Muehlenbein, associate professor of anthropology at Indiana University, and Davide Ponzi, PhD '11, a former MU biology researcher who currently is a postdoc at the University of Chicago — selected a group of Caribbean men to play dominoes and cricket, first with friends and then with strangers. Tests showed that testosterone levels rose sharply when the islanders competed against strangers, yet remained flat when their opponents were friends.

'EVOLUTION WAS A FOUR-LETTER WORD IN ANTHROPOLOGY.'

Flinn connected the findings to humankind's prehistoric heritage of living in tribal groups constantly under threat of invasion from other groups. Natural selection favored an adrenaline rush in face-offs with strangers but not when interacting with fellow tribes people, who relied on cooperation for survival. "Our hormonal reactions while competing are part of how we evolved as a cooperative species," says Flinn, whose coauthored study appeared in the journal *Human Nature* in 2013.

But when it comes to kin, friends take a back seat. At MU's 2013 Life Sciences & Society Symposium, Daly lectured about his decades of research on family relations and social issues. His studies indicate that humans are hardwired to favor blood relatives over friends and strangers.

One form of bias he calls the Cinderella Effect, when parents favor their biological children over stepchildren. "In a stepfather household, kids are far less able to get economic support for college," Daly told the Jesse Auditorium audience March 16, 2013. "In a stepmother household, less money is spent on them, such as for dental care." But it gets worse. Over a 16-year period, stepfathers in Canada killed children who were weeks old to age 5 at a per capita rate that's 120 times higher than those killed in that age range by their biological fathers, according to records in Canada's national homicides archive. "Blood really is thicker than water," Daly said.

Daly is working on a book that takes an evolutionary perspective on the relationship between people's socioeconomic status and homicide rates.

Sitting in his office in Swallow Hall, feet propped on a chair, Daly explained the utility of his research. "I lean toward the view that getting better information about anything that is a social problem improves the likelihood something can be done with it to help people," he said.

For 14 years, Assistant Professor Robert Walker has studied tribal societies in Brazil, where he discovered an in-group/out-group mentality among hunter-gatherer tribes similar to the social structures of other higher primates such as chimpanzees. For Amazon tribes and for chimpanzee groups, violence was ongoing and offered benefits of sexual access to captured females and possible expansion of territory, Walker and Drew Bailey, a psychology postdoc at Carnegie Mellon University in Pittsburgh, wrote in a paper published in 2012 in *Evolution and Human Behavior*. But beyond those reasons, the fighting appeared to be generated by the in-group/out-group sensibility.

"It's really going to war against 'the other,' " Walker says.

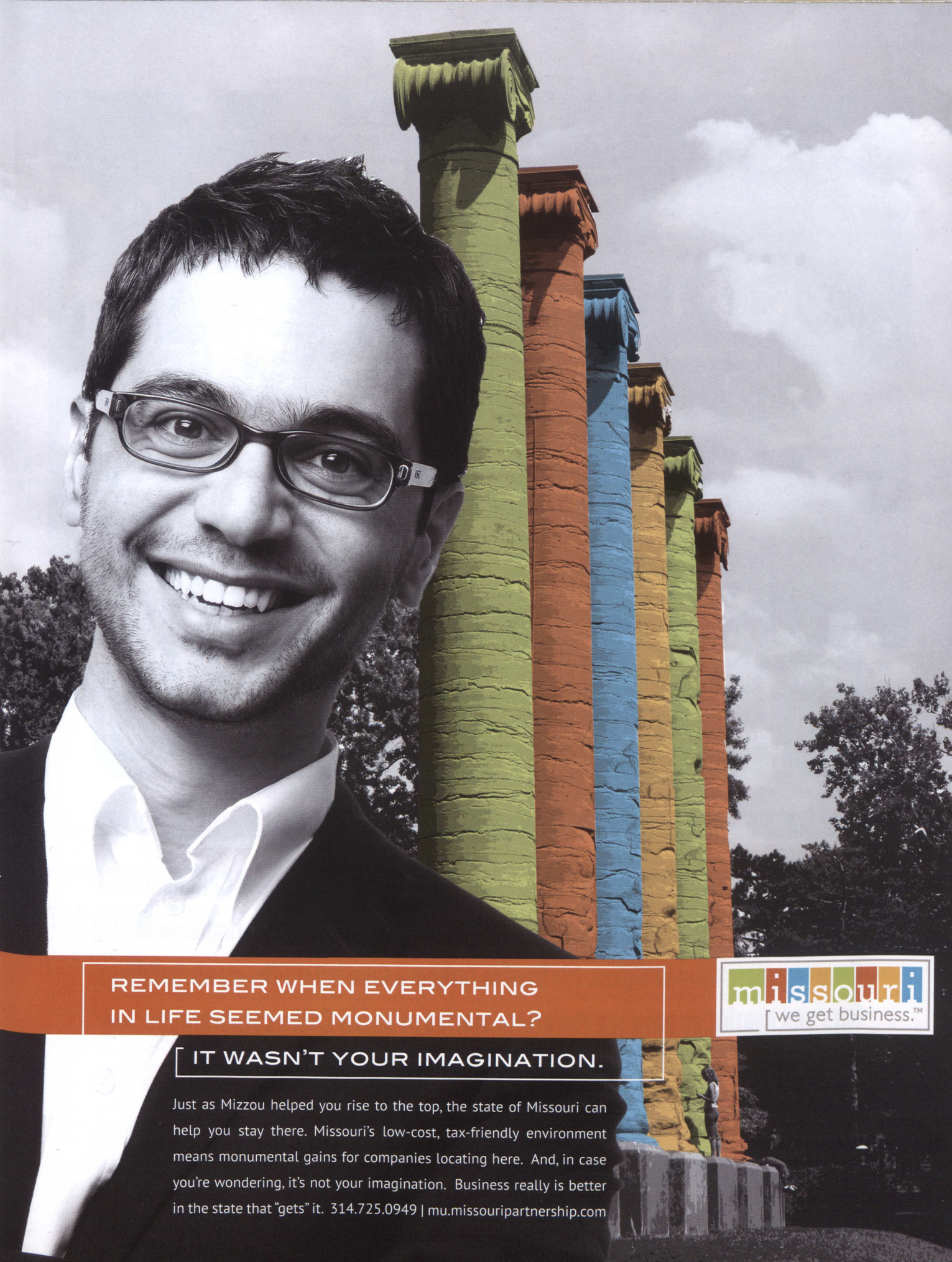
People in developed societies are also prone to in-group/out-group behavior, though its expression is typically more refined. Nationalism, racism and class wars are examples, Walker says.

But humans aren't mere puppets, tugged forever by the strings of their inherited culture and biology. Understanding why humans behave as they do offers an opportunity to correct bad behavior, scientists say. "It is a way of understanding ourselves that is extremely powerful," Flinn says of anthropological studies. "Without it, we will continue to do things that make no sense."

The New Vista

The questions anthropologists ask have remained largely the same since the turn of the 20th century, including those involving human behavior. But the responses to these questions from the best researchers today are more evidence-based than speculative, more nuanced than general, involve more experts in a variety of disciplines, and tend to fit neatly into the widening field of evolutionary science. The MU department has scaled the precipice and stepped to the edge of this scientific vista, and other universities are noticing.

"We have this reputation as the fun and exciting place to be where the new ideas are happening," Flinn says. **M**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