

## **Cattle Cause Patriliney**

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Anthropologists have long suspected that the practice of raising cattle caused early "matrilineal" societies to become "patrilineal." In matrilineal societies, descent and kinship groups are traced through females. Daughters or other female relatives inherit wealth, property, and sometimes political power. Patriliney is the opposite sort of social arrangement--descent is traced through males, and inheritances go to sons or male relatives.

Anthropologists have observed that matrilineal societies are almost always horticultural: they grow fruits and vegetables for food, and do not raise cattle or other large livestock. Meanwhile, patrilineal societies often do raise cattle. This strong correlation between horticulture and matriliney, in comparison to patriliney's association with cattle-raising, convinced many experts that, as anthropologist David Aberle put it, "the cow is the enemy of matriliney, and the friend of patriliney." But a correlation between two cultural traits in modern populations does not prove that one trait caused the other. That is because human cultures are historically related to one another (which means that, in technical terms, they are not statistically independent). Therefore, the co-occurrence of two cultural traits could result simply from the traits being passed down together from an ancestor culture, and not from a causal relationship between them. In order to show that one cultural trait causes another, it is necessary to show that they are related independently of shared ancestry. In anthropology, this is known as Galton's Problem.

Now, anthropologists Clare Janaki Holden and Ruth Mace from University College London have claimed that "language trees" provide the strongest evidence to date that cattle cause patriliney. Language trees are models of the historical relationships between languages. They are similar to trees used in biology to model the evolutionary relationships between species. Using lists of vocabulary items drawn from modern languages, scientists can reconstruct the languages' historical relationships by comparing the similarities and differences between words and sounds. These relationships are represented by a diagram that looks like a tree. The modern languages are located at the tips of the tree, and each internal node in the tree (a junction of two branches) represents an ancestor language in the past. The historical "distance" between two languages can be determined by finding their closest common ancestor node in the tree.

Historical relationships between languages are thought to be a fairly direct reflection of the historical relationships between human populations. When a population splits apart, the languages spoken by the separated populations diverge independently over time. This results in the development of new, distinct languages. Therefore anthropologists and other scientists use language trees as mirrors of human population history.

To test the hypothesis about patriliney and cattle, Holden and Mace used a previously developed Bantu family language tree to model the history of 68 modern Bantu speaking

populations. (The Bantu language family consists of over 450 languages spoken by people in equatorial and sub-Saharan Africa.) Holden and Mace then applied a computer program to test for statistical correlations between patriliney and cattle in these 68 populations. Because their language tree shows the historical relationships between these populations, the anthropologists could overcome Galton's Problem by controlling for common ancestry in their statistical analysis. In other words, they could show that patriliney was statistically likely to co-occur with cattle cultivation regardless of whether these traits had co-occurred in an ancestor culture. These results strongly support the hypothesis that matrilineal societies in Africa became patrilineal after they began raising cattle.

Holden, Mace and other anthropologists have discussed at least two reasons why cattle could have caused patriliney in early African societies. First, cattle are commonly used as a dowry in Africa. Men or their families give cattle to the bride's family in exchange for her hand in marriage, a system known as "bridewealth." The more cattle a man has, the more wives he can afford to take. The more wives a man has, the more children he can produce. (Of course, the reverse is not true--a woman with many husbands can still only have one pregnancy at a time.) Therefore, "If you want to maximise your number of grandchildren, you should give your cattle herd to your son," Holden explained in an email interview. From an evolutionary perspective, this means that when cattle are introduced into a society there will be pressure for it to become patrilineal.

The second reason is straightforward. Cattle must be protected from raiders and thieves. Cattle defense is more likely to fall to men than women, due to men's greater average strength and size. This raises the social status of men, and makes them more likely to control the cattle. Together, these factors may explain why the acquisition of cattle spelled the end of matriliney in early human societies.

### **Internet Resources**

"Cattle Ownership Makes It A Man's World."

([www.newscientist.com/news/news.jsp?id=ns99994220](http://www.newscientist.com/news/news.jsp?id=ns99994220)) Article on Mace and Holden's work from New Scientist.

"FirstCite." ([www.pubs.royalsoc.ac.uk/firstcite\\_common.shtml](http://www.pubs.royalsoc.ac.uk/firstcite_common.shtml)) Provides free online access to the abstract and full text of Holden and Mace's study; included under the heading, "Proceedings: Biological Sciences."

"Human Evolutionary Ecology Group." ([www.ucl.ac.uk/heeg/culture.htm](http://www.ucl.ac.uk/heeg/culture.htm)) Website describing Holden and Mace's research.

### **KEYWORDS for Electronic Searches**

matriliney, patriliney, horticulture, Galton's Problem, language tree, Bantu languages