

## Societies evolve a bit like creatures, study finds

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**Societies evolve somewhat similarly to the way living creatures do, in that increases in complexity tend to be gradual, according to new research published in the journal *Nature*.**

**Most scientists “think that biological evolution happens in incremental, small steps. We found the same thing in political evolution,” said Currie of University College London, U.K., one of the authors of the report in the Oct. 14 issue.**



An arrangement of limestone slabs on the island of Tongatapu, Tonga in the Pacific. It's thought to have been built as a gateway to the royal compound of the 11th Paramount Chief of Tonga at the beginning of the 13th century. (Credit: Thomas Currie)

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**They defined political “complexity” as the number of layers of authority, from local to regional power bases covering ever-expanding areas. In this picture, the simplest societies are small tribes or bands with one, often informal, leadership role; the most complex are modern nation-states, with multiple levels of control and bureaucracy. Many other societies are somewhere in between.**

**Scientists have had trouble fully understanding how such complexity develops, because much of it occurred in prehistory. The archaeological evidence is incomplete, and societal organization isn't the kind of characteristic that tends to leave direct evidence in the archaeological record, Currie noted.**

**Currie and colleagues sought to solve the problem using so-called phylogenetic methods, adapted from biology. In this approach, existing societies are viewed as new branches of a family tree, much as currently existing species are commonly arranged on an evolutionary or “family” tree.**

**In either case, based on the modern characteristics of these populations, scientists try to reconstruct how they probably looked when they first arose from common progenitors, and what changes would have had to occur since then.**

**In the case of organisms, scientists can use genetic data to estimate when such common ancestors lived, since genes tend to change at a set rate.**

**In the case of societies, Currie's group used language instead of genetic data. And they focused on a specific family of societies: speakers of Austronesian languages, common throughout the Pacific islands.**

**It's a “particularly suitable database” of information, wrote Jared Diamond of the University of California, Los Angeles, in a separate commentary in the journal. That's because the “language tree” for this group is very complete, he observed. Moreover, “ancestral Austronesian societies underwent spectacular political differentiation to give rise to examples of the entire range of political organization, from small egalitarian societies such as Borneo's Iban, through the simple chiefdoms of Easter Island and New Zealand and the complex chiefdoms of Tahiti and Sumatra, to the Javan and Malagasy states.”**

Currie and colleagues tested six competing models of political “evolution” against the database and concluded that the best-fitting model is one in which complexity increases or decreases one step at a time—with one layer of authority added or removed as a society increases or decreases in complexity.

A close second in terms of best-fitting models, they added, was one in which complexity can increase only one step at a time, but can decrease by more than one step at a time. This can occur, for example, if a political system disintegrates or if a small group sets out to found a colony elsewhere.

One can make a “rough analogy” between the path followed by social evolution and that followed by biological evolution, Currie said—“single cells aggregating into larger organisms, then groups of organisms.” Moreover, as in the evolution of individual species, competition plays an important role in the shaping of societies, and perhaps, their levels of complexity, Currie and colleagues wrote.

Regardless of precisely how this evolution occurs, it seems “political evolution is constrained to follow only incremental increases in complexity,” the team wrote. “This could be due to such factors as an evolved social psychology adapted to life in small-scale groups, the difficulty in reorganizing existing institutions that rely on the coordination of large numbers of individuals, or the requirement for the development of other institutions before more hierarchic organization is stable.”