

**Daniel García Rivero. *Arqueología y Evolución: A la Búsqueda de filogenias Culturales*, Serie Geografía e Historia, Universidad de Sevilla, Sevilla, 2013. ISBN 9788447214907.**

García Rivero's book represents what is, to my knowledge, the first published volume on evolutionary archaeology to be published in Europe, excluding the United Kingdom. A few edited volumes have come out of Argentina, and, although excellent, are not on par with García Rivero's book in terms of depth and scope. Darwinian evolution has finally assumed a fairly prominent place in American and British archaeology, to the point that those of us who helped carve out that niche no longer feel the need to even mention Darwin's name in our publications. This is as it should be; one certainly does not see evolutionary biologists beginning a paper by pledging their allegiance to Darwin. Rather, they simply go about their work, knowing subconsciously that readers will naturally assume what the underlying paradigm is that guides their work.

In the Spanish-speaking world, archaeology is just now starting to show more than a passing interest in evolutionary archaeology, but almost all of that interest has been confined to Argentina. It is gratifying to see this interest spreading to Spain. Regardless of one's geographic location, García Rivero's book can serve as a blueprint for how to extend Darwinian principles into how we make sense of the past. The volume is arranged into six chapters, beginning with an introduction and followed by ever-more-technical subjects, from an overview of various perspectives on culture and cultural evolution, to cultural transmission, to methods for understanding cultural inheritance.

The latter topic is really what the book focuses on: How do we adapt methods developed in biology to track relatedness for use in archaeology? One such method is cladistics, which was developed in the 1940s by the German entomologist Willi Hennig and today is one of the main approaches to phylogenetic reconstruction. In brief, cladistics creates hypotheses of evolutionary descent with explicit rules surrounding changes in the form of things through time. Cladistics generates what are called "phylogenetic trees," which are testable hypotheses of relatedness. Trees show change within lineages and can be used to construct an ordinal-scale sequence

of the evolution of taxa, be they taxa comprising organisms, languages, or stone tools. Essentially, this means that in certain cases we can potentially determine not only, say, which projectile-point form preceded another form but which form was *ancestral* to another.

As García Rivero makes clear in his extensive treatment of the subject, phylogenetic reconstruction is based on a model of descent with modification in which new taxa arise from the bifurcation of existing ones. It defines ancestor-descendant relationships in terms of relative recentness of common ancestry: Two taxa are deemed to be more closely related to one another than either is to a third taxon if they share a common ancestor that is not also shared by the third taxon. The evidence for exclusive common ancestry is evolutionarily novel, or "derived," character states. Two taxa are inferred to share a common ancestor to the exclusion of a third taxon if they exhibit derived character states that are not also exhibited by the third taxon.

One outstanding feature of the book is the glossary of terms, which helps guide readers who are new to the world of phylogenetics. Many of the drawings and tables come from articles and books that I co-authored with various colleagues, including two books that Lee Lyman and I published, *Applying Evolutionary Archaeology: A Systematic Approach* (2000) and *Cladistics and Archaeology* (2003). It was my hope that they would have significant influence beyond North America, and that hope certainly was fulfilled with the publication of García Rivero's excellent volume. I highly recommend it to all archaeologists interested in bringing logical reasoning and methodological rigor to what they do.

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