

Simulations, Genetics and Human Prehistory

Shuichi Matsumura, Peter Forster, and Colin Renfrew

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Reviewed by KYLE BILLINGTON

Department of Archaeology, University of Sheffield, West Court, 2 Mappin Street, Sheffield S1 4DT, UNITED KINGDOM; prp10knb@shef.ac.uk

This volume is a good overview of the use of different genetic approaches to the study of human prehistory and how the insights offered by these approaches can inform archaeological interpretations. The contributions offer an interesting insight into how a growing cross-disciplinary approach from two differing fields of study can offer novel thoughts on longstanding problems. Furthermore, there is clearly a lot that both disciplines can learn from each other, and also from continued collaboration, that can only result in improvements to understanding in both fields. The volume represents the works presented at a symposium dealing mainly with genetic simulations of human movements to islands.

As a non-geneticist, with only an elementary understanding of genetics, I decided to review this book in an attempt to further my understanding of this interesting field. My first note to any prospective readers would be that acquiring a good understanding of genetics prior to beginning your read would be advisable (although there is a brief overview of some of the most basic concepts presented in the introduction). I will certainly be doing so before having a second attempt at reading the book. That said, even with just a basic knowledge of genetics this is still a hugely enjoyable read and does have plenty to offer for the layman. The conclusions drawn are of obvious archaeological and evolutionary significance. It has proved difficult to present comprehensive accounts of population dispersals from only archaeological or genetic evidence (see Chapter 11). Considering environmental and geographic factors in analyses has offered results which are more reconcilable with the archaeological evidence. This is perhaps the greatest advantage of such a cross-disciplinary format.

The book is split into six sections; the first three sections cover broad topics of continued interest in archaeology. These are the human migration out of Africa, complex societies in Europe (both prehistoric and historic), and human dispersals from Asia. The second three sections cover the more philosophical aspects of genetic approaches in archaeology including methodological challenges involved in integrating genetics into archaeology, how archaeologists view the use of genetics in their field, and, finally, a chapter considering the actual plausibility of such research.

In the first section the origin of modern humans is considered by exploring the multiregional versus unique origin hypotheses. By comparing DNA profiles from around the world and comprehensively mapping environmental

factors it is shown that the unique origin for humans is favored by genetic evidence. A greater resolution is given to the results by using a higher number of genetic loci in the analysis and this is almost a recurrent theme throughout the book; the more genetic information available for study the better. The origin of modern humans in East Africa also is evinced by the negative correlation between genetic diversity of a population and geographical distance from East Africa. The section also looks at two different approaches to studying island population history which will be of great interest to the avid geneticist and archaeologist alike.

The second section deals mostly with the British Isles, firstly, their colonization and, secondly, their subsequent invasion by the Anglo-Saxons. The latter is my personal favorite chapter (Chapter 6), an account of the invasion and spread of Anglo-Saxon Y-chromosome DNA throughout the British Isles. The reason I am so fond of this particular chapter is because of the elegant convergence of genetic and archaeological ideas. The spread of Y-chromosomes from the continent is linked succinctly to socioeconomic factors as well as changes in British law over time. The arguments presented in this chapter are then carried forward in a wonderful explanation of the evolution of the native language from Brittonic (the original Celtic language) to Old English. I would say to any archaeologists with no particular interest in genetics, and to any geneticists with no particular interest in archaeology, read this chapter.

Section Three deals with migrations from Asia and will be of particular interest to many archaeologists and anthropologists. The first chapter in the section deals with the interesting colonization of Madagascar. I had been previously unaware of the noteworthy mix of African and Asian genomes on the island and found it most interesting to learn about, as well as the unusual language which seems to have Asian affinities despite the island being approximately ten times closer to mainland Africa than South East Asia. All aspects of this section I am sure would be of great appeal to the layman. The chapters within the first three sections, while utilizing complex genetic techniques (at least from the point of view of the non-geneticist) maintain a grasp on interesting non-genetic topics that make this research accessible to all to some degree. Technical language is kept to a minimum and is properly explained where it is used in most cases; this results in a thoroughly enjoyable read despite the highly specialist content of some of the studies presented.

As noted earlier, the second three sections deal with the more philosophical aspects of studies of this type and of such a cross-disciplinary approach. Section Four investigates the methodological challenges of using genetic approaches to reconstruct past human movements. It provides some highly interesting discussions. Section Five may be of particular interest to the archaeologist beginning to foster an interest in the application of genetics to their field. The section offers some insights from archaeologists on the use of genetics in archaeology, advantages, disadvantages, and future directions.

I have found, as I am sure most people will, that this book is appealing and enjoyable, and I am confident that it will be accessible to all. The book is written throughout in non-specialist language and covers such a vast range of fascinating topics that I think it is essential for everybody. It is written by scholars with on-going research in the field and with long histories of similar research and so you could not wish for a more well-informed text. The figures are very informative and are well utilized, offering an invaluable aid to the text. At \$50 there is no excuse for not having this book in your collection.