

The evolution of modern human diversity

**A study of cranial
variation**

MARTA MIRAZÓN LAHR



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Exactly how modern humans evolved is a subject of intense debate. This book deals with the evolution of modern humans from an archaic ancestor and the differentiation of modern populations from each other. The first section of the book investigates whether modern populations arose from regional archaic hominid groups that were already different from each other, and argues that in fact, most lines of evidence support a single, recent origin of modern humans in Africa. Dr Lahr then goes on to examine ways in which this diversification could have occurred, given what we know from fossils, archaeological remains and the relationships of existing populations today. This book will be a must for all those interested in human evolution.

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To Fabio, Phillip and Christopher

Foreword

When Anders Retzius, a century and a half ago, invented the cranial index, he gave us an answer for which there was no question. Nonetheless this, and other indices for face, nose and so on, were useful in description, and there ensued a long period of setting up and standardising cranial measurements, and the gathering and publication of the same – literally in volumes. Results were not commensurate with the effort: they remained largely descriptive, except perhaps as used in the discernment of races of dubious actuality. Eventually English and Indian biometricians (Pearson, Hobgen, Fisher, Mahalanobis, Rao) addressed the problems of population parameters, generalised distances and factors of shape – a turning point because redundancy of information could now be controlled, and significant elements of shape could be elicited. But it was only in the computer age that various workers of the last few decades were able to build on this, largely using intergroup distances and clustering techniques. These have given much significant information, although actual results have differed among workers because of differing data, exact form of analysis or suitability of method to problem.

Now Marta Mirazón Lahr, in this book, goes us all one better, tailoring measurement and method to the precise problems perceived, in a well integrated study. She attacks the main question of the moment, that of modern human origins. She sharply defines what should be looked for in the existing evidence. She selects or creates measurements and graded morphological traits, clearly defined and tested for reliability. She analyses these over regional and other samples, simultaneously handling the fossil data, the context of time, and various probable processes like loss of robusticity or modes of population dispersal. She has looked under a lot of old stones. She ends with a broad and suggestive reconstruction of probable events, without being dogmatic or overly specific, and thus getting into side issues.

And all this is eminently readable – clarity of reasoning makes for clarity of prose. Her main conclusion supports a recent evolution of moderns and a stepwise dispersal from Africa, as against the alternative, the Multiregional Model of separate development. Whether or not some remain unpersuaded,

she has made a solid contribution to the discussion. I for one can only contemplate in some awe the formidable amount of exacting work she has accomplished.

W.W. Howells
Maine, May, 1995

Preface

This book is the outcome of my years of study at Cambridge. Cambridge has one of the world's great skeletal collections, collections that remain a major source of information on our history and biology. The study of human skeletal, and particularly cranial, morphology was one of the main interests of physical anthropologists for a long period of time, until it fell into disregard in the middle of this century. The fall of *craniology* had many reasons, some historical, some political and some scientific. Nevertheless, the study of recent human cranial variation in the past 40 years continued, largely through the works of a number of people working with the applications of multivariate statistics to anthropology. These researchers have developed a consistent framework of relationships between modern populations, and my work rests heavily on their studies, especially the works of W.W. Howells, L. Brace, M. Pietrusewsky and G. van Vark. My own research, however, does not aim at disclosing close population relationships in terms of statistical distances. My greatest interest is in terms of mechanisms that can disclose the evolutionary pathways of diversification, be these social, ecological or morphological. I believe that all these played a role, varying in importance in different circumstances. This book represents an attempt at examining some of these processes, and suggesting a possible pattern of the evolution of modern humans.

The first and second parts of this book represent the research I carried out for my PhD, under the supervision of Rob Foley. Nick Macie-Taylor advised on many of the statistical analyses used, and I gained from his knowledge, dedication and enormous patience. Chris Stringer gave many suggestions and ideas, and I thank him for his much appreciated advice. The third part of the book reflects the research I carried out in the past three years, with a post-doctoral Fellowship from Clare College, Cambridge. I have had the pleasure and benefit of discussing my work with L. Aiello, Baruch Arensburg, J. Bowman, C. Duhig, H. Eeley, M. Gomendio, L. Humphrey, R. Kruszinski, P. O'Connor, K. Robson Brown, E. Roldán, V. da Silva and Nan Stevens.

My recent work has been partly done in collaboration with Richard Wright from Australia, Rebeca Haydenblit from Mexico (currently in

Cambridge), and especially with Rob Foley. I have gained from Richard's vast statistical knowledge and concerns, Rebeca's practicality and realistic approach, and Rob's pull towards theory, and literally, millions of ideas. With collaborations like these, ideas are shared to the extent in which they no longer come from one or the other. So I am sure that they will all recognise many of their own thoughts in my writings – and I gratefully acknowledge their very different contributions to my own thinking. My most sincere thanks to Bill Howells, who patiently read and commented on the entire manuscript, and whose knowledge and generosity I so much admire. He has been a most important source of support and encouragement. My greatest intellectual debt is to Rob Foley, who throughout the years has been teacher, supervisor, colleague and friend. Discussing and arguing about the evolution of modern humans with him is not only always interesting but enormous fun, and it only gets better when Baruch Arensburg is in the room. To both of them, who are very dear friends, my greatest thanks.

I thank the following people for allowing access to skeletal material under their care and much appreciated hospitality: B. Arensburg, M. Berner, S. Condemi, G. D'Amore, R. Foley, D. Hervet-Grimaud, R. Kritscher, R. Kruszinski, H. de Lumley, J. Moggi-Cecchi, M. Piccardi, C. Stringer and J. Zias. Cambridge Colleges are a real experience (especially to a South American), and through Clare and the generosity of its Fellows, I discovered the important role they play in nurturing and promoting research. I received several small grants from Clare, as well as from the Leakey Trust, the CARE Foundation, and a full PhD scholarship from CNPq-Brasil. Many thanks also to the editorial staff of CUP, especially Tracey Sanderson and Rita Owen, for their able assistance.

My most sincere thanks to my parents, Luis and Martha Mirazón, who helped me in every way, and to my sisters Gabi, Marina and Nora.

I dedicate this work to Fabio and our children, Phil and Chris. Those who know us, know how much Fa's care, help, support and interest mean. Without him, nothing of this would be. Phil and Chris are the greatest joy of my life.

Marta Mirazón Lahr
Cambridge, June 1995

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