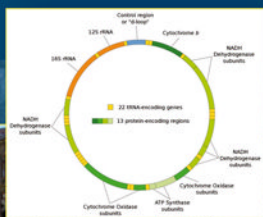


STUDIES IN GLOBAL SOCIAL HISTORY

MIGRATION HISTORY IN WORLD HISTORY

MULTIDISCIPLINARY
APPROACHES

EDITED BY JAN LUCASSEN,
LEO LUCASSEN & PATRICK MANNING



BRILL

Migration History in World History

Studies in Global Social History

Series Editor

Marcel van der Linden

International Institute of Social History, Amsterdam, The Netherlands

Editorial Board

Sven E. Beckert

Harvard University, Cambridge, MA, USA

Philip Bonner

University of the Witwatersrand, Johannesburg, South Africa

Dirk Hoerder

University of Arizona, Phoenix, AR, USA

Chitra Joshi

Indraprastha College, Delhi University, India

Amarjit Kaur

University of New England, Armidale, Australia

Barbara Weinstein

New York University, New York, NY, USA

VOLUME 3

Migration History in World History

Multidisciplinary Approaches

Edited by

Jan Lucassen, Leo Lucassen and Patrick Manning



BRILL

LEIDEN • BOSTON
2010

Cover illustration:

This book is printed on acid-free paper.

Library of Congress Cataloging-in-Publication Data

Migration history in world history : multidisciplinary approaches / edited by
Jan Lucassen, Leo Lucassen and Patrick Manning.

p. cm. — (Studies in global social history ; v. 3)

Includes bibliographical references and index.

ISBN 978-90-04-18031-4 (hardback : alk. paper) 1. Human beings—Migrations—
History. 2. Emigration and immigration—History. I. Lucassen, Jan. II. Lucassen, Leo,
1959– III. Manning, Patrick, 1941–

GN370.M54 2010

304.809—dc22

2009043278

ISSN 1874-6705

ISBN 978 90 04 18031 4

Copyright 2010 by Koninklijke Brill NV, Leiden, The Netherlands.
Koninklijke Brill NV incorporates the imprints Brill, Hotei Publishing,
IDC Publishers, Martinus Nijhoff Publishers and VSP.

All rights reserved. No part of this publication may be reproduced, translated,
stored in a retrieval system, or transmitted in any form or by any means, electronic,
mechanical, photocopying, recording or otherwise, without prior written permission
from the publisher.

Authorization to photocopy items for internal or personal use is granted by
Koninklijke Brill NV provided that the appropriate fees are paid directly to
The Copyright Clearance Center, 222 Rosewood Drive, Suite 910,
Danvers, MA 01923, USA.
Fees are subject to change.

PRINTED IN THE NETHERLANDS

CONTENTS

Foreword	vii
About the authors	ix

PART I

HISTORICAL APPROACHES

Migration History: Multidisciplinary Approaches	3
<i>Jan Lucassen, Leo Lucassen and Patrick Manning</i>	

PART II

BIOLOGICAL APPROACHES

Population Genetics and the Migration of Modern Humans (<i>Homo Sapiens</i>)	39
<i>Peter de Knijff</i>	
A Brief Introduction to a Geochemical Method Used in Assessing Migration in Biological Anthropology	59
<i>Shomarka Keita</i>	

PART III

LINGUISTIC APPROACHES

Prehistoric Migration and Colonisation Processes in Oceania: A View from Historical Linguistics and Archaeology	77
<i>Andrew Pawley</i>	
Linguistic Testimony and Migration Histories	113
<i>Christopher Ehret</i>	

The Archaeo-Linguistics of Migration	155
<i>Patrick McConvell</i>	

PART IV

ANTHROPOLOGICAL APPROACHES

Ancient Immigrants: Archaeology and Maritime Migrations ...	191
<i>Jon M. Erlandson</i>	
The Family Factor in Migration Decisions	215
<i>Jan Kok</i>	
References	251
Index on Names of Authors	277
Geographical and Languages Index	279
Subject Index	285

FOREWORD

This book is part of a larger project, entitled “*Setting the Agenda for a Long-term World Migration History*”, initiated by Ulbe Bosma, David Feldman, Nancy Green, Gijs Kessler and the first two editors of this book. The project starts from the premise that a long time frame and a global perspective are crucial in order to fully understand the causes and effects of migration and settlement processes in today’s globalising world. In its current form, the field of historical migration study focuses primarily on the European and Atlantic worlds. The initiators of this project aim to broaden the perspective to include the full migration experience in the non-Western world while proposing both a short and long-term series of studies to further this goal. The short term series entails three conferences and the publication of their proceedings. The first conference took place on 16 and 17 December 2005 at the Netherlands Institute of Advanced Studies (NIAS) in Wassenaar. The first part of the conference was devoted to a discussion of papers on periodization by Patrick Manning and Dick Hoerder, on geographical horizons by Adam McKeown and Prabhu Mohapatra, and on the categories “migration” and “diaspora” by Donna Gabaccia. The second part of the conference was given over to contributions that the sciences (historical linguistics, archaeo-linguistics, physical anthropology and population genetics) might bring to the field.

This book offers an introduction to the development of migration history over the last decades. It is based partially on the first part of the conference, as well as revised versions of the papers (by Christopher Ehret, Shomarka Keita, Patrick McConvell, and Andrew Pawley) of the second part of the conference, supplemented by work from other authors (Jon Erlandson, Peter de Knijff, and Jan Kok). In the introduction we will also discuss the added value of these contributions to what one might call “traditional” migration history.

The second conference was devoted to settlement processes and membership regimes worldwide since 3000 BCE and was held in Minneapolis on 17–19 April 2008. The third conference on migration movements worldwide, will take place in Taipé in 2010.

Finally, we would like to express our gratitude for the support given to this project by the Netherlands Institute of Advanced Studies, the N. W. Posthumus Institute, Sephis, the Unger van Brerofonds and the Immigration History Research Center (IHRC) of the University of Minnesota.

Amsterdam/Leiden/Pittsburgh, May 2009

ABOUT THE AUTHORS

CHRISTOPHER EHRET (1941) is professor of History at the Department of History, University of California Los Angeles (UCLA).

JON M. ERLANDSON (1954) is professor of Archaeology at the Department of Anthropology, University of Oregon.

SHOMARKA KEITA (1954) is a physician and anthropologist affiliated with the National Human Genome Center of Howard University and the department of Anthropology of the Smithsonian Institution in Washington, DC.

PETER DE KNIJFF (1956) is professor of Population and Evolutionary Genetics at the Leiden University Medical Center (LUMC) of Leiden University.

JAN KOK (1959) is a social historian attached to the International Institute of Social History (IISH) in Amsterdam and affiliated to the Virtual Knowledge Studio (VKS) of the Royal Netherlands Academy of Arts and Sciences.

JAN LUCASSEN (1947) is senior researcher attached to the International Institute of Social History (IISH) in Amsterdam and professor of History at the Free University of Amsterdam.

LEO LUCASSEN (1959) is professor of Social History at the Institute of History of Leiden University.

PATRICK MANNING (1941) is Andrew W. Mellon professor of World History at the University of Pittsburgh.

PATRICK McCONVELL (1947) is a research fellow (Linguistics) at the School of Language Studies of the Australian National University in Canberra.

ANDREW K. PAWLEY (1941) is professor emeritus, attached to the Department of Linguistics at the Australian National University in Canberra.

PART I

HISTORICAL APPROACHES

MIGRATION HISTORY: MULTIDISCIPLINARY APPROACHES

Jan Lucassen, Leo Lucassen and Patrick Manning

Migration is the talk of the town. It is difficult to read a newspaper without stumbling upon the ubiquitous phenomenon of human geographical mobility, its consequences and the reactions it provokes: boat refugees from Africa, dead bodies washed up on Mediterranean shores, Chinese peasants in Shanghai and other booming towns, Filipino servants and nannies in Rome and Dubai, Mexicans illegally crossing the border of the United States, Polish and Romanian workers all over Western Europe and Chinese mainland brides in Taiwan, to mention just a few examples.¹ On the whole, the current situation is seen as resulting from unique political upheavals (the fall of the Iron Curtain, the wars in Iraq and Sudan, etc.). Others point to the process of globalisation, which is regarded as unprecedented and characterised by increasing cultural, social, political and economic global interaction and interpenetration since the 1980s or so.² Contemporary predictions about migration and its effects have often been proved wrong, largely due to an insufficient understanding of the past. Think of the forecasts at the beginning of the 1990s that 25 million Russians would leave the Soviet Union and of a massive stream of labour migrants from other Eastern European countries after the fall of the Iron Curtain.³ Moreover, such a-historical interpretations are not particularly helpful in understanding the nature of the migration experience. Quite the reverse, recent studies show, for example, that the current global migration is more diverse, but that its scale is strikingly similar to a century ago,⁴ whereas more long ranging observations show that migration has been a structural aspect of human life since the very beginnings.⁵ So far, however, the work by

¹ Piper and Roces 2003; Paliwala and Uberoi 2005; Lu 2008.

² Held et al. 1999; Sassen 2006. For different periodizations, see Strikwerda 1999; O'Rourke and Williamson 2002 and Manning 2005.

³ Thränhardt 1996.

⁴ Gozzini 2006.

⁵ Hoerder 2002 and Manning 2005.

migration historians has not really influenced the current debate.⁶ As a result, the discussions on the problems caused by global migration do not profit from the long-term insight developed within the field of migration history.

WHY DO MIGRATION STUDIES MATTER?

Optimism or pessimism has often dominated the public discourse in an irrational way. Scholars, policy makers and the media alike tend to ignore relevant historical analogies and interpret current developments as unprecedented. For example, in January 2007, Bernard Lewis, the world-renowned Middle Eastern and Islamic scholar, voiced his belief that Europe would become Islamic by the end of the century and that Muslims are on the verge of taking over this part of the world, fueling fears that migrants from Muslim countries are a sort of fifth column and that they will remain an alien body and a threat to Western values.⁷ Others predict that the internal migration of 345 million people within China in the next 25 years will destabilize or even disrupt society.

Such moral panic is nothing new. The economic historian William Cunningham prophesied in 1897 that the (then) recent Russian Jewish immigrants to London—in contrast to earlier waves of migrants to the UK—would be unfit for assimilation, as were Southern Europeans in the eyes of many American commentators and politicians circa 1900.⁸ Similar developments in the 19th century are the widespread concerns about Catholic Irish immigrants in Protestant England and the United States, whose massive presence would wreck society and who, in the eyes of the majority, could never assimilate because their religion was at odds with democracy and individualism. Or in the words of Aristide Zolberg:

The confrontation between a sanctimonious mid-19th-century Anglo-American Protestantism and a demonized Roman Catholicism strikingly evokes the late twentieth century construct of a “clash of civilizations”

⁶ With the notable exception of the work by the historian Klaus Bade, who has been very influential, especially in the German speaking world, in linking historical knowledge on the last two centuries to the political debate on migration and integration: Bade 1995; Bade 2000 and Bade 2003.

⁷ Interviews with Bernhard Lewis in *Die Welt* (July 28, 2004) and *The Jerusalem Post* (January 29, 2007). See also Tibi 2002; Very different opinions were voiced by: Roy 2004; Klausen 2005 and Laurence and Vaisse 2006.

⁸ Cunningham 1897; Foner 2000; Gerstle and Mollenkopf 2001; Zolberg 2006.

between the West and Islam, and more particularly European reactions to Muslim immigrants.⁹

The same holds true for the moral panic that accompanied the massive internal migrations in Western Europe during the Industrial Revolution,¹⁰ and the fear for unskilled and defective pauper immigrants in the United States before World War I, leading to a surge of eugenic ideas, both from the right and the (progressive) left.¹¹ Re-reading the historical record can provide an important temporal comparison for our own times, and thus put in perspective the recurring moral panic.¹² Historians have a particular role in the contemporary debate on migration and settlement issues. Being able to analyse continuity and change, they can not only correct widespread misconceptions, but also help understand general conditions under which migration processes occur and the factors that influence the ensuing acculturation processes.

In short, we argue that the basis of contemporary optimism or pessimism regarding migration movements and settlement processes has been built on a weak understanding of the past, and thereby of the nature of these phenomena. This is explained by the fact that—as historians tend to stress—much of their research is neglected by the general public and policy makers, but also by a lack of systematic historical knowledge on global connections and processes as such. A concerted effort is therefore necessary to redefine the field of migration history and to formulate new and promising questions that move away from the national focus centered on European and Atlantic regions and towards a more global perspective.

WHY DOES GLOBAL MIGRATION MATTER FOR HISTORY WRITING?

If historians can be useful for contemporary debates about global migration, then it follows that global migration should also be of concern to most nation-based historians. Except for states that explicitly defined themselves as immigration countries, such as the United States, Canada, New Zealand and Australia,¹³ until recently most national histories

⁹ Zolberg 2006: 434.

¹⁰ As described in Chevalier 1973 and Jones 1971.

¹¹ Leonard 2005; Zolberg 2006; Stromquist 2006; Fahrmeir 2007: 156–162.

¹² As argued in Lucassen 2005 and Lucassen, Feldman and Oltmer 2006.

¹³ As well as Caribbean and South American countries and South Africa.

seemed to have had no need to incorporate migration into their narratives. In Europe, migration history was the field of a handful of specialists largely providing footnotes to economic and social histories. In other parts of the world the available knowledge was spread among manifold specialists in the arts and the humanities and also in the social sciences who predominantly addressed academic audiences in their own areas but failed to build a bridge to specialists in migration history, thus deepening the splendid isolation of migration history.¹⁴

Meanwhile, the lack of attention by historians to migration is changing quickly and increasingly shows how fundamental and structural this phenomenon is for human civilizations. First, the importance of migration in the political and social debate worldwide has also aroused interest in its historical aspects in countries outside of the white settler colonies.¹⁵ This concerns especially Western and Northern European countries which were once the source of massive emigration to the Americas and other parts of the world. Many of these, however, have experienced significant immigration, as well as massive internal migrations, both in the early modern and modern period,¹⁶ long before the well known post World War II colonial, labor and refugee migrations. Secondly, the spectacular growth of World History has given rise to comparisons and approaches that go well beyond Atlantic perspectives. This applies not only to the 1846–1940 period¹⁷ but also to the history of the slave trade in early modern history, which has largely ignored massive slave migrations in Asia, also before the advent of Europeans.¹⁸ Thirdly, many scholars, especially in the sub-field of family history, have argued that only detailed and local studies in a global comparative framework can explain why and how people migrate.¹⁹ In this book we argue that global migration history needs to link all of these levels, from the local to the regional, national and global perspectives.

¹⁴ As argued by Morawska already in 1990.

¹⁵ Good examples are: on the national level Noiriel 1988; Lucassen and Penninx 1997; N.L. Green 2002 and Bade 1992. On the European level, see: Bade 2003; Moch 2003a; Lucassen 2005 and Bade et al. 2007.

¹⁶ Moch 1983; Lucassen 1987; Pooley and Turnbull 1998; Hochstadt 1999; Moch 2003a.

¹⁷ McKeown 2004; Bosma 2007; Mohapatra 2007.

¹⁸ McKeown 2004; Vink 2007; Vink 2003. For an earlier attempt at linking migration in Asia to global history, see Gungwu 1997 and 2000.

¹⁹ Van Poppel et al. 2004; Engelen and Wolf 2005; Ying-Chang and Wolf 2006; and Moch 2007. See also the chapter by Jan Kok in this volume.

THE STATE OF THE ART

In the 1990s it seemed appropriate to take stock of the achievements of migration history.²⁰ On the one hand, it was clear that this field had grown from a narrow Atlantic focus, strongly based in the United States, the self-professed immigration country *par excellence*, into a sub-discipline of history in other parts of the world. The large-scale immigration of guest-workers and the arrival of millions of colonial migrants in Western Europe certainly contributed to that continent beginning to appreciate its migration roots. This awareness was to extend far beyond the well known westbound emigration past when in the 19th century tens of millions of Europeans crossed the ocean to the Americas.²¹ A first summary, and major achievement, was provided by Leslie Page Moch in 1992, in her analysis of both internal and international migrations *within* Western Europe since the middle of the 17th century. Moch successfully bridged the fields of local and temporary mobility and (international) migration, making use of insights in the fields of historical demography and family history.²² In the same year Pieter Emmer and Magnus Mörner published their systematic overview—covering the period 1500–1970—of both Europeans moving to other parts of the world and the role of Europeans (Dutch, Portuguese, English) in the (forced and indentured) migration of Asians and Africans to other continents, especially South America and the Caribbean.²³ A few years later the volume edited by Nicholas Canny enlarged and deepened the intra-European picture by adding the emigration of Europeans both within Europe (Scots to Poland) and to other parts of the world (predominantly in the Americas), both as free and indentured migrants in the early modern period.²⁴

Attempts to go beyond Europe and the Atlantic are scarce.²⁵ The first serious attempt was the volume *Human Migration* edited by the founder

²⁰ Lucassen and Lucassen 1997a. This book was the result of a workshop held at the Netherlands Institute of Advanced Studies (NIAS) in Wassenaar in 1993.

²¹ Nugent 1992; Williamson and Hatton 1994; Hoerder 2002.

²² Lucassen 1987 (on seasonal migrations in Europe); Moch 2003 (on permanent migration), which conceptually built on insights developed by Tilly 1978. See also Kok's chapter in this book.

²³ Emmer and Mörner 1992.

²⁴ Canny 1994. See also Curtin 1989; Steinfeld 1991; Northrup 1995; Wokeck 1999.

²⁵ With the exception of Treadgold (1957) who pointed out that some 10 million Europeans went eastbound to Siberia. See also Hoerder 2002.

of world history, William McNeill, who in 1978, together with Ruth Adams, published an interesting collection of essays which explicitly tried to offer a global overview and to link the past with the present. Notwithstanding historical chapters by Charles Tilly (on Europe) and James Lee (on China), the bulk of the book was devoted to the present.²⁶ This attempt at a global approach was followed by Lydia Potts' and Robin Cohen's overviews of the world's labor market, which had a clear eye for the historical dimension, but which were largely restricted to unfree and indentured labor migrations in the last two centuries.²⁷

Nevertheless, the field of migration history is still far from unified, due to the tendency to make fundamental distinctions between different types of migration, which transcends a purely typological functionality. The most important is the difference between free versus unfree migration. Some, like Potts, focus on forms of unfree migration, especially when it concerns non-Europeans transported by Europeans;²⁸ others exclude unfree or involuntary migrations from their definition, like the transportation of slaves, convicts or prisoners of war. Those who do include these kinds of forced migrations are often very selective. Forced migrations under Hitler are nearly always present in their narratives, under Stalin sometimes present and under Mao the millions of forced migrants have attracted almost no attention from migration scholars.²⁹ Scholars working on Asia and Africa, on the other hand, seem to focus solely on forced moves, depicting migration chiefly in terms of forced recruitment, chattel slavery, coolie labor and state promoted relocations, especially in Russia and China.

Historians working on slavery, however, are so preoccupied with their topic, that their speciality has become isolated from mainstream migration history. The problem resulting from this academic balkanisation is that the continuum from chattel slavery via serfdom and debt peonage to free labor is given up, although it has become clear that *a priori* distinctions between free and unfree migration are untenable.³⁰ The same holds true for the policy driven and more recent distinction between 'legal' and 'illegal' or 'irregular' migrants, in which the latter,

²⁶ Tilly 1978.

²⁷ Potts 1986 and 1990. See also Cohen 1987.

²⁸ For a criticism see McKeown 2004.

²⁹ Potts (1990), but also Hoerder devote little attention to forced migrations in Communist China. See for Russia Polian 2004 and Hellie 2007.

³⁰ Steinfeld 1991; Gabaccia 1997; and Eltis 1997.

especially women, are often depicted as unfree, as victims of smugglers and traffickers. As many scholars have shown, however, this dichotomy masks the complexities of the situation migrants find themselves in, often denies their agency and oversimplifies the separation of voluntary and involuntary processes of migration.³¹

A similar problem arises with respect to the opposition labor migrants versus refugees. As the causes for migration are different, many argue that treating both groups as migrants is not very helpful and only complicates the analysis. At first sight this may seem a truism. When applied to the unruly reality, however, such an approach very soon leads to massive analytical headaches. To start with, the term refugee is not neutral, but determined and socially constructed by states, which often have their own ideological agenda. A good example are the '*Aussiedler*' in Germany, millions of whom have migrated from Eastern Europe since the 1950s (but the bulk after 1989) and who are defined by the German state as refugees. In fact, many of them mainly utilise this ethnic definition in order to settle in a rich Western European country, whereas many have no or only remote genealogical and cultural links with erstwhile German settlers in Eastern Europe. From the mid 1980s onwards this migration basically resulted from economic motives rather than from persecution.³² Nevertheless they are defined as (a sort of) refugees. For many Jews who were able to leave the USSR after the mid 1970s the same holds true. Their major incentive was not ethnic discrimination but the prospect of building a better existence in the United States or Israel.³³

Looking at the early modern period, the label refugee poses historians with even greater problems. Although during the religious wars in the 16th and 17th centuries many people chose to move to states that guaranteed their freedom of religion (Protestants, Catholics, Jews and Muslims), most of them also had clear economic motives and chose destinations where they could market their skills and human capital, as is illustrated by textile workers from the Southern Netherlands who fled to the Protestant Dutch Republic and England.³⁴ A more general observation pertaining to refugees is that these migrants tend to be highly selective not only with respect to the choice of destination, but also in

³¹ Schrover et al. 2008; Augustins 2007; and Davies 2007.

³² Dietz 2006; See also Bade 1997; and Joppke 2005: 182–188.

³³ Zaslavsky and Brym 1983.

³⁴ Lucassen and De Vries 2001; Vigne and Littleton 2001; and Esser 2007.

who leaves. Mostly it is the young, able and better educated, showing that economic motivations clearly play an important role as well. Just like labor migrants, refugees base their decision on expectations and information about work and opportunities from their respective networks. In fact, all refugees combine political with economic motives.³⁵ We therefore fully endorse the statement of Anthony Richmond that all movement is restrained.³⁶

Surveying the field in 2008 a lot of progress can be recorded, due to the following three developments within the historical discipline: To start with, the breakthrough of world, or global history, institutionalised by two quality journals,³⁷ has opened up the Europe-centered Atlantic world and shown the profits to be gained from comparing migration patterns in what we will loosely call 'The Atlantic' and the rest of the world, especially bordering the Indian Ocean and the Pacific.³⁸ Secondly, (historical) gender studies in a global context have enriched the field considerably, showing not only that migration patterns of men and women often differ, but also by laying bare the gendered mechanisms at the micro-level within the household, which determines who is to leave and who is to stay. This is often institutionalised and backed up by wider societal stakeholders, including the state.³⁹ Finally, we mention the development of global labor history, which explicitly uses a global, or transnational, comparative framework in order to understand the influence of specific state and societal structures on citizenship, political mobilization and labor recruitment, including migration.⁴⁰

The influence of this progress can be illustrated by a number of recent studies in the field of migration history. David Eltis has tried to overcome the unproductive free-unfree dichotomy in the collaborative volume on coerced and free migration,⁴¹ stating—as Richmond did—that most migration has both voluntary and coercive elements, which are difficult if not impossible to disentangle. This does not imply that typologies and distinctions are useless, quite the contrary. As Eltis explains, it does make

³⁵ Lucassen and Lucassen 1997b: 16.

³⁶ Richmond 1988: 17.

³⁷ The *Journal of World History* (1989–) and the *Journal of Global History* (2006–).

³⁸ Key works in this breakthrough are: Wong 2000; Pomeranz 2001). For a good overview of the field, including migration studies, see Patrick Manning 2003.

³⁹ Brettell 1986; Moch 1992; Parrenas 2001; Sharpe 2001; Reeder 2003; Moya 2007; and Schrover et al. 2008. For the micro level see the overview by Moch (2007).

⁴⁰ Hanagan 2004; Lucassen 2006.

⁴¹ Eltis 2002.

a difference whether one has no choice to leave, for ecological, political or social reasons, or whether one has the option to stay. It also matters whether one is compelled to move against one's own interest (slaves) or whether migrants have some sort of choice over the decision, as was the case with indentured labor.⁴² Such typologies only become unproductive when they develop into exclusive dichotomies, in which such distinctions are treated as *sui generis*, that makes comparisons irrelevant, thus obstructing the tracing of possible similarities, as well as uncovering what *is* indeed different.⁴³ The book edited by Eltis is therefore a major step forward, because it truly compares the whole range of migrations on the continuum free-unfree. Nevertheless most chapters still deal with the Atlantic world, with the exceptions of two, highly interesting, contributions on Russia from the Middle Ages onwards.⁴⁴

The jump to a truly global approach was made by Dirk Hoerder who published his magnum opus *Cultures in Contact* in the same year as Eltis' collection. Hoerder's book has a much wider scope, looking at the past 1000 years and covering the entire globe. Never before had such a rigorous attempt been made at global migration history with a clear gendered angle. Moreover, Hoerder explicitly aimed at getting away from a Euro-centered, or Atlanto-centered perspective by focusing on migrations (and the contact between migrants and the people they encountered) within and between other parts of the world. Apparently, however, it was very difficult to reach these goals. Given the Europe-centeredness of most studies on non-West migration, treating the moves of Asians and Africans mainly as a consequence of European expansion since the 15th century, *Cultures in Contact* could not entirely live up to the author's high global ambitions.⁴⁵ One of the missing links in Hoerder's study is the rich harvest produced in the field of world history, most of which probably arrived too late on the market to be digested.⁴⁶ Had this perspective been included, the emphasis on Europe and migrations provoked by Europeans would have been pruned considerably.

Apart from the attempt to offer a more balanced and less Euro-centered account of migration history by McNeill and Adams, mentioned

⁴² Eltis 2002: 5–6.

⁴³ As argued in Lucassen and Lucassen 1997a.

⁴⁴ Hellie 2002; Moon 2002.

⁴⁵ Hoerder 2002. For a critique see Manning 2004 and Lucassen 2004.

⁴⁶ Recall that Wong (2000) and Pomeranz (2001) published their books only one and two years before *Cultures in Contact*.

earlier, not much happened until specialists on Chinese history, such as Bin Wong and Pomeranz, also known as ‘the California School’, entered the scene, with a serious attempt to redress the, in their eyes, one-sided interpretation of the ‘Rise of the West’, stressing that China until 1800 did not lag behind Western Europe and that the ‘Great Divergence’, as Pomeranz called it, started around that time. Only thanks to ‘coal and colonies’ was England, and in its wake other European nations, able to take the lead.⁴⁷ It is not the purpose of this introduction to take a position in this debate, but for our argument it is highly relevant that the work by the ‘California School’ once again showed the magnitude of internal Chinese migrations, from a very early time onwards, with an important role of the Chinese state.⁴⁸

The great escape from the Euro-centered deadlock in migration history in the modern period came recently with the publication of an article by Adam McKeown, in which he argued that in the period 1850–1940 apart from the well known Atlantic migration system, involving some 60 million people, at least two other systems had emerged in Asia, absorbing similar numbers (45 to 50 million) of migrants: one in North Asia (Manchuria, Siberia, Central Asia, Japan) and one in Southeast Asia (Indian Ocean Rim, South Pacific).⁴⁹ McKeown criticises Potts and Hoerder for only having eyes for forced labor migration in Asia (coolies, indentured labour), predominantly triggered by European colonial and imperial interventions. In fact, he argues, these were only a small minority of the total migration volume within Asia. The bulk were more or less free migrants who moved to the two centers of capital concentration mentioned above, very similar to the Atlantic core in the Western part of the globe. This new interpretation of global migration patterns in the recent past has redressed the balance considerably. Nevertheless it has not remained unchallenged.

Although he broadly supports McKeown’s paradigm, the Indian labor historian Prabhu Mohapatra stresses that most of the 30 million

⁴⁷ Wong 2000; Pomeranz 2001. Their work has sparked much debate. See for example: Vries 2001; and Broadberry and Gupta 2006.

⁴⁸ Poo 2005; Crossley et al. 2006; Isett 2007. The early migrations, starting at least as early as 700 BCE and increasing dramatically during the 13th to 15th centuries were already mentioned by Lee 1978: 24. For the millions of internal migrants in the 17th and 18th centuries, see Pomeranz 2001: 84.

⁴⁹ McKeown 2004. For critical reactions see the discussion dossier in the *International Review of Social History*, no. 1, 2007. Similar conclusions were drawn by Huff and Caggiano (2007) for South East Asia.

Indian migrants who went to the plantations in Burma, Malaysia and Sri Lanka were circular migrants (whereas the majority in the Atlantic stayed at destination) *and* that although formally free, they were subjected to harsh and coercive conditions once they started working at the plantations.⁵⁰ Moreover, most of these plantations in the Southeast were within the European colonial sphere of influence. Equally interesting and important is Leslie Moch's critique pertaining to the Northern Asian system, based on her reading of recent comparative micro-level studies on Chinese migration,⁵¹ stressing the differences with Western Europe with respect to family and inheritance systems (a topic covered in this volume by Jan Kok), with far reaching gendered consequences for who could migrate and under what conditions. To give only one example: in Western Europe already from the late Middle Ages onwards children were relatively independent from their parents due to the early spread of wage labor⁵² and in North Western Europe a woman traditionally did not get a dowry upon marriage but inherited after her parents died. This gave considerable freedom to women, and explains the high mobility of women before marriage.⁵³ In China women were subjected to the Confucian principle of lineage, which became especially strong after the Song dynasty (960–1279), when the Mongolians made the household the basis for taxation. As the men were held responsible for the household, it became vital to have enough potential male successors, lest the household would run out. This principle was enforced by the Ming dynasty (1368–1644), which made the position of women even weaker. With respect to migration this meant that after—and sometimes even before—marriage women automatically moved to the household of her parents-in-law and had very few opportunities to engage in wage labor.⁵⁴

The Eurasian comparative literature in the field of family history that has emerged since James Lee and Wang Feng's seminal *One Quarter of Humanity*,⁵⁵ has so far only scarcely been picked up in the mainstream migration history field, yet it is crucial to understanding the diverse

⁵⁰ Mohapatra 2007.

⁵¹ Among others: Ying-Chang and Wolf 2006; Lee and Wang Feng 1999; Van Poppel, Oris and Lee 2004; and Waltner and Maynes 2001. Other important contributions are: Birge 2003. And Eastman 1988.

⁵² Van Bavel and Van Zanden 2004; and Van Bavel 2006.

⁵³ Therborn 2004; see also Goody 1976.

⁵⁴ Lee and Feng 1999; Therborn 2004; Moch 2007.

⁵⁵ Lee and Feng 1999.

migration regimes around the globe and their developments through time. Especially the role of institutions, both at the macro (state) level, the meso (civil society) and at the micro (family) level is now emerging as a key to explaining the systemic differences in time and space.

Notwithstanding the growing interest in global migration history, there are five major impediments on the road to an integrated field of study: 1) Many historians still tend to focus on one country (nation state), with systematic comparisons being the exception; 2) The relatively few spatial comparisons available tend to be restricted to Western Europe, the Atlantic world or, eventually, the white settler colonies;⁵⁶ 3) The very few attempts at global comparisons, such as the pioneering work of Dirk Hoerder, still pay much more attention to European or European-induced migrations (colonial migration, slave trade, indentured labor) than to equally important migration movements within other continents, as McKeown has shown. As a result, especially Asia, Africa, China and the non-European pre-colonial world are greatly understudied.⁵⁷ 4) Area specialists of Africa, the Pacific, Asia and South America who study migration and acculturation are often not on the radar screen of European and Atlantic migration history specialists and vice-versa; and 5) the period under study is seldom longer than 500 years, which to a large extent explains the gap between historians and scientists working on migration issues on a much longer time scale, which prevents the accumulation of conceptual and theoretical knowledge.

These obstacles have systematically been identified by Patrick Manning in his book *Migration in World History*, an attempt at capturing human migrations in the last 80 millennia, which for the moment can be considered the linchpin of the exciting recent developments within the field of migration history.⁵⁸ The book argues that although all species migrate, only humans migrate to other communities, because different groups of humans, distinguished by their unique language capacity, developed cultures of their own. This cultural proliferation (from technology to value systems) explains the advance of civilizations and clarifies why it was profitable for people, unlike animals, to migrate to other groups. Manning divides these 'cross community' migrants

⁵⁶ See for example Richards 2004.

⁵⁷ Manning 2004; Lucassen 2004.

⁵⁸ Manning 2005.

into four basic types: settlers, sojourners, itinerants and invaders.⁵⁹ A second strand in the book is that from very early on, migration is of utmost importance in connecting the various parts of the world, with the exception of the Americas who were largely isolated from the rest of the world until, in October 1492, Cristoforo Columbus stumbled upon an island he named San Salvador, part of what became known as the Bahamas.⁶⁰

Manning's stress on 'connections', however, is not shared by everyone, as the discussion among economic historians on the starting point of the globalisation process and the role of migration therein shows. In the discussion on the impact of global migration patterns two different definitions of globalization, with their own periodization, are *en vogue*.⁶¹ The restricted one is applied by economic historians, like Jeffrey Williamson,⁶² who define globalization in terms of market integration and price convergence, and therefore consider the period 1820–1914, also the era of intercontinental mass migrations, as the first phase of globalization. World historians, like Manning, stressing the importance of economic, social and cultural *connections* between various parts of the world, argue that globalization started much earlier—at least with the 'Columbian exchange' at the end of the 16th century, when migrants (traders, priests, soldiers and workers) established a world wide web.⁶³ By lack of quantification such a broad definition of globalization, however, lends itself badly to a formal test, whereas the market oriented approach of economic historians is rather one-dimensional. A way out is offered by the differentiated globalization approach of Held *cum suis*, who distinguish between intensity, extensity, impact and velocity.⁶⁴

When we apply these criteria to the last six centuries, the period of 'early globalization'⁶⁵ (1400–1820) stands out as one of *thin globalization*. Migrations link all parts of the world, but are at most *extensive*, whereas the *impact* on some continents, especially the America's (the dramatic

⁵⁹ Ibid: 8–9. See also Manning 2006a and Manning 2006b.

⁶⁰ Theories of pre-Columbian contact are quite popular, but so far have produced mostly unconvincing if not pretty wild theories. Menzies (2003), for example claimed that the Chinese admiral Zheng He arrived in America in 1421. His ideas were severely criticized by Finlay (2004).

⁶¹ On periodization see also McKeown 2007.

⁶² O'Rourke and Williamson 2002.

⁶³ Manning 2005: 112. Flynn and Giráldez 2004. See also McNeil and McNeill 2003.

⁶⁴ Held, McGrew and Perraton 1999.

⁶⁵ For a recent discussion see: McKeown 2007: 221–223.

mortality among the native population, exposed to European diseases), was huge from a demographic perspective. The scale of intercontinental migrations, however, was rather modest in the early modern period. That changed from the 19th century onwards, when the transport revolution (from sail to steam and the role of railroads) dramatically increased the *intensity and velocity*.⁶⁶ The big *impact*, however, applies especially to the contacts between Europe and the Americas, as well as Oceania, but much less to intercontinental migrations to and from Asia and Africa. Due to the exclusion of Asian migrants from the powerful Atlantic and white settler colonies like Australia, from 1870 onwards Chinese and Indians basically remained within Asia,⁶⁷ whereas the end of the slave transports from Africa rather decreased the overall *extensity* worldwide. This changed after World War II, first of all due to decolonization which brought considerable numbers of migrants to Western Europe.⁶⁸ More important, however, is the lifting, in 1965, of the American quota act of 1921 and the Johnson-Reed immigration act of 1924, which sparked a truly global migration stream to North America. Compared to the first round of globalization in the 19th century, the poorest countries were now drawn into this global migration network too.⁶⁹

Notwithstanding the rather undifferentiated use of ‘connections’ as a concept, the added value of Manning’s study, apart from giving a balanced global overview building on the advances in world history, is that it opens up the traditional field of migration history and offers a much more structural and universal migration typology. It is the first overview that engages with sciences, which are very remote to mainstream migration scholars: population genetics, paleo-archaeology and historical linguistics: all working in the ‘deep past’, long before written records appear. This book aims to continue along this interdisciplinary frontier, not only by mapping these foreign and largely unknown lands, but also by explaining what insights into the sciences have to offer to mainstream migration historians who work on more recent periods and thus to our understanding of migratory processes in the present. It is our intention too to develop a research agenda for further explorations and continuous interdisciplinary collaboration.

⁶⁶ Keeling 1999; Lee 2005; Keeling 2005; Cohn 2005.

⁶⁷ McKeown 2004. See also: McKeown 2008.

⁶⁸ Including European settlers and their descendants: Cross and Entzinger 1988; Smith 2003; Joppke 2005; Bosma 2007.

⁶⁹ Gozzini 2006: 321–322.

We do acknowledge that the universalizing approach put forward in this book is not the only way of reaching a more interdisciplinary approach in migration history. In the last decades huge literatures have been developed within cultural studies, ethnic and regional studies, gender and post-colonial studies.⁷⁰ These, collectively, constitute an equally interdisciplinary alternative approach which shares several of the goals of this volume. As this alternative approach does not address the long term developments that are central in this book, we decided not to include these in our discussion.

DISCIPLINARY APPROACHES TO MIGRATION

In this book we distinguish three areas which, until now, have dominated migration studies, each with their distinctive time periods, territories, subfields, and questions: *Sociological approaches* analyze migration in the contemporary era through the disciplinary optics of sociology, economics, demography and policy-oriented studies. *Historical approaches* provide narratives of migration in literate societies, as recently as the early 20th century and as far back as classical antiquity. *Anthropological approaches* to migration center on early and non-literate societies with multidisciplinary tools—including ethnology, physical and cultural anthropology, archaeology, and linguistics—increasingly cooperating with and dependent on such natural-science approaches as genetics and climatology. Of course all three of these arenas of migration studies are social-scientific in the most general sense. In theoretical and empirical terms, however, these three bodies of literature have maintained considerable distance from each other.

The foremost perspective of this book is to improve communication between the historical and anthropological segments of migration studies, by introducing to historians the approaches of linguistics, archaeology, cultural anthropology, and human biology, especially genetics.⁷¹ The exploration of this range of “anthropological” disciplines has led us to treat the scope of “human migration history” as including the full range of human experience, rather than limit the study to periods and

⁷⁰ See for example Stoler 2002; Brettell 2003 and Gabaccia 2006.

⁷¹ We have left for a later stage in our project ‘Setting the agenda for a long-term world migration history’ the communication of historical and sociological approaches.

places for which we have written documents. Of course, the patterns of migration have changed along with modifications in technology, social organization, and ideology. Yet historical analysis should permit the reconstruction of migration as the underlying human impulse to move is modified by each of these changes. Put differently, our presumption is that migration in different social situations can be interpreted more clearly through a framework encompassing a long time period, wide geographical range, and a variety of disciplinary outlooks.

The development of historical studies over the past half century helps to explain why historians should increasingly be reaching beyond the limits of their own training to learn about the approaches of neighboring disciplines to migration.⁷² Within European history, the interest in Viking, German, and classical-era migration sparked off interest among archaeologists and population geneticists. Historical area-studies, that developed in the years of decolonization following World War II, stimulated the interest in the displacement of Amerindian populations, the Atlantic slave trade, the early migration and settlement of African populations, the oceanic migrations in Southeast Asia and the Pacific, and the continuing controversy about Aryan migrations into North India. In each of these instances, historians delved increasingly into the methods we have labeled as “anthropological.”

As historians expanded their studies of migration, however, they did so in a segmented fashion. Historical studies of migration have developed as a series of distinct literatures separated by regional, temporal, and topical frontiers. The possibility of an encompassing discussion of past human migration is widely understood, but in practice what we have seen are only occasional links of sub-fields in migration history. The largest sub-field has addressed Atlantic migrations of Europeans (c. 1840–1940), with domestic or continental migration in Europe and North America following as significant sub-fields. Additional sub-fields address the Atlantic slave trade (17th to 19th centuries) and early modern European migrations (16th to 18th centuries). Still smaller historical literatures address Asian migrations of the 19th and early 20th centuries and earlier migrations, usually European-linked. A distinct social-science literature, centered in sociology, demography, and

⁷² Again, here we are primarily interested in interdisciplinarity which bridges different historical periods.

economics, is devoted to migration since 1950, notably European and North American instances.

Our purpose in this volume is to display and explicate the “anthropological” disciplines that have analyzed migration and on which migration historians have drawn, both to encourage wider application of these valuable methods and to overcome the segmentation of the literatures on migration history. As the chapters in this volume demonstrate, these disciplines can add new data, new analytical questions, and new interpretations to our understanding of migration. Attention to these and other general principles will help migration historians to incorporate and debate the results and methods of other scholars, and join in the multidisciplinary interpretation of migration.⁷³

The authors of the chapters in this book introduce their disciplines—genetics, chemistry, historical linguistics, archaeology, and anthropology—and show how they identify central issues linked to migration, gather and analyze data, and interpret migratory patterns. Each discipline has its defined subject matter; the basic questions it seeks to answer; its analytical framework, assumptions, and theory; the data on which it relies; its analytical procedures; and the interpretations that result from the analysis.

How is the migration historian to approach the presentation of these disciplines? Historians have thrived as generalists, drawing together evidence from many fields of study without becoming too deeply drawn into the specifics of one discipline or another. In short, historians have tended to accept the interpretations of other disciplines—without much investigation of their data, framework, or analytical procedures—and integrate them into historical narratives and syntheses. The interdisciplinary approach to migration history, as presented in this volume, challenges that tradition, yet makes no attempt to renounce it. Instead, we call for an adjustment of the balance between historical generality and disciplinary specialization. We urge migration historians to learn more about the disciplines of genetics, linguistics, archaeology, and anthropology, without necessarily going so far as to become specialists. Conversely, historians working on more recent periods and using written sources (roughly from 3000 BCE onwards) have a lot to offer

⁷³ One may argue, further, that the phenomenon of migration, because it connects multiple points through human movement, is not only best studied through multidisciplinary approaches, but also provides an advantageous topic for historians to address the contemporary challenge to advance cross-disciplinary studies more generally.

with respect to forms, typologies and mechanisms of migration at the micro and meso level that can be observed empirically and theorised, at least for the last millennia. Their observations and insights are based on actual human behavior which is largely hidden for those who work on the 'deep past' and may produce useful and fruitful hypotheses for the latter.

In particular, it is the specialists in genetics and linguistics who prepare the data, conduct the analysis, and interpret the results. But historical generalists can read the results, assess the methods, identify the implications of the analyses, and can find inconsistencies in the methods or the interpretations of analysts working in different disciplines or on different historical situations.

CONTRIBUTIONS MADE BY THIS VOLUME'S CHAPTERS

The chapters in this book present both analytical methods and the historical conclusions that arise from applying them. The authors have given varying emphases: some have privileged methods, and others have privileged interpretive results. But all have shown the interplay of method and interpretation. Each author has presented a disciplinary framework and one or more analytical procedures, and then has discussed and interpreted the data for about a half dozen cases. In each case, two types of lessons are displayed for the migration historian: the methods of analyzing data relevant to migration, and the interpretive conclusion on patterns of migration. While it may be tempting to grasp the conclusion and let the rest go, only by learning, debating, and applying at least part of the methodology can the migration historian become a full participant in the interdisciplinary discourse on migration.

As this volume shows, of course it depends partly on the period under study. Paleontologists can compare *Homo sapiens* to earlier species; population geneticists trace the human record as far back as 200,000 years ago; linguists and scholars using chemical methods tend to focus on the last 12,000 years (roughly from the beginning of agriculture), though sometimes on earlier periods. Studies by historical anthropologists, finally, who concentrate on the family, largely rely on the last few thousand, and mostly the last few hundred, years, but a number of their findings may be projected back into time.

Genetic analysis explores characteristics of the human genome—the complete set of genetic material, encoded in DNA—through sequencing

of the nucleotides (amino acids) that form DNA. The degree of difference in the DNA of individuals today reveals the time distance in separation of their common ancestors. The initial key work has been conducted on sex-linked genetics: mitochondrial DNA for females and Y chromosome DNA for males. These analyses document two of the many lines of descent of any individual.

Tracing genetic ancestry focuses on *polymorphisms*—literally, multiple forms of genetic materials—at a given site in the genome. Peter de Knijff’s chapter focuses on two types of polymorphism: First, *single-nucleotide polymorphisms* (SNPs) on Y chromosomes are rare, and can give indications of changes long ago. Second, repeated sequences of nucleotides or *short tandem repeats* (STRs) are more common and can give indications of more recent changes. Mapping the polymorphisms within populations can yield *gene trees*—family trees of ancestry with a particular genetic form, or of more complex groupings of genetic characteristics. Within the gene trees, the branches of similar genetic types are known as *haplogroups*.

De Knijff summarizes several results on human migration drawn from these analytical tools. His first example traces the main Y chromosome SNPs in early human males, which give indications of migrations from 100,000 years ago to 20,000 years ago. De Knijff, starting with a simplified “theoretical” version and then turning to a more complex version with real data, argues that there were two main migrations out of Africa, both moving especially along the Indian Ocean coastline.⁷⁴

His second example shows how Y chromosome data can also clarify patterns at micro levels. For a modern village in northern Ghana, genetic data reveal the importance of clan membership in male residence. In parallel examples, he describes how mitochondrial DNA data suggest that Africans 70,000 years ago lived in small matrilineal groups and how STR data indicate that traces remain of Christian Crusaders in Lebanon.

Third, De Knijff goes beyond mitochondrial DNA and Y chromosome analysis to summarize work done on *autosomal* (non-sex-linked) genetic patterns. He asks: given the high level of human diversity, do clear genetic clusters exist or are we restricted to gradual clines or gradations

⁷⁴ The genetic data, in giving increasing attention to migration routes along the Indian Ocean coast, are parallel to a recent argument using linguistic evidence to trace early human migration: Manning 2006b.

among populations?⁷⁵ Large-scale analysis of the Human Genome Diversity Project reveals that within-population diversity accounts for 95% of the variety, and among-population diversity accounts for the remaining 5%. Still, within the 5%, distinct regional groups of human population are revealed, on continental and sub-continental lines. Human diversity is thus a mix of clines and clusters.

Fourth, De Knijff applies genetic analysis to the issue of biological mixing within the past 400 years. Combining mitochondrial DNA analysis and Y chromosome analysis for five Brazilian populations, and distinguishing males and females identifying themselves as “white” or “black”, one learns about the complexity of “racial” mixing. For females now known as “black” the great majority of their female ancestors were African; a few were European and rather more were Amerindian. For females now known as “white,” their female ancestors were dominantly white, yet large minorities of their female ancestors were Amerindian or African. For black males, over half of their male ancestors were European, less than half were African and a small number were Amerindian. For white males, virtually all of their male ancestors were European, and a very few were Amerindian. Overall, the results show that European males had numerous children with women of all origins; some African males had children with some of the African women; and Native American males had few children.

Chemical analysis of human skeletal remains, while almost as laborious as genetic analysis of living persons, can give surprisingly strong information on migration. Shomarka Keita’s chapter links geochemical methods to biological anthropology, and provides remarkably precise information on migration of individuals, although these results are limited to the rare cases where relevant information is available and analyzed. As he demonstrates, chemical analysis of teeth and bones of human remains can sometimes provide detailed information on the migration of individuals and even on the time of life at which individuals moved from one region to another. The key to the analysis comes from the presence of strontium (Sr), a chemical element similar to calcium, in human teeth and bones. Strontium, as a relatively heavy element, has several stable isotopes (with the same chemical character but varying slightly in weight). Geochemists have found that the ratio of Sr 87 to

⁷⁵ In biology, a *cline* is a gradual change of phenotype (trait, character or feature) in a species over a geographical area, often as a result of environmental heterogeneity.

Sr 86 is specific to the region of the earth, and it can therefore give a clear indication of where an individual lived. In addition, biological anthropologists have found that the chemical composition of teeth is determined early in life and remains unchanged, while the chemical composition of long bones (as in legs) changes so that it reflects the current or recent location and consumption. As a result, a “skeletal biography” of an individual can be reconstructed from that person’s teeth and long bones: the ratio of Sr 87 to Sr 86 in the teeth can be matched to that of the region in which the person was age 7–10, and the same ratio in the long bones can be related to that of the region in which the person has lived for the last 7–10 years of life.

With this analytical tool, Keita provides a range of interpretations, ranging from some that are fully documented to others that are hypothetical and open to testing. As a documented case, he describes the situation in Libya some nine thousand years ago, in which pastoralism was displacing hunting and gathering. Here the results show that, with time, the diversity of families declined. That is, as the tending of herds became more important, marriage partners were selected from a narrower geographical range than had been the case earlier. The migratory pattern is clear from the evidence, although it will take some anthropological analysis to explain why this pattern developed. In another case, Keita has offered hypothetical evidence in which, through analysis of strontium in teeth, the remains of African-born people in the Americas might be traced to the African regions of their birth. With more geochemical analysis of African and American soils it will be possible to conduct such analyses. In addition to the technical advances in migration studies on which Keita reports, his chapter adds to the conceptual understanding of migration. He shows that we need to think of migration not only in terms of whole persons, but of the differential record of migration in various parts of the body. He gives attention to those who eat imported food, and notes that some people within a locality may be more affected by migration than others.

Three chapters give primacy to methods of historical linguistics in tracing migration. The authors—Christopher Ehret, Andrew Pawley, and Patrick McConvell—draw on slightly different aspects of linguistic methods, and combine linguistics with archaeology and climatology. In sum, they show the power of linguistic methodology in tracing past migratory movements. In addition, they show that linguistic methods are accessible to historians and are thus susceptible to far more widespread

application than has so far been the case. This lesson appears repeatedly in our survey of interdisciplinary approaches to migration: the adjoining specializations—genetics, linguistics, and the others—may require a high level of experience and expertise to carry out their most sophisticated analyses, but the basic principles are extremely powerful and historians can learn them with a reasonable amount of study.⁷⁶ Vice versa, as we stated earlier, scholars who concentrate on the very long run will undoubtedly profit from the existing mainstream historiography on migration history, not in the least pertaining to warnings against, simplistic modernization schemes and the cultural and gendered specificity of family systems and societal structures.⁷⁷

Christopher Ehret begins by introducing general principles in language change, then turns to emphasize major questions centering on two quite different types of language change and analytical procedures appropriate to each. First he explores examples of the expansion of languages and their speakers through study of language classification. This is analysis *within* distinct language communities—that is, it makes use of the notion of “linguistic stratigraphy” to refer to the various stages of language change. This analysis permits the location of ancestral homelands and even migration paths of language communities. This technique is the main sort of historical linguistic analysis that has been conducted, though it could profitably be applied to many more cases. The technique, which relies on “genetic” classification of language relationships, is immensely powerful and relatively easy to apply. Categorizations of languages are widely available.⁷⁸ Analyzing these language classifications, migration scholars can gain insights into long-term migration histories of large and small language groups: Indo-European, Germanic, Bantu, Afroasiatic, Austronesian, Sino-Tibetan, etc. In addition, Ehret shows how other information on the past can be connected with data on language distribution to provide a rich picture of early migration.

⁷⁶ Ehret forthcoming.

⁷⁷ Hoerder 2002; Manning 2005; Lucassen and Lucassen 2009; the chapter by Jan Kok in this volume.

⁷⁸ For an accessible and informative source, see “Ethnologue” (<http://www.ethnologue.com/>), and in particular the language classifications within it (http://www.ethnologue.com/family_index.asp). Some of the classifications are disputed, however, so that most but not all results of this analysis will be reliable. For a discussion of the inconsistencies in methods and criteria for classification of languages in various parts of the world, see Manning 2006b.

Ehret's second major question asks about the movement of words and things from one language to another. This is analysis *across* language communities, tracing their interaction. He presents a remarkably general statement on word borrowing, showing the number of different patterns by which words are exchanged among languages, and correlates these with various social situations. To explain the methods for analyzing word borrowing, he presents four cases of historical interpretation in the past 2000 years. While determining the borrowings is specialist work, Ehret is able to display evidence of borrowings as well as summarize the results of his analysis. These results reveal the different patterns of word borrowing that can prevail over various time periods. In one case he demonstrates the process by which Semitic languages from South Arabia thrived and expanded in Ethiopia, and shows that the intruders were not farmers but merchants. In a second case he traces borrowings from Bantu into Malagasy to show that the journey of Austronesian-speakers from Borneo to Madagascar involved a stop in East Africa, and that the number of Malagasy was rather small. A third case documents gendered migration in East Africa. Luhyia communities absorbed Kalenjin populations; the Kalenjin had many female Luhyia immigrants. Finally, he focuses on word borrowing and long-term demic encounter, for example pastoralists migrating into other pastoral populations. Ehret's Table 1 provides an insightful picture of the range of migratory relations, distinguishing recent arrival from long-term interaction of communities.

Andrew Pawley presents Oceania as a laboratory for migration studies, and works primarily with linguistic evidence. He describes the interplay of four major regions of Oceania, and the ecological constraints on the migration of humans and other species. He then analyzes the settlement of two major linguistic groups, which arrived in Oceania at times separated by over 35,000 years. First he relies on archaeological evidence to establish the initial settlement of people in New Guinea some 40,000 years ago. Working with the same broad community of languages, he uses linguistic classification to argue that speakers of the Trans New Guinea family of languages spread from a region in the central highlands of New Guinea across the highlands some 7–10,000 years ago, most likely as a result of their development of agriculture.

Pawley also explored the migrations of Austronesian speakers and relies on archaeological and linguistic evidence to trace six different stages of the migration that settled much of Oceania. His narrative begins

in Taiwan over 4000 years ago, traces oceanic migrations of agriculturists southward to the Philippines, then southeast to New Guinea and the Bismarck Archipelago (as well as southwest to what are now Indonesia, Malaya, and even Madagascar). The societies producing the Lapita pottery tradition of the Bismarck Archipelago began, just over 3000 years ago, a rapid seaborne expansion to islands as far east as the corridor between Tonga and Samoa. There, based on linguistic evidence, he argues that both migration and language change halted for roughly a thousand years. At the end of this interval came the most extraordinary seafaring voyages, in which migrants speaking the Polynesian subgroup of languages settled the Marquesas, the Hawaiian islands, New Zealand, and visited the coast of South America.

Patrick McConvell, working mainly with Australian examples, emphasizes patterns of migration as seen through the expansion of language groups and through language shifts and the borrowings of words. As an alternative to reliance on a “family-tree model” of language change, McConvell proposes a “punctuated equilibrium” model in which types of language change alternate in time. He distinguishes “upstream” migrations, in which language groups expand with little interruption, from “downstream” migrations, in which populations interact and exchange words and things with other populations. His terminology corresponds to the conditions of Australia, in which “upstream” migrations into the sparsely-populated interior led much more to expansion of a single group than interaction with other groups, and “downstream” migrations toward the coast brought social interaction in these more densely populated areas.

In his introduction, McConvell distinguishes migration from diffusion as mechanisms of cultural transfer. That is, he seeks to distinguish the movement of material goods from the migration of people. Later in the chapter he seeks to articulate “signatures” of various patterns of migration and diffusion, relying on social network theory. These genetic, linguistic, and archaeological patterns, McConvell argues, confirm clear distinctions between upstream and downstream migrations: for instance, cross-community marriage and language shift are common in downstream migrations, but one finds marriage only within the community and little language shift in upstream migrations. His examples focus on the Pama-Nyungan languages, which spread over most of Australia and displaced previous languages some 5000 years ago. He treats the expansion of Pama-Nyungan as an upstream spread, and the spread of Ngumpin Yapa (a subgroup of Pama-Nyungan) as a downstream

movement. In order to argue for the generality of the patterns he has identified, he offers the Athabaskan and Numic languages of western North America as evidence of upstream spreads. In addition, he uses the emergence of Australian English to argue that dialect convergence can take place in some cases. McConvell focuses particularly on marriage patterns (“casting the marriage net”) in facilitating these various patterns of language change.

While a number of our chapters provide references to archaeological results, Jon Erlandson focuses frontally on archaeology as a discipline for locating and synthesizing information on human migration. He begins with a general overview of the place of migration in studies of archaeology, noting that “migration” and “diffusion” have been conflated in the past, and showing how changing theories and academic fashion sometimes give great attention to migration and at other times reject it as a factor for social change. Erlandson then summarizes four major cases of life at the water’s edge in human history, focusing specifically on seafaring. His first case is the maritime migration along the Indian Ocean coast roughly 50–60,000 years ago. This migration is not known in any detail, though supporting evidence comes from the records of intensive aquatic foraging along the South African coast in earlier times, the confirmed arrival of humans in Australia and New Guinea 50,000 years ago, and also the DNA analysis of peoples of the Indian Ocean coast. Shell middens, the remains of human consumption of shellfish, have been located and dated to confirm early human occupation of the Indonesian archipelago. These records suggest that maritime technology was a consistent part of the toolkit at the time of human migration out of Africa.

Erlandson’s second case comes from the Ryukyu islands, including Okinawa, where human bones have been dated to about 35,000 years ago. Discovery in Japan of obsidian found only on Kozushima Island—50 kilometers offshore—in sites dated at least 20,000 years ago further confirms the regular use of watercraft. In addition, such navigation of cool North Pacific waters indicates that humans had the capacity to migrate by sea along the Pacific coast all the way to the Americas, and to do so well before the end of the last Glacial Maximum some 15,000 years ago. In other publications, Erlandson has hypothesized that a “kelp highway” of dense biological communities in offshore Pacific vegetation provided nourishment for humans as well. This may be the explanation of the Monte Verde archaeological site near the coast of Chile, dated to 14,500 years ago.

In a third case, Erlandson traces the migration of Austronesian-speakers from the Southeast Asian mainland into Indonesian islands. Archaeological records show the migration of two groups some 3,500 years ago—north to the many islands of Melanesia, and northeast to New Guinea, the Bismarck Archipelago, and the Solomon Islands. The Lapita culture, known for its characteristic pottery, linked these and more distant islands. A thousand years later, Polynesian peoples emerged out of this ancestry: they conducted voyages and established settlements throughout the eastern, northern, and southern Pacific, including the Pacific coast of South America. Finally, the Vikings of Scandinavia were a group of similar maritime agriculturists who expanded in the 9th century and raided, traded, and settled across a span from Central Asia to North America, and into the Mediterranean. In addition to a rich archaeological record, the Vikings also left oral and written documents of their exploits. Summarizing this review, Erlandson suggests that there may have been periods of technological improvement in watercraft in about 70,000, 30,000, and 4000 years ago, each leading to longer and more dependable voyages. There remain serious difficulties in early marine archaeology, not least because the oceans have risen some 300 meters over the past 10,000 years; consequently many early sites are under water.

In our final methodological exploration, Jan Kok presents migration in terms of the study of family structure. He traces the intersection of two typologies—one on types of family and the other on types of migration—to suggest the recurring patterns of migration and their results in each of the family types described. Among the types of migration he distinguishes are the patterns of generations and inheritance, local migration, circular migration, and chain migration. The typology of family structure, drawn especially from the work of the French social scientist Emmanuel Todd,⁷⁹ labels families as various sorts of nuclear, authoritarian, and community families, based on rules of marriage, residence, and inheritance. In this typology the densest variety of family systems is found in Europe, while other regions are categorized as having more uniform systems. Following the introductory section, the three main sections of the chapter each discuss a different level of migration behavior as seen in all six of the systems of family structure that are taken

⁷⁹ We realize that Todd's typology has been criticized by various sides, but as long as other useful typologies are lacking it remains a useful point of departure.

to encompass the world. The first section discusses migration at the most immediate level: inheritance, marriage migration, gender differences, and life cycle migration. The second section addresses both local migration and circular migration, where local migration includes leaving home and circular migration includes the movement of sojourners. Finally, the section on chain migration addresses long-distance migration, with particular attention to family and ethnic networks, especially studied by family historians in European countries since the early modern period, but increasingly so in East Asia (especially China) as well.⁸⁰

WHAT CAN MIGRATION HISTORIANS DO WITH THESE NEW INSIGHTS?

At first sight the ground-breaking results of the research of historical linguistics, archaeology, physical and cultural anthropology, and population genetics presented here seem to be confined to the earlier parts of human history, so that they may not matter to the general historian or even migration historian. This is only partially true, however. It goes without saying that a better understanding of earlier periods of human history enables us to distinguish long-term continuities and discontinuities linking our own times to the past. Furthermore, methods currently applied mainly to the analysis of long-term processes in remote periods of time are not restricted to these. The most obvious cases are the ubiquitous DNA-specialists these days. They can be found from forensic research to the excavation pits of the archaeologists, but also linguistics as we encounter it in this book has relevance for recent history. In fact, at closer scrutiny, all of the disciplines presented here play or can play a role in modern migration history.

Three general lessons stand out in this multidisciplinary exploration. First, the notion of migration needs to be broadened. That is, migration is more than just the movement of individuals from one place to another, and more than the movement of families and societies. Other aspects of migration include the movement of human genetic material, chemical constituents, individual words and whole languages, material culture, and ideas—including ideas about migration. Analyses of migration need to be specific about what, precisely, is in movement.

⁸⁰ For the historiography see the chapter by Jan Kok.

Second, the time frame of migration studies needs to be extended. Human migration history extends to the full scope of human history, some 150–200,000 years. Within that time frame, various disciplines enable us to explore migration over long and short time periods. Genetic analysis easily encompasses the full time frame of human and even hominid existence. Paleontology and archaeology analyze human physical remains and remains of human material culture and environment. Human language has existed for perhaps 70,000 years, and evidence of the original human language and major change in language surely survives today. This addresses slow change over time. Within that long time frame, these same disciplines also provide evidence of more rapid changes that took place at varying times in the past. Of course, most studies of migration will continue to be restricted to certain regions within certain periods, but attention to the larger and more general patterns of human migration will help clarify which patterns, for instance, in industrial-era migration, are newly developed, and which are continuities of earlier migratory patterns. Attention to a long timeframe has the advantage that it makes clear what is specific and what can be regarded as the universal human pattern.

Third, the types of documentation of migration need to be broadened. For historians, the usual types of data on migration include testimonies, censuses, commercial data, and government reports. In addition, however, words, material remains, myths, and the chemical and genetic composition of human bodies provide valuable information on migration. Linkage of these various types of evidence may yield far more nuanced and convincing interpretations of past migrations. At the very least, they should not be neglected.

While the “anthropological” disciplines as a group offer suggestions for reconsidering migration, the individual disciplines each have their specific angles. Genetics, for instance, draws its evidence mostly from persons now living, and can show links of these individuals to their immediate relatives. Yet this same genetic evidence, depending on the basis of comparison to evidence from other persons, can be used to trace migrations and interrelationships among groups of people for many thousands of years. Chemical analysis of migration, as in the analysis of strontium content of bones and teeth, works with individual-level data, and can be made applicable for all the times for which we have relevant human remains. Linguistic analysis is necessarily the study of communities, since language is a property of communities more than of individuals. Linguists have shown that a basic vocabulary of some

200 words highly depends on revealing linguistic relationships. All three linguistics chapters, plus the archaeology chapter, tend to argue that migratory patterns for hunter-gatherer and farming populations are not fundamentally different. Linguistic analysis works in the present and also in the past, and many historical linguists are comfortable with arguments that go back as far as 8–10,000 years. Beyond that time, analysis becomes more problematic, so new techniques and even theories may need to be developed. Moreover, while the overall theory of language change is generally accepted, the linguists of various regions do not agree on the criteria for identifying a relationship among language groups, so that there remain major debates on world language classification. Archaeology, itself an interdisciplinary field, includes the handling of multiple and independent lines of evidence. Techniques of dating are improving, so that archaeological techniques may be used for the full span of human history. Family history is mostly restricted to a shorter period of time, in that its study requires genealogy, and hence written or oral records. On the other hand, linguistic, archaeological and even genetic evidence may provide useful fragments of evidence on family history, and these might be applicable over long periods of time.

The authors of the chapters in this book have gone far beyond an abstract presentation of their methods, and have emphasized the presentation of major interpretative statements. In particular, they have given us substantial accounts of the migration history of Oceania, Australia, Africa and North America. Each of these regions is at some distance from the European and Atlantic regions that have gained prime attention in historical studies so far. The authors write on these regions not only to add novelty and fresh issues, but to suggest that lessons on migration in these regions are important in the understanding of the human migratory experience overall. Furthermore, they suggest that advances in migration studies centered in one area of the world can and should be applied to other regions. Thus, even within the chapters of this book, it is possible to develop comparisons of the making of Bantu-speaking and Austronesian-speaking peoples, and comparisons of migrants in the South Pacific and in the North Pacific. Concepts developed in one study of migration can be applied to others. Thus, McConvell's notion of "upstream" and "downstream" migrations, developed in the context of Australian migrations, can be applied to the interplay of Luhya and Kalenjin populations (as described by Ehret) and the spread of Trans New Guinea languages (as described by Pawley).

Interdisciplinary approaches to migration elicit ideas not only about the specific methods and conceptions of each discipline, but also about the general philosophy of analyzing migration. One key philosophical issue is whether to treat each human population as a specific and unique society or as one more grouping of a common humanity. In the chapters to follow we will see the difference between the chapters on genetics and chemistry, which apply methods assumed to be universal in application, and the chapter on family history, which sets out the notion of six continental systems of family structure and migration. The former emphasizes human commonality, while the latter emphasizes societal specificity.⁸¹

Although migration historians have done a good job at criticizing ahistorical and often simplistic social scientist interpretations of both current and past migrations,⁸² many migration scholars, among whom also historians, have gone too far in accommodating the notion that migration patterns are culturally and socially specific. The ready assumption of cultural specificity has led to the treatment of migrations in different time periods and different regions as distinct so that, by and large, specialized temporal subfields with substantially different frames of reference have developed.

Consideration of migration in a broader frame of reference—with a more general notion of migration, a longer timeframe of analysis, and a wider range of evidence—will make it easier to identify the general and underlying characteristics of human migration. As has been argued in one recent analysis the distinctive character of human migration is that it sends young adults from one language-based community to another, and in the process engenders linguistic and cultural learning both for the migrants and the receiving communities, thus creating a social mechanism for the creation and sharing of new knowledge.⁸³ This thesis and others on the species-level patterns of human migration can be considered as part of the global history of human movement.

To develop experience with a broad frame of reference, historians should use models for migratory behavior, and then critique the limitations of models as well as add individual specificity to general models. Conducting comparisons and applying frameworks widely will help us to get a sense of the degree to which migration is a universal pattern.

⁸¹ The two are not necessarily inconsistent, as the former is a presumption in method and the latter is an interpretation of data.

⁸² Lucassen and Lucassen 1997b; Hoerder 2002; Foner 2000; Lucassen 2005.

⁸³ Manning 2006a and 2006b.

At many points, surely, we will encounter cultural specificity in migration patterns. But the overall interpretation will be quite different and more general when we can put the specific characteristics of Atlantic slave migrants or today's migrant domestic workers into a more clearly understood pattern of a mix of voluntary and involuntary migration that has accompanied human life from the beginning.

But there is a limit to how far historians can go in moving away from social uniqueness, into common patterns. Jan Kok's "social networks," emphasizing the regional and ethnic characteristics of family structures, represent the other pole of this discussion of human commonalities vs. social specificities in migration patterns. The details of his text identify the ways in which patterns of migration are determined not simply by economic incentives but also by the specifics of migrants' social situations. The analysis emphasizes cross-sectional differences among social systems rather than temporal change in migration. In several ways, therefore, Kok's chapter serves as a bridge from the "anthropological" approach of the earlier chapters to the "historical" and "sociological" approaches to migration. That is, in its geographic and temporal focus, Kok's analysis addresses the societies and time periods that have been scrutinized most thoroughly in the historical literature. In addition, in its reliance on typology and sociological theory—as well as its cross-sectional and global scope—it is close to the "sociological" approach most commonly applied to contemporary migration.

A productive way to pursue the discussion is to seek links and comparisons of families as portrayed by Kok with family as portrayed by Pawley, Erlandson, McConvell, Ehret, and Keita. For instance, Kok's description of family systems could be extended by reference to the anthropological descriptions of systems of kinship terminology (most of them based on native North American patterns). On the other hand, one may consider the widespread violations of societal rules and patterns. In particular, during the past five centuries of human interaction, the normal rules of society have been broken through enslavement and forced migration, and much in the way of biological reproduction and family relations has been illicit, according to the contemporary observer. The multidisciplinary analysis of migration, drawing on the full range of frameworks and analyses, should lead to a more comprehensive and nuanced understanding of both the general patterns and specific cases in migration history.

Having said this, a caveat is in place requiring historians to always question whether perceived developments pertain to hours, weeks, months, years, generations, centuries or millennia. To give one concrete example: if we write that man migrated from Northeast Africa via the shores of Arabia, Persia, India and Indonesia as far as Australia, what does it mean for the individuals involved? Of course none of them has seen both Africa and Australia in one single life. In fact, this movement took as much as some 50,000 years (between 100,000 and 50,000 BCE). Suppose that the whole coastal “trip”—10,000 kilometers as the crow flies—actually meant a migration of on average not 200 meters but, say, 1 kilometer per annum, what was its impact on the short-lived life of most of our ancestors? A similar question can be posed regarding the first emigration from the tropical areas of Africa, Asia and Oceania resulting in the peopling of the northern regions between 40,000 and 30,000 BCE. This is particularly interesting because it resulted in phenotypical changes which we tend to consider as very important for our identity: the emergence of human beings with lighter skins, narrow noses and mouths and straight hair of different colours. Do we have to conceive this as a process that actually has been noticed by those concerned—before cross-cultural migration later on did so unavoidably?

As a model for the possible response to these questions, we may turn to the case of the “Bantu migrations” in Africa, where linguistic evidence demonstrated by 1950 that Bantu languages had spread, over several thousand years, from a corner of southeast Nigeria to occupy virtually the entire southern third of the African continent. The early explanations of the migratory process were vague and simplified. Nearly two generations of research have now provided a rather detailed picture of the many pieces of this great migration, ranging from slow advance along an agricultural frontier in some cases to rapid movements along rivers or occupation of new territories along with mobile herds in others.⁸⁴ For another model, we can turn to the spread of the English language over the past four centuries, which we know to be a complex mix of physical migration and cultural conversion, and which may also be broken down into a number of distinct migratory movements.

⁸⁴ Confirmation of the regional origins of Bantu languages came in Greenberg 1963. For a summary of current knowledge of the migrations, see Ehret 2001a and 2001b.

If this book simultaneously opens many venues to any migration historian and raises many more questions, our aim has been achieved. After all, this presupposes the willingness to take cognizance of the work of scholars in different fields. After this optimistic note, we would like to end with a note of caution, however.

As always, misinterpretations lie in wait. In particular a new racism, based on the results of genetics, may emerge from a one-sided identification of contemporary human beings with archaeological remains and the soil in which they are found. Take for instance a recent Dutch experiment where DNA from one thousand year old bones in the town of Vlaardingen has been linked to a dentist who lives today in the nearby city of Rotterdam. He had been selected, along with a number of other people, from a group whose genealogy could be reliably traced back to a forefather in 16th century Vlaardingen. In this case the press reports suggested a direct line between these two individuals, separated by one millennium, and most likely rightly so.⁸⁵ They forgot to mention, however, that roughly 30 to 40 generations lie in between, which means that we now know something about one out of millions of forefathers of this dentist. Imagine that this is not about Vlaardingen and Rotterdam, but about parts of the world which are contested between different generations of immigrants, and everybody can see the possibility of unintentional and intentional misinterpretations of migration history.

⁸⁵ <http://www.blikopnieuws.nl/bericht/53301> (consulted on September 30, 2009).

PART II

BIOLOGICAL APPROACHES

POPULATION GENETICS AND THE MIGRATION OF MODERN HUMANS (*HOMO SAPIENS*)

Peter de Knijff

INTRODUCTION

This chapter concentrates on some aspects of the most recent 100,000 years or so of human evolution, i.e. the emergence modern humans—*Homo sapiens*—in Africa and their migration out of Africa and subsequent global dispersions. It is very likely that modern humans have always been a migratory species as far as geography and ecology permits. For this reason, the transition by modern humans during the last 10,000 years from a mobile hunter-gatherer life-style towards predominantly stationary farming-based societies should be seen as the exception rather than the rule. One consequence of our mobile past is the non-random global distribution of genetic variation. This can be used for many research purposes and has many consequences. For instance, important ancient human migration routes have been reconstructed and dated by comparing patterns of genetic variation among globally dispersed human populations. Also, it has led to a pattern of non-random distribution of genetic risk factors.

What makes the study of human migration by means of genetic research tools unique is the simple fact that genetic information can only migrate from one geographical location to another if the carrier of it (i.e. the human individual) migrates. This is in contrast to language, culture, and behavior: their dispersal does not necessarily involve migration of human individuals, and could involve much more complex processes.¹ The combined analyses of gene trees with geospatial (location) information from the same samples—sometimes combined with population demography data—essentially allow the reliable reconstruction of migration routes and population structure at a global scale, but also at the extreme micro-geographic scale. For this there are many

¹ Diamond and Bellwood 2003.

good examples in current literature. This chapter describes a few of these examples in some detail.

GENE TREES IN A GEOSPATIAL CONTEXT:
AN EXAMPLE AT THE GLOBAL SCALE

The first example of the use of gene trees in the context of reconstructing human evolution and migration was the use of mitochondrial DNA (mtDNA) variation.² This study revealed an African origin of all extant mtDNA genomes (the so-called African Eve hypothesis), and although these results were initially heavily debated, they have been confirmed to a major extent by many subsequent studies.³

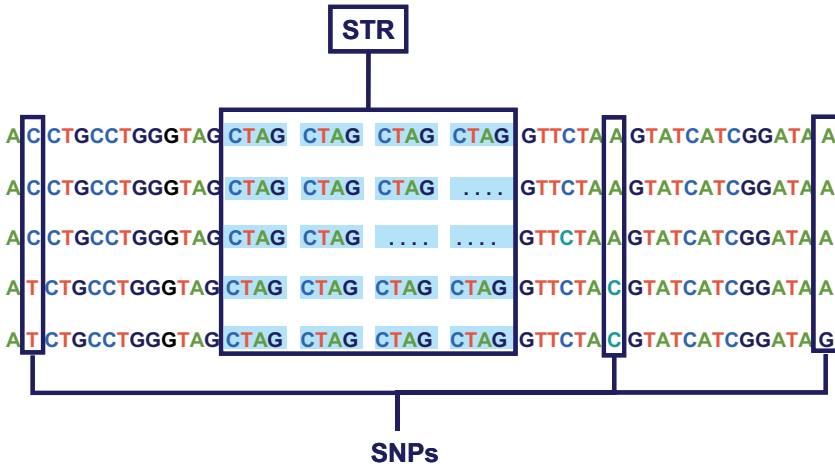
Here we will focus on a second, perhaps even more powerful genetic system: the use of human Y-chromosome polymorphisms among globally dispersed males. Because males carry only a single copy of the Y chromosome, the contents of this chromosome cannot be recombined when it is passed on from one generation to the next. This renders the Y chromosome a perfect tool to reconstruct paternal pedigrees for many generations. Only very rarely, spontaneous mutations occur on the Y chromosome. Because of these two processes combined—lack of recombination and rare mutations—the Y chromosome is an ideal tool to reconstruct human evolution and human migration back in time. Exactly how Y-chromosome polymorphisms can be used to reconstruct migration routes is explained below in detail by means of a theoretical example.

THE GLOBAL USE OF Y CHROMOSOME POLYMORPHISMS: THEORY

If we were able to zoom in on a small part of the Y chromosome of a number of unrelated males we would see two major types of genetic variation (polymorphisms or variants) among their Y chromosomes (figure 1).

² Vigilant, Stoneking et al. 1991.

³ For a recent update, see Torroni Achilli et al. 2006.



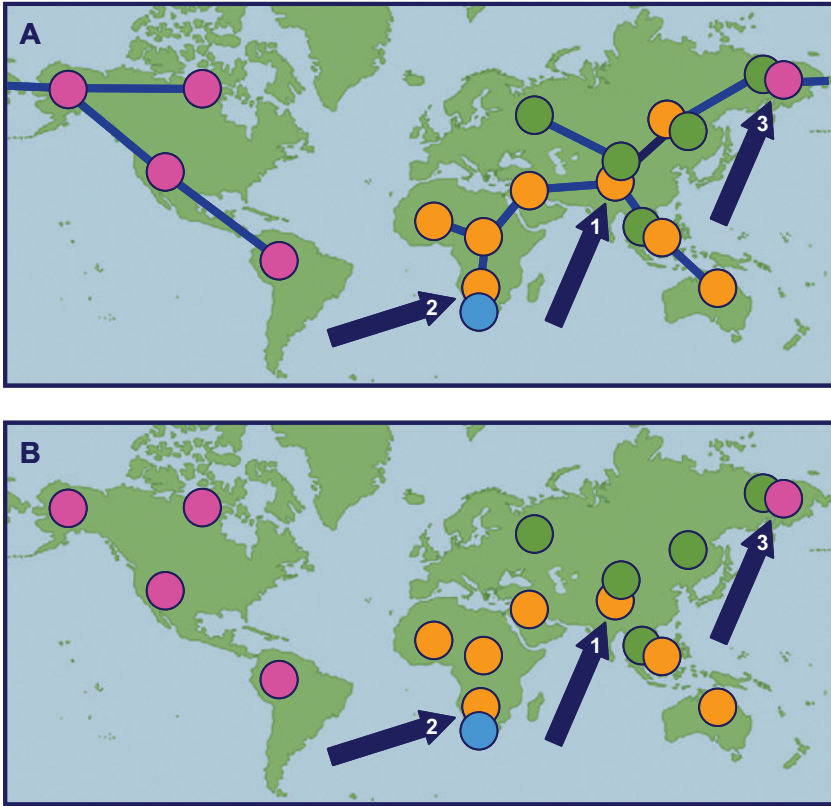
Shown are two different genetic variations. The first, single nucleotide polymorphisms (SNPs) are genetic variations at a single position. Among the five males we detect three SNPs, from left to right a C/T, an A/C, and an A/G polymorphism. The second type of genetic variation is in the form of short tandem repeat (STR) reflecting variation in the number of short repetitive genome fragments. Shown here is a tetra nucleotide repeat with the repeat motif CTAG repeated 2–4 times among these males.

Figure 1. A small fragment of the Y chromosome of five different males.

First, there are differences at a single position or single nucleotide polymorphisms (SNPs). Second, there are stretches of repeated sequences or short tandem repeats (STRs). On average, the mutation frequency of SNPs is 2×10^{-8} per generation compared to 0.2 percent (2×10^{-3}) per generation for STRs,⁴ a difference of about a factor of 100,000. This makes Y-STRs ideal to infer population differences in a more historical context (say the last 2,000–5,000 years), whereas SNPs are more suitable at the human evolutionary time scale (the last 100,000 years). However, ultimately, it is the combined use of Y-SNPs and Y-STRs which is most powerful.⁵

⁴ Jobling and Tyler-Smith 2000.

⁵ De Knijff 2000.

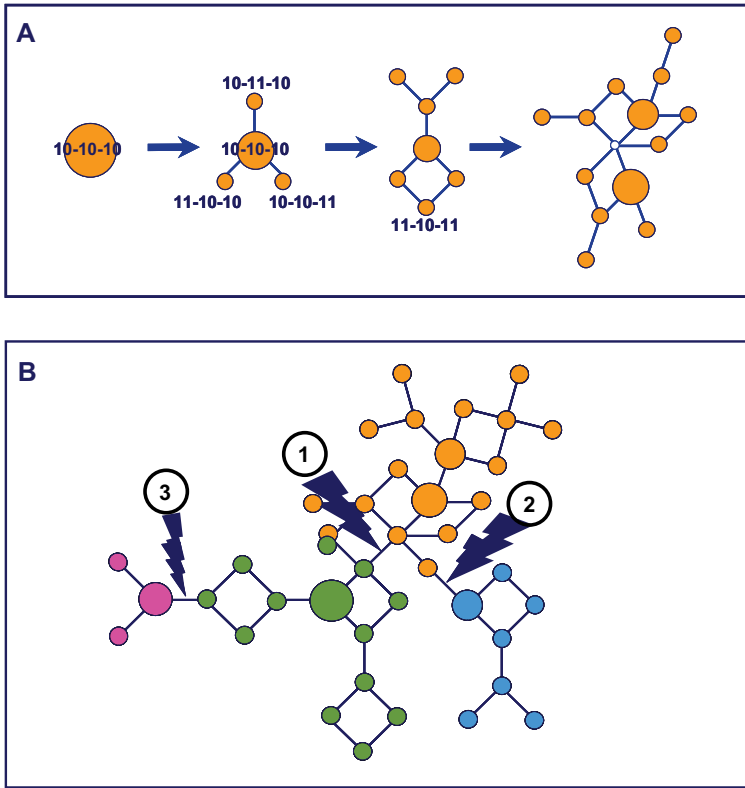


(A) Theoretical model of the spread of modern humans out of Africa reconstructed by means of Y chromosome variation. All males leaving Africa had the same Y chromosome (indicated in orange). At three moments in time (see the numbered arrows) a new Y chromosome, indicated with different colors, arose due to spontaneous mutations. These new Y chromosomes are only observed at locations where they first occurred and where humans migrated to, not where humans first came from. Once we have reconstructed the tree of Y variants (Figure 2), our model makes perfect sense. (B) The big problem is that in real life we only have a map of globally dispersed Y variants. Only when we can accurately date each of the three new variants can we start with the reconstruction of the migration routes. In addition, the denser our modern sampling is, the better we can indicate the region of origin of each new Y chromosome variant.

Figure 3. A theoretical model of the spread of modern humans.

While these males migrated out of Africa they accumulated new Y chromosome variants at different stages of their migration. If one makes the simplifying assumption that there was no back migration, it can be easily seen how Y chromosome variation among males sampled globally could result in region-specific variants. Please note however, that figure 3A can be seriously misleading because it assumes that the connections between the dots (populations) are the true connections (i.e. routes of migration). What we actually only know for certain in population genetics is illustrated in Figure 3B: a number of globally dispersed populations with different Y chromosomes. Based on this information we would like to be able to reconstruct the most likely migration routes connecting the populations we sampled. Thus, how can we reconstruct the routes indicated in figure 3A from information as in 3B? In order to do so with some accuracy we need to know (i) the evolutionary tree connecting the Y chromosome variants (this we have, see figure 2), (ii) an estimate of the age of each new Y SNP, and (iii) the place of first occurrence of each new Y SNP. If these conditions are met, a reconstruction of the human migration processes back in time on the basis of present day male sampling and analyzing their Y-chromosomes is possible. If, additionally, in these males also their mtDNA variation would be studied, valuable—and perhaps contrasting—information based on female migration could be obtained. Current sampling procedures do include a minority of females, but only out of political correctness and not out of necessity. Sampling only males and their Y-chromosomal, mtDNA, X-chromosomal (only a single copy in males!) and autosomal DNA information is sufficient unless one is interested in complex—and perhaps population specific—genomic imprinting processes. However, it is yet unclear how this could help us deciphering human migration processes. In short, we do not need females for this purpose but are afraid of saying so.

Figure 4 explains how we can estimate the age of Y-SNPs. The identification of the place of first occurrence of each new Y-SNP is much more problematic and not solved for each and every Y-SNP. The application of this basic principle is largely dependent on a sufficiently dense sampling strategy. The more DNA samples from globally dispersed human populations are screened for Y-SNPs and Y-STRs, the more accurate the reconstruction of migration processes will be.



(A) In order to date the ages of each new Y-SNP variant we can make clever use of Y-STR variation. By means of deep rooting pedigree studies and the analyses of father-son pairs, a fairly accurate Y-STR mutation rate of 0.2 percent can be obtained. This means that a single Y-STR locus will spontaneously increase in length or decrease in length once every 500 generations. Normally these mutations involve a single repeat step. From this it easily follows that if we were able to follow the growth of Y-STR variation we would be able to detect a process as shown here. Out of a single Y-chromosome with three STR loci of 10 repeats long, due to spontaneous mutations new Y-chromosomes emerge, all with a slightly different Y-STR composition (in this example each of the STR loci mutated once from 10 to 11 repeats). Given time, slowly a more complex Y-STR network grows, containing Y chromosomes connected to each other with single STR repeat steps. Obviously, assuming a certain average Y-STR mutation rate we can estimate the number of generations it takes to accumulate a certain Y-STR variation out of a single Y chromosome.

(B) In real life, of course, a Y chromosome can accumulate both SNP variation and STR variation. Here we see this happening. The flashes indicate a new SNP due to a spontaneous mutation. This new SNP marks the beginning of the growth of a new Y-STR network connecting Y chromosomes which all share the same SNP background. Within each of these subgroups we can use the Y-STR variation to estimate the age of the marking SNP. What is also illustrated here is the notion that the younger the age of a SNP, the simpler the Y-STR network is. It is important to stress here that this rather simple approach only works in the absence of substantial immigration and only in the original population where the SNP arose.

Figure 4. Dating Y-SNPs by using Y-STRs.

THE GLOBAL USE OF Y CHROMOSOME POLYMORPHISMS: REAL DATA

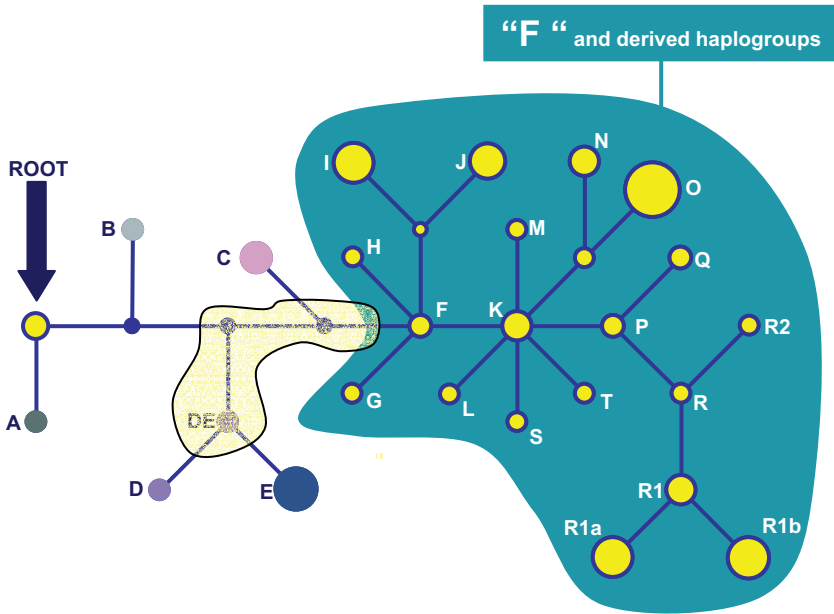
One recently published study⁶ describes and summarizes in detail the results of a large number of Y-SNP related studies published during the past 10 years. At the same time they also provide a very detailed update on the Y-SNP tree and nomenclature. The current tree of Y-SNP variation now incorporates information from approximately 600 SNPs or other binary polymorphisms. These polymorphisms now define 20 major branches of the Y-SNP tree or haplogroups, labeled A-T (figure 4) and over 300 distinct sub-haplogroups. We have collated many of the previously published Y-haplogroup studies into a Y-SNP database containing data from about 1100 globally dispersed populations and close to 60.000 males. Based on this source of information we discuss some initial results below.

If we simplify the full Y-SNP tree (figure 5) into the six most basic branches and plot their global distribution among populations where they are currently present in frequencies of 10 percent or more (figure 6), a number of observations can be made. First, it is immediately clear that the two most basal (and hence oldest) major Y-haplogroups A and B only occur among Africans, predominantly south of the Sahara. Second, two other basal haplogroups, C and D only occur outside Africa where they have a scattered distribution. Third, haplogroup E occurs in rather high frequencies (up to 50 percent) in nearly all African populations, but also (in lower frequencies) in many countries bordering the Mediterranean Sea. Fourth, haplogroup F is mainly found outside Africa, but is also observed in northern Africa. From these observations it is possible to postulate a few migration scenarios.

(i) It is unlikely, given their present day distribution, that males carrying haplogroup A and B were ever involved in any out-of-Africa migration. Together with data from carriers of haplogroup E Y-chromosomes, migration and dispersal processes within Africa entirely rely on detailed information of these Y-haplogroups.

(ii) the precursor of haplogroups DE and CF (shown with a pale yellow shading in figures 5 and 6) D+E and C+F arose independently and rapidly after each other, most likely within Africa. Males from these two groups were involved, most likely, in two out-of-Africa migration events.

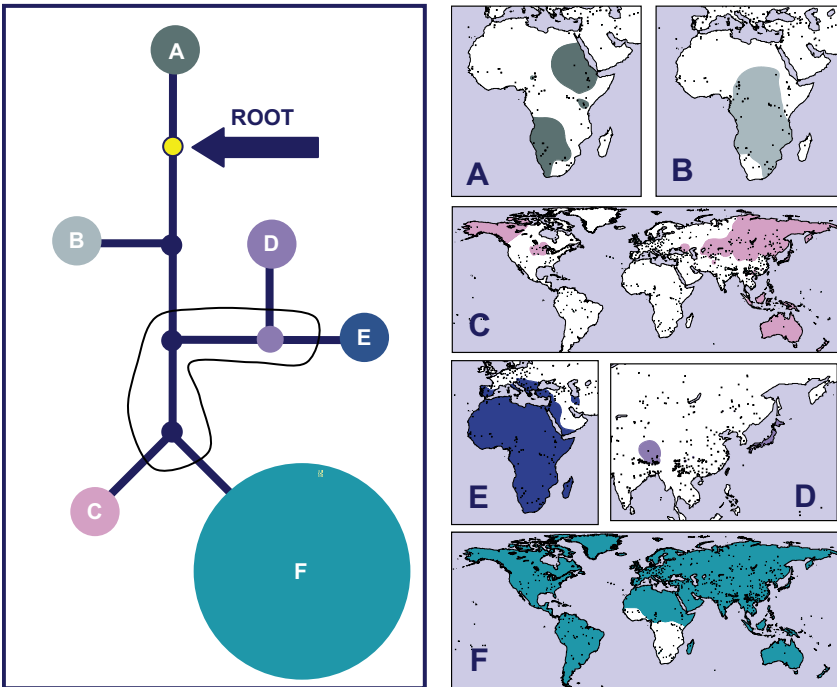
⁶ Underhill and Kivisild 2007.



This is a simplified Y-SNP tree in which all distinct Y haplogroups from the most recent Y-SNP tree are condensed into 20 major Y haplogroups. The Y-haplogroup names A-T are according to the consensus nomenclature. These major haplogroups can be further divided into many subgroups. Here only three of the most important subgroups (R1, R1a, R1b and R2) are shown. The diameter of each circle corresponds to a somewhat inflated relative frequency based on Y-SNP information from about 60,000 globally dispersed males (our own database). Note that the colors of haplogroups A-E and the macro-haplogroup F (consisting of haplogroups F-T) correspond to the colors of the maps in Figure 6.

Figure 5. The most recent Y-SNP phylogeny.

(iii) The first one involved males with haplogroup D. These males could have followed a two-pronged forklike migration route into Asia. One route led them south-east, eventually reaching the Andaman islands, where it is still found today. The second route followed a more north-east direction, running north of the Himalayas, leading them into central Asia and subsequently all the way to Japan. Currently carriers of haplogroup D are only found in appreciable numbers in Tibet, Japan, and some Himalayan populations. An accurate dating of the first haplogroup D Y-chromosomes is still not possible, mainly because of insufficient sampling. However, considering the fact that it has a more



This is a condensed Y-SNP tree of the six major Y haplogroups and maps showing their global distribution (see also Figure 5). From this condensed tree and the corresponding maps, a complex picture emerges, illustrating the out-of-Africa expansion of modern humans. Although there are a number of different possible scenarios, the most likely model is the one where the DE and C+F independently arose in Africa, shortly after each other and contributed to two independent migrations out-of-Africa. The first one resulted in a nowadays very scattered distribution of haplogroup D Y-chromosomes in various parts of Asia; the second one involved C+F Y-chromosomes, apparently spreading very rapidly (and perhaps locally wiping out D haplogroup carriers) throughout Asia and beyond.

Figure 6. Global distribution of the six earliest major Y-haplogroups.

basal position in the Y-SNP tree, haplogroup D must have an older age compared with haplogroups C and F.⁷

(iv) A second out-of Africa migration, involving males with haplogroups C and F, took place approximately 69.000 years before present

⁷ Manning's analysis of early human migrations based on entirely separate data—the distribution of language groups—proposes numerous similarities and some differences in comparison with this interpretation. For instance, the Himalayan-centered haplogroup D corresponds to the homeland of the Sino-Tibetan or Dene-Caucasian language group in Manning's analysis (Manning 2006b).

(69 KYBP).⁸ Exactly how these first humans migrated out of Africa is still very much open for debate, although from a number of studies it becomes more and more clear that these early modern humans could have followed a coastal route along the southern fringes of the Arabian peninsula and the Asian continent.⁹ They soon arrived in the Indian subcontinent where they successfully settled. From this homeland they migrated into the Asian subcontinent in different directions at different timescales. Although it does not clearly appear in Figure 6, the two ancient out-of-African haplogroups C and D do occur in India, although very locally and in very low frequencies. Haplogroup F and some of its sublineages are very common throughout India. This strongly suggests that indeed, already 50,000 years ago, modern humans were present in India. Exactly how and where the haplogroups C and F evolved and subsequently spread over Asia and beyond is unclear, mainly because of lack of data from vast and important regions (Tibet, Mongolia, Siberia, and Central Asia) and insufficient detailed genetic information from many of the already sampled populations. We do know, however, that within Asia, the Himalayan mountain range must have been a formidable geographical barrier. Alternatives are that early migrants could have moved from India into the rest of Asia around the Himalayas, either through South-East Asia, through Central Asia, or both.

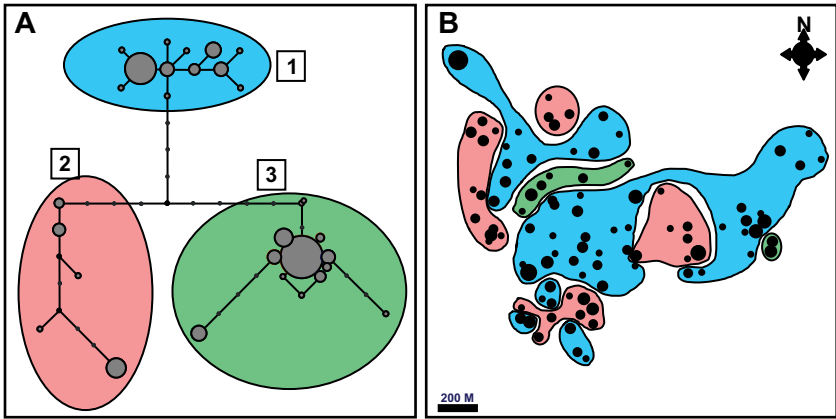
GENE TREES IN A GEOSPATIAL CONTEXT: AN EXAMPLE AT THE MICRO-GEOGRAPHIC SCALE

Gene trees and their geospatial distribution patterns can also be studied at a much smaller scale, even to that of a single village, as we will show below. It is commonly known that throughout sub-Saharan Africa there is a marked difference in male-mediated and female mediated geneflow among populations—that is, Y-chromosome vs. mtDNA patterns—when food-producing populations are compared with traditional hunter-gatherers. Destro-Bisol et al.¹⁰ provided some important insight into the underlying processes and concluded that socio-cultural factors, including

⁸ Karafet, Mendez et al. 2008. Note that KYBP means thousands of years before present

⁹ Mellars 2006a and 2006b. Erratum in: *Proc Natl Acad Sci U S A* 2006; 103:13560; Richards, Bandelt et al. 2006; Sengupta, Zhivotovsky et al. 2006; Underhill, Passarino et al. 2001; Underhill 2003b.

¹⁰ Destro-Bisol, Donati et al. 2004.



A total of 205 males from a single village in north-east Ghana were analyzed for a large number of Y-SNPs and Y-STRs. Panel (A) shows the network connecting all observed different Y-chromosomes, indicated by grey circles. Each type is connected to another by single STR repeat mutations. Some types could only be connected by inferring Y-chromosome types not observed in our data set. These missing types are indicated by small black dots. The size of each grey dot indicates the relative frequency of a Y-chromosome type among all males analyzed. There are three distinct clusters of related Y-chromosomes present among the males in this village. Each of these groups is given a different color. (B) The 205 males all live in 93 different compounds (groups of a variable number of different huts) scattered over a total area of approximately 4 km². Each black dot represents a different compound. The size of the dot represents the total number of males analyzed from each of these compounds and varies between 1 and 8. Compounds with males from the same Y-chromosome groups are combined into within-village clusters according to their Y-chromosome type using colors corresponding with the colors in panel 7A.

Figure 7. A micro-geographical study using Y-chromosome polymorphisms.

polygyny and patrilocality, were responsible for a much higher female mediated gene-flow compared to a reduced male-mediated gene flow specifically among the food-producing populations. However, exactly which factors are involved is still not clear. This might be due to the fact that they were only able to contrast and compare widely dispersed populations and could not report on the relevant factors. We speculated that such factors could be better discovered following a different approach. For this, we initiated a detailed study focusing on a group of villages in the north-east of Ghana. Here we describe some initial results of a single village.

In this village (figure 7B) all adult males ($n = 205$) from 93 different compounds were analyzed for a large number of Y-SNPs and Y-STRs. Based on the combined Y-chromosome data a network of Y-chromosomes could be constructed (figure 7A). This network dis-

played three clearly distinct groups of related Y-chromosomes. We subsequently plotted the distribution of these three groups, giving each a different color, and noticed a prominent non-random distribution (figure 7B). There are clear clusters of compounds where all males belong to the same Y-chromosome group. Subsequently, we tried to correlate this pattern with a number of social-cultural and demographic factors, including family membership, clan membership, clangroup membership and tribe membership. From this it became clear that the clustering pattern could only be explained by clangroup membership. In circumstances of the present time in which the data were collected, males are extremely faithful to their clangroup and remain within their clans; females are allowed to marry out of their clan groups and often leave the village. This contrast showed up when the same males were analyzed for mtDNA variation: the males could be categorized into nearly complete distinction of Y-chromosome type, but such orderly groupings were completely absent in the patterns of their mtDNA type.

If similar factors are still acting on many more sub-Saharan African farming populations, one can image that this would create a complex mosaic of non-randomly distributed clusters of related Y-chromosomes. This can then explain the observations of Destro-Bisol et al. and others, at least among African pastoralists.

The two studies described above illustrate the difference in geographic scales for which one could use Y-chromosome (or mtDNA) polymorphisms. Applications are manifold and with the increase in resolution of genotyping, i.e. full mtDNA genome sequencing and high resolution Y-SNP and Y-STR typing, more subtle processes can be studied in the future. Two good examples of such studies are briefly discussed here: both result from the National Geographic Genographic Initiative.

The first study¹¹ provides a simple but very important answer to the often-raised question of why only two out of many distinct African mtDNA lineages were responsible for all subsequent non-African mtDNA diversity. By analyzing 624 complete African mtDNA genomes, the authors discovered a minimum of 46 distinct African mtDNA lineages. The five most basal (oldest) lineages, dated at 90.000–150.000 years before present, are exclusively found among the southern African Khoisan, dominantly hunter-gatherer groups which, in linguistic terms, are the most distinct of human populations. The authors discovered

¹¹ Behar, Villems et al. 2008.

that, up to the proposed timing of the first out-of-Africa migrations, up to 40 other mtDNA lineages were already present: most of these were distributed among populations that today are small, isolated, and practice matrilineal descent. If humans expanding out of Africa belonged to such populations, this would explain why all non-African mtDNA genomes are derived from the mtDNA lineages M and N. If, at the time of expansion, African populations were already large and not matrilineally structured, such a result would have been nearly impossible, apart from evoking more complex processes such as selection or extreme selective bottlenecks.

The second study¹² eloquently describes a much more recent migration process: the genetic influence of Crusader activity in the 11th–13th centuries on the Lebanese Y-chromosome gene pool. A total of 926 Lebanese Muslim, Christian, and Druze men were typed with Y-chromosomal SNP and STR markers. Rather unexpectedly, male genetic variation within Lebanon was found to be strongly structured by religious affiliation. Y-haplogroup R1b was found to be more frequent in Lebanese Christians than in Lebanese non-Christians. It was subsequently discovered that the most common R1b STR-haplotype among Lebanese Christians was highly specific for Western Europe. This could be explained by the direct influence of Crusader activity in the 11th–13th centuries. These men could have introduced these western European Y-chromosome lineages specifically into Lebanese Christians.

THE GLOBAL VARIATION IN AUTOSOMAL [NON-SEX] GENE FREQUENCIES

Reconstructing the evolutionary history of modern humans by means of mtDNA and Y-chromosome genetic variation, in essence, makes use of only two single non-recombining genes and can result in misleading inferences for many different reasons. Therefore, it would be ideal to be able to confirm the mtDNA and Y-chromosome results by means of many independent non-recombining gene fragments. This kind of research is still in its infancy, although some examples do exist.¹³ It is, however, possible to learn from summary statistics describing the genetic

¹² Zalloua, Xue et al. 2008.

¹³ Garrigan and Hammer 2006.

differences within and among different human populations.¹⁴ The availability of approximately 1064 cell lines of 52 globally dispersed human populations, from the Human Genome Diversity Project (HGDP), has been pivotal in this respect.¹⁵

There is a still ongoing debate about the global distribution of human genetic variation, centered on the theme of genetic clusters or clines [i.e. inclines or declines in association].¹⁶ Global human genetic diversity seems mainly to be influenced by geography, with genetic variation among human populations increasing with increasing geographic distance, a process reflecting our past migration routes. Although this fundamental process would not completely rule out the possibility of distinct genetic clusters, it often used to argue against the concept of distinctive genetic subgroups—that is, genetically based ‘races’. One conveniently ignored aspect in these debates is the sampling strategy underlying many of the articles discussing these issues. It is in this respect that the HGDP is becoming more and more important, and even more so since the recent release of two in-depth SNP-screening studies using these samples.¹⁷ These two studies provide a very detailed picture of global human genetic diversity, with further support for a single sub-Saharan African origin of modern humans.

Both studies (describing partly overlapping large-scale SNP genotype results from the same DNA samples) confirm and extend an earlier study on the same HGDP samples using 377 autosomal STR loci¹⁸—that is, STR sites on chromosomes other than the Y. Within-population differences among individuals explain about 95 percent of the total genetic variation, whereas among-population differences account for the remaining 5 percent. Based on these numbers one would, perhaps naively, assume that it would be impossible to stratify the 52 HGDP populations into well defined groups. And yet, this is exactly what all three studies report. Irrespective of the type of genetic polymorphism used, the HGDP panel is stratified into six or seven major clusters, five of which correspond with major geographic regions: Africa, Middle-East, Europe, Central and South Asia, East Asia, the Americas and Oceania. Subsequent analyses can reveal more detailed structure even within each

¹⁴ Cavalli-Sforza 1998.

¹⁵ Cavalli-Sforza 2005.

¹⁶ Handley, Manica et al. 2007.

¹⁷ Li, Absher et al. 2008.

¹⁸ Rosenberg, Pritchard et al. 2002.

of these major groups when analyzed separately. Taken together, these very detailed (and publicly available) sets of data suggest that human genetic diversity has a non-random geospatially distributed pattern that can be best summarized as ‘stepped clinal’,¹⁹ i.e. a combination of clines and clusters unifying remote and closely spaced human populations.

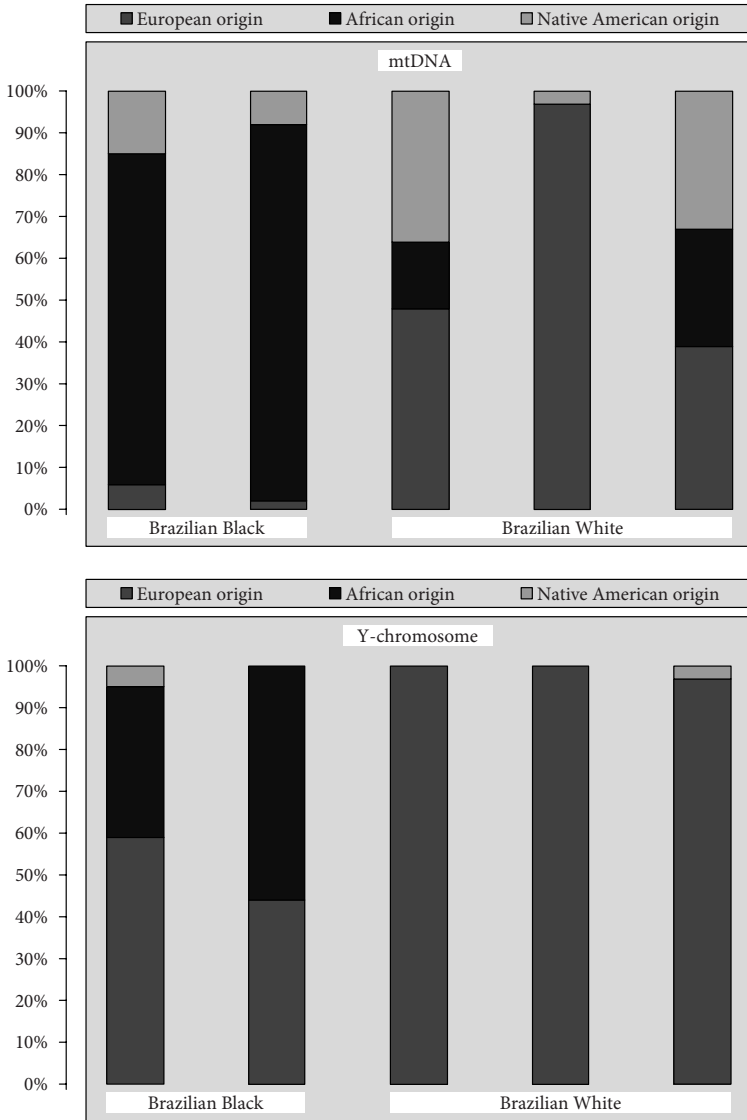
THE GENETIC ANALYSIS OF RECENTLY ADMIXED POPULATIONS

A major advantage of using autosomal markers is its application in genetically recently admixed populations—that is, population admixtures within the past 500 years. Among these populations the use of sex-specific markers—especially when analyzed on their own—can demonstrate misleading results. A clear example of such an admixed population is the population of Brazil.²⁰ The analyses of sex-specific genetic data among contemporary South American populations clearly reflect differences in the sex ratios of the populations involved in the admixture history (Figure 8).

More European men than woman were involved in the initial European colonization of South America that started in the 15th century and mixed with local Native American women. Much later, Europeans brought African slaves (mostly male) to South America. Consequently, more genetic mixing occurred between European men and African women. The result of this sex-biased admixture history is that European ancestry is higher for Y-chromosome markers (from the male line) than for mtDNA markers (from the female line) and African / Native American ancestry is higher for mtDNA than for Y-chromosome markers in some contemporary South Americans. Brazilian populations labeled “White” are of (self-indicated) European descent and show nearly exclusively European Y chromosomes and not only have the highest proportion of European mtDNA, but also have a considerable fraction of Native American and African mtDNA. Brazilian populations labelled “Black” are of (self-indicated) African descent and show the highest fraction of African mtDNA and a high fraction of European and African Y chromosomes with little or no Native American Y chromosomes.

¹⁹ Witherspoon, Marchani et al. 2006.

²⁰ Alves-Silva et al. 2000; Carvalho-Silva et al. 2001; Marrero et al. 2005; Hunemeier et al. 2007.



(A) Results of an mtDNA screening among Brazilian populations (see main text for references). Among three self identified Brazilian “white” populations—of European descent—a variable amount of European mtDNA is found. Among two Brazilian “black” populations, an extremely high percentage of the mtDNA was of African origin. (B) for their Y-chromosomes the Brazilian “white” populations were nearly exclusively of European descent, and also among the Brazilian “black” populations a 40–60 percent European Y-chromosomal contribution was found.

Figure 8. The genetic analyses of a recently admixed population.

These results suggest that European men had disproportionate sexual access to women of all groups, presumably as a reflection of their power. More generally, this example illustrates that conclusions based solely on uni-parental markers, which are frequently used in population history studies as well as in genetic-ancestry testing, can sometimes lead to contrasting answers when reconstructing the geographic origin of populations and individuals that experienced sex-biased admixture. In such cases, ancestry-informative autosomal markers should be used to complement sex-specific markers in order to reliably identify geographic origins of individuals.

The power of such markers was recently demonstrated in a recent detailed genetic survey using a large number of autosomal microsatellite loci among 24 Native American populations. It revealed that, especially among three North American populations (Cree, Chipewyan, Ojibwa), an appreciable amount (30–40 percent) of Eurasian admixture could be discerned. A much reduced European admixture (less than 10 percent) was observed among some—but not all—populations from Central and South America.²¹

IN CONCLUSION

In the above, we have discussed some aspects of the use of genetic markers to study the effects of migration by modern humans—*Homo sapiens*—during the most recent 100.000 years of human evolution. Initially demonstrated by mtDNA data, and later confirmed by Y-chromosome and autosomal data, is the origin of modern humans in Africa. Exactly how many expansions out-of-Africa were involved is not known. Based on genetic data, the earliest expansions are estimated to 60.000–80.000 years before present. However, there is archeological evidence that anatomically modern humans were already present in the Middle East 90.000 years ago.²² These early expansions, at least as far as we can rely on current molecular dating methods, did not venture further out and did not contribute to our current non-African genepool. This suggests that there have been multiple out-of-African expansions,

²¹ Wang, Lewis et al. 2007.

²² Forster and Matsumura 2005.

as previously argued,²³ some of which were successful and others that were not. It will be extremely difficult to decipher exactly how many successful expansions there were, and which route they followed, and we will probably never know the complete picture.

Some additional help might come, in the near future, from the increasing amount of DNA results on long-deceased humans. These studies will be able to give us a much more complete picture because they will reveal past processes which have left no genetic signal in our current populations. A recent example of such an unexpected discovery is the presence of mtDNA N1a lineages among Central European populations around 7000 years before present.²⁴ Similar lineages are absent among contemporary European populations, so the new research indicates a hitherto unknown population demographic process among—at least—Central Europeans. By combining similar results from many other globally dispersed sites with the growing number of detailed genetic studies among contemporary modern humans will ultimately give us a much more refined insight into our migratory past.

²³ Templeton 2002.

²⁴ Haak, Forster et al. 2005.

A BRIEF INTRODUCTION TO A GEOCHEMICAL METHOD USED IN ASSESSING MIGRATION IN BIOLOGICAL ANTHROPOLOGY¹

Shomarka Keita

INTRODUCTION

This chapter will present a non-technical introduction to the principles and methods of geochemistry that are being employed to assess migration. These methods primarily involve using strontium isotopes. The presentation will first review some general information about migration and biological anthropology, and then discuss strontium isotopes as a tool in the research of human movement.

One basic migration “problem” involves the somewhat blunt but clear question as to whether or not an individual has died in the same geographical area in which he or she was born, or resided in early life. The mammalian skeleton, via its biological characteristics, provides the material for addressing change in residence because of the geographical variability in soil geochemical composition.² Diets reflect this composition which becomes encoded in the skeleton. Animal movements or displacements in various circumstances were the first to be studied with geochemical techniques;³ for example, conservationists used isotope methods to help in making decisions about whether or not poaching had occurred, specifically, the likelihood that an animal was killed in a region where it could be lawfully taken. Bioarchaeologists later adopted the use of strontium isotopes to study aspects of migration after having

¹ I would like to thank the editors, Professors Jan and Leo Lucassen, and the Netherlands Institute for Advanced Studies for supporting this work and hosting me at the migration conference held there in December of 2005. Professor Patrick Manning is acknowledged as offering critical comments that improved this manuscript. This piece is dedicated to my parents, who saw most of the 20th century. My father fought in World War II, a war that allowed for great migration that actually hurt one community of Americans, but also spurred it on to demand its inclusion in the society that it had given its blood to, and this is the case for my mother’s father who fought in WW I as well.

² Smrčka 2005.

³ Beard and Johnson 2000; Bentley 2006.

used them initially to better interpret the diets of archaeologically defined populations; such studies have included such topics as the seasonal mobility of pre-colonial sheep herders based on the examination the geochemistry of sheep dentition.⁴

MIGRATION: BRIEF OVERVIEW

Biological anthropologists (and bioarchaeologists) have long been interested in migration. Indeed a concern with migration was once fundamental to all branches of anthropology, largely because of the use made of diffusionist models invoking population movement to explain cultural, linguistic, and biological changes at the population and geographical levels. Indeed for some topics or problems there is an ongoing debate about the relative importance of the roles of migration of people versus ideas in bringing about observed changes, a notable example being the spread of agriculture.

In anthropology a consideration of migration as a possible mechanism is a near necessity as a *possibility* in many scenarios of cultural or population change.⁵ The peopling of different regions of the earth is an issue of migration. Whether the questions are about the australopithecines, *Homo erectus*, archaic *Homo sapiens*, modern *Homo sapiens*, or others, migration has to be invoked to explain the spatial distribution of fossils, subfossilized remains, and the current patterns of habitation of the earth. The concepts of colonization and cultural and biopopulation change have a long connection with the notion of migration.

In population genetics and anthropological genetics the term 'migration' is frequently used in older literature to refer to the process of gene flow, or even as its synonym in some instances.⁶ Gene flow refers to the exchange or transmission of genes from one population to another. In real world terms this means individuals leaving offspring in populations other than the one of their ethnic or geographical origin. An example would be the descendants of Matthew Henson, the Afro-North American crew member of Perry's expedition to the North Pole.⁷ Although he was married to an American woman, Henson, via a common-law

⁴ E.g. Balasse et al. 2002.

⁵ Rouse 1986.

⁶ See the papers in Boyce 1984.

⁷ Counter 1991.

relationship, only has Greenland Inuit descendants and none in his ethnic group of origin. This case illustrates the transmission of some African genes via an Afro-North American to the Inuit population. The concept of migration as gene flow will not be further discussed in this chapter. Rather the more widely used idea of migration as the spatial movement of persons is to be the focus.

Migration can be understood as a mechanism that inserts similar “kinds” of individuals into diverse environments, or different “kinds” of individuals into similar environments.⁸ This conceptual framework opens the door for a variety of questions and projects. These range from comparing the growth patterns, morphology and stature of the descendants of migrants in new environments with that of their source populations, to examining head shape of parents born in one place with that of their children reared in the environment of a new homeland.⁹ The general health as well as changes in patterns of disease in migrants versus the source populations has also been studied; this was a special interest at one time in Asian migrants coming to western countries.¹⁰ Rural to urban migrations have been of interest to epidemiologists and bioanthropologists examining changes in patterns of hypertension and other aspects of health, such as obesity levels. Different lifestyles and diets are key variables in such research, but also the consideration of possible genetic predispositions—or lack of them—in the source populations. Other studies have involved comparing fecundity levels between migrant and “home” populations. The examination of patterns of marital distance is another kind of migration study that has been carried out by biological anthropologists. Ethnologists and cultural anthropologists have examined the impact of migration on questions of identity, and the issues of assimilation and resistance to it.¹¹ Needless to say social circumstances can affect the psyche and health of migrating populations and their kinsmen at the origin and terminus of their treks.¹² Bioarchaeological assessments of migration patterns in the pre-European American southwest, at Grasshopper Pueblo in Arizona (13th to 14th centuries AD) have led to hypotheses about the reorganization of communities and the existence of sodalities (organized

⁸ See Mascie-Taylor in Mascie-Taylor and Lasker 1987.

⁹ E.g. Boas 1912.

¹⁰ Roberts et al. 1992.

¹¹ Benmayor and Skötes 1994.

¹² Roberts et al. 1992.

non-kinship based groups) over time in the region. For the *Annales* oriented historian these kinds of studies offer insight and data for a potentially attractive line of inquiry.

The methods for studying migration in anthropology almost all depend on assessing similarity or dissimilarity in one sense or another. This is obvious when an aspect of a problem includes trying to assess whether or not migration has actually taken place, how much has occurred, and from where in some instances. For example genetic similarity at some level might be evidence that migration has occurred; however, it can also mean that similar selection pressures have caused similar gene frequencies. Different kinds of genetic markers may have more reliability as indicators of the existence and degree of migration; this is thought to be usually the case for genes that are said to be selectively neutral, because they convey no obvious survival advantage. However, the use of selectively “neutral” markers is not an absolute guarantee of uncovering true affinities, because such genes in theory could be increased in a “selective sweep” if they are linked to the genes under selection, a phenomenon called genetic hitch-hiking. The ‘hitch-hikers’ also increase in frequency as a function of the selective advantage of those to which they are linked. Similarity in cultural artifacts, styles of pottery, and aspects of language, are also possible clues to migration (versus trade) in some circumstances. Sometimes dissimilarity can be misleading when an issue is expressed in categorical terms. The peoples of supra-Saharan Africa are on average physically different from most of the populations in found in tropical Africa, although there is a cline in a range of traits from eastern through northern Africa. However, Y chromosome variants (specifically the PN2 lines of descent) show that the populations are far more interconnected than the physical traits would suggest in a model of rigid categorical interpretation based on external traits.¹³ In other words an ancestral PN2 bearing population gave rise to the majority of the male ancestors of supra-Saharan, Saharan and sub-Saharan African peoples. Thus, dissimilarity at one level of biological organization [average physical traits at the population level] is contradicted by a similarity [in lineages of descent] that actually shows both regions to share male *ancestors* at a time depth *after* the emergence of modern humans. There are also tropical Africans with the stereotyped traits often solely (and incorrectly) made synonymous

¹³ Reported in Keita et al. 2004.

with indigenous “Africans” who carry Y lineages said to be from a back migration from “Eurasia” in the paleolithic period;¹⁴ these lineages make them more ‘similar’ in this sense to “Eurasians”, because they are actually genealogically related, and no one knows the appearance of the “Eurasians” involved. There were more recent migrations as well from Eurasia. So similarity must be placed in the context of other kinds of evidence and evaluated with a rich appreciation of the complexity of human interactions over time and space. For the historian of the biocultural *longue durée* who wishes to engage background data, these examples illustrate how processes of biogenesis can and must be separated from those of ethnogenesis, and the ethnic actors of known “historical time”, a concept itself open to discussion.

The use of chemical isotopes, including strontium, also involves the concept of similarity, in that a “match” between the composition found in aspects of the skeleton and a reference sample is used to make a determination of likely association. The reference sample would ideally be from local fauna, however if not available the composition of the soil, water, and geological formations could be used. The issue of not being able to prove a negative has some bearing here as well. Individuals or families in some industrialized societies, or very wealthy ones, may consume a diet largely based on imported food and water. Such persons’ chemical profiles (taken in the appropriate tissues) will not necessarily reflect the locale of their birth or early life. Thus an analysis for such remains, based on a dental sample after a fire, will not give a clear signal for a single region. Rather there may be a “mixed signal” meaning one that does not exactly fit any known locale exactly—especially if one has a group of individuals. Drinking local water but eating plants from another geochemical zone would give this kind of picture. However, the mixed signal itself may be an indicator of a particular kind of affluent class niche, and help identify the person from a forensic or historical perspective, because it gives information about the unknown subject—it humanizes him or her. “Jet setters” may have a set of unique signals that tie them not to a single geography but to a lifestyle. Similarity between them would be a function of this lifestyle, not a particular place. For the historian this would be of interest, especially those pursuing micro-historical studies. Imagine the findings for an individual who was born and reared in Cuba, immigrated to the US, but who dies while living on

¹⁴ Underhill 2003.

a South Pacific Island that had become his home. This person's social history illustrates something about migration, globalization, mobility, and personal choice. The biology of his body may well indeed reflect this migration history. However, the caveat remains: a local chemical signal could be that of a migrant traveling within the same geochemical "zone", and remains with a non-local signal could indicate those of a local whose food was procured from a region or regions beyond his or her domicile.¹⁵

HUMAN TISSUE BIOLOGY

The human skeleton has properties that can reflect aspects of a person's personal lifetime biological history. The skeleton's development involves the mineralization of its different tissues, which occurs at different times, and in the case of bone exhibits metabolic turnover that can change chemical composition over a lifetime.¹⁶ Different classes of teeth develop at different times. Deciduous ("baby") teeth form in utero, and permanent teeth form after birth. The bony skeleton begins development in utero, grows and matures through early adult life, with aspects of the craniofacial region continuing to exhibit growth throughout life in some dimensions.

The chemical properties of various tissues make possible what can be called a skeletal biography or osteobiography. Because of the similarity in chemical valence some elements, such as strontium, can replace calcium during the developmental phases. The different rates of tissue turnover, in theory permit a determination of chemical makeup that can be dated to a particular broad frame in the life of any individual.¹⁷ The enamel of teeth does not change its chemical composition once formed. However, the composition of bones can change and varies by the specific bone. The chemical composition of the enamel of teeth reflects the nutrient and chemical intake during the time of their formation in early life. The chemical composition of the cortex (also called cortical bone), the outer layer of long bones, reflects the last seven to ten years, because of the way bone is formed and modified. Other bone

¹⁵ Bentley 2006.

¹⁶ Bentley 2006.

¹⁷ Bentley 2006; Beard et al. 2000.

has a spongy appearance and is found within spaces between cortical bone, as for example in the ilium or rib; this is cancellous bone which may have a turnover time of 15 to 20 years. These skeletal characteristics make it possible in theory to ascertain the chemical composition of dietary intake near the time of death, in childhood, and in the period in between in some basic fashion, and hence provide a basis for determining a pattern of movement based on a match between the findings in the bone and geochemical environments. It is important to note that postmortem changes due to chemical exchanges between remains and the environment can affect the results of strontium and other analyses involving tissues. However, this process, called diagenesis, primarily affects bone. Tooth enamel is usually very resistant to interactions with the environment.

In practice whatever teeth or bones are available are used in analyses. More than one tooth, for example would be analyzed, although when looking at several individuals one would be limited to comparing the same tooth for the best results. Comparing similar bones would also be desirable. More information would be gained from having a full set of dentition given the longer rates of development of various tooth classes. Some develop in earlier childhood and some later. The kind of tooth found can usually be identified because of its anatomical characteristics. The most important observation is that teeth reflect earlier life events.¹⁸

While details will not be discussed here it is important to note that the enamel is not laid down instantaneously; this means in theory that different parts of the enamel crown could have a different chemical signatures, and micro-sampling of different regions within a tooth in theory could provide more detailed information.¹⁹ The fact that enamel is deposited over a period of time is the reason why linear defects in the teeth can sometimes be dated chronologically to physiologically stressful events during an individual's early life, and why stressful events (i.e. illness or starvation) can be inferred when not known otherwise. These defects, called enamel hypoplasias, are used to infer the childhood health of an individual or groups, used as an index of the general biological strain on the population, viewing children as the weakest link. This kind of information may also provide the microhistorian, or

¹⁸ Beard and Johnson 2000.

¹⁹ Schweissing and Grupe 2003a and b.

Annales oriented scholar with information that personalizes the effects of larger socioenvironmental forces. Anthropologists interested in political economy have used such information to examine the effects of social structure on the health of elites and non-elites in ancient societies.

CHEMISTRY OF THE ENVIRONMENT

The determination of whether or not an individual has come from another geographical place depends on there being regional differences in geological chemistry.²⁰ This is the core basis of the method. The chemical composition of soil and water is based ultimately on the geochemical characteristics of local rock and earth formations and varies by geography. This different chemistry is reflected in the soil, plants, and animals. For example within Europe different regions have a different chemical composition. The famous “Iceman” of the Alps has been suggested to have come from elsewhere based on the geochemical variation in the area.²¹

Strontium has been the element that has proved most popular in human and animal migration studies. As noted this element, with some others, can replace calcium in the development of mineralized tissues (bone and teeth), because of their bivalent state. This is the key to the method. Strontium isotopes are a part of the chemistry of geology and therefore also vary from region to region, and importantly can be traced throughout the food chain. In other words, the Sr isotopic profiles of plants are also reflected in herbivorous and carnivorous consumers.

While there are four stable isotopes of Sr two are generally used in the analysis of migration: ^{87}Sr and ^{86}Sr .²² The abundance of ^{87}Sr is not usually measured in absolute values in the rock-soil environment or skeletal elements. Rather the ^{87}Sr and ^{86}Sr values are measured and presented as the ratio $^{87}\text{Sr}/^{86}\text{Sr}$. This ratio has the advantage of eliminating the influence of the natural variation of the total amount of strontium, and some potential sources of “noise” in the calculations. This is because this ratio identifies the Sr content whose source is *radiogenic*. ^{87}Sr is

²⁰ Aberg et al. 1998; Bentley et al. 2004; Hodell et al. 2004; Evans et al. 2006.

²¹ Miller et al. 2003.

²² Bentley 2006.

the only strontium isotope of radiogenic origin, being a product of the breakdown of rubidium ($^{87}\text{Rb} \rightarrow ^{87}\text{Sr}$).

It would be misleading to think in terms of a “normal” ratio for the planet; rather the locales of interest should be the points of orientation. There is as yet no complete database of geochemical characteristic of different regions of the world. However, an example of variation can be given. In the regions near Vaihingen in Germany there is difference between the lowlands, the mountains, and adjacent areas, based on the $^{87}\text{Sr}/^{86}\text{Sr}$ ratios found in the streams, rocks, groundwater, and skeletons.²³ The mountains have values above .715, while the lowlands range between .708 and .710. While broadly true differences in various subareas are not well-known, however, this variation illustrates that within a 100 km radius there can be substantial differences. In Guatemala and Belize, in the territory of the ancient Maya various locales gave mean values of .7088, .7077, .7042, .7064, and .7155.²⁴ Because the resolution is to four decimal places there can be some confidence in the validity of the method.

Knowledge of the geochemistry of different parts of the world, although not complete, makes it possible to assess a range of questions involving migration, broadly defined. The principle is transparent although in practice ‘mixed signals’ must be considered as was previously discussed. The next section will present both speculative cases, as well as some gleaned from the literature given in the bibliography. It could be said that a migrant is one whose dental geochemical signature is different from that of his or her long bones. However, this needs further discussion, because while true it is better to compare the teeth available to the local range of values; this is usually defined as being two standard deviations from the average strontium content (expressed as a ratio) from the rest of the human bones from the dig site. In this case the concept of ‘local’ could be said to be somewhat strained, because local might include people who actually moved within the same or between similar geochemical environments, and non-locals may be those who actually lived in a restricted area, but whose diet included foods from afar, thus giving them a “foreign” signal. This would be especially true if the individual changed subsistence strategies over a life time, but could also be the case if the food was always varied. ‘Local’ will also

²³ Bentley et al. 2003.

²⁴ Hodell et al. 2004.

come to mean a place defined socially or culturally, and concepts from cultural geography may have to be theoretically included in concepts of place. We can then break down our notion of local based on the age of the person; it is then possible to say that one was local in a place as child but not as an adult, as for example in someone who may have recently returned home and died. Likewise it may be that one was local as an adult in terms of the last ten years of life, but not as a child. Both scenarios indicate that the person may have been a migrant, unless of course the only variable that was changing was diet, perhaps due to imported food, and not actual residence.

The technique generally involves making comparisons to either the strontium in the actual environment, or to the composition in the enamel and bone of control groups developed from species that live in a particular region. This latter method is preferred for the construction of geographic databases to be used for strontium analyses.²⁵

SCENARIOS

The residence of early life versus later life is the main issue in archaeological sites where migration is being considered. If the chemical signatures in teeth are different from those in the long bones then the locale of residence changed during life. This principle of interpretation would also indicate those who were brought home for burial—another kind of migration. Of course a return to one's place of origin within ten years of death, assuming that the geology and dietary customs and resources were the same, could result in the cortical bone resembling the dental signatures of early life, but the cancellous bone would reveal something different about life in the intervening period. An additional caveat, more applicable to current times, is that imported food could have a different isotope composition that would interfere with understanding an actual locale of origin/early life. Living at the border of different geochemical regions could also cause unclear signals in enamel and bone if people traveled back and forth or secured food resources from different regions. And there is also, as mentioned earlier, the issue of some social classes or people from some countries having a cosmopolitan diet that would cause a mixed geochemical signal, not reflective of

²⁵ Bentley 2006.

a specific geographical locale, but rather a pointer to a particular social niche in some sense. These examples illustrate a conceptual limitation: the method would work best if all socially or culturally defined groups only lived their early lives in geographical areas that were also distinct in geochemistry.

What are some possible historical questions that isotope analysis might either “solve” or provide some help? Several come to mind. The importation of Africans for the purpose of slavery in the US was officially outlawed in the early 1800s, but was this policy followed? If an 1860 graveyard was located with remains of possible African origin then a strontium analysis of dental enamel could be performed. If the strontium profile matched that of soils/plants of the Cameroons and not the US then this would answer the question of late arrivals, especially if other skeletal parts revealed the person to be a child. (If the person were older then the dental signal might only indicate birth in the Cameroons.) Likewise a chemical analysis of early American remains without other identifiers could reveal if the individuals in a particular cemetery had been born in Europe, Africa or the US.

Strontium analysis could help determine if the remains in a graveyard in a medieval Saharan town were local or cosmopolitan by birth. This could help solve disputes about the population composition at a given time and its origins in a preliminary fashion, especially if this could be coupled with ancient DNA techniques. Such analyses would be of interest in understanding those scholars who may come to settle in Timbuktu and Jenne from other areas; for example a grave whose marker suggests that someone had come from Morocco could have the enamel of the remains examined to verify this.

Another case where this technique might be of interest would involve the individuals in societies in which foreign traders were thought to be present, for example as in Saharan oases, or the case of the court members who were buried at the same time as the king in the Early Dynastic period in Egypt. These individuals, who either were sacrificed in some manner, or voluntarily allowed themselves to be buried so as to serve the king in the afterlife, had a range of craniometric patterns,²⁶ some of which were different enough that they may have been foreign to the Nile Valley, or at least foreign to southern Egypt, the site of origin of the Egyptian state. Strontium analysis might indicate if they were

²⁶ Keita 1992.

actually immigrant foreigners to the Nile Valley, who came into the service of the king, or were simply northern Egyptians. This example illustrates also what could not be determined, namely their membership in an endogamous foreign group that was non-Egyptian in origin, but who been born in the Nile Valley. Geochemical techniques could possibly illuminate something about the levels of migration in major Egyptian towns in the formative periods of the Egyptian state, and thus help illuminate aspects of the social dynamics including reorganization, as postulated for Arizona in the late 13th to 14th centuries by Ezzo and Price.²⁷ Knudson et al. are able to suggest, based on strontium analyses, that the naturally mummified individuals from the Andean Middle Horizon (500–1100 AD) in Juch'uyupampa Cave in southern Bolivia, were primarily locals, by birth or last residence, but that their communities had been influenced to some degree by a more distant culture (the Tiwanaku) because of their grave goods.²⁸

CASES FROM THE LITERATURE

Strontium isotope analysis has been used to study or explore a range of questions involving mobility. Here a few are discussed. It is of some interest that capturing mobility in a few individuals might indicate in general a lot of mobility in the society, or extremely bad luck in sampling. In any study that finds clear evidence of the mobility of large numbers of people the odds of capturing this should be considered, at least conceptually, especially in situations like the migration of Angles and Saxons to England from Germany. In the study by Montgomery et al. that addresses the Anglo-Saxon migration question no evidence was found for any significant numbers of non-locals, although the site is understood to be from the period of interest.²⁹ This case makes for pertinent questions.

What are the odds that one would find skeletons of the first immigrants, who presumably, with their descendants, became settler colonists? Of course constant migration could have taken place over generations, and this would mean that in every large cemetery there

²⁷ Ezzo and Price 2002.

²⁸ Knudson et al. 2005.

²⁹ Montgomery et al. 2005.

should be a certain percentage of detectable immigrants, but immigration would have slowed over time. It is interesting that in some of the case studies reported below, that the excavation got the right “snapshot” as it were to reveal migration. This may mean that in these cases that migration was a common every day occurrence, increasing the likelihood that it would be detected, or that the investigators were lucky. It is reasonable to say that it would be lucky to recover the remains of someone who actually made the Middle Passage in a long used cemetery. In some historical situations one would expect to see evidence of migration because of social practices. For example, in those Caribbean islands in which slaves were worked to death such that replacement of the population was only achieved by the importation of new enslaved persons, one would expect almost exclusively non-local signals in every burial horizon for slave cemeteries until abolition. In those countries where there was a natural growth of the enslaved population via births, and the early abolition of slavery, one would expect a decrease in the number of non-locals per generation.

Bentley et al. report on a study designed to help assess mobility in the early Neolithic period in Vaihingen, Germany, dated to the sixth millennium BC.³⁰ They found that strontium isotope signatures varied by burial position. Those buried in a ditch around the settlement exhibited more ‘non-local’ $^{87}\text{Sr}/^{86}\text{Sr}$ values than those buried within the settlement. These results were interpreted as suggesting two social or ethnic groups. Analysis of other remains indicates sex-based patterns of mobility; for example more females were suggested to be non-local. This sex bias in this and other such circumstances may suggest something about preferred marital customs, or have other explanations. The domestic cows had a different signature than the wild game; this was interpreted as indicating that perhaps the cows ranged into different areas, or that the strontium ratios were more variable than indicated by the human remains. The non-locals have been interpreted as possibly being mobile pastoralists who ranged over fairly great distances from Vaihingen.

Tafari et al. evaluated remains from temporally successive sites in the southwestern part of the Libyan Sahara.³¹ These sites represent changes in subsistence patterns and include hunters and gatherers as the earliest

³⁰ Bentley et al. 2003.

³¹ Tafari et al. 2006.

group (9800–7000 Before Present (BP)), with later sites representing Early (7000–6300 BP), Middle (6100–5000 BP), Late 5000–3500 BP) and Final Pastoral (3500–2700 BP) populations. Their goal in part was to examine mobility patterns in relationship to subsistence strategy by examining strontium ratios. A shift to food production, specifically pastoralism, was the major change in the central Sahara for the periods covered. The people of the Final Pastoral period interacted with the Garamantians whose society later controlled the “oasis” system of subsistence in southern Libya. Unfortunately the investigators had small sample sizes making their work more speculative than they wished. Their results were nevertheless interesting in the range of findings. For example, in the hunting group and the Garamantian related site they found great heterogeneity between individuals. This might indicate a fusion of different peoples, the recruitment of distant kinsmen, the fusion of individuals that created a new population, or great exogamy. The remains dating to the core pastoral phase sites overall exhibited a narrower range of values. Synthesizing the strontium data with the archaeological observations about the burial patterns of females and children made it possible to construct possible scenarios that integrated the impact of pastoralism on society in the central Sahara, as well as patterns of movement. They concluded that there was a change in mobility patterns and perhaps in kinship patterns with the change in subsistence pattern. This use of chemistry adds to the possibilities of techniques in the construction of scenarios and narratives that make it possible to understand one set of early African peoples in a changing environment. Migration’s role as a part of lifeways is rendered more transparent, especially when the chance of finding migrants is theoretically small. However, this case may be illustrative of this statistical matter: it may indicate that in situations like this that migration was an every day affair, that societies and ethnicities and alliances may not conform to more recent notions.

Central America has been the focus of various studies.³² Hodell et al. used strontium isotopes to lay the groundwork for evaluating migration in the Maya region.³³ They were able to identify and map different geographic regions based on the isotope ratios with some precision. This will permit, if other circumstances are right, the investigation

³² Price et al. 2006; Wright 2005; Price et al. 2000.

³³ Hodell et al. 2004.

of migration for particular circumstances. Wright was able to easily identify immigrants from distant regions who had come into Tikal in Guatemala in precolonial times.

In another case involving Central America and the forced African diaspora Price et al. verified that Africans who had made the Middle Passage were buried in a church cemetery in Campeche, Mexico in the sixteenth century during the colonial period.³⁴ Skeletal analysis of teeth suggested that there were Africans present based on dental mutilation patterns, but were the Africans born in Mexico or Africa? The strontium ratios, which were very high, did not match those of Mexico, but of certain regions in Africa, specifically the Elmina region in Ghana. The strontium analysis enabled identifying persons who had actually made the Middle Passage: forced immigrant pioneers on the soil of the “New World” in the country of the Aztecs.

The first three cases do more than suggest something about mobility. They assist in ridding us of suppositions about the likely biological and/or cultural isolation of earlier societies. The Campeche example informs those who do not know about the African presence in Mexico about the longevity of that presence, and hints at many avenues for historical enquiry.

CONCLUSION

The use of strontium isotopes has proved useful in a range of migration issues or problems involving humans and other animals. The method has potential uses for historians in some “mystery” scenarios where the question is exploratory, but could also be used to confirm historical hypotheses.

The historian of this era can make use of a range of “scientifically” based techniques, and thus perhaps confirm certain ideas. This is no threat to one aspect of the philosophy of history; that is to say that old debates about whether history is a science, or can be a science, or scientific, are not to be revisited because of chemistry and biology. We are not likely to ever understand all of the details of the warp and weave of the past. The questions about causation and the motives of people, and why some societies embarked on conquest and building

³⁴ Price et al. 2006.

skyscrapers, and others did not, why some committed mass murder against members of the species, and still will not honor the dignity of a common humanity, will not be solved by any biology or chemistry. It will never “all” be known. Rather the spirit of a new history that recognizes our humanity, the tragedies and evils of the past, and our duty to understand and correct the traditions as Ibn Khaldun said, is what those of us interested in the past are duty-bound to do. An integrity of enquiry is needed. It will be those operating with questions from these perspectives that keep science in check. The need for history has never been greater.

PART III

LINGUISTIC APPROACHES

PREHISTORIC MIGRATION AND COLONISATION
PROCESSES IN OCEANIA: A VIEW FROM HISTORICAL
LINGUISTICS AND ARCHAEOLOGY¹

Andrew Pawley

INTRODUCTION

The term 'Oceania', as used here, refers to the islands and seas of the southwest and central Pacific, specifically to the regions widely known as Melanesia, Polynesia and Micronesia. It includes New Guinea but not the island groups that lie close to Asia on the western and northern margins of the Pacific, such as the Indo-Malaysian archipelago, the Philippines, Taiwan, and the Japanese and Aleutian archipelagos, nor does it include the almost landless expanses of the eastern Pacific, beyond Easter Island. Oceania extends over 70 degrees of latitude and spans a third of the world's circumference east-to-west.

When European voyagers began to explore the Pacific systematically in the 1760s and 1770s they were astonished to find that almost every habitable island and island group they visited was peopled, even those that lay a thousand kilometres or more from their nearest neighbour. The Pacific Islanders grew crops and kept animals but had neither metals nor writing. By the 1780s scholarly debate over their origins was well under way in Europe. Initially, it was language that provided the strongest clues. From the reports of James Cook and other explorers it was already known that the inhabitants of the islands in the vast area that we now call the Polynesian Triangle, whose apices are Hawaii, New Zealand and Easter Island, all spoke closely related languages. It had also been established that the Polynesian languages were related to Malay, Javanese and Tagalog, of Island Southeast Asia, and to Malagasy, of Madagascar, and theories to account for the wide distribution of this family of languages were being debated.

¹ I am indebted to Robert Blust, Roger Green, Patrick Manning and Malcolm Ross for comments on a draft of this paper.

At first the story of the peopling of Oceania promised to be fairly simple. Commentators such as Cook, Joseph Banks, Johann Forster and William Marsden wrote in the 1770s and 1780s that these peoples had obviously come from SE Asia. Not only were the affiliations in language clear but in their physical appearance Polynesians were seen to be broadly of the 'Malay' type, with wavy hair and brown skins. European observers had been greatly impressed by the Polynesians' skills in building and sailing outrigger and double canoes and by their gardens and fruit crops. They concluded that these people had sailed from SE Asia to distant island groups in the Pacific in the fairly recent past and had prospered there because they were capable farmers and fishermen. What little was known about the peoples of Micronesia seemed consistent with this view.

However, the 18th and early 19th century European observers noticed a considerable diversity of physical appearance and language in the lesser known island groups to the west of Polynesia. There most of the people had frizzy hair and dark skins (hence the name 'Melanesia', the 'black islands') and spoke languages very different from those of the Polynesians. There were signs that the story of the peopling of the Pacific would turn out to be a complicated one, and so it has proved. We now know that modern humans settled certain parts of Oceania before they reached Europe, the Americas and, in all probability, northern Asia, and that the region exhibits an extraordinary level of linguistic diversity. Although the total land mass of Oceania amounts to a mere one percent of the world's total the region contains close to 20 percent of the world's languages. And in terms of the number of language families it contains that are not clearly related to one another, the island of New Guinea alone shows a level of diversity that far exceeds the whole of Europe.

By virtue of its unusual geography Oceania provides a unique laboratory for investigating the effects of a wide range of variables on the course of prehistoric colonisations. It is a world of islands but the islands that are (or have been) inhabited by Pacific Islanders extend from the tropical to the temperate and even subantarctic zones. Some are remote groups of tiny atolls, barely two or three metres above sea level, others are mountainous land masses, in some cases hundreds of kilometres long. There is great variation in the nature and richness of the flora and fauna in different islands or regions.

Reconstructions of the prehistoric human settlement of Oceania rest on work in several disciplines, including historical linguistics, archae-

ology, comparative ethnology, biological anthropology and population genetics, geomorphology and palaeobiology. Here I will be particularly concerned with what the first two of these disciplines tell us about migratory and colonising behaviour in this region. Prehistoric archaeology recovers fragments of a culture—for the most part, only its durable artifacts—but can place them precisely in time and space. Linguistic reconstructions can (when there are plenty of well-described languages to serve as witnesses) provide information about a much wider range of cultural domains, but the methods of historical linguistics alone cannot give these reconstructions an absolute time or place.²

The discussion will focus on the two phases in the prehistoric colonisation of Oceania that are most clearly attested in the scientific record. The first phase began more than 40,000 years ago, when humans crossed Wallacea to reach Australia and New Guinea, then a single land mass. It continued over many millennia as they moved into various parts of the region known as ‘Near Oceania’, whose core consists of the closely-spaced islands of New Guinea, the Bismarck Archipelago (consisting of New Britain, New Ireland and the Admiralty group), and the main Solomons chain. The history of this first phase, very imperfectly understood, is associated with the non-Austronesian speaking peoples of Near Oceania (as well as with those of Australia, a region I will touch only briefly here).

The second phase began some 3400–3300 years ago when Austronesian-speaking, pottery-making fishermen-farmers from Island Southeast Asia, equipped with outrigger sailing canoes, settled in parts of

² As this essay is for the general reader I have tried not to clutter the text with scores of references to primary sources in specialist journals. As much as possible, I refer to books and articles that are fairly readily accessible and which provide more specialised references—but often a more specific reference is called for. A succinct overview of the colonisation of the Pacific basin is given by Green (1994). Good general books on the prehistory of Oceania (also including material on Southeast Asia) include Bellwood (1978, 1997), Kirch (1997, 2000), and Spriggs (1997). General treatments of the linguistic prehistory of Oceania and/or Island Southeast Asia tend to divide between works that deal with Austronesian languages, e.g. Blust (1995a, 2009), Lynch et al. (2002), Pawley and Ross (1994, 1995), Ross et al. (1998, 2003, 2008), and those that deal with Papuan languages, e.g. Foley (1986), Pawley (1998, 2005), Ross (2001, 2005). Works that attempt an inter-disciplinary synthesis, or at least a multi-disciplinary perspective, include Bellwood et al. (1995), Friedlaender (2007), Goodenough (1996), Kirch and Green (2001), Pawley (2002, 2007), and Pawley et al. (2005). This paper does not treat the literature on the biological anthropology and population genetics. For recent studies of Near Oceania population genetics, see Friedlaender (2007) and the chapters in Part IV of Pawley et al. (2005).

Near Oceania. It continued over the next three millennia as their linguistic and cultural descendants interacted with autochthonous populations in this region and became the first people to reach and settle the central Pacific, the vast area known as 'Remote Oceania'. The Austronesian diaspora has been the subject of very extensive research in archaeology, historical linguistics and other historical disciplines.

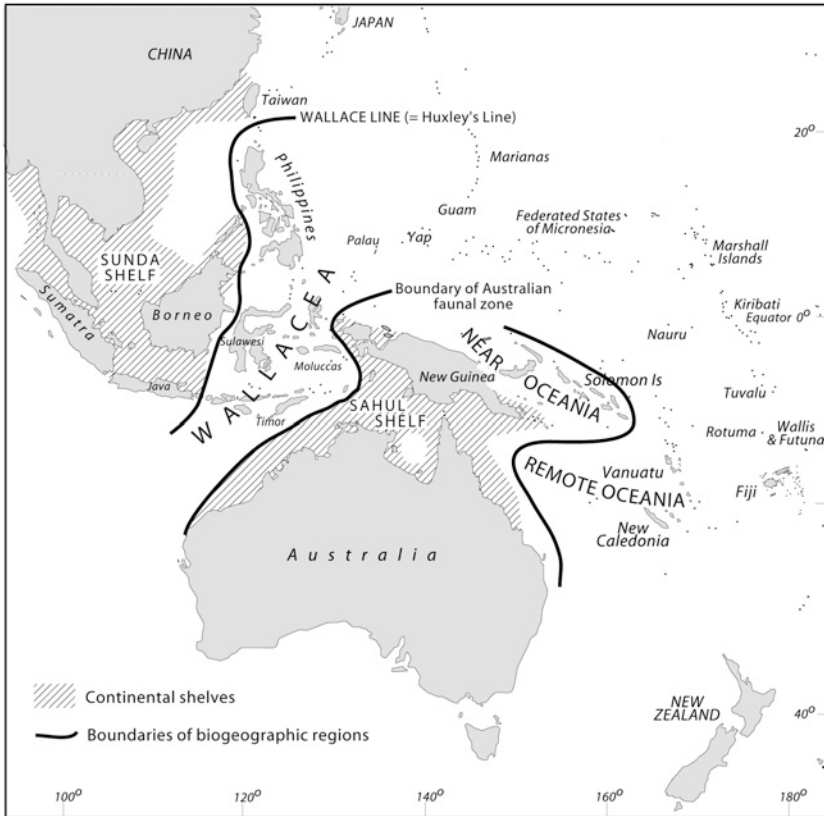
This essay will address a number of questions that arise from the historical record. How did climatic and geomorphological changes shape population movements into and over this region? What technological innovations enabled the first humans to reach Near Oceania? Why is New Guinea linguistically such a remarkably diverse region? Was the spread of the Trans New Guinea language family over much of New Guinea linked to the development of agriculture there some 10,000–7,000 years ago? What factors led to the extraordinarily rapid colonisation of Island Southeast Asia and the southwest Pacific by Austronesian speakers between 4000 and 3000 years ago? How did it come about that Austronesian languages in Oceania are spoken by such biologically diverse populations? How purposeful was the settlement of the major island groups of Remote Oceania?

GEOGRAPHIC AND CLIMATIC FACTORS AFFECTING THE MOVEMENTS OF PEOPLE

Certain biogeographic boundaries, set by climatic and geomorphological events, have influenced the human settlement of Oceania. At various times during the last Pleistocene glaciation, beginning about 120,000 years ago, with a peak about 21–18,000 years ago, sea levels were much lower than today.³ For much of this time Sumatra, Java, Borneo and Palawan were part of a continuous land mass, Sundaland, connected to continental southeast Asia. During the Upper Pleistocene and until about 8000 years ago New Guinea was linked to Australia, forming the continent known as Sahul. Australia and New Guinea share a distinctive mammalian and bird fauna and a number of distinctive plant genera.

Between Sundaland and Sahul are the various islands (principally, the Philippines, Sulawesi, the Lesser Sundas (from Lombok to Timor)

³ Chappell 2005.



Map 1. Major biogeographic regions of Island Southeast Asia and Oceania: Sundaland, Wallacea, Near Oceania and Remote Oceania.

and the Moluccas) that make up Wallacea. Within Wallacea various stretches of open sea, the longest between 60–100 km, were traversed by the first settlers more than 40,000 years ago, in what were perhaps the first substantial open sea voyages made by humans. Wallacea's flora and fauna are intermediate between the Southeast Asian and Australian types.

In terms of human migrations the boundary between Near Oceania and Remote Oceania is particularly important, because it was not crossed until just over three millennia ago.⁴ Near Oceania is, in effect, the easternmost extension of Island South-East Asia, where large islands occur closely spaced, like stepping stones, before the vast oceanic spaces of the Pacific begin. Some of the islands in Near Oceania are formidable in their size and rugged terrain. New Guinea is 2400 km long and the mountains that run the length of its interior include peaks that reach 4,500 m. New Britain is 480 km long and from 50 to 80 km across, mountainous and actively volcanic. New Ireland is 350 km long though never more than 50 km across. Bougainville is more compact but has a landmass similar to New Ireland. The islands of Near Oceania for the most part form an intervisible series of landmasses, which served as a natural corridor for the dispersion of plants and animals. The largest gaps between islands are currently on the order of 150–200 km. In some cases the gaps were shorter in the Pleistocene.

Remote Oceania contains the far-flung island groups of the central Pacific, typically separated from each other by several hundreds, sometimes thousands of kilometers of open sea. To reach the nearest islands of Remote Oceania from the main Solomons archipelago one must make crossings of 350–400 km to the small Reefs/Santa Cruz group. The divide between Near and Remote Oceania is associated with a considerable diminution in fauna and flora.⁵ No indigenous terrestrial mammals occur east of the main Solomons group. Even in marine life the difference is marked. The reefs of the Bismarck and Solomons show a richer diversity of fish, molluscs, crustacea, echinoderms, seaweeds, and other edible life than those of Remote Oceania.

The many coral atoll groups of Micronesia and Polynesia began to emerge as habitable lands only within the last 2000 years, when sea levels fell by 1 to 1.5 metres. Sitting just above sea level, these tiny,

⁴ Green 1991.

⁵ Green 1991.

sandy islands provide a precarious existence for humans, animals and plants and, in the absence of surface water, stone, and fertile soil and with a shortage of living space, their colonisers have made some striking adaptations in material culture and social organisation.

Meteorological patterns have also influenced directions of human movement and cultural change. South of the Equator, where southern New Guinea and most Pacific islands are situated, the prevailing winds are the Southeast Trades, which for most of the year are consistent and strong, especially in Remote Oceania. People trying to sail east in this region would have had to rely on sporadic westerlies to carry them, except during the short wet, stormy season when westerlies are more common. In this zone there is a long dry season. In the equatorial region the trade winds of the northern and southern hemispheres meet, creating a zone of low pressure with relatively little wind but frequent, year-round rainfall. Bellwood explains the absence of rice and millet cultivation in most of Oceania in the following way: the northern New Guinea passageway into Oceania is a region of wet equatorial climates, better suited to the cultivation of root and tree crops than to cereals.⁶

THE ARCHAEOLOGICAL RECORD FOR NEAR OCEANIA: 50,000–3500 BP

Although the Pleistocene archaeological record for Near Oceania is very uneven the main outlines are fairly clear.⁷ Humans entered the Australia-New Guinea continent more than 40,000 years ago. The earliest dates for New Guinea are from two sites on the north coast, one from uplifted coral terraces on the Huon Peninsula, dated at between 40 and 50,000 BP⁸ and the other at Lachitu, near Vanimo, dated to 39,000 BP. Two sites from Australia have been dated at between 60,000 and 50,000 BP although these dates are disputed.

The voyages that carried people in steps from Sundaland to Sahul, across Wallacea, were possibly the first in human history involving ocean crossings on the order of 50 to 100 km. No doubt the crossings

⁶ Bellwood 1995.

⁷ O'Connell and Allen 2004; Specht 2005; Spriggs 1997.

⁸ Groube et al., 1986.

were unintentional but these early colonisers of Near Oceania must have been competent makers of craft designed for coastal travel.

By 40–35,000 BP people had made the crossing from New Guinea to New Britain, which requires a 90 km direct voyage from the Huon Peninsula or shorter steps by island hopping, and had made the short further step to New Ireland.⁹ By at least 29–28,000 BP people were at the northern end of Greater Bougainville (encompassing today's Bougainville, Choiseul and Santa Isabel), 180 km distant from New Ireland.¹⁰ By at least 21,000 BP people occupied what was then Greater Manus, whose eastern margin was about 100 km distant from New Ireland on the west-flowing current.¹¹ However, the offshore voyaging capacities of Pleistocene sailors in Near Oceania were limited. Interaction between inhabitants of New Guinea and the Bismarck Archipelago, and between the Bismarcks and Bougainville, seems to have been minimal during that period.¹² In fact, until just over 3000 years ago humans were confined to Near Oceania—they got no further into the Pacific than the main Solomons group.

The stone tool kits and other materials from pre-20,000 BP sites in Near Oceania indicate that the people were broad-spectrum foragers, hunting and gathering a range of animals and plants. There were no truly sedentary settlements, only camps and seasonal bases. Although the earliest settlers probably relied heavily on the rich resources to be found on the seashore people did not remain confined to the coast. Rock shelter and open sites in the central highlands of New Guinea show human occupation by 30–26,000 BP. The occupants were evidently seasonal visitors to the uplands, not permanent inhabitants, coming to hunt large game and harvest pandanus nuts.¹³

During the Upper Pleistocene and early Holocene the prehistory of the Bismarck Archipelago followed a rather different course from that of New Guinea.¹⁴ The large, waisted axes found in a number of New Guinea sites were virtually absent from sites in the Bismarcks. New Britain, New Ireland, and Manus had no counterpart to New Guinea's Pleistocene megafauna. Early archaeological sites in the Bismarcks

⁹ Pavlides and Gosden 1994; Leavesley and Chappell 2004; Specht 2005.

¹⁰ Spriggs 1997.

¹¹ Specht 2005.

¹² Anderson 2000.

¹³ Evans and Mountain 2005.

¹⁴ Specht 2005.

point to a dependence on marine shellfish, inshore fish and hunting of birds, rats, bats and reptiles. After 20,000 BP there is evidence of considerable regional interaction, with obsidian moving from New Britain to New Ireland, and game animals (a phalanger and a wallaby species) being transported from the New Guinea mainland, where they became a significant food source.

Early in the Holocene (post-glacial) period climate changes brought major shifts in patterns of vegetation, in sea levels, and available resources. In the New Guinea highlands landscapes begin to be modified by humans after 10,000 BP with a marked increase from about 5,000 years ago.¹⁵ There is evidence for agriculture as early as 10,000 BP at Kuk in the Upper Wahgi Valley,¹⁶ evidenced by extensive drainage systems and the pollen record. The shift from a primarily foraging to a primarily agricultural economy at Kuk may have taken place over many millennia. By 7000 BP the inhabitants of Kuk were clearly practising intensive agriculture. The main cultivated plants are thought to have been *Colocasia* taro, gourds and bananas.

As to how fast agriculture spread in New Guinea the archaeological evidence at present says rather little. There are no other sites with drainage systems as early as Kuk's but in the case of the Baliem Valley, in the highlands of Irian Jaya, pollen cores record an almost continuous vegetation history from about 8000 BP to the present, reflecting progressive human impact by way of agriculture.

Not all New Guinea societies were farmers even in historic times. Roscoe points to another route to sedentism and larger social units.¹⁷ New Guinea foragers who occupy favorable aquatic environments where it is possible to gather sago to supply carbohydrates, and to get fish, shellfish, and crustaceans from tidal rivers, lakes, and swamps, tend to live in medium to large villages and to show a degree of hierarchical structure and elaborate visual art forms. Some of the Asmat and Mimika communities of the southwest coast of New Guinea and the Murik communities of the Sepik basin are examples.

Where the shift to intensive agriculture did occur (and eventually most societies in Near Oceania became farmers, while continuing to supplement food production by hunting and gathering) brought

¹⁵ Hope and Haberle 2005.

¹⁶ Denham 2005; Denham et al., 2003.

¹⁷ Roscoe 2005.

radical changes in patterns of social organization and material culture. Agriculturalists are sedentary, tied to the land they have cleared, tilled, planted, and fallowed. There is potential for faster population growth, larger social units and social hierarchy and for the making of artefacts that are not easily transportable, such as substantial houses, elaborate carvings, and heavy containers. Language communities tend to become larger.

EUROPE DISCOVERS THE AUSTRONESIAN LANGUAGE FAMILY

In the late 18th century comparative study of languages was the most powerful tool scholars had for investigating prehistoric connections among peoples. European scholars were intensely interested in the linguistic data recorded by travelers to distant lands.

In a remarkable table that showed agreements between Malay and languages from the Philippines (Tagalog and Kapampangan) and five languages of Polynesia in the numerals for 1–10 and in forms denoting some 36 other concepts, J. R. Forster, an 18th century scientist on Cook's second voyage, confirmed the existence of the Austronesian family (not then called by that name).¹⁸ The table also shows that some agreements, though fewer, extended to certain languages of Melanesia (Tanna and Malekula of Vanuatu), and one language of New Caledonia for which Forster had data. Indeed, Forster can claim priority over Sir William Jones in anticipating modern ideas about the development of related languages from a common proto-language. Eight years before Jones' celebrated statement that Sanskrit, Greek and Latin must have "sprung from some common source" Forster commented as follows on the agreements in his table:

I am...inclined to suppose, that all these dialects preserve several words of a more ancient language,...which gradually divided into many languages, now remarkably different. The words therefore of the language of the South Seas isles, which are similar to others in the Malay tongue, prove clearly in my opinion, that the Eastern South Sea Islands were originally peopled from the Indian, or Asiatic Northern isles [i.e. the Indo-Malaysian Archipelago: AP]; and that those lying more to the

¹⁸ Forster 1778.

Westward, received their first inhabitants from the neighbourhood of New Guinea.¹⁹

Around the middle of the 19th century scholars, chiefly missionaries, began to describe in detail some of the languages of Eastern Melanesia: Fiji, Vanuatu, the Loyalties, New Caledonia and the eastern Solomons. It was soon evident that most of these languages showed a family resemblance to those of Polynesia and the Indo-Malaysian region. At a time when 'race' and 'language' were expected to go together 19th century Europeans were perplexed to find that these 'Melanesian' peoples also spoke Austronesian languages. A common view was that the Melanesians must have borrowed Austronesian elements from their neighbours to the west (Indo-Malaysia) and/or the east (Polynesia), adding this material to a substrate that was non-Austronesian.

By the 1880s there was enough material on the languages of eastern Melanesia for Robert Codrington of the Melanesian Mission to publish the first major comparative linguistic study of this region.²⁰ He rejected the view that the Melanesian languages had a mere overlay of Austronesian on an alien base. Codrington showed that almost all the 34 Melanesian languages in his sample share many everyday words and a good deal of morphology (the grammar of word formation) with well-established members of the Austronesian family.

THE DISCOVERY OF THE 'PAPUAN' LANGUAGES' OF NEAR OCEANIA

Little was known of the languages of New Guinea and the Bismarcks until the last decades of the 19th century, when Britain and Germany annexed, respectively, the southern and northern halves of eastern New Guinea and its satellites and the Dutch were becoming more active in administering the western half of New Guinea, which nominally had long been part of the Netherlands East Indies. In the 1890s an English linguist, S. H. Ray, pointed out that some of the languages of British New Guinea and the Solomon Islands were not Austronesian. A parallel discovery had already been made in the Moluccas by in the 1850s by the naturalist A. R. Wallace, when he collected vocabularies in these easternmost islands of the Indo-Malaysian archipelago. In

¹⁹ Forster 1778:190.

²⁰ Codrington 1885.

a well-known book on his travels in this region Wallace proposed a distinction between ‘Malay’ and ‘Papuan’ languages in the Moluccas.²¹ Following Wallace’s lead, Ray applied the name ‘Papuan’ to the non-Austronesian languages of Melanesia, as a convenient catch-all. Soon after, Wilhelm Schmidt observed that non-Austronesian languages were present on the north coast of the New Guinea mainland and in New Britain. What was striking about the various small groups of Papuan languages, was that, unlike the Austronesian languages, there was no evidence of common origin.

Only in the last 50 years has the full extent of the diversity of the languages of Near Oceania become clear. A superficial measure of linguistic diversity is the number of distinct (i.e. mutually unintelligible) languages. Of the world’s 6000 or so distinct languages, approximately 1100 are spoken in Near Oceania. New Guinea alone has about 900. Language communities in Near Oceania tend to be very small—the median size of the 800 or so indigenous languages of Papua New Guinea, for instance, is fewer than 2,000 speakers.

However, far more significant for understanding the ancient history of a region than the number of languages is its deep genealogical diversity, measured by the number of linguistic stocks that are not demonstrably related or are only distantly related.

A few methodological remarks are in order here. Linguists often speak of certain language families as being ‘unrelated’ but this usage always carries an implicit qualification: ‘common origin has not been demonstrated’. It is impossible to disprove the claim that any two languages ultimately stem from a single ancestor; one can only show that there is insufficient evidence to justify positing a genetic connection. To establish that languages are related one needs to show convincingly that they share resemblances due to direct inheritance rather than to other causes—borrowing, chance, or universal characteristics of human speech. I follow most historical linguists in taking a fairly conservative position on what counts as sufficient evidence to establish a hypothesis of genetic relationship as convincing. Among the kinds of resemblances that most strongly indicate common descent are (i) resemblances in paradigmatic sets of grammatical forms, e.g. in pronouns, and verbal and nominal inflections, (ii) shared irregularities in such paradigms, e.g. the English comparative series *good*, *better*, *best*

²¹ Wallace 1869.

corresponds to German *gut, besser, best*, (iii) regular sound correspondences in words for very basic concepts like ‘eye’, ‘head’, ‘nose’, ‘two’, ‘three’, ‘father’, ‘mother’, ‘stone’, ‘water’, ‘sun’, ‘moon’, ‘fire’, ‘tree’, ‘bird’, ‘louse’, ‘eat’, ‘sleep’ and ‘die’.

When I speak of ‘language families’ in this essay I refer to groups whose genetic relatedness is generally regarded as well established. Such families generally do not have great time depth—in most cases the common ancestor is likely to have broken up well within the last ten millennia. The linguistic literature also contains many proposals that posit more ancient genetic relationships between certain established families (among the best-known being the Nostratic, Euroasiatic, Amerind and Indo-Pacific hypotheses). As such proposed groupings generally do not meet criteria (i)–(iii), and have remained highly controversial, they fall outside my definition of ‘language family’.

According to a recent classification by Malcolm Ross,²² the area encompassing New Guinea, Northern Island Melanesia (the latter consisting of the Bismarck and Solomons archipelagos), the Moluccas and the Timor area contains some 23 language families that cannot on present evidence be regarded as related, plus 9 or 10 isolates. Ross uses cognation in pronoun forms as the main basis for recognising language families among the 605 languages compared and innovations in pronoun forms as the main basis for subgrouping. This is the most extensive classification of ‘Papuan’ languages based on a single systematic class of evidence of types (i) and (ii). Ross also appeals to evidence of type (iii) when it is available.

Earlier classifications of Papuan languages presented in Wurm and others are problematic in many respects.²³ These err on the side of lumping, appealing to fragmentary evidence to link various well-supported families into a number of ‘phyla’. On closer inspection almost all their arguments for positing such phyla have proved to be untenable (the one exception being the Trans New Guinea phylum, see below).

An extreme case of lumping is Joseph Greenberg’s Indo-Pacific hypothesis.²⁴ This not only places all the Papuan families in a single genetic stock, but also tentatively includes the Andaman Is. languages, spoken south of the Bay of Bengal, and the Tasmanian languages, while

²² Ross, 2001, 2005, and forthcoming.

²³ Wurm (1975), Wurm (1982) and Wurm and Hattori (1981–83).

²⁴ Greenberg 1971.

excluding the remaining 250 or so Aboriginal Australian languages. Given that archaeology dates the spread of modern humans into Sahul and across various parts of Australia, New Guinea and Northern Island Melanesia at more than 40,000 years ago, the putative common ancestor of Indo-Pacific would have had to have broken up before that date, presumably in Southeast Asia. The case for connecting Andaman and Tasmanian languages with any or all of the various groups of Papuan languages is extremely weak and I know of no specialist in Papuan linguistics who finds merit in that proposal.²⁵ However, some Papua-nists have recently pointed to a few tantalising structural resemblances among some of the families of Northern Island Melanesia that suggest either distant relationship or ancient diffusion in Melanesia and to faint signals,²⁶ in certain features of grammatical structure, that connect some New Guinea families.²⁷

What we know of the archaeology and population genetics of New Guinea and Northern Island Melanesia indicates that after initial settlement some 40 millennia ago the people of these two regions had essentially separate histories throughout the Pleistocene.²⁸ It may well be that the Papuan language families in each region ultimately stem from one or a very few ancestral languages that arrived in the Pleistocene and diversified *in situ*. However, if many of the families are related they diverged so long ago that the evidence of common origin has almost completely faded.

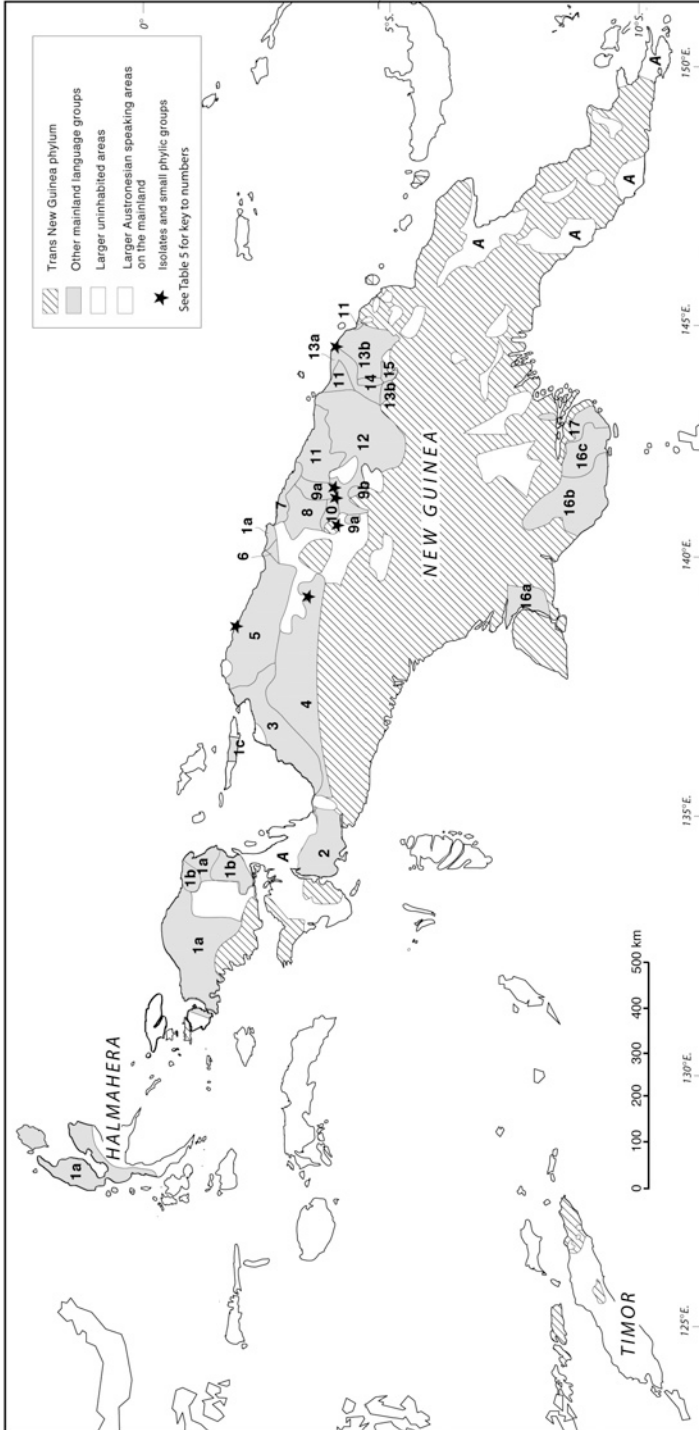
In terms of the number of generally accepted language families it contains, the northern third of New Guinea, from the Bird's Head in Irian Jaya to the Sepik-Ramu basin, is arguably the most linguistically diverse part of the planet. No fewer than 15 families, along with several isolates, are found in this region, which is no larger than Great Britain. By comparison, the whole of 15th century Europe contained representatives of just three established language families (Indo-European, Uralic and, marginally, Semitic) and one isolate, Basque.

²⁵ Greenberg first presented (or referred to) evidence for 14 'subgroups' of Indo-Pacific languages and then offered evidence for relating all of these. His material includes some valid cognate sets shared by several of the 14 groups but these are all groups that we now assign to the Trans New Guinea family. The evidence for relating any of the other groups to Trans New Guinea or to each other is extremely weak and indeed several of the 14 major 'subgroups' posited by Greenberg do not appear to be supported.

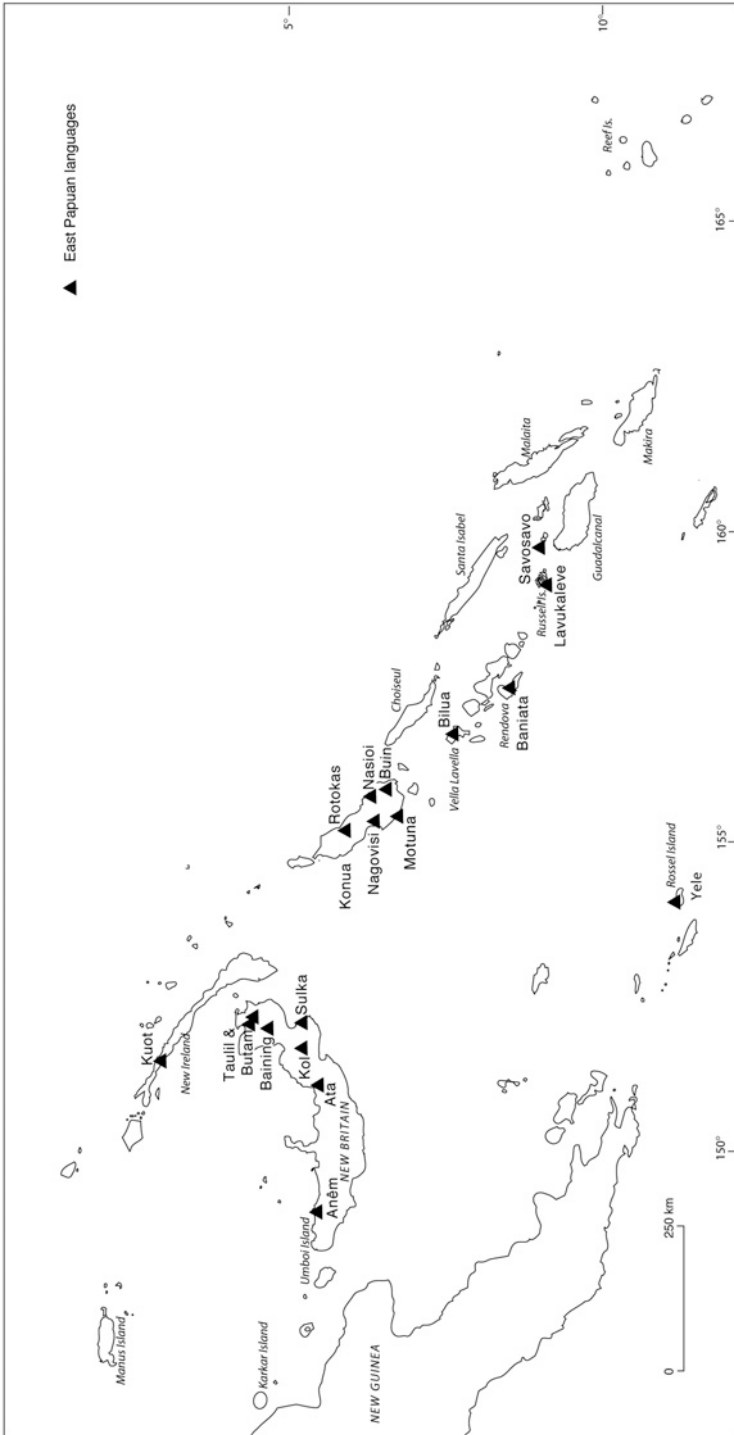
²⁶ Dunn et al. 2005.

²⁷ Reesink 2005.

²⁸ Friedlaender 2007; Pawley et al. 2005; Spriggs 1997.



²⁹ After Ross 2005.



Map 3. Distribution of Papuan languages in Northern Island Melanesia.³⁰

³⁰ Ross 2001, 2005.

The second most diverse region of Near Oceania, by the same measure, is Northern Island Melanesia. Today only 20 or so Papuan languages survive there, as against about 150 Austronesian languages. Even so, Ross divides these into six language families and about three isolates.³¹ Before the arrival of Austronesian languages the number of Papuan languages and families in Northern Island Melanesia must have been greater. The south central region of New Guinea is a smaller region of high diversity.

The Trans New Guinea family

One very large family of Papuan languages has become widely accepted. All the inhabited valleys of the central highlands of New Guinea, from the neck of the Bird's Head to Southeast Papua, are occupied by members of the Trans New Guinea (TNG) phylum. Trans New Guinea languages also dominate several smaller lowland and mountainous areas to the north and, especially, to the south of the central highlands. This family contains about 400 of the 700–800 non-Austronesian languages of Near Oceania.³²

The TNG hypothesis was originally proposed, in various versions, in the early 1970s. In the most extended version almost 500 languages were assigned to the group.³³ Other Papuan specialists at the time regarded the evidence for all versions of the TNG hypothesis as far from convincing though not without promise.³⁴ However, over the past decade or so a much more systematic case for the TNG family can be made, although with a membership that is somewhat smaller than was posited in 1975.³⁵ The main evidence for TNG consists of: (i) Some 200 putative cognate sets, nearly all denoting so-called 'basic vocabulary', which are represented in two or more major subgroups. (ii) A body of regular sound correspondences, based on (i), which has allowed a good part of the Proto TNG sound system and its development in a sample of daughter languages to be reconstructed. (iii) Systematic form-meaning correspondences in the personal pronouns, permitting reconstruction of virtually a complete paradigm. In Ross' sample of

³¹ After Ross 2001, 2005.

³² Pawley 1998, 2005; Ross 2005.

³³ Wurm ed. 1975.

³⁴ See Pawley 2005 for a history.

³⁵ Pawley 1998, 2005; Ross 2000, 2005.

605 Papuan languages 311 showed one or more reflexes of proto TNG pronouns and another 36 were assignable to TNG on other grounds. (iv) Widespread resemblances in fragments of certain other grammatical paradigms.

Where did the dispersal of TNG begin? A good candidate is the central highlands of Papua New Guinea, between the Strickland River and Kainantu, because on present evidence this is where the greatest concentration of high-order subgroups in the family is found.

When did the TNG expansion begin and what powered it? One method of estimating how long ago the common ancestor of a linguistic group broke up is the degree of divergence in basic vocabulary between its high-order subgroups (measured by number of cognate words in a standard 200 item list). The lexical diversity among the more divergent subgroups of TNG is far greater than that which distinguishes the major subgroups of Indo-European (Germanic, Romance, Greek, Celtic, Slavic, Indo-Iranian, etc.), which are generally believed to have diverged around 6000 years ago. It is also far greater than that distinguishing the primary subgroups of Austronesian, which probably diverged around 5000 years ago. If we take Indo-European and Austronesian as yardsticks, a date of somewhere between 7000 and 10,000 BP for the breakup of proto TNG is indicated by the lexical diversity criterion.

A second line of evidence resides in the dating of certain environmental and archaeological events that might be correlated with linguistic events. Most of the valleys in the central cordillera of New Guinea were heavily forested in the early Holocene. Before about 10,000 BP these valleys probably had no permanent populations, or only very small ones. It seems unlikely that the TNG family would have achieved its present distribution unless its speakers possessed some cultural advantages that enabled them to build up populations that could maintain year round habitation of the major highland valleys and expand fairly rapidly along the highlands.

It seems likely that the initial dispersal of TNG languages was linked to the appearance of agricultural systems in the central highlands.³⁶ As was noted before, archaeological and palynological research in the Waghi Valley, near Mt Hagen, in Papua New Guinea, has shown that by 10,000 to 7000 years ago people there were growing crops. At present a term for 'taro' (something like **ma*) is about the only lexi-

³⁶ Pawley 1998; Denham 2005.

cal reconstruction associated with agriculture that can be tentatively attributed to early TNG.

Why did TNG languages come to dominate the central highlands, and much of south-central and southeast New Guinea, but not the north-central and northwest regions of the island? The extraordinary linguistic diversity of the Sepik-Ramu basin and some other parts of north New Guinea can only be explained by assuming that these regions have been continuously occupied by speakers of various non-TNG families since before the TNG expansion. Comparative linguistics so far provides no clues as to whether speakers of these non-TNG languages had agriculture or some other cultural adaptations that allowed them to hold their ground against encroaching TNG speakers. However, the consensus is that taro and bananas were first domesticated in the lowlands and Swadling and Hide have argued for an initial domestication centre in the north New Guinea lowlands.³⁷

THE AUSTRONESIAN COLONISATION OF OCEANIA

The Lapita people come to Near Oceania

Around the middle of the 2nd millennium BC a new population entered northwest Melanesia, bringing sweeping changes in technology and life styles. These were pottery-making farmers from SE Asia, with a strong maritime adaptation, who by 3500–3300 BP had settled in several parts of the Bismarck Archipelago.³⁸

They brought a culture quite different from any which preceded it in the record for the Bismarcks, or indeed any part of Melanesia.³⁹ Its most prominent markers are earthenware vessels with red-slipped surface, made in a characteristic variety of shapes. A minority of these vessels are decorated with elaborate geometric motifs, done by dentate stamping, i.e. with repeated applications of a set of toothed implements. The decorated vessels, which often contain highly stylised representations

³⁷ Swadling and Hide 2005.

³⁸ Green 2003; Kirch 1997; Kirch 2000; and Spriggs 1997.

³⁹ A contrary case for Lapita origins was developed in the latter half of the 1980s and 1990s by a number of Australian-based scholars who proposed a predominantly local (Melanesian) origin for the Lapita cultures of the Bismarck Archipelago (Allen and Gosden 1996). Their arguments are reviewed in Green (2003), Kirch (1997) and Spriggs (1997).

of human faces, almost certainly had ceremonial uses. The pottery tradition is known as Lapita, after which the archaeological culture as a whole is named. In Lapita sites representing permanent settlements the pottery is part of a cluster of distinctive elements: settlements consisting of nucleated villages, sturdy rectangular houses, often on stilts, domesticated animals (pig and chicken), a range of fishing gear, a characteristic stone adze/axe kit, shell ornaments and evidence of long distance exchange of obsidian.

Early Lapita site locations in the Bismarck Archipelago show a consistent pattern. The favoured settlement places were small offshore islands. Most sites were in areas where there is either a broad fringing reef, or a lagoon and barrier reef, or both, and were situated facing passages in the reef through which canoes could come and go. Settlements were usually also adjacent to identifiable fresh water sources (springs or streams), and every site has arable land nearby.

Taiwan as the initial Austronesian dispersal centre

The Lapita cultural complex is very plainly the archaeological footprint of Austronesian speakers entering northwest Melanesia from the Philippines or eastern Indonesia but ultimately coming from Taiwan. In the last few decades it has become clear that Taiwan was both the primary dispersal centre of the Neolithic cultures that appeared in the Philippines, Indonesia and the Bismarck Archipelago between 4000 and 3000 years ago and the primary dispersal centre of the Austronesian language family.⁴⁰

Austronesian is today a family of more than 1000 languages, which extends from Taiwan and Hawaii in the north to New Zealand in the south and Madagascar in the west to Easter Island in the east. In spite of its large size and distribution, the Austronesian family is fairly young. This is indicated by (among other things) the fact that it is easy to find a good many cognates (words inherited from a common ancestor) between the most widely separated members of the family. Table 1 gives some reconstructed Proto Austronesian words and their 'reflexes' (descendant forms) in daughter languages. (A star before a form indicates that it is reconstructed, not directly attested.) Reconstructions are

⁴⁰ Bellwood 1995, 1997, Blust 1995a, 1995b, and Blust forthcoming; Kirch 1997; Kirch 2000; and Pawley 2002.

Table 1. Some Austronesian cognate sets.

	‘eye’	‘liver’	‘louse’	‘rain’	‘eight’
Proto Austronesian	*maca	*qatay	*kutu	*qudal	*walu
Paiwan (Taiwan)	maca	qatsay	kasiw	qudal	alu
Tagalog (Philippines)	mata	atay	kuto	ulan	walo
Toba Batak (Indonesia)	mata	ate-ate	hutu	udan	walu
Manam (N. New Guinea)	mata		kutu	ura	
Kwaio (Solomons)	maa	lae-fou	‘uu	uta	kwalu
Lolomatui (Vanuatu)	mata	ate	kutu	uhe	welu
Puluwat (Micronesia)	maah	ya-ya	uuw	wut	waluw
Bauan (Fiji)	mata	yate	kutu	uca	walu
Tongan (Polynesia)	mata	‘ate	kutu	‘uha	valu

made using the standard comparative method of historical linguistics, which depends crucially on sister languages showing regular sound correspondences in cognate (related) words, words that are inherited from a common ancestor. These sound correspondences are key markers of genetic relationship. Shared sound changes (changes in pronunciation) exhibited in cognate sets are one sort of evidence showing that certain languages are more closely related to each other than to others in the family (and so form a subgroup, a branch of the family tree).

Figure 1 shows the most widely accepted family tree classification for Austronesian.⁴¹

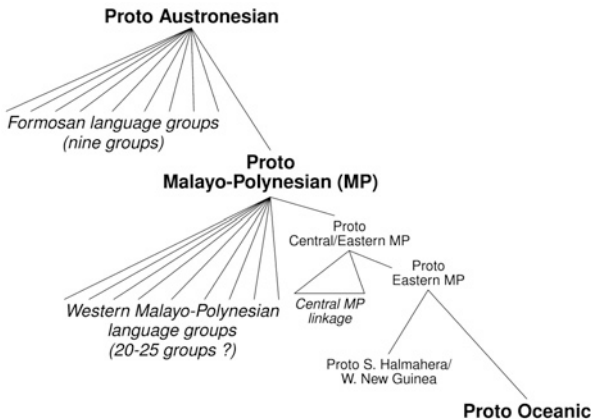


Figure 1. High-order subgroups of Austronesian (after Blust).

⁴¹ Following Blust (1995a, 1995b, 1999, and 2009).

It is highly significant that, in Blust's classification, nine of the ten surviving first order branches of Austronesian are confined to Taiwan. The sole exception is the huge Malayo-Polynesian branch. This distribution of subgroups makes Taiwan much the most likely location of Proto Austronesian. Western Malay-Polynesian is not an established subgroup, merely a convenient areal grouping. It comprises some 500 languages: those of the Philippines, Malaysia, Indonesia as far east as mid-Sumbawa and Sulawesi, and Madagascar. Central-Eastern Malay-Polynesian contains close to 700 languages. It includes the (Austronesian) languages of the islands of eastern Indonesia east of mid-Sumbawa and Sulawesi, and those on the Bomberai Peninsula, on the Bird's Head of New Guinea. Around 156 of these are Central Malayo-Polynesian. Eastern Malayo-Polynesian has more than 500 member languages, of which some 47 belong to the South Halmahera-West New Guinea group and the rest to Oceanic.

Figure 6 shows the geographic distribution of the major subgroups or branches.

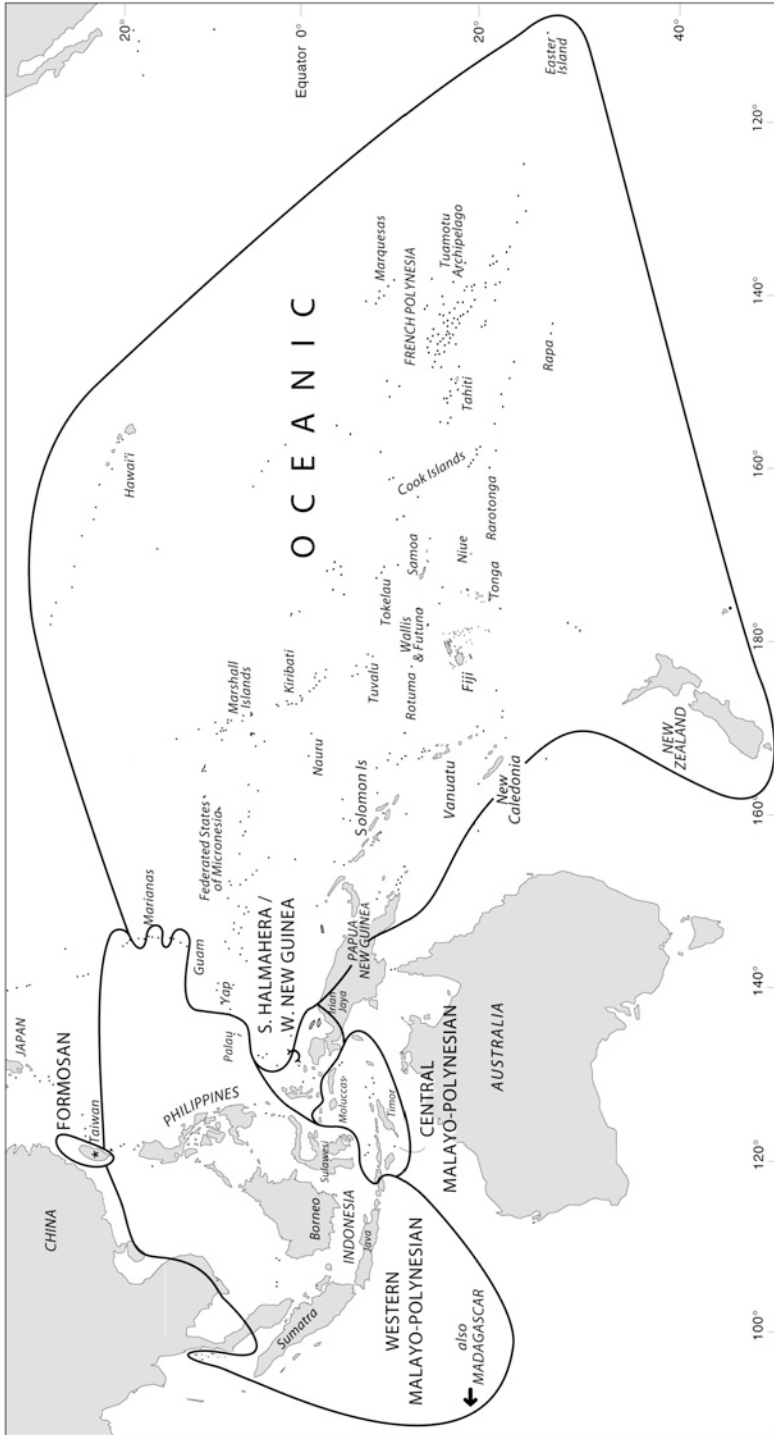
Stages in the Austronesian dispersal

Let us now briefly consider archaeological and linguistic evidence relevant to defining and explaining the main stages in the Austronesian dispersal, with particular reference to Oceania.

Until a few thousand years ago all human populations in East Asia, as elsewhere, lived exclusively by hunting and gathering.⁴² Populations were sparse and nomadic. When Neolithic cultures do appear in this region they do so as a sharply defined horizon.

The early stages of agriculture in East Asia probably go back at least 10,000 years. Rice is thought to have been domesticated from wild rice (*Orzyza rufipogon*) in the swampy regions around the middle and lower Yangzi River. By 8,000 years ago some groups living in the temperate regions of central and northern China were practicing full-scale field agriculture, with economies based on rice (Yangzi Valley) or fox-tail and broomcorn millet (Yellow River Basin) and domestic animals. These farmers lived in villages and made pottery. Bellwood argues that four major language families, Austronesian, Thai-Kadai, Hmong-Mien and Austroasiatic, "seem to have arisen by...dispersal out of

⁴² Bellwood 1997.



Map 4. Map of Austronesian subgroups.

subtropical southern China and northern mainland China, where the cultivation of rice and other crops developed widely between about 6000 and 3000 BC⁴³.

Neolithic cultures appear in Taiwan at around 5500 BP. The earliest Taiwan Neolithic tradition, known as Corded Ware or Ta-p'en-keng (TPK), is named for its distinctive pottery vessels with thickened rims and ring feet, cord-marked on their bodies and incised on their rims. The antecedents of the Taiwan Neolithic are to be found in sites in Fujian and Guangdong Provinces on the Chinese mainland, dating to the 5th millennium BC. In Taiwan the TPK tradition gives way over the next two millennia to a variety of more localised traditions, whose material culture resembles quite closely traditions that appear in Oceania in the 2nd millennium BC. This diversification of archaeological cultures was presumably contemporaneous with the breakup of Proto-Austronesian into a number of branches within Taiwan.

Taiwan is separated from northern Luzon, in the Philippines, by a 350 km stretch of ocean, the Bashi Channel, often rough but containing several small, habitable islands. There was a long pause before Neolithic colonisers from Taiwan settled Luzon and the intervening islands. The pause was, on present evidence, not less than 1000 years—the period between the first appearance of Neolithic cultures in Taiwan about 5500 years ago and their first appearance in Luzon (currently dated at around 4000 years ago).

On the main islands of the Philippines the immigrants encountered populations of Negrito foragers. The latter have survived in seven different regions as small, marginal populations. All now speak Malayo-Polynesian languages. Between about 4000 and 3500 BP the Austronesian expansion began in earnest—although it was really the Malayo-Polynesian expansion, because it concerned only that branch of the family. Not long after Neolithic settlements appear in Luzon closely related archaeological cultures turn up in the central and southern Philippines, the Mariana Is. on the western margin of Micronesia, north Borneo, Sulawesi, Halmahera, Timor and the Bismarck archipelago, all possessing red slip pottery with globular vessels and dishes on stands, some with incised or stamped decorations, and a characteristic suite of shell and stone tools and ornaments.⁴⁴

⁴³ Bellwood 1995:97.

⁴⁴ Bellwood 1997:232–3.

Lexical reconstructions tell a good deal about the way of life of early Austronesian speakers. About 1000 words have been reconstructed to the level of Proto Austronesian (PAN), more than 4000 to Proto Malayo-Polynesian (PMP), around 2000 to Proto Oceanic (POc) and some 3000 to Proto Polynesian.⁴⁵ For Proto Austronesian, a rich array of terms for farming is present, including an extensive vocabulary associated with rice and millet.⁴⁶ Terminologies indicating the keeping of pigs, dogs and water buffalo were present as well as others indicating substantial wooden houses raised on stilts, pottery manufacture and weaving.

The Proto Malayo-Polynesian language can be associated with the earliest Neolithic societies of the Bashi Straits and the Philippines. PMP lexical reconstructions show both retentions and additions to the Proto Austronesian cultural inventory, reflecting adaptation to new, tropical environments and a world of large, closely-spaced islands.

Reconstructions of the PMP plant vocabulary show the addition of names for various cultivated tropical plants, especially taro (*Colocasia esculenta*) and *Dioscorea* yams, and for a number of trees that were not present in the cooler environment of Taiwan. Chickens, whose presence in the early Taiwan Neolithic is uncertain, were certainly known to PMP speakers. The outrigger canoe complex is well attested. Cognate terminology specifically associated with outrigger canoes is lacking from Taiwan languages. It is possible that this absence is due to cultural loss (much of coastal Taiwan has been Sinicised in the last three centuries) but the long pause in Taiwan suggests that technology for ocean voyaging was poorly developed there before about 4000 BP.

In the course of moving from temperate/sub-tropical Taiwan into the wet tropical islands of Southeast Asia and on into Near Oceania, speakers of Austronesian languages lost a number of elements of material culture.⁴⁷ Grain crops disappeared. Pigs and chickens were brought to New Guinea and the Bismarck archipelago but not the water buffalo. It is unclear whether the first Austronesian colonists of Near Oceania brought dogs or whether these were introduced later. There is no

⁴⁵ For lexical items attributed to these early stages by far the largest database is Blust's *Austronesian Comparative Dictionary* (ACD), a computer file equivalent to several thousand pages of printout (Blust 1995c). For Proto-Oceanic an important source is Ross et al. (1998–2008). For Proto-Polynesian the major source is Biggs and Clark (2006) and for Proto-Micronesian it is Bender et al. (2003).

⁴⁶ Blust 1995a; Pawley 2002.

⁴⁷ Blust 1995a.

linguistic evidence that weaving was retained. Bark cloth had become the favoured material for garments.

What do we know of early Austronesian social organisation? Widespread agreements across the Austronesian world in sibling terminology and social status point to a society where seniority of birth was important. Blust has argued that unilineal descent groups, accompanied by a system of preferential or prescriptive cross-cousin marriage,⁴⁸ were the core corporate and political units of early Malayo-Polynesian society. His views have not been widely accepted by social anthropologists who are impressed by the predominance among Western MP societies of bilateral kindreds, which in contrast to a stable descent groups, are egocentric and allow the individual to make shifting alliances. Be that as it may, a strongish case has been made that Proto Oceanic society had landholding unilineal descent groups, probably matrilineal in most communities, and that descent groups and their leaders were ranked by seniority of ancestry.⁴⁹

The appearance of the Lapita Neolithic tradition in the Bismarck archipelago can be equated with the formation of a well-defined Austronesian interstage, namely Proto Oceanic. It is a striking fact that all but a few of the 480 or so Austronesian languages of the Pacific Islands fall into a single subgroup, Oceanic.⁵⁰ The members of Oceanic all share a considerable number of diagnostic changes to the sound system, morphology and lexicon apart from other members of Austronesian,⁵¹ indicative of a few centuries of unified development before dispersal. The subgrouping evidence indicates that the bearers of the language immediately ancestral to Proto Oceanic reached the Bismarcks from the Moluccas and the north coast of New Guinea. The immediate relatives of Oceanic are languages spoken in South Halmahera and around Cenderawasih Bay, near the western end of New Guinea.

Surprisingly, no early Lapita settlements have yet been found on the islands close to the north New Guinea coast (though catastrophic volcanic activity may have buried these) or on the mainland. How-

⁴⁸ Blust 1980.

⁴⁹ Hage 1999.

⁵⁰ The only Pacific Island Austronesian languages excluded from Oceanic are (a) Chamorro, spoken in the Marianas, (b) Palauan, spoken in the Belau (Palau) group at the western margin of the Carolines, and (c) about 30 languages located at the western end of New Guinea between 130 and 136 degrees E, either on the Bird's Head or on the islands and the eastern margin of Cenderawasih Bay.

⁵¹ Lynch et al. 2002.

ever, cultures clearly descended from Lapita appear widely on offshore islands and coastal pockets in various parts of New Guinea after about 2000 BP.

Although they came to dominate the Philippines and the Indo-Malaysian Archipelago, Austronesian languages have had much lesser impact in mainland New Guinea. Today, Austronesian languages in New Guinea are, except for two or three areas, confined to scattered coastal pockets and offshore islands and island groups. An initial distribution of this nature is consistent with the strong maritime adaptation of early Malayo-Polynesian colonists. However, the fact that in most regions of New Guinea Austronesian languages have remained largely confined to the coast suggests that many of the non-Austronesian societies there were already practising agriculture when the Austronesians arrived and had population numbers sufficient to hold their ground.

There are abundant signs that the Austronesians at first had a similar, marginal distribution in Timor, the Moluccas, New Britain, New Ireland, Bougainville and the Solomons. However, in due course a large part of these regions became Austronesian-speaking, though not without a good deal of linguistic and cultural exchange between immigrants and autochthonous populations.⁵²

What forces drove the Austronesian diaspora? A succinct summary of likely factors is given by Bellwood,⁵³ who suggests the following:

1. Continuous population growth based on an agricultural food supply, allowing a continuous generation-by-generation “budding off” of new families into new terrain.
2. The inherent transportability of the agricultural economy to support colonising propagules.
3. The presence of a deep and absorbent “frontier zone” available for colonisation.
4. A developing tradition of sailing canoe construction and navigation. To colonise a vast island world so rapidly must have required quite sophisticated watercraft and navigational abilities.
5. A predilection for rapid coastal movement and exploration, probably to find the most favourable environments for cultivation and sheltered inshore fishing. This promoted a colonisation pattern of

⁵² Dutton and Tryon 1993.

⁵³ Bellwood 1995:101–103.

- wide-ranging settlement that was followed, often not until some centuries later, by territorial infilling.
6. A culturally-sanctioned desire to found new settlements in order to become a revered (or even deified) ancestor in the genealogies of future generations.
 7. A desire to find new sources of raw materials for 'prestige goods' exchange networks.

Bellwood comments that not all of these factors were present from the beginning of the expansion. Factors 5–7 probably evolved as part of the process.

It can be seen that these factors divide into two categories: (a) economic and technological preconditions for the Austronesian dispersal and (b) motives for exploration and colonisation. Factors 1–4 fall into the first category: circumstances that made it possible for people to migrate and establish colonies but did not, by themselves, cause people to do so. Bellwood has in many works argued that the spread of large language families cannot be accounted for mainly in terms of the diffusion of new technology and new prestige languages across existing populations.⁵⁴ Rather, the languages are, in the first place, carried by migrating populations, and successful, rapid, large-scale migrations are enabled by cultural advantages. One critical element in the spread of the Austronesian-speaking societies must have been the capacity to grow crops and keep domestic animals, which enabled immigrants to dominate and marginalize or absorb non-farming populations throughout Island Southeast Asia and to survive on islands with impoverished biota in the central Pacific.

Factors 5–7 belong to the second category: values, attitudes and ambitions that got people moving. Unlike 1–4 and 5, which one can expect to be more or less directly reflected in the archaeological and/or linguistic records, factors 6 and 7 represent cultural values whose existence in the distant past can only be inferred from ethnographic parallels which can help to make sense of the data from historical disciplines.

⁵⁴ Bellwood 1995, 1997, and 2005.

The Lapita colonisation of Remote Oceania

During the period from about 3300 to 3000 BP widely dispersed Lapita communities in the Bismarck Archipelago maintained social and economic ties with each other.⁵⁵ After about 3000 BP there appears to have been less interaction between widely separated communities and more regional specialisation, indicating a weakening of social ties between farflung communities, and the build-up of denser local populations.

Around 3200–3100 BP bearers of the Lapita culture began a remarkable phase of colonisation beyond the Bismarck Archipelago. Within a span of 200 or 300 years they established settlements on all the major island groups between New Britain and Samoa, some 4500 km to the east. Their earliest attested colonies in Remote Oceania are in the Reefs/Santa Cruz group (3200–3100 BP), closely followed by settlement of Vanuatu and New Caledonia, and then Fiji and Tonga (3000–2900 BP) and Samoa (2900–2800 BP).

The dentate-stamped decorated pottery that was the most emblematic component of early Lapita material culture lasted for just a few centuries. In almost all regional sequences it disappeared by 2600–2500 BP. However, for some centuries after this date many features of the Lapita cultural complex continued with little change, including, as a rule, the plain ware ceramic vessel forms. Still later, within the last 2000 years, many Oceanic communities gave up pottery-manufacture.

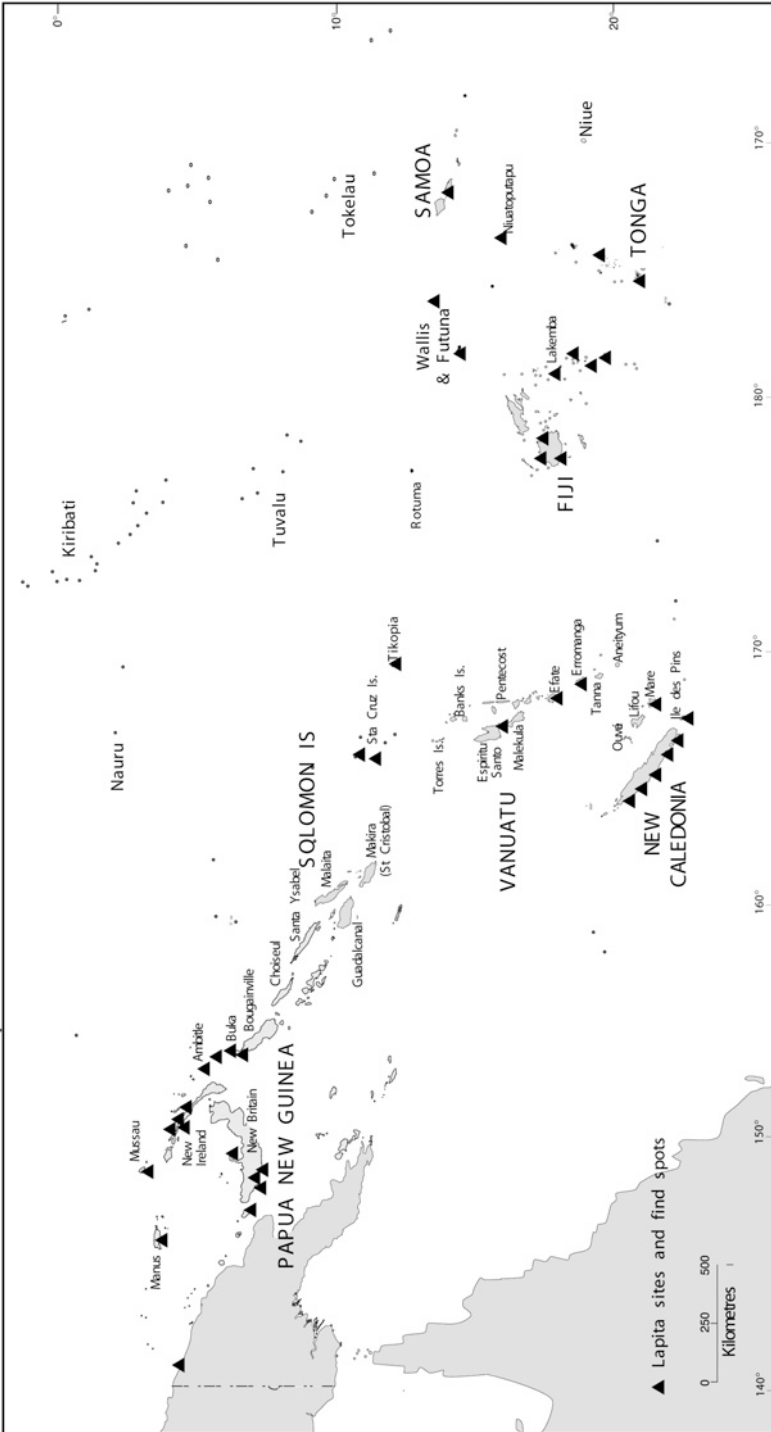
Multiple settlements of Micronesia

Two other movements of Malayo-Polynesian speakers into Remote Oceania occurred about the same time as the Lapita expansion, but independently of it. Archaeological evidence shows that the Mariana Islands, forming the northwest margin of Micronesia, were settled by at least the late 2nd millennium BC.⁵⁶ Belau (Palau), at the western margin of the Carolines, was perhaps settled about the same time although as yet there are no published dates earlier than 600 BC. The sources of these movements were probably the Philippines (Marianas) and, for Palau the Philippines or eastern Indonesia.

Two other movements into Micronesia, from Melanesia, are indicated by the linguistic subgrouping. One was to Yap, a high island situ-

⁵⁵ Kirch 1997, 2000; Summerhayes 2000.

⁵⁶ Rainbird 2004.



Map 5. Distribution of Lapita sites.

ated about 1000 km north of New Guinea, in the western Carolines, where an Oceanic isolate is spoken.⁵⁷ The other movement led to the formation of the Micronesian subgroup, a branch of Oceanic to which most of the remaining languages of Micronesia belong.⁵⁸ The immediate external affiliations of Micronesian are uncertain—current best guess is that it is an early offshoot of Remote Oceanic (see map 4). However, Proto-Micronesian itself was probably spoken on more of the few high islands in the central and eastern Carolines, where pottery and other artefacts have been found that fall in the late Lapita range. The various atoll groups and raised limestone islands of Micronesia offer limited resources and a precarious existence and most were occupied somewhat later. Settlers on the atolls have survived by dint of great ingenuity in adapting methods of agriculture, boat-building, tool manufacture and social organisation to the very limited resources available to them.

The long pause in the Tonga-Samoa region

The easternmost limits of the Lapita expansion were in Tonga and Samoa, the core island groups of West Polynesia. These were first settled around 2900 BP.⁵⁹ In time cultural descendants of the Lapita people of West Polynesia colonised all the major island groups of Central East Polynesia (the Societies, Southern Cooks, Marquesas and Tuamotus) as well as those of Hawaii and New Zealand, but there was a very long pause before Central East Polynesia was first settled.

Both archaeological and linguistic evidence indicate that the ‘West Polynesian pause’ lasted at least a millennium and perhaps as long as 1500 years. Although sampling deficiencies in the archaeological record for Central East Polynesia leave room for change, there is at present little archaeological evidence for first permanent settlement of any island groups in this region before about AD 700. The West Polynesian pause is marked linguistically by an immense body of innovations, lexical, grammatical and phonological, accumulated by the ancestral Polynesian language after it separated from its nearest relatives, the Fijian and Rotuman languages.⁶⁰ The immediate common ancestor of Polynesian,

⁵⁷ Ross 1996.

⁵⁸ Jackson 1986.

⁵⁹ Burley and Connaughton 2007; Geraghty 1983; Green 2003; Kirch 2000.

⁶⁰ Pawley 1996.

Rotuman and Fijian is known as Proto Central Pacific. The linguistic dating method known as glottochronology (based on the assumption that languages will replace about 20 percent of their 200 most stable words per millennium) points to 1200–1400 years as the most likely interval between the breakup of Proto Central Pacific and the breakup of Proto Polynesian.

Why was there such a long standstill in West Polynesia? Several factors seem to have been operating. Whereas the Fiji-Tonga-Samoa area is a natural voyaging corridor, the major island groups of Central East Polynesia—the Society Is. and the Marquesas—lie more than 2000 km to the east. To reach any of them meant long voyages and the prevailing SE trade winds would have made this difficult. There has been debate as to whether the Lapita people had vessels suitable for carrying colonising expeditions, with people, animals and plants, on voyages of thousands of kilometres. At first European contact large double-hulled canoes were used by Polynesians and Fijians for long ocean voyages. It has been suggested that this vessel design was a key element in the Lapita colonisation of Remote Oceania. However, the linguistic evidence is non-committal on this issue. It may be that the double canoe was not developed until well after the initial colonisation of Fiji and West Polynesia.

There is another puzzle which lies within West Polynesia itself: the fact that a single Polynesian language was maintained in the Tonga-Samoa area for something like 1000 years. Given that the Samoa group lies some 600 km northeast of the nearest islands of the main Tongan group, one might have expected the speech of Tonga and Samoa to diverge steadily after each was settled and substantial local populations had built up, and to become mutually unintelligible after a millennium or so. However, this did not happen. Well-marked regional dialects developed ('Tongic' vs 'Nuclear Polynesian') but a single language, whose endpoint was Proto Polynesian, was maintained across the Tonga-Samoa region, including other small islands and island clusters that lie between Tonga and Samoa (Niuafō'u and Niuatoputapu) or to the west of Samoa (Futuna and Wallis (Uvea)). The decisive breakup of Proto Polynesian probably only came after Nuclear Polynesian speakers settled parts of Central East Polynesia (perhaps around AD 500) and after Tongic speakers settled the isolated island of Niue, some 400 km east of Tonga (probably some 2000–1500 years ago).

Plainly the sailing craft and navigational skills were available to allow regular communication between the islands in the Tonga-Samoa

area. But there must also have been social and economic forces that kept a network of distant communities in contact and maintaining a single language for a much longer time than was the case in any other Oceanic region with a comparably long settlement history. What were these forces? We can only make a speculative case, based on a combination of ethnographic, archaeological and linguistic clues.⁶¹ Among the factors seem to have been increasing social stratification, underpinned by intensification of food production and population increase, and leading to out-marriage of women of chiefly families to distant places and to frequent voyages of ceremonial exchange, and regular trade in scarce goods. The construction of large ocean-going canoes and the outfitting of expeditions carrying ceremonial goods to distant lands, requires a high level of organization and food production as well as diverse specialist skills. It points to the presence of influential leaders directing a range of specialists, such as was observed by early European visitors to Tonga, Samoa and Tahiti.

The settlement of East Polynesia

The full story of the colonisation of Oceania has many twists and turns and we cannot possibly touch on all of them here. But one remarkable phase of the Austronesian diaspora—the settlement of East Polynesia—cannot be overlooked.

The three lands that form the apices of the Polynesia Triangle—Hawaii, New Zealand and Easter Island—are all part of East Polynesia and they are truly remote places. The Hawaiian group is 4000 km from the nearest inhabited Polynesian islands (the Societies and Marquesas groups). New Zealand is almost 2000 km from the Cooks and lies well below the tropical zone and in a region of high winds and rough seas. Easter Island is 1000 km from its nearest neighbour, Henderson Is., tiny and almost equally isolated.

The early archaeological cultures of East Polynesia show a number of developments that set them apart from those of West Polynesia.⁶² And, matching this, the East Polynesian languages (including Hawaiian, Tahitian, New Zealand Maori, Cook Islands Maori, Marquesan, Mangarevan and Easter Island) form a subgroup defined by a body

⁶¹ Green 2002.

⁶² Bellwood 1978; Kirch 2000.

of innovations that must have taken several centuries to accumulate. Proto Eastern Polynesian was presumably spoken somewhere in Central East Polynesia, before its speakers dispersed more widely.

The settlement of East Polynesia now appears (after extensive revision by the archaeologists of their chronologies) to have all taken place within the past 1500 years or so. Even the Society and Marquesas groups, long regarded as the East Polynesian homeland, so far lack secure dates earlier than AD 800. Hawaii was probably settled around AD 800, Easter Island around AD 1000 and New Zealand around AD 1200. While first landfalls must have been accidental, the fact that the standard Polynesian root crops and some tree crops and domestic animals were present in these remote lands, and were known by traditional Polynesian names, shows that Polynesians undertook ocean voyages well equipped with the means to establish colonies.

There is steadily increasing evidence that at some point East Polynesians reached South America. Most significantly, the sweet potato (*Ipomoea batatas*), an important pre-contact staple, especially in New Zealand, Hawaii and Easter Island, is generally regarded as a South American domesticate. Sweet potato remains from Mangaia in the Southern Cooks are dated to about AD 1100–1200. The chicken (*Gallus gallus*) is of Asian origin. Bones of pre-Columbian chickens have recently been found in Chile, whose DNA sequences are identical with chickens from prehistoric sites in Tonga and Samoa.⁶³

The final stage in the East Polynesian diaspora was the settlement of a number of small, isolated islands from the larger marginal islands, such as New Zealand and Hawaii. New Zealand, for example, was the source of settlements on the Chatham Is., the sub-antarctic Auckland Is., which lies some 400 km south of the southern tip of Stewart Island, at 52 degrees S., and possibly the Kermadecs and Lord Howe Is. Life on these small isolates was precarious and in some cases they were only inhabited briefly.

How systematic was the prehistoric colonisation of Remote Oceania?

For generations Pacific scholars have debated the question of how deliberate the settlement of Remote Oceania was—how far new colonies in distant island groups were founded by systematic exploration

⁶³ Storey et al. 2007.

and systematic transportation of crops and domestic animals.⁶⁴ Opinions fall on a continuum between the ‘minimalists’ and the ‘romantics’. The minimalists stress the role of accidental voyages in founding colonies and downplay the capacity of Oceanic sailors and sailing craft to carry out successful two-way voyages over long distances. The ‘romantics’ stress Oceanic navigators’ ability to make expert use of star, wave and wind movements and patterns to regularly make successful long range two way voyages both in an east-west direction and across different latitudes. As evidence for the minimalist view, for example, certain archaeologists point to the long pause before the settlement of central east Polynesia. They also point out the absence of clear evidence of land clearance, indicative of semi-intensive agriculture, and of pigs and chickens in the record of some island groups until some centuries after first settlement. The implication is that although the first colonists stemmed from farming communities, they brought no crops or domestic animals to their new homelands, and for some generations relied heavily on fishing, hunting and gathering. Their critics can point to various counter-examples, where there is clear evidence of two way voyaging and transport of scarce goods between distant islands. The truth, no doubt, is somewhere in the middle. While everyone agrees that some colonies were founded by accidental, ‘drift’ voyages, that long-range voyages over thousands of kilometres were rare and that there were periods when even medium-range two-way voyaging declined, the remarkable speed and success of the Lapita settlement of Remote Oceania as far east as Samoa and the successful transport of animals, plants and other scarce materials to various remote islands in East Polynesia testifies to a considerable amount of systematic two-way voyaging during certain periods.

A NOTE ON THE BIOLOGICAL HISTORIES OF THE PEOPLES OF OCEANIA

There is a very heterogeneous literature on the biological histories of the peoples of Oceania, which I will not attempt to review here. Data from population genetics are consistent with the following interpretation:⁶⁵

⁶⁴ Anderson 2000; Finney 1996; Irwin 1992; Lewis 1972.

⁶⁵ See Friedlaender et al. 2008.

There was initial settlement of Sahul and Near Oceania between 50,000 and 25,000 years ago by one or a few already related populations but no sign of further genetic influence from outside this region until the Holocene. In the Holocene there was a rapid spread of peoples from East Asia to Polynesia and Micronesia with relatively little genetic admixture taking place in the Bismarck Archipelago. A stronger East Asian genetic signal may once have existed in the Bismarcks but if so, it has been reduced by intermarriage and/or mortality. Indeed, to explain the diverse biological character of the Austronesian-speaking peoples of Melanesia and eastern Indonesia one only has to point to millennia of interaction between the descendants of communities that were originally Papuan-speaking and those that originally spoke Oceanic languages.

LINGUISTIC TESTIMONY AND MIGRATION HISTORIES

Christopher Ehret

LANGUAGE AND MIGRATION

The application of linguistic evidence in tracing human migrations has a long scholarly history. Despite that long history, the potential of this kind of study remains mostly unrealized. Scholars commonly have applied one set of methods, aimed at uncovering particular histories of population movement and identifying probable origin areas and the broad directions and trends of migration. A further set of methods, with which very few scholars have a hands-on acquaintance, subjects the linguistic evidence to more nuanced analyses, allowing the investigation of such issues as the nature and kinds of demographic shifts set in motion by a period of migration and the social, cultural, and economic dimensions of that history.

The latter methods, which work with the evidence generated by language contact situations, especially the testimony of word borrowing from one language to another, have received relatively little attention, even in ethnohistorical studies. Sociolinguists have investigated a great variety of contact situations around the world, but the normal direction of their work has been to study language change in relation to known demographic and social histories. An existing situation involving two or more speech communities is laid out, and the subsequent examination aims at identifying and characterizing the kinds of language change, grammatical and lexical, that took place and at building models of wider theoretical and explanatory value. Moving in the opposite direction—identifying a set of changes in a language, induced by language contacts, and from them inferring the otherwise unknown human history that lay behind those changes—is a tack that scholars have almost never undertaken in systematic fashion, except in one field of study. That field is African history, in which major new work and significant advances in method have been produced in recent decades.

Outside of the African history field, the application of linguistic evidence to historical reconstruction has generally been left to some

students of the Indo-European language family and, for the non-Western parts of the world, to the ethnographers. Even in these instances, scholars have tended to utilize only a portion of the tools available to them. Especially this kind of study has focused on the questions of where a particular language family originated and where its speakers subsequently spread. A second major focus has been the reconstruction of the ancient lexicons of the ancestral languages, the proto-languages, of various language families, because the reconstructed lexicons reveal many aspects of the knowledge and cultural practices of the societies that spoke the languages.

Nearly everywhere, though, scholars have tended either to neglect or to give only superficial attention to the historical implications of word borrowing over extended periods of contact. This evidence is potentially the most telling resource of all. A period of word borrowing lasting from as few up to many generations almost always accompanies the sustained encounter of two societies. The kinds of words borrowed, the scale and intensity of borrowing, and the directions of borrowing tell a great deal about the demography and social history of the encounter of peoples: which group was moving into the other's territory; what the relative proportion of the in-coming to existing population was; and what kinds of social and economic relations characterized and evolved out of the encounter between the two populations. Using the categorizations of long-term word borrowing, summarized in Figure 1, we can construct more nuanced pictures of the manners, pace, and demographic proportionality of particular histories of migration in times and places where either written sources are lacking or those sources are few and ambiguous. This approach enables us to propose much stronger and more compelling correlations of linguistic with archaeological evidence, and provides new tools for assessing whether diffusion or migration was the principle cause in particular cases of historical change.

This chapter begins with two examples of the classical methods of tracing the paths of long-term migration through language evidence. From there it moves on to the less widely known methods of loanword analysis, presenting several historical case studies to illustrate some of the more telling ways in which this kind of evidence can advance the historical understanding of migration in global history.

Category	How the word borrowing takes place	Parts of vocabulary in which the word borrowing occurs	Minimum duration of word borrowing
1— Single-word borrowings	Through contacts among individuals or groups belonging to 2 or more speech communities	An individual word for a new item of culture is adopted	A few hours or days may sometimes be enough
2A— Semantically restricted word borrowing	Through contacts of the members of one speech community with those of another	A set of words dealing with a particular field of technical or cultural knowledge is borrowed	Uncertain; possibly as little as 1–2 generations in some instances
2B— Grammatically restricted word borrowing	From a suppressed collection of minority populations to a dominant speech community	Interjections and some adverbs are borrowed	Uncertain; but probably as little as a century
2C— Status-restricted word borrowing	From a lower-status minority to a dominant majority speech community	Jocular, deprecatory, or tabooed vocabulary is borrowed	Uncertain; but probably 2–3 generations
3A— Intensive word borrowing	From a dominant majority to a coexisting economically distinctive minority speech community; or from intrusive conquering small minority to majority people, closely related in language	Borrowings take place all through vocabulary (basic words are adopted at a rate of about 1–3 per cent per century; other vocabulary is borrowed more rapidly)	Usually about 2–3 centuries; just 2–3 generations in instances of conquest by speakers of closely related language
3B— Heavy general word borrowing	According to <i>first</i> pattern described in 3A preceding, but of shorter duration than 2–3 centuries; or according to the pattern in 3C following, but of longer duration than 2–3 centuries	Borrowings take place in all parts of vocabulary, <i>except</i> for basic vocabulary	If short period of category 3A borrowing: 1–2 centuries; if category 3C borrowing: more than 2 centuries
3C— Extensive general word borrowing	From one speech community to another, as part of the merging of the one community into the other (and the loss of its former language in the process)	Borrowings take place in all parts of the vocabulary, <i>except</i> for basic vocabulary <i>and</i> terms for large animals	Uncertain; but probably about 1–2 centuries
3D— Light general word borrowing	From one neighboring speech community to another	A sparse, semantically diverse scatter of culture vocabulary is borrowed	2–3 generations
4— Pidginization	By a collection of distinct speech communities thrown together by historical circumstance in the same region; as part of their adoption of a new common language	Rapid and extensive word borrowing takes place in all parts of the vocabulary, accompanied by severe grammatical simplification of the adopted new common language	Less than one generation

Figure 1. Categories of Word Borrowing.

THE EXPANSION OF LANGUAGES AND THEIR SPEAKERS: CLASSICAL
METHODS OF INFERENCE

Throughout human history, the spread of a language has always been accompanied by the migration of speakers of the language, even if sometimes relatively few in number. The spread of a language into a new area is, in other words, a sure marker of migration of one scale or another, from minimal up to massive. There exist cases, such as the many centuries-long spread of Bantu languages across the southern third of Africa, where the incoming Bantu-speakers in many areas rapidly came to outnumber the existing populations. At the opposite end of the spectrum, gene flow may be only a relatively minor accompaniment of the emergence of new speech community. In the western Roman Empire, the Latin-speaking administrators and military contingents along with the immigrants who participated in the creation of a new landed class, both tiny minority elements, were enough over the long term to implant Latin as a language of expanding utility and acceptance among the local peoples. They were few on the ground; nevertheless, they stood at the focal positions in a great reordering of society, politically and economically.

Migration of still different kinds results in the creation of pidgins and creoles. All known and verifiable cases of pidgins and creoles arose in situations of long-distance trade. West African Krio and Melanesian Pidgin in Oceania illustrate one kind of pidgin formation. They arose in the eighteenth and nineteenth centuries as languages of business among people who spoke a great many different languages at home but participated in common far-flung trade networks. English became the base of pidgin formation in both cases because migrating English speakers predominantly crewed, or at least commanded, the ships that linked the networks together. A second type of pidgin/creole formation resulting from migration is that seen in Hawaiian pidgin or West Indian creoles. In these instances mass labor migration, of enslaved people in the one case and of contract workers in the other, generated the need for a common means of communication among people of different language backgrounds, thrown together in one place. The one common language in these cases was the language of a certain tiny minority element in the overall migration, the overseers and the owners of the lands on which the work took place, and so their languages became the basis of pidgin or creole formation.

There exist also instances of what might be called the lateral transmission of a language. The Dahalo hunter-gatherers of coastal northern Kenya at an uncertain point in time, but probably more than 2000 years ago, dropped their earlier language, which had belonged to the Khoesan family, in favor the Southern Cushitic language of their pastoral and cultivating neighbors. This shift may have been accompanied by little or no gene flow. But even here migration provided the context for language shift. A new, economically and numerically dominant people, the Southern Cushitic food producers, migrated into the lands all around the Dahalo. The Dahalo remained socially distinct because they retained a distinctive environmental niche in which they could carry on their older hunting and gathering economy. But the language of their originally immigrant neighbors became an essential second language for them and, in time, their first language as well.¹

On the other hand, although language spread may always imply that some kind of migration took place, languages do not spread willy-nilly across the landscape. The normative pattern in most of history, except in instances of long-distance resettlement by sea, has been for language spread to proceed by increments outward from the places in which its speakers were already a well-established population. On this observation is based one of the fundamental interpretive principles in the application of linguistic evidence to migration history, the linguistic geographical version of Ockham's razor: i.e., the most probable history of language, and therefore population, spread is the one that requires the fewest moves of language frontiers to explain the latter-day language distributions.

THE NUMIC MIGRATIONS

A classic North American example of the utility of linguistic evidence in mapping migration histories is that of the Numic peoples of the Great Basin. In the eighteenth century the territories of the Numic communities, known by such names as Paiute, Ute, and Shoshoni, spread across more than a million square kilometers in the western parts of the present-day United States, from the Sierra Nevadas of California to the high plains just east of the Rocky Mountains. The near mutual

¹ Ehret 1974: 10–12.

intelligibility of all the Numic languages and dialects showed that the linguistic divergence of Numic, and therefore the expansion of Numic communities across this vast expanse, had begun only a relatively few centuries prior to the 1700s. The archaeological evidence confirmed this inference and resolved the dating issue: a new cultural complex, directly ancestral to that of the later Numic societies, in fact spread across the whole region in the period between 1000 and 1700 CE.²

But where did this complex of expansions begin? Where did the ancestral Numic, i.e., proto-Numic, society reside, and what were main lines of Numic population spread in subsequent eras? The mapping of the latter-day Numic dialects provides a striking example of the convergent outcomes of applying two inter-related interpretive principles to the resolving of this problem. One approach is through identifying the geographical area that displays the greatest diversity in relationship among the languages that form the language subgroup or family at issue. The longer languages have been spoken in an area, the greater the time they have had to evolve their own separate characteristics. Thus the regions of greatest diversity within a group of related languages—the areas where languages belonging to each of the different primary branches of a language group can be found—are nearly always the place where the language group originated. The second approach is through applying the principle of “fewest moves,” as depicted above. The two approaches conjoin in their implications for Numic history.

The Numic group consisted of three primary branches; each branch had two primary sub-branches. An outline classification identifies these subgroupings:

Numic

- I. Southern Numic
 - A. Kawaiisu
 - B. Southern Paiute (Chemehuevi, Goshiute, Ute), Commanche
- II. Central Numic
 - A. Tubatulabal
 - B. Panamint, Owens Valley Paiute, Shoshoni
- III. Northern Numic
 - A. Mono
 - B. Northern Paiute, Bannock

² Lamb 1958: 95–100.

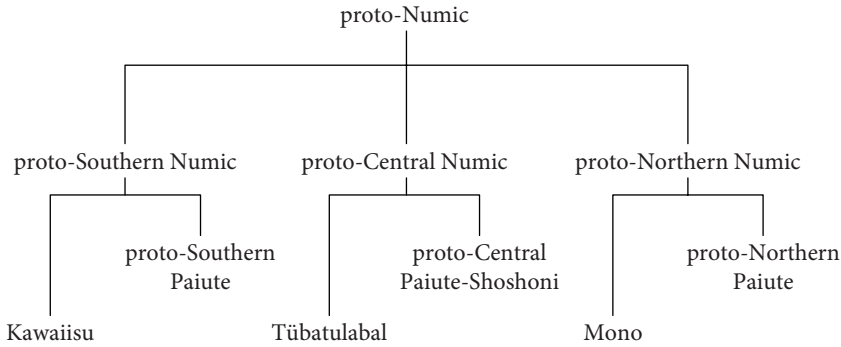
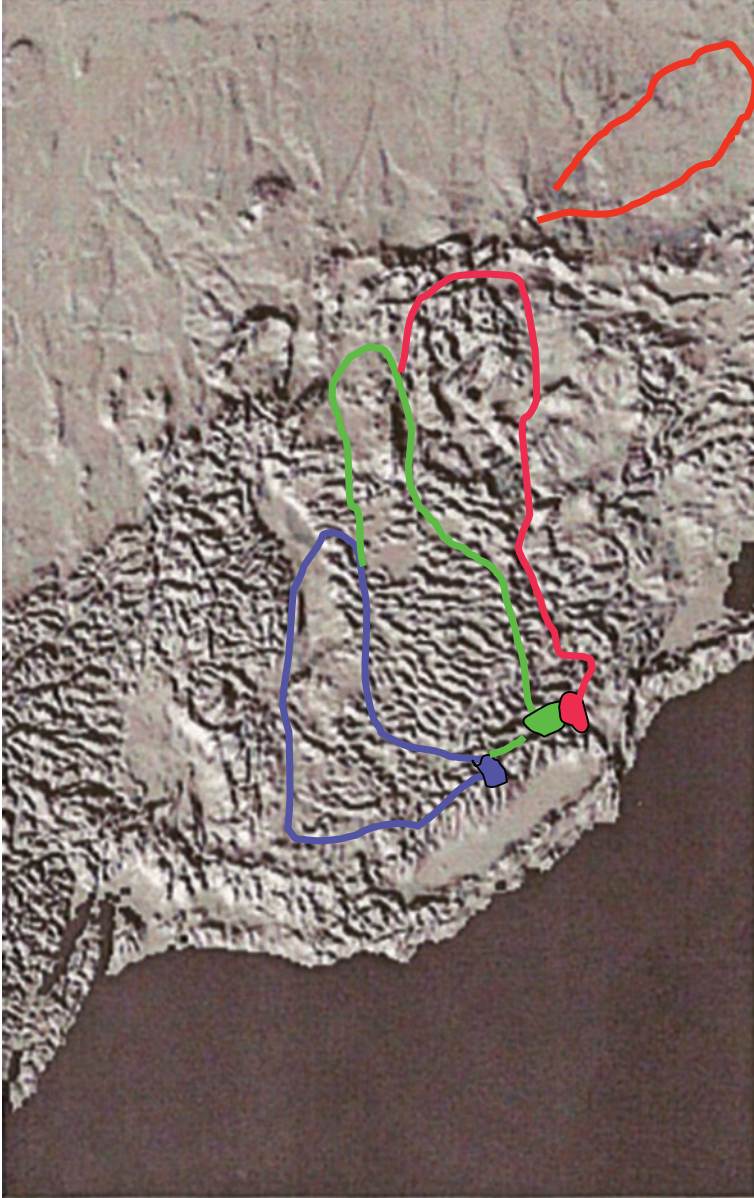


Figure 2. Family Tree and Stratigraphy of Nomic Language History.

To better visualize the historical implications of a subclassification such as this one, it is necessary to convert it into a family tree, showing the lines of the descent by which the various languages of later times derived by various intermediate stages from the proto-language of the group. Figure 2 presents the results of that exercise.

If we then map the geographical spread of the Nomic languages, as depicted in Map 1, it becomes immediately evident that the center of relational diversity within the Nomic language group lay along a stretch of land from the Tehachapi Mountains northward to the Mono Basin of the central eastern Sierra Nevada range. In each primary branch, one sub-branch consists of a single language spoken in one part of that restricted territory, while the second sub-branch comprises a set of very closely related dialects spoken across a vast expanse of lands extending for hundreds of kilometers eastward or northward from that narrow area.

The territory of each such second branch begins immediately east of the small territory of the single-language branch. In the case of the Southern Nomic branch, Kawaiisu occupied the Tehachapi Mountains at the southern end of the Sierra Nevadas, while the groups belonging to the second sub-branch extended eastward from the Chemehuevi of California's Mojave Desert to the Utes of central and southern Colorado, with the further migration of the Comanches in the eighteenth and nineteenth centuries creating a new expanse of Central Nomic speech southward across the panhandle of Texas. As for the Central Nomic branch, the Tubatulabal lived in the southeastern Sierra Nevadas immediately north of the lands of the Kawaiisu, while the territories of the second Central Nomic sub-branch extended eastward from that region northeastward across Death Valley, central Nevada



Violet: Northern Numic
Green: Central Numic
Red: Southern Numic

Blue: Mono
Green: Tubatulabal
Red: Kawaiisu

Map 1. Numic languages

and northern Utah to present-day central Wyoming. In the instance of the Northern Numic branch, the Mono speakers were restricted to the central parts of the Sierra Nevadas; in contrast, the Northern Paiute lands extended several hundred kilometers northward from there into eastern Oregon and also across most of southern Idaho.

The most parsimonious history of population movement explaining this distribution pattern places the proto-Numic society somewhere in the lands in or along the immediate east side of the southern Sierra Nevada range of modern-day California. At the first stage of their history, proto-Numic speakers spread out along the eastern side of the Sierra Nevada Mountains, from the Tehachapi Mountains and Owens Lake in the south to Mono Lake and the Bridgeport area in the north. This expansion led to the divergence of proto-Numic into three societies, proto-North Numic, proto-Central Numic, and proto-Southern Numic. At the second stage of Numic history, each of these three societies developed two kinds of economic emphases, utilizing the lower montane environments in the Sierras and the dry sage and desert (Great Basin) environments immediately east of the Sierras. In northern Numic, this development laid the basis for a subsequent economic differentiation into the Mono (montane) versus the ancestral Northern Paiute (Great Basin); (2) in Central Numic, to the Tubatulabal (montane) versus the ancestral Paiute-Shoshoni (Great Basin); and (3) in southern Numic, to the Kawaiisu (montane) versus the ancestral Chemehuevi-Ute (Great Basin). Once these distinctions had emerged, the dry-environment-adapted communities each then expanded at the third stage in Numic history far eastward across the Great Basin.

THE BANTU "EXPANSION"

A more intricate and even more compelling application of the combined principles of fewest moves and center of diversity is provided by the African case of the so-called Bantu expansion. Often simplistically visualized in the earlier literature as a single vast expansion across a third of Africa in just a few centuries' time, Bantu "expansion" was in fact a complex history of multiple population movements that took place over the course of several thousand years. The family tree of the Bantu language group, Figure 3, reveals at least six successive stages of Bantu language divergence between the early third millennium and the end of the first millennium BCE. This family tree serves as a linguistic "stratigraphy" of the key periods in Bantu language history and

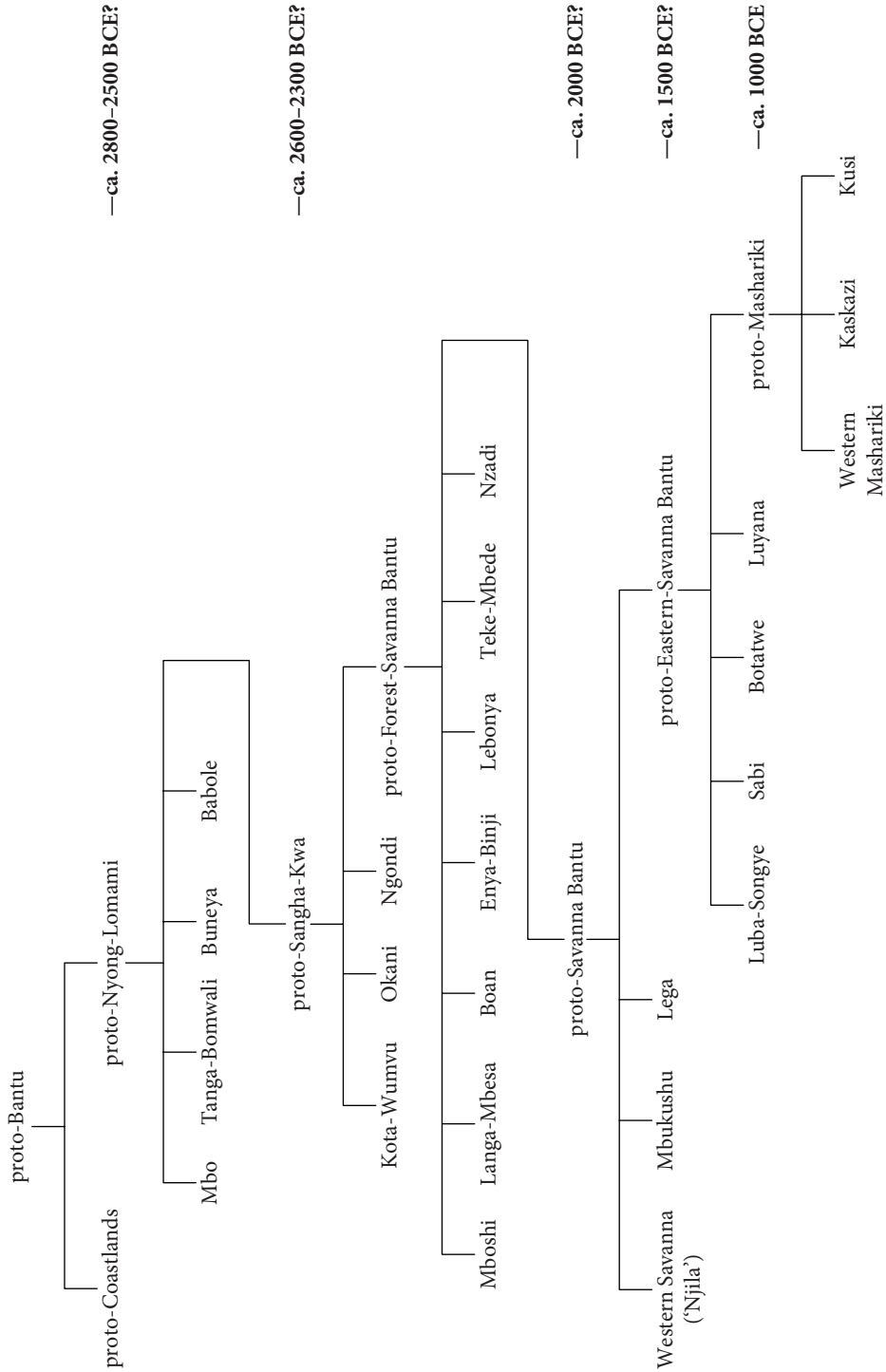


Figure 3. Stratigraphy of Early Eras of Bantu History.

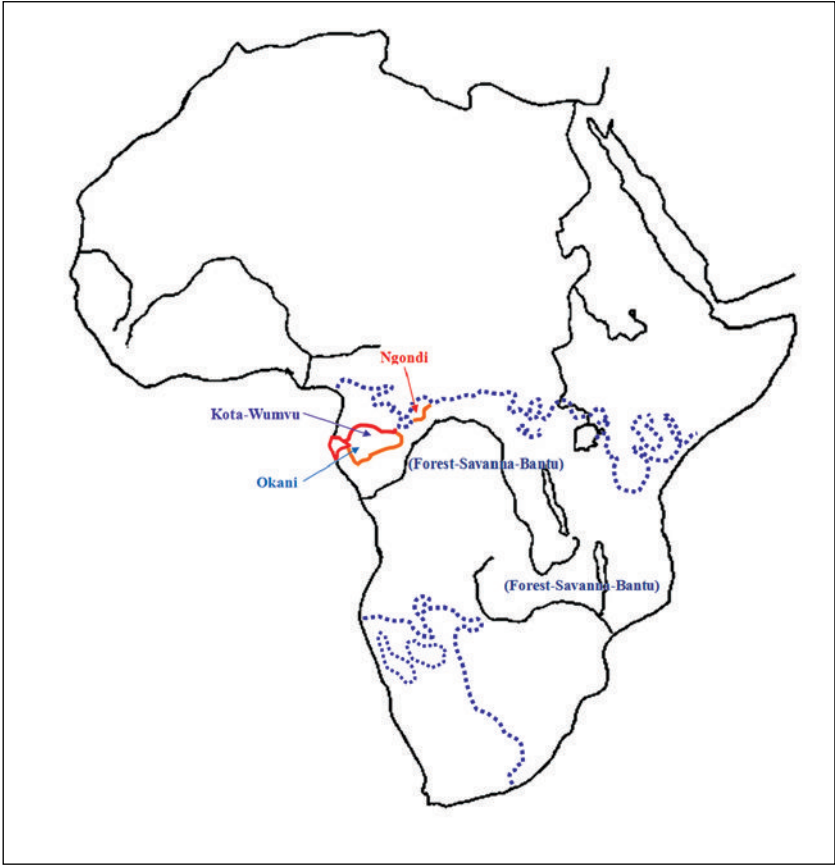


Map 2. Center of diversity: Nyong-Lomami era.

therefore in the history of the peoples who spoke those languages in the different eras.³

Mapping the locations of the new branchings of the Bantu language family that emerged at each successive stage in the stratigraphy compellingly establishes where the centers of diversity lay at each period in this long history. Maps 2–7 present the successive locations of these

³ The dating of the last two stages depicted in Figure 2 is well established from the archaeology. The postulated archaeological correlations for dating the earlier Nyong-Lomami stage are still provisional, however, and proposed correlations exist for only a few of the intermediate periods. See Ehret 1998 for the dating correlations for the latter two eras; see Klieman 2003 for arguments relating to the earlier periods of Bantu history.

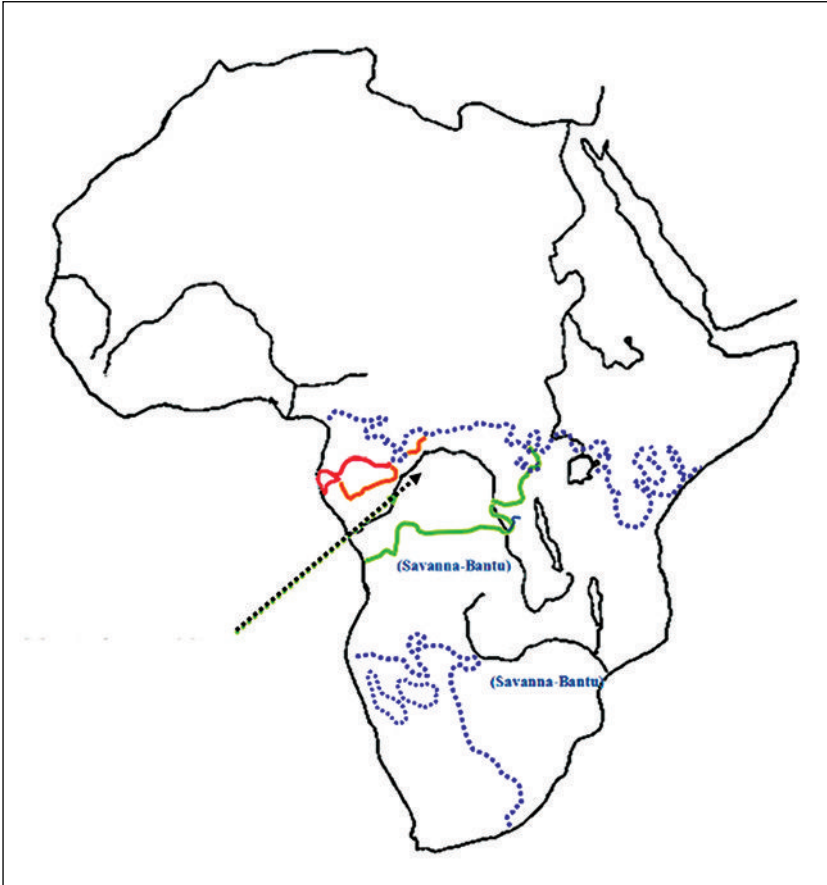


Map 3. Center of diversity: Sangha-Kwa era.

centers. When the maps are viewed in chronological order, the step-by-step eastward movement of the successive centers of diversity at each stage of Bantu expansion stands out sharply, and the multiplicity of the migration events involved in this long-term history become clear.⁴

The first two periods of Bantu divergence, the proto-Bantu and proto-Nyong-Lomami eras, gave rise to six distinct branches: Coastlands, Mbo, Tanga-Bomwale, Buneya, Babole, and Sangha-Kwa. All but one of these six are tightly clustered in the farthest northwest part of

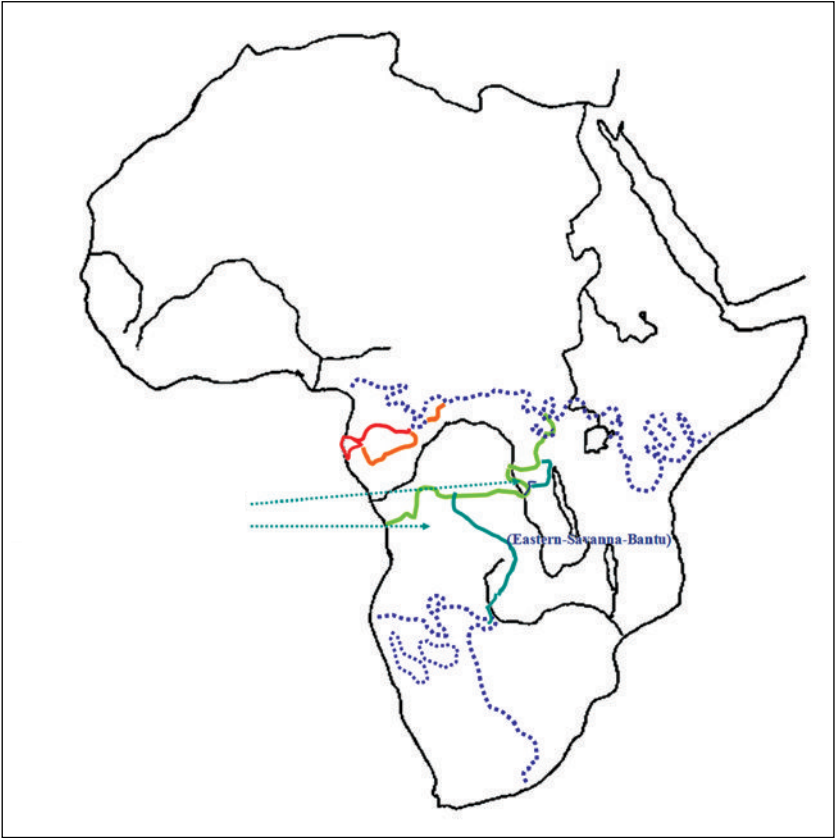
⁴ The classification followed here combines Klieman's findings for the western equatorial rainforest languages, based on lexicostatistics and phonological innovation histories (see references in Klieman 2003) with the findings of Bastin, Coupez and Mann 1999; Ehret 1999; and Ehret 2001a.



Map 4. Center of diversity: proto-Forest-Savanna era.

the modern-day parts of Africa in which Bantu languages are spoken, occupying less than five per cent of the total Bantu-speaking areas, as Map 2 shows. The remaining Bantu languages, which spread across more than 95 per cent of the Bantu sphere, belong to a single branch, Sangha-Kwa. The center of diversity at the first stages of Bantu history, and therefore the original territories of proto-Bantu and proto-Nyong-Lomami, lay without doubt in the farthest northwest areas.

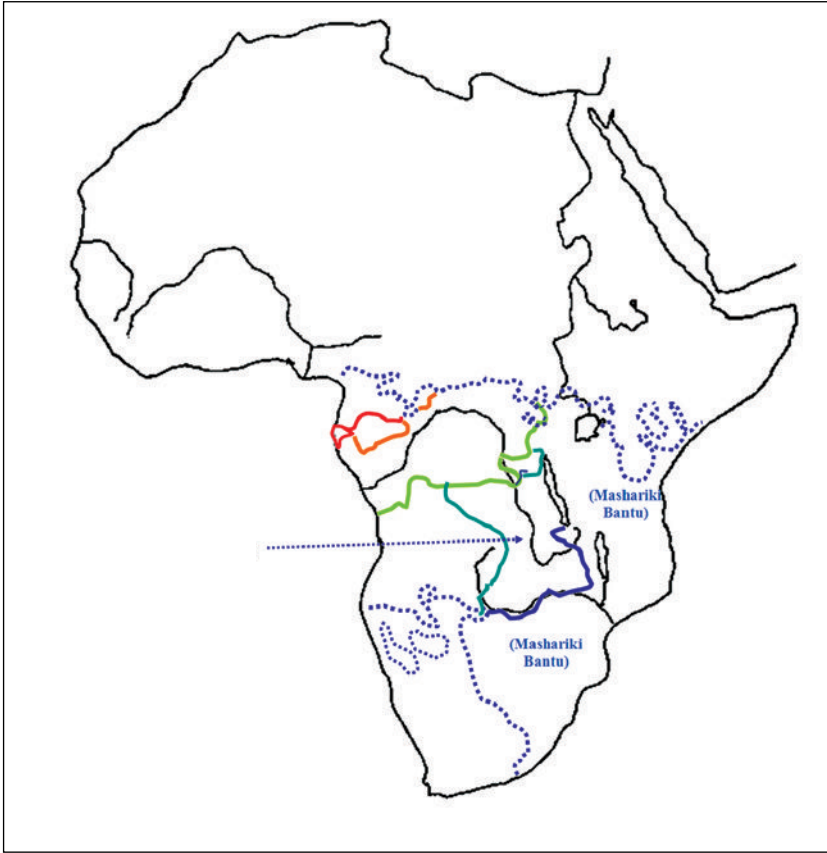
At the third stage of Bantu language history, the proto-Sanga-Kwa era, the center of diversity continued to be in the far northwest. The Sangha-Kwa branch diverged at that period into four sub-branches: Ngondi, Okani, Kota-Wumvu, and Forest-Savanna-Bantu. Again, three of the four sub-branches are restricted to the northwest, as Map 3



Map 5. New expansions in proto-Savanna-Bantu era.

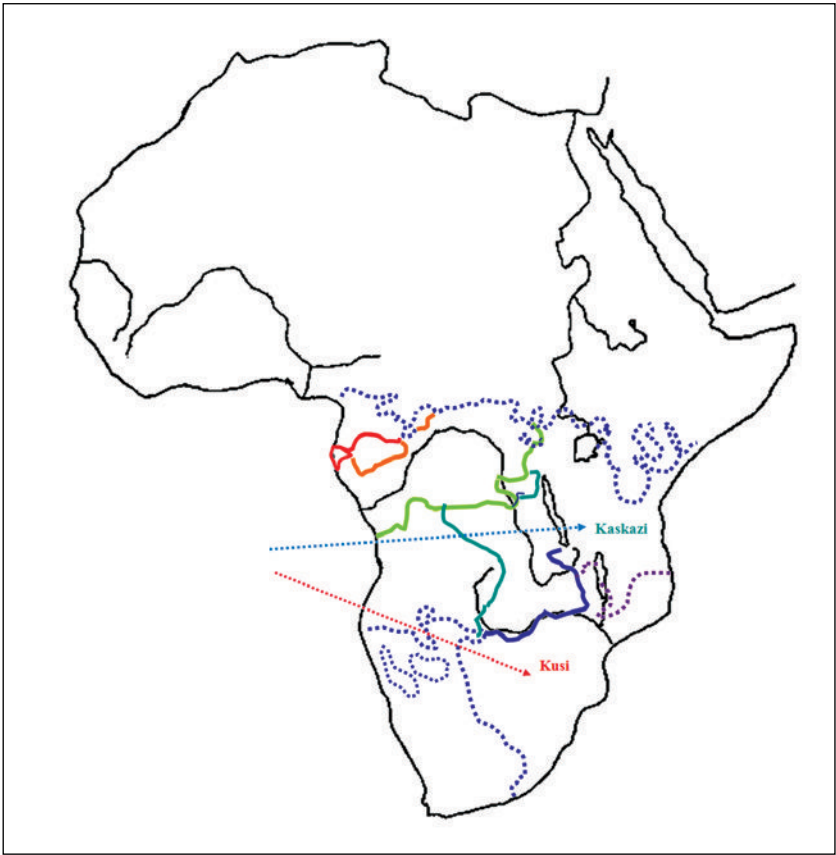
depicts, with just one of the four sub-branches, Forest-Savanna-Bantu accounting for all the rest of the Bantu languages.

At the fourth stage in this history, the proto-Forest-Savanna period, at least eight sub-sub-branches evolved out of the Forest-Savanna sub-branch: Mboshi, Langa-Mbesa, Boan, Enya-Binja, Lebonya, Teke-Mbede, Nzadi, and Savanna-Bantu. The locations of these branches reveal a new center of diversity for this fourth era of Bantu expansion, along the lower and middle Congo River, although still in the north-western quadrant of the modern-day Bantu sphere. Again, as Map 4 reveals, only a single sub-sub-branch, Savanna-Bantu accounts for all the Bantu languages spoken east and south this still relatively narrow center of diversity.



Map 6. New Expansions, proto-Eastern Savanna era.

The fifth and sixth stages of Bantu divergence, the proto-Savanna-Bantu and proto-Eastern-Savanna eras, successively broadened the areas occupied by early Bantu speech communities. But in each case the new centers of diversity again lie adjacent to the centers of diversity of the immediately preceding periods, as is apparent from Maps 5 and 6. Savanna-Bantu diverged into four sub-sub-sub-branches, three of which abut other of the major sub-sub-branches of Forest-Savanna-Bantu and only one of which, Eastern-Savanna, has a vastly wider spread, accounting for all the numerous Bantu languages spoken farther east. Eastern-Savanna in turn broke up into five sub-sub-sub-sub-branches, with four of those groups spoken adjacent to the rest of the Savanna-Bantu group, and just one, Mashariki, of again wide dispersal,



Map 7. New Expansions, at end of proto-Mashariki era.

accounting for all the Bantu languages spoken across the eastern side of Africa.

The first four stages in this history appear to have followed in relatively close succession, with each period lasting just a few centuries and with the next era of wider spread beginning even as the previous stage was still unfolding. Kairn Klieman proposes dating the Nyong-Lomami expansion to the early centuries of the third millennium BCE, and the Sangha-Kwa spread to around the middle of the millennium.⁵

⁵ Klieman (2003: chapter 2) lays out the arguments for this chronology and explains how the overlapping of linguistic changes from one period into the next reveals the early stages of Bantu population and language movement as having proceeded one after other without out any major breaks.

The proto-Forest-Savanna and proto-Savanna eras likely belong to the late third and earlier second millennia BCE respectively. The still later proto-Eastern-Savanna stage probably took shape around the middle centuries of the second millennium.

Only in the last two periods of Bantu divergence, the successive proto-Mashariki and proto-Kaskazi/proto-Kusi eras depicted in Map 7, did Bantu-speaking immigrants begin to establish themselves through eastern and southeastern Africa. The developments set in motion by these expansions extended across the centuries from the early last millennium BCE to the mid-first millennium CE. The narrow distribution of one of the three subgroups of Mashariki, Western Mashariki, around the middle of Lake Tanganyika, fits in with the proposal that this last major era of Bantu immigration originated just west of that lake, at the eastern edges of the regions reached by previous proto-Eastern-Savanna era of expansion, and radiated out northward, eastward, and southeastward from there.⁶

To sum up, the linguistic evidence reveals a long succession of incrementally wider expansions of Bantu speech communities over three millennia. The population movements that spread Bantu languages began in the far northwestern corner of the equatorial rainforest of Africa, probably early in the third millennium BCE. At the proto-Forest-Savanna period, the fourth stage in the linguistic history dating to around 2000 BCE, Bantu languages for the first time spread beyond the northwestern corner of the rainforest belt, apparently principally following the Congo River both up and downstream. At the fifth and sixth stages, the proto-Savanna and proto-Eastern Savanna eras, Bantu communities spread into western and central parts of the southern savanna belt. A seventh stage in the spreading out of Bantu communities began around 1000 BCE, with the proto-Mashariki initially establishing themselves in the western parts of the African Great Lakes region. After mid-first millennium BCE this settlement gave rise to a wide scattering out of the speakers of two branches of the Mashariki Bantu languages, Kaskazi and Kusi, whose communities by the middle of the first millennium CE extended across much of eastern and southern Africa. Contrary to ideas common in earlier African historiography, there was no single “Bantu expansion.” The Bantu languages did

⁶ Ehret (1998: chapter 2) lays out the origin areas and early expansions of the Mashariki Bantu; Chapters 6 and 7 describe the later settlements of their Kaskazi and Kusi descendants.

not explosively expand across Africa, and the various migrations of Bantu-speaking communities were not driven by some single cause, such as the possession of ironworking.⁷

THE DEMOGRAPHY AND SOCIAL HISTORY OF POPULATION
MOVEMENTS: WORD BORROWING TESTIMONIES

The Numic and the Bantu examples illustrate how the evidence of language relationships and the mapping of those relationships reveal origin areas and outline the broad directions of such migrations. But from a historian's perspective that is mere framework. History is about cause and consequence in human lives. Positioning migration in the nexus of historical change requires us to ask more demanding questions. What scale and kind of migration of people accompanied a particular language spread? What was the relative demographic contribution of incoming populations? What kinds of relationships played out among immigrating people and previously established people? What kinds of social change ensued? Economic change? Political change? Cultural change?

Questions like these require a different kind of linguistic argumentation, drawing on the evidence of word borrowing over extended periods of time. It turns out that different definable patterns of historical encounter between speakers of different languages—whether brought about by migration or other causes—each engender a different pattern of word borrowing over time. The different histories, in other words, leave behind different word-borrowing signatures in the languages concerned. Modeling from real-time cases, both African and non-African, has allowed this writer to propose an overall categorization of the different word-borrowing signatures and the varieties of historical encounter between societies that can generate these patterns.⁸ This scheme, presented in Figure 1, though still in many respects a work in progress and in need of ongoing refinement, has already proved to be an effective interpretive tool in a variety of African cases where written evidence is lacking, as well as in cases where written documentation

⁷ Ehret 2005: vol. 2, pp. 664–670, presents a detailed overview of this very *longue durée* history.

⁸ Ehret (forthcoming: chapter 4 ‘Historical Inference from Word Borrowing’) provides the most up-to-date presentation of the categories.

does exist.⁹ Note that the effective identification of word borrowings depends on first working out the regular sound correspondence patterns of the language that has adopted them and the language from which they came. In addition, determining when a word borrowing took place and its historical significance requires a clear language classification and stratigraphy into which to fit this datum.

Four illustrative case studies out of the many that could be cited draw our attention here. The migration of Semitic speakers into the northern Horn of Africa in the mid-first millennium BCE; the migration of the ancestral Malagasy people from Indonesia to Madagascar in the very early first millennium CE; and the movement of certain Luhya Bantu speakers into the proto-Kalenjin society in Kenya in the mid-first millennium present three contrasting examples of the specificity of the inferences possible from loanword evidence. The case of Maa and Maasai history in central East Africa illustrates the applications of this kind of resource in constructing a *longue durée* history characterized by recurrent episodes of population movement and by the succession of demographic, social, and cultural changes set in motion by those migrations.

INTRUSIVE ENCLAVE SETTLEMENT: EARLY SEMITIC SPEAKERS IN THE HORN OF AFRICA

Three thousand years ago, nearly all the languages spoken from the Red Sea shores of modern-day Eritrea as far south as south-central Ethiopia belonged to the Cushitic branch of the Afroasiatic language family. Today the great majority of people in those regions speak one of fifteen Semitic languages. One of those languages, Amharic, is the first language of millions of people and the common language of government and education in Ethiopia. Two others, Tigre and Tigrinya, are the majority languages of Eritrea. The Ethiopic Semitic languages all descend from a single language, proto-Ethiopic, spoken about 2500 years ago. What kind of migration brought this language to the Ethiopian highlands? Where did this migration take place? How did

⁹ For an especially insightful application of these categories in seventeenth and eighteenth-century Sudan history to matters ignored in the existing written sources, see Spaulding 1990.

proto-Ethiopic gain wide currency in the first place, and how did it and its daughter languages become first languages in so many areas? The categories of word borrowings in the proto-Ethiopic language from the pre-existing Cushitic languages of the region reveal crucial elements of this story.

Proto-Ethiopic, in linguistic historical terms, was in origin a spoken dialect of the common Yemeni language of the first millennium BCE, so-called “Epigraphic South Arabian”. Immigrants from South Arabia carried this language with them when they settled in modern-day Eritrea and far northern Ethiopia. The immigrants at first formed only a tiny minority of the overall population. Why do we know this? The proto-Ethiopic language borrowed large numbers of words from an indigenous language of the northern Ethiopian highland belonging to the Agaw branch of the Cushitic group. The Agaw loanword set specifically displays the characteristics of the category “intensive borrowing,” category 3A of Figure 1. To wit:

- (1) Agaw loanwords occur all through the vocabulary of proto-Ethiopic;
- (2) an exceptional number of Agaw loanwords entered the core vocabulary of proto-Ethiopic.

The latter feature is the key to identifying this category of borrowing. Table 1 at the end of the chapter lists the six Agaw loanwords in proto-Ethiopic among the 100 items that make the standard core vocabulary list.¹⁰ Core vocabulary is so highly resistant to word borrowing that even as few as six word borrowings from another language in the 100-meaning list count as an extraordinary number.

Intensive word borrowing has two kinds of correlative histories. The less usual context is a very specific kind of violent conquest, in which the conquerors speak a language very closely related to the language of the conquered people. In this limited context, the conquered majority borrow core vocabulary words from the conquerors’ language, yet within a very few generations the immigrant conquerors give up their language in favor of the language of the conquered. The Danish impact on Anglo-Saxon in ninth- and tenth-century Britain is a prime exam-

¹⁰ By core vocabulary is meant the words for meanings that make up the standard 100-word list of basic vocabulary, often called the “Swadesh list”: see, for example Hymes 1960.

ple. This kind of history does not apply in the proto-Ethiopic case. The Semitic languages, although belonging to the same language family as the Cushitic languages, are only very, very distantly related. As well, proto-Ethiopic did not soon fall out of use, but in fact eventually spread in the northern Horn of Africa and evolved into a number of daughter languages that spread still more widely in the Ethiopian highlands in later centuries.

The alternative and far more usual correlative history of Category 3A, intensive word borrowing, is one in which the borrowing speech community forms a persistent minority enclave population within the wider territories of a far more numerous majority society. It is that historical situation which the loanword evidence entails for the original proto-Ethiopic speakers. An enclave of this kind may arise through the spread of a new majority population into the territories surrounding the minority population. Alternatively, the enclave can be formed by an intrusion of new settlers into the midst of a longer-established population. The linguistic geography of proto-Ethiopic's closest relatives, the Epigraphic South Arabian dialects of the last millennium BCE, puts it beyond doubt that the proto-Ethiopic speakers were intruders from Yemen: proto-Ethiopic was the language of migrants who had moved across the Red Sea and settled in enclaves in the midst of long-established Agaw-speaking peoples.

What kind of enclaves were these? A further category of word borrowing, Category 2C, a semantically restricted subset of terms relating to agriculture, lies embedded within the overall intensive Agaw loanword set of proto-Ethiopic. This subset points us toward an answer. The people who brought the proto-Ethiopic language to the Ethiopian highlands in the first millennium BCE, it is evident, were *not* themselves farmers, but followed an entirely non-farming occupation and obtained their food from the indigenous Agaw populations. The evidence on this point is compelling. The proto-Ethiopic speakers came from Yemen, where the full suite of Middle Eastern agricultural crops had been established for several thousand years. Yet many of the most basic agricultural terms of proto-Ethiopic, including words even for crops long grown in the Ethiopian highlands, but ultimately of Middle Eastern origin—wheat, barley, chickpeas, and flax¹¹—and for the plow, were borrowed from Agaw (Table 2 at the end of the chapter lists some

¹¹ Appleyard (1974) details an extensive array of this evidence; see also Ehret 1979.

of these terms). The borrowing of such words took place even though Semitic speakers had ancient acquaintance with these items, and *even though* ancient Semitic root words for all these crops and for the plow existed in the contemporary sister dialects of proto-Ethiopic spoken in southern Arabia in the first millennium BCE.

So how did this initially very tiny minority of immigrants establish themselves as enclave populations, and why did the language of this tiny minority of immigrants eventually become widely adopted by former Agaw Cushitic speakers in the northern Ethiopian highlands? The tendency of proto-Ethiopic to maintain older Semitic commerce-related vocabulary, in contrast to its extensive adoption of borrowed Agaw terms in agriculture, implies a special relation of the immigrant proto-Ethiopic speakers to commerce—that the immigrants came initially as merchants in pursuit of trade and that commerce formed the economic basis of their separate social existence. This kind of relation led to the use of their language, proto-Ethiopic as a *lingua franca* and thus as a second language of Agaw participants in the new kind of trade. The fragmentary epigraphic documents and the significantly fuller archaeological evidence conform to this proposal. They reveal that, by the 5th century BCE, the immigrants had established towns that were centers of commercial exchange in Eritrea and far northern Ethiopia, very much the kind of enclave, distinct in language from the surrounding countryside but dependent on surrounding peoples for agricultural produce, that the linguistic evidence requires.

To sum up, proto-Ethiopic borrowed many farming terms from Agaw because the immigrant speakers of the language in the northern Horn of Africa in the mid-first millennium BCE were not farmers but urban dwellers specializing in commerce. Because it was the language of merchants, proto-Ethiopic also became a *lingua franca*, widely used as a second language by the Agaw majority population of the countryside.

In the later first millennium CE, for which fragmentary epigraphy and fuller archaeology exist, a regime of city-states arose, culminating in the emergence of the Aksumite empire in the early first millennium CE. In these polities the various daughter dialects of proto-Ethiopic, especially Gêez in Aksum, took on the enhanced status of vehicles of governance and hence of access to power, influence, and prestige. Provincial governors and their agents and servants—political migrants—spread these usages still more widely in the Aksumite high era, 100–500 CE. Over time the spoken Ethiopic Semitic dialects have

gained currency as new first languages among many even of the most rural farming populations, in much the same fashion as Vulgar Latin did in the western Roman Empire.

MAPPING LONG-DISTANCE MIGRATION FROM LOANWORDS:
THE MALAGASY CASE

The problem of Indonesian migration to Madagascar, bringing the Malagasy language and culture to the island, has been the topic of a number of studies. Otto Dahl showed decisively a half century ago that the ancestral Malagasy came ultimately from Borneo, where their closest related language, Maanjan, is spoken.¹² An issue still bruited about, however, is the question of whether the proto-Malagasy sailed directly from Borneo to Madagascar or followed a more indirect route around the northern and western portions of the Indian Ocean. A generally neglected set of linguistic data, by allowing us to reconstruct a culturally significant intermediate stage of travel in that migration, answers this question decisively with respect to the African side of this history. These data, consisting of loanwords in Malagasy from an early coastal East African Bantu language as well as a few Malagasy loanwords in Bantu languages of the same region (see Table 3 at end of the chapter), reveal with culturally specific detail that, before settling in Madagascar, the proto-Malagasy sojourned for a time on the northern coasts of East Africa. Less directly, this evidence confirms Dahl's earlier conclusions that the proto-Malagasy migration around the shores of the Indian Ocean took place during the first three centuries CE.¹³ Both sides of this encounter along the East African coasts were of a socially peripheral nature and principally involved the transference of new items of culture from one society to the other.

The proto-Malagasy borrowed words came from an extinct Bantu language, for which the name Azanian has been proposed,¹⁴ spoken along the northern Tanzanian coasts beginning around the second century BCE. The Azanians began to be displaced no later than the third century CE by new Bantu communities speaking an early dialect of the

¹² Dahl 1951 and 1991.

¹³ Dahl 1951 and 1991.

¹⁴ Gonzales 2009.

Upland Bantu group. The Upland dialect in turn gradually dropped out of use in favor of a different Bantu language, proto-Northeast-Coastal, the early speakers of which first migrated to the coast from the East African interior at around the fourth century CE.¹⁵ The archaeology of especially the transition from Upland to Northeast-Coastal speaking societies is clear and strong and shows that it took place over a period of many generations, lasting roughly from around the late 300s up to the 600s CE.¹⁶ For the borrowed words in proto-Malagasy to have come from the Azanian Bantu language, the cross-cultural encounters have to date to the earliest part of this sequence, before 200 or 300 CE, at a time when Azanian Bantu speakers still predominated at the coast.

The borrowings of Bantu words for animals and a kind of shield fit the pattern of Category 2A, semantically restricted borrowing, in this case reflecting the acquisition of a new subset of subsistence knowledge and one item of weaponry. Inherited Austronesian vocabulary maintained in Malagasy shows that the proto-Malagasy brought pigs and chickens and South Asian crops along on their migrations. The word borrowings (depicted in Table 3) show, on the other hand, that they adopted cows, sheep, and an African grain, sorghum, and a new kind of shield from the Bantu along the East African coast. In fitting the pattern of Category 2A, semantically restricted borrowing, the Bantu loanwords reveal the spread of a new knowledge set but give no indication whether or not Bantu people were assimilated in any significant numbers into the migrant proto-Malagasy community. The contrasting lack of any Malagasy word borrowings from the Northeast-Coastal Bantu dialects, which replaced the Upland Bantu language in the coastal areas from the fourth to the seventh centuries CE, has a further implication, namely, that those proto-Malagasy communities

¹⁵ Gonzales (2009) presents extended and detailed arguments for the point-for-point correlation of the three stages in the archaeological sequence of the Kenya-Tanzania coastal region, 200 BCE to the mid-first millennium CE, with the linguistically-attested three-stage sequence of Bantu-speaking populations; see also Ehret (1998: 184–189), who identifies the evidence for the Upland and proto-Northeast-Coastal Bantu parts of the sequence.

¹⁶ Chami (1994) documents this transition in pottery styles. Chami's recent book (2006) obscures these findings by arguing the view that African developments in East Africa over thousands of years form an unbroken continuity. Gonzales (2009) deconstructs this view and disentangles the separate but historically overlapping elements of the picture.

who migrated farther south to Madagascar embarked on this venture by no later than around the fourth century.

Just as clearly, not all of the proto-Malagasy picked up and moved to Madagascar. Some communities persisted for a while along the southern Kenya and far northern Tanzania coasts, bequeathing knowledge of the South Asian crops, rice and bananas, to two descendant societies among the incoming Northeast-Coastal Bantu. Table 4 at the end of the chapter presents this very short list. The word borrowings fit Category 1 of Figure 1: they are single word borrowings, indicative of the spread of individual items of material culture from one society to another, but not of the migration of people. A third single word borrowing, of the generic term for the chicken, although probably originally adopted by the Azanian and Upland Bantu before 300 CE, subsequently diffused, with the spread of chickens to other Bantu-speaking societies, right across much of the eastern side of Africa. The slightness of the proto-Malagasy contribution to the lexicon of the early Northeast-Coastal peoples has a further implication worthy of note: the proto-Malagasy groups who stayed behind along the East African coast were very, very few in number relative to the expanding Northeast-Coastal Bantu peoples and were eventually absorbed with little or no cultural impact.

GENDERED MIGRATION

A third example, intriguing for quite different reasons, comes from the history of the Luhya, a grouping of Bantu peoples of western Kenya, and the Kalenjin peoples of the adjacent western Kenya highlands during the first millennium CE. On the Luhya side of this history, the dominant feature evident in the linguistic evidence for the whole period from the early first millennium CE up to recent centuries has been the recurrent episodes of Luhya migration into territories formerly Kalenjin in speech. Reprising that history would add examples of the kinds already reviewed with respect to the Numic and early Bantu expansions. What is different about the encounters between Luhya and Kalenjin is what the evidence has to teach us about recovering the social history of migration. The expansions of the Luhya involved the absorbing again and again of former local Kalenjin-speaking communities as a whole into the expanding Luhya settlements. On the Kalenjin side of the ethnic divide, however, migration during the

proto-Kalenjin period, ca. 500–800 CE, appears to have been highly gendered, with Luhya women as the migrants.¹⁷

Why do we infer that migration from the early Luhya society to the proto-Kalenjin society was mainly of women? In contrast to the wide range of Kalenjin loanwords in Luhya, the Luhya words adopted into the proto-Kalenjin language, with one exception, relate to the area of activity that is and was anciently women's work in the Luhya societies. This set of loanwords consists principally of cultivation and cooking terms, although it includes one term, for "tree stump," that evokes the one notable Luhya male agricultural contribution, the cutting down of trees in clearing new fields.¹⁸

What social mechanisms or relations might make sense of this evidence of a one-way spread of women's expertise? The proto-Kalenjin of the early and middle first millennium CE were strongly pastoral people, who also practiced some cultivation of grains. To contract a daughter's marriage, a family required the prospective bridegroom and his family to pay bridewealth in cattle and other livestock. The early Luhya of the same period, in contradistinction, were primarily cultivators, who also raised some livestock. The comparative ethnographic as well as supporting linguistic evidence, indicate that in early periods in the history of Bantu-speaking peoples, bride service and not a payment of bridewealth preceded marriage. The young man seeking to marry had to perform an extended period of service in the household of his intended bride and satisfy especially the older women of the household of his worth.¹⁹ In very early Luhya society 2000–1500 years ago it seems probable that this same pattern held true. A corollary of bride service is that it made men the immigrants, the ones who changed their place of residence. Paying bridewealth, in contrast, makes women the immigrants, even if only over a short distance.

The marrying of Luhya women to Kalenjin men would have conferred benefits for men in both societies. Luhya women contributed an

¹⁷ Ehret 1977.

¹⁸ Ehret 1971: 157, Table E.2. A further word of less clear historical implication is the proto-Kalenjin borrowing of the old Luhya term for "father's sister." Just why the in-marrying women's term for their paternal aunt should have become established in the proto-Kalenjin language, but not any other kin terms, is unclear. But uncovering the history behind this borrowing should be an interesting matter for future investigation.

¹⁹ Saidi (2009) presents a variety of arguments and evidence for the ancientness of these kinds of relations among Bantu-speaking peoples.

expanded agricultural variety and productivity to the Kalenjin homestead. Cattle ownership in Kalenjin societies was above all the prerogative of men and the primary source of wealth and status. Luhya fathers, by marrying their daughters to Kalenjin men, could increase their own wealth in cattle and so enhance their positions in society. The numerous early Kalenjin loanwords in the Luhya livestock lexicons are in keeping with this inference.²⁰ They indicate that the flow of livestock and livestock raising expertise, associated with men, was just as one-way as the flow of cultivation lexicon and expertise associated with women, but in the exact opposite direction. Over the long term such relations, by increasing men's wealth in cattle, undoubtedly helped bring into being new customary balances between women's and men's authority and status in the Luhya societies. These societies are today patrilineal, unlike the ancestral Luyia who appear to have been matrilineal.²¹ They contract marriage through payment of bridewealth rather than through performance of bride service, and women and not men are the ones who move house when they get married.

WORD BORROWING AS A REGISTER OF LONG-TERM DEMIC ENCOUNTER

The migration histories surveyed to this point from the perspective of word-borrowing evidence fall into types widely studied: cases of long-distance ethnic migration by sea to new areas of settlement, of the merchant establishment of trading colonies in new lands, and of shorter-distance social migration across ethnic boundaries. Much more commonly in history, however, societies have engaged in what might be characterized, not as single migration events, but as cumulative migrations unfolding over generations. The Numic and Bantu expansions, although each covers a radically different timescale, are cases in point. People expand their frontiers outward into the lands of neighboring peoples through recurrent episodes of aggression or through the cumulative effects of recurrent, peaceful, short-distance

²⁰ Ehret 1971: 144, Table D.9; Ehret 1998: 317, Table 33A.

²¹ Ehret 1998 (Chapter 5) lays out the lexical evidence for matrilineal clans as the original basis of unilineal kinship among the Bantu-speaking peoples. Pp. 150–151 make the case for the earliest Luhya on the basis of metaphors encapsulated in terms today referring to patrilineal descent.

movements of families and local communities. Strongly pastoralist peoples seem especially associated in the histories of Asia and Africa with policies of aggressive expansion. The Maasai of central East Africa are such a case.

The skein of social and cultural history that leads directly down to the emergence of the Maasai society began with the movement of a particular group of strongly pastoral, cattle-raising people from what is today far southern Sudan into the Turkana Basin of present-day north-western Kenya, at some point in the first half of the first millennium CE.²² We call this society the pre-*proto-Ongamo-Maa*. Their heirs in language, the *proto-Ongamo-Maa*, entered a second stage of expansion in the eighth century CE, moving farther south from the Turkana Basin and establishing themselves in the Baringo Basin and adjacent Laikipia Plateau. By no later than around 1000, a third migration began, with a significant portion of the pastoralist *Ongamo-Maa* breaking away and moving southward into the plains around Mount Kilimanjaro. The term “*Ongamo-Maa*,” by the way, comes from the names the different descendants of the *proto-Ongamo-Maa* gave themselves. Those who moved south to the Kilimanjaro region called themselves in later times the *Ongamo*. The communities that remained behind in the Baringo Basin and Laikipia Plateau seem very early to have adopted a new ethnic self-identification, *Maa*.

The *Maa* society expanded its territories more widely in the Baringo Basin and neighboring areas during the early second millennium. Late in the first half of the second millennium, following this expansion, the *Maa* diverged into three different regional collections of communities: the ancestral *Sampuru*, who adapted their pastoral pursuits to the dryer grazing lands of the eastern Baringo Basin; the *Camus*, who took up intensive irrigation agriculture near Lake Baringo; and the ancestral *Maasai*, who took advantage of the pastoral possibilities farther south in the highland grasslands of the Laikipia Plateau and southern Baringo Basin.²³ The last era of this history, beginning around 1500, was marked by a new great expansion of the *Maasai* from southern Baringo southward via the Kenya Rift Valley into the extensive grasslands of northern Tanzania.

²² Ehret 1983.

²³ Vossen 1988.

In the current state of our knowledge, two firm, although approximate, dates anchor the chronology that leads down in time from the pre-*proto-Ongamo-Maa* to the latter-day Maasai people. Archaeological findings establish ca. 700 CE as the threshold of the second stage of this history, the movement of the *proto-Ongamo-Maa* from the Turkana Basin into the Baringo Basin of north-central Kenya.²⁴ The independent testimonies of the oral traditions from several societies of Kenya and Tanzania provide the second date: they conjoin in placing the beginnings of the much later Maasai expansion southward from Baringo through the Rift Valley of Kenya and into northern Tanzania in the decades immediately following 1500.²⁵ Figure 4 depicts the linguistic stratigraphy of this history, naming the succession of societies and providing an approximate dating scale along the right-hand side.

The linguistic and demic histories of the Maasai tell two different although inextricably intertwined stories. The evidence of word borrowing attests that, at each period of migration of the linguistic ancestors of the Maasai into new territories, they encountered well-established pastoral societies already resident in those regions. The early *pre-proto-Ongamo-Maa* settled among Eastern Cushitic peoples in the Turkana Basin. The further expansion of their *proto-Ongamo-Maa* descendants into Baringo around 700 CE engendered major interactions with an early society speaking a Southern Nilotic language related to the modern-day Kalenjin languages of Kenya. Around the early second millennium, the Maa spread wider in southern Baringo and the adjacent Laikipia Plateau, where they competed with a well-established Southern Cushitic-speaking society.

In each of these periods the language ancestral to Maasai borrowed a major set of loanwords, of the heavy general category (3B in Figure 1). This category of borrowing has major implications for demographic change. It consistently goes with a history in which the existing society at first outnumbers the incoming population. A significant period of bilingualism ensues, but over the longer term the people of the existing society of a region gradually assimilate into the intrusive society, often creating a new cultural synthesis of features drawn from both cultural backgrounds. The original genetic contribution of *proto-Ongamo-Maa* settlers in northern Kenya in the first millennium CE was repeatedly

²⁴ Ambrose 1982.

²⁵ Ehret 2001c.

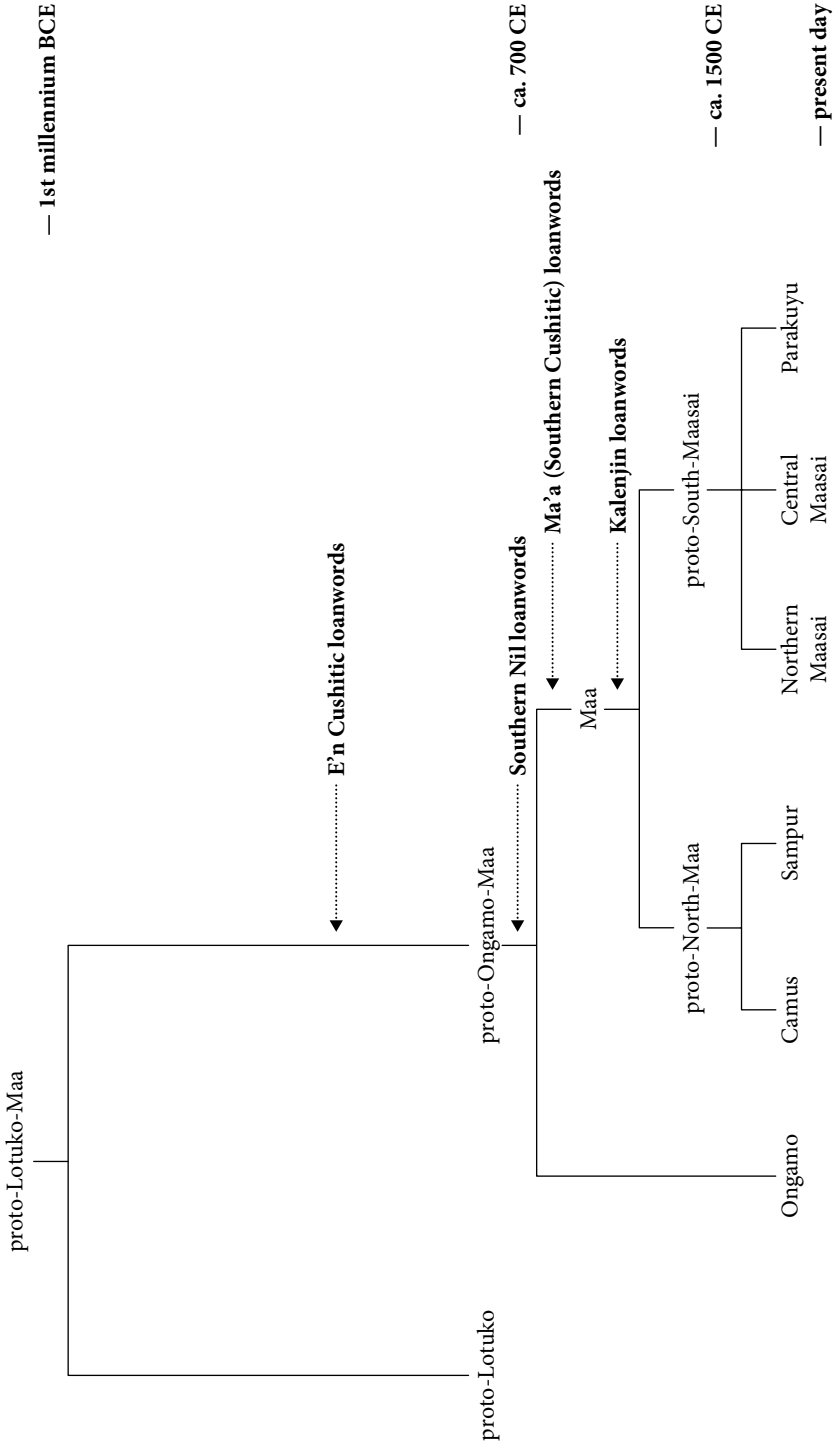


Figure 4. Stratigraphy of Ongamo-Maa and Maa History.

further thinned out at each period by the incorporation of a new major demographic component from the prior populations of each region.

Tables 5–8 at the end of the chapter provide representative selections of the word borrowings dating to each of the successive periods of expansion of the peoples leading down to the Maasai. These illustrate the defining types of loanwords characterizing heavy general borrowing, as well as reveal specific elements of the social and cultural exchanges that accompanied the processes of assimilating existing populations into the societies of the incoming immigrants. Among other transferences:

- (1) The Eastern Cushitic society of the Turkana basin in the first millennium CE passed on new pastoral vocabulary to the already strongly pastoralist pre-proto-Ongamo-Maa, including notably a new item of material culture, metal cowbells (Table 5). Although erstwhile Eastern Cushites formed a major element in the genetic ancestry of the pre-proto-Ongamo-Maa people, there are no indications in the available evidence of significant Eastern Cushitic impact on the social or political structure of society.
- (2) In the subsequent era, beginning around 700, the incorporation of a Southern Nilotic people of the Baringo Basin into the proto-Ongamo-Maa society appears, in contrast, to have set off significant social changes. Specific word borrowings for the “young man” stage of life and for the act of circumcision, the rite that initiated a boy into that life stage, indicate that the Ongamo-Maa society adopted from the Southern Nilotes both circumcision as a male rite of passage and at least one part of the age ranking system for men characteristic of more recent Maa peoples (Table 6). The likeliest explanation for the adoption of this demanding rite was that it had already been a long established, socially pivotal observance among the majority element in the amalgam of communities incorporated into the proto-Ongamo-Maa society, that majority element being the former Southern Nilotic-speaking society of the Baringo Basin.
- (3) The Southern Cushitic society involved in the interactions of the subsequent Maa period of the early second millennium had an even more startling impact on the people who moved into their lands. The new society that evolved out of this encounter retained the older ethnic name of the Southern Cushitic society, Ma’a, in the form *Maa*, as the self-name of the new society, even while shifting

to the Ongamo-Maa language of the immigrants (Table 7).²⁶ In other words, a considerable sense of societal continuity prevailed across the transition. The formerly Southern Cushitic society, it can be argued, did not break up in the face of the immigrants' inroads, but instead found ways to accommodate to their presence. One of the effects of that accommodation is likely to have been a period of extensive bilingualism, with the immigrant language over the longer term finally displacing the Southern Cushitic language from use.

- (4) Finally, later on in the first half of the second millennium, the South Kalenjin brought with them into late Maa society new social and political features, while having an impact on livestock raising as well as on religious and medical ideas. Notably, the Kalenjin communities who were incorporated into late Maa society contributed a cluster of new vocabulary relating to the functions and roles of the *age grades* (formally defined and ritually recognized stages of life) of "young men" and "elders". When boys were circumcised, they were initiated into a named *age set*. In conjunction with their joining the age set, they simultaneously graduated as a group from the status of boy into the age grade of young man. Fifteen or more years later the age set underwent a second graduation, from the young man age grade (see Table 6) to the age grade of "elder" (see Table 8). The grades together constituted the political system: the young man age grade had responsibility for war and defense; from the elder grade came the oligarchy of elders who governed the society.

The influx into the Maa language during this last period of new terms from South Kalenjin relating to age grades and age sets probably indicates that some restructuring of how the grades carried out their roles in society took place. For example, the two terms, *ol-porror* and *e-sirit*, depict fighting groups of young men, while the borrowing of *ol-payian* "elder" may indicate changes in Maa conceptions of the elder age grade, although what the changes if any might have been is not yet known.

²⁶ The term Maasai, which became the name of a major descendant people of the Maa, is itself a probable borrowing of an old, now lost Southern Cushitic plural form of *Maà*.

Yet despite the adoption of new terms from South Kalenjin, the older Maa structuring of the overall political system persisted. In the proto-Kalenjin society of the later first millennium CE, and probably also among the South Kalenjin, a cycle of eight age-set names existed.²⁷ When a new age set was formed it took the next name on the cycle. In most Kalenjin societies, a new age set was initiated approximately every fifteen years, so that after about 120 years had passed, the age set names began to repeat. The Maa had, in contrast, a linear naming system for age-sets—they chose an entirely new name each time a new age set of young men was initiated—and that pattern persisted from the early Maa down through their more recent cultural and linguistic heirs, the Sampuru and the Maasai. The heavy general category of South Kalenjin word borrowings in Maa fits the conclusion that the South Kalenjin initially outnumbered the Maa groups expanding into their lands. But the persistence of the Maa linear structure of the age-grade/age-set system, despite the influx of new Kalenjin terms for particular elements of the system, shows that the Maa communities held the politically central position in the long-term processes of ethnic incorporation that their expansion set in motion.

PROSPECTS AND SCOPE

This chapter barely scratches the surface of what can be done and what has already been done with linguistic evidence in probing histories of migration. Especially, the materials presented on the contribution of loanwords studies are the merest tidbits of the feast of information this set of techniques can uncover. The techniques of this kind of work have immense potential anywhere the written sources are sparse or lacking. Even where written sources seem extensive, analysis of the patterns of word borrowing over time can suggest new avenues for exploration and may bring to light unsuspected aspects of the person-to-person level of encounter between immigrants and indigenes.²⁸

For the African continent there already exist complex studies, with linguistic evidence as a primary resource, of long-term regional

²⁷ Ehret 1971: 64.

²⁸ Spaulding 1990, already cited in footnote 9, is a striking demonstration for eighteenth-century Sudan history of this latter potential.

histories involving multiple spreads of peoples and the intricate intersections and diffusions of ideas and things associated with those developments. The southern half of the African continent is particularly well served by such studies, among them Jan Vansina's *Paths in the Rainforests*,²⁹ David Schoenbrun's *A Green Place, A Good Place*,³⁰ this writer's *An African Classical Age*,³¹ and Kairn Klieman's *The Pygmies Were Our Compass*.³² African linguistic historical data have also contributed to the modeling of the long-term effects of the development of early agriculture on the migrations of people and the spread of language.³³

The teaching and applying of linguistic methods for history nevertheless tend largely still to focus on the questions of where languages originated and where they spread and on what reconstructed early vocabulary can reveal about past culture. As valuable as this information can be, it leaves aside the complexity of cultural encounter and its human dimensions that sophisticated and detailed examination of loanword histories reveals. It is that body of method this chapter particularly aims at bringing to the attention of scholars of migration. The utility and power of these methods in studying pre-modern migration is clear, and they are likely to have much to tell us about migration in the past 500 years as well.

²⁹ Vansina 1990.

³⁰ Schoenbrun 1998.

³¹ For which see footnotes 3 and 4.

³² Klieman 2003.

³³ Ehret 2003.

Table 1. Agaw Core Vocabulary Loanwords in proto-Ethiopic.

Ethiopic root	Source of borrowing	Commentary
*t'əs "smoke"	proto-Agaw (PA) *t'əza	
*s'äg ^w är "hair"	Agaw: Bilin šäg ^w ər; proto-East Cushitic (PEC) *t'ogor-(< proto-Cushitic (PC) *t'ag ^w ar-)	
Vnk'ak'Vh "egg"	PC *ʔink'ok'anḥ- (proto-Soomaali *ukah; proto-Southern Cushitic *k'ok'aanḥ-) (East Cushitic: Oromo <i>ankak' u</i> is borrowing from Ethiopic)	Not known in modern-day Agaw languages, but regular pre-PA shape of this root would have been *ʔank'ak'ah-; hence borrowing from extinct Agaw language is indicated here
*dämmänä "cloud"	PA *dəmmən-/*dämmän-	
*ʕas- "fish"	PA *as- ~ *ʕas-	Borrowed from Agaw language in which ʕ was retained
*bärärä "to fly"	Agaw: Kemant <i>bärär</i> ; PEC *barar-	
*ʕok' "to know"	PA *ak ^w -	Borrowed from Agaw language in which ʕ was retained

Table 2. Agaw Agricultural Loanwords in proto-Ethiopic.

Ethiopic root	Source of borrowing	Commentary
proto-Ethiopic (PE) *ʔərf- “plowshare”	proto-North Agaw (PNA) *ərb-ən (proto-Agaw [PA] *ʔärf-)	Agaw form attests common North Agaw ablaut, f/b stem-final (from earlier f/p variant: *p > PA *b)
PE *sənrä ~ *särnä “wheat”	PA *sinra	From Agaw
PE *tälba ~ *tälba “flax”	PNA *tərba	From Agaw
PE *dagusa “finger millet”	PA *dagus- “finger millet”; also proto-East Cushitic (PEC) *dingaws-: Yaaku tinkausi “bulrush millet”; Gawwada <i>tisk-aar</i> “wheat” (PC *dingaws-/*dangaws-)	From Agaw: meaning and phonology support this conclusion
PE *täf “tef”	PA *taf-(PNA *tab-)	Agaw form attests common North Agaw ablaut, *f/*b stem-final
PE *bəgg- “sheep”	PA *bəga	From Agaw
proto-North Ethiopic (PNE) *säk’- “barley”	PA *säk-um	From Agaw
PNE *nəw- “plow”	PNA *nuw- “plow”; Beja <i>niu</i> “plow handle”	From Agaw

Table 3. Upland Bantu Loanwords in proto-Malagasy.

Malagasy root word	Source of borrowing	Commentary
*ampemby “sorghum”	*m-pembe < proto-Kaskazi (PK) *-pemba ~ *-pembe (*m- is Bantu n. class prefix)	Innovation of the Kaskazi group to which Azanian Bantu belonged; Malagasy added *a- because *mp cannot occur word-initially
*ombikombi, *angomby “cow”	PK *ɲombe (proto-Mashariki)	Consonant *ɲ did not exist in proto-Malagasy: as a result, speakers either deleted it or changed it to <i>ng</i>
*ondrikondri “sheep”	early Kaskazi (South Nyanza areal cluster) *ɲondi	Specifically innovation of South Nyanza areal cluster of communities, from which the Upland Bantu diverged in the late 1st millennium BCE; see preceding note for phonological treatment; *nd > *ndr is Malagasy sound change
*ampinga “shield”	*m-pinga < proto-Mashariki and PK *-ping- “to put across, bar, obstruct, put in the way of” (m- is Bantu n. class prefix)	Innovated term apparently unique to extinct Azanian language of the coast; *a- added because *mp cannot occur word-initially in Malagasy

Table 4. Proto-Malagasy loanwords in Northeast-Coastal Bantu languages.

Northeast-Coastal root word	Source of borrowing	Commentary
proto-Seuta *i-huti “banana” ($<$ pre- <i>proto-Seuta</i> *i-puti)	proto-Malagasy *futi (from Austronesian *puti) (modern-day Malagasy <i>fotsy</i> (pronounced [futsi])	*i- is Bantu n. class prefix
Swahili <i>wali</i> “cooked rice”	proto-Malagasy *vari (from old Austronesian root) (modern Malagasy spelling <i>vary</i>)	
*n-kuku “chicken” (this term later diffused as far south as South Africa)	proto-Malagasy <i>akuku</i> ($>$ modern-day Malagasy <i>akuhu</i>)	If this were a Bantu loan in Malagasy, it would have yielded Malagasy *ankuhu

Table 5. Eastern Cushitic Loanwords in pre-proto-Ongamo-Maa Period.

Loanword	Eastern Cushitic Root	Loanword	Eastern Cushitic Root
<i>Core vocabulary</i>		<i>Livestock lexicon</i>	
*-boliboli “egg”	Proto-Eastern Cushitic (PEC) *BolBol “egg”	em-balelo “lamb”	LEC: Oromo <i>balale</i> , etc.
		*-tuala “cow bell”	LEC: Oromo <i>duwala</i> , etc.
		*-maal “dewlap”	PEC *ma’al-
(large wild animals)			
*-sarraï “oryx”	PEC: *sar- “sp. large antelope”		
		<i>Other material culture lexicon</i>	
<i>Peripheral basic lexicon</i>		ε-sipil “iron point, blade”	LEC: Oromo <i>sibila</i> “iron”
ɔl-balbal “lake”	PEC *bal-, *balbal-	ε-marō “large homestead”	proto-Eastern Cushitic *mar- “to reside” (Afar <i>maro</i> “homestead”)
<i>Small and medium animals</i>			
<i>Numerals</i>			
ɔl-kaldas “baboon”	PEC *geldees-		
ɔl-cuki “kind of mongoose”	PEC *cuuk’- (Soomaali <i>shuuqshuuq</i>)	saal “nine” (loss of *g is regular Maa change)	PEC *sagaal”
en-garrarraiyo “chameleon”	Lowland Eastern Cushitic (LEC): Oromo <i>garara</i>	ip “hundred”	LEC: Oromo <i>d’ibba</i> , etc.

Table 6. Southern Nilotic Loanwords in proto-Ongamo-Maa.

Loanword	Southern Nilotic Root	Loanword	Southern Nilotic Root
<i>Large wild animals</i>		<i>Various culture lexicon</i>	
*-makau “hippopotamus”	SNil *makau ~ *makai	*-supeni “ewe lamb”	SNil *supeen
*-sirua “eland; eland-colored cow”	SNil *siirua	*-ḷḷḷḷ “long oval shield”	SNil *ḷḷḷḷ-
*-inkat-“wildebeest”	SNil *inkat	*-piron “firestick” *-murrani “youngman (age grade)”	SNil *piron SNil *muren
<i>Small and medium animals</i>			
*-kərɔi “colobus monkey”	SNil *kərɔi-	*-mūrat-“to circumcise”	SNil *mūraat
*-motonyi “vulture”	SNil *motoony		
*-k-olupa “centipede”	SNil *ooluup-		
		<i>Numerals</i>	
		*-tikitam “twenty”	SNil *tiktem

Table 7. Southern Cushitic (Ma'a) Loanwords in early Maa language.

Loanword	Southern Nilotic Root	Loanword	Southern Nilotic Root
<i>Core vocabulary</i>		<i>Small and medium wild animals</i>	
*-sapuk "big" (borrowed root plus Maa *-k adj. suff.)	PSC *ɬaf- "to grow"	e-suni "blue duiker" *-kumani "bush duiker"	Ma'a soni SCush *guman- (not known in present-day Ma'a)
<i>Large wild animals</i>		<i>Subsistence lexicon</i>	
ɔl-arro "buffalo"	present-day Ma'a <i>aro</i> "elephant": earlier SCush meaning "large herbivore (gen.)"	e-luaata "herd" (stem *lua plus Maa *-ta noun suff.)	SCush *lawa "enclosed homestead (in which herd is kept at night)"
e-maalo "greater kudu"	present-day Ma'a <i>malo</i> , from earlier *ma'alo	-was "black cow with white flanks"	SCush *wasi "colobus monkey" (which is black and white)
*-sarga "bushbuck"	SCush *sarig- "antelope sp." (not present in modern-day Ma'a)	en-kurma "cultivated field"	Ma'a-Kurume "cultivated field" (SCush *kur- "cultivate")
<i>Ethnic name</i>			
*Maa "the Maa peoples"	Ma'a, self-name of the Ma'a Southern Cushites		

Table 8. Kalenjin Loanwords in the Maa language.

Loanword	Kalenjin Root	Loanword	Kalenjin Root
<i>Core vocabulary</i>		<i>Various material culture</i>	
*-Irūra “to sleep	Proto-Kalenjin (PK) *rur	ɔl-murunya “razor” ɔ-sosian “stick for cleaning calabashes”	PK *murunya PK soosian
<i>Large wild animals</i>		ɛ-mɔɔtian “quiver”	PK *maat- plus PK *iaan noun suff.
(e)-ɲiro “rhinoceros, rhino-colored, brown”	PK *ɲir- “rhinoceros”	ɛ-sampur “pouch” ɔl-kɛsɛn “baby-sling” ɛn-anka “cloth”	PK *sampur “kind of hide sack” PK *kesen “to carry (child) on back” PK *aanka
<i>Peripheral basic lexicon</i>		<i>Society and beliefs</i>	
-misimis “to be dark”	PK *miis “to make dark”	ɛn-kanyit “honor” ɔl-payian “elder (age grade)” ol-porror “age-set band” e-sirit “age-set band” ɛn-tɔmɔnɔn, pl. ɪn-tɔmɔnɔk “pregnant woman” *-sai “to pray” -sakut “to work magic on” ɛ-sɛtan “magic”	PK *kaanyit PK *paayaan PK *poror PK *sirit PK *tɔmɔnɔ
<i>Small and medium animals</i>		<i>Livestock terminology</i>	
o-suiyani “wild dog”	PK *suiyaan	aros “cow, black and white spotted on underbody” keri “cow, with black stomach, white back” ol-mergef “ram” o-sitima “young ram” ɛ-sunya “fat cuts of meat”	PK *sadi ~ *saai PK *saakut “medicine; to work magic on” PK *sɛɛtan “amulet”
<i>Environment</i>		<i>Numerals</i>	
ɔɲata, aɲata “plains”	PK *aɲata	ɔsɔm “thirty” artam “forty” onom “fifty”	PK *sosom PK *artam PK *kɔnɔɔm

THE ARCHAEO-LINGUISTICS OF MIGRATION

Patrick McConvell

INTRODUCTION

In prehistory, we do not have direct documentary evidence of migrations, but archaeology and linguistics may provide clues. Often there are material objects and traces (studied by archaeology) and languages or linguistic features (studied by diachronic linguistics) in one place which bear a resemblance to those in another place. One type of explanation of such a distribution is migration: people moved from one place to another and took their artefacts and styles of life and/or their languages with them.

In the history of both archaeology and linguistics, migration has been the dominant form of explanation of such patterns at various times in various places. However this has caused a reaction at various phases, and the sceptics about migration-driven explanation usually turn to one or other form of diffusion of traits as an alternative. In archaeology, trade is another way in which artefacts can be transported from place to place, and styles of production and life can also move from place to place without significant people-movement, either in association with trade or independently.

Languages can spread by migration of groups into unpopulated areas, or by driving out or, more rarely, exterminating indigenous populations. In such cases influence of other languages on the migrants' language may be minimal, and changes which the language of the migrants undergoes are driven by internal factors. Where migrants move into contact with or through other groups, aspects of languages can also be adopted by neighbours (such as loanwords) often in tandem with trade and diffusion of other cultural traits, in processes known as 'language contact' or 'adstrate influence'.

Adoption of whole languages without significant people movement is a more doubtful scenario, both in terms of theory and historical experience. But certainly whole groups of people can undergo 'language shift' to a migrant language when exposed to relatively small numbers of migrants, under the right conditions (Figure 1a). This is

often thought of as a consequence of invasion and ‘elite dominance’ militarily and politically by the newcomers. The adoption by a central European group of the language Hungarian, which has its origins far to the east, is probably an example of this.¹ It occurs also between groups where power relations are not on the face of it so unequal, as in the ‘downstream spread’ cases to be discussed further below.

More frequently, migrant groups undergo language shift to the languages of the people among whom they come to live (Diagram 1b): this is the common case in recent historical migrations. Pakendorf also shows that some groups of Yakuts in Siberia shifted to Even when they moved into their area in prehistory.² Where language shift has occurred, historical linguistics can frequently detect what is called ‘substrate’ influence—aspects of the previous language spoken by the group continuing in the new language that they have adopted.

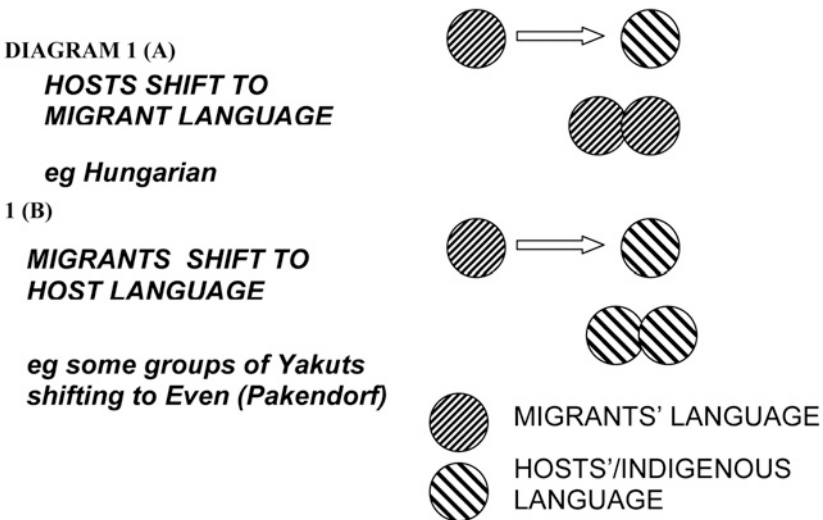


Figure 1a & 1b. Language Shift and Migration.

¹ Pakendorf (2005) for the Siberian cases cited here uses bio-genetics, specifically mitochondrial DNA, to establish whether language shift has occurred or not, and at least in clear and relatively recent cases, this is probably the most powerful tool we have at the moment. The fact that Hungarians are very similar to the peoples surrounding them genetically while speaking an unrelated language points to language shift having taken place based on a small migrant population (Sokal 1988).

² Pakendorf 2005.

Migrations without language shift—exceptions to the tendency for language shift in one direction or the other to accompany migration—include mass colonizations by people such as Europeans in the Americas, Australasia and Southern Africa, and a few exceptional cases of smaller groups of people retaining their old language for some generations, like some Romany groups, and the *Sprachinseln* (language islands) formed by groups which impose isolation and cultural conservatism on themselves, like the German Mennonites in America and Russia. Other Yakuts groups apart from the ones which shifted to Even retained their original language despite migrating. The absence of language shift is also characteristic of ‘upstream spread’ to be discussed later.

All the different processes of language spread and interaction described above involve an element of migration, and the different scenarios do have different linguistic ‘signatures’ which enable us to distinguish them in undocumented cases. These signatures are more clearly discernible where we can add archaeological and bio-genetic evidence to them. Spreads of language families often involve complex sequences of migration and language shift, but it is argued here that this is not random but displays a pattern, which is discussed under the heading of the ‘upstream-downstream’ model.

MIGRATION IN ARCHAEOLOGY

Adams et al. announced the ‘retreat from migrationism’ and Anthony bemoaned the fact that anti-migrationism and ‘immobilism’ had been dominant in archaeology for over two decades.³ By 1997 though, ‘banished’ migration could be said to have been ‘readmitted...to the wings’.⁴ Reviewing the position of migration in archaeology at the beginning of this century Burmeister remarks that in archaeology ‘migration is largely absent as an object of study’⁵ but this has been enacted in different ways in different traditions: in Britain and America

³ “Migrationism” is the notion that cultural change is generally linked to the migration of human populations. In the early twentieth century this view was commonly displaced by “diffusionism,” the notion that cultural patterns could spread and change independently of migration. Adams et al. 1978; Anthony 1990.

⁴ Chapman and Hamerow 1997a: 1.

⁵ Burmeister 2000: 539.

the predominant attitude has been blanket rejection of migration as an explanation, whereas in the German tradition migration has been the default explanation of similarities but without serious justification or theorisation of it. Burmeister calls for 'a method of establishing proof of migration and the expansion of the theoretical understanding of migration as an element of cultural behaviour'.⁶ Anthony in his comment on Burmeister says that these aims are already being addressed in what he calls 'new migration studies' and, referring to his earlier paper,⁷ that the 'role of migration studies has changed dramatically in the last ten years'.⁸ The beginnings of success in distinguishing between the evidence for migration and for cultural diffusion links to the notion supported in this paper that we need to develop robust characterisations of 'signatures'—characteristic patterns—of migration and of cultural diffusion in the interdisciplinary field of archaeology, linguistics and bio-genetics.⁹

'Immobilism' and 'anti-migrationism' was particularly strong in Australianist archaeology from the 1960's to the early 1990's, with major figures such as Richard Gould promoting the idea of cultural continuity and stability in the Western Desert for over 10,000 years.¹⁰ Nowadays this region is well recognised as having seen many changes, including in population and language, during that period,¹¹ although there is still resistance to embracing strong migrationist hypotheses.

Anthony states correctly, but contrary to the prevailing view in much of 20th century archaeology, that in prehistory and history 'Migration is not an exception but a constant'.¹² Much recent work in archaeology and in the interdisciplinary prehistory involving linguistics, such as Bellwood, has crucially involved notions of migration as the primary means by which languages spread.¹³

⁶ Idem: 540.

⁷ Anthony 1990.

⁸ Anthony 2000:554.

⁹ There has also been work on 'models of human colonization' deriving its impetus mainly from archaeology, which relates to prehistoric migration studies e.g. Moore and Campbell (2000).

¹⁰ Gould 1969.

¹¹ Smith 2005 and other papers in Veth, Smith & Hiscock eds. 2005.

¹² Anthony 1997:29.

¹³ Bellwood 2005.

MIGRATION IN LINGUISTICS

The view proposed here is that migration has been significant throughout Australian prehistory and is associated with the spreads of language families. This view is expressed here in terms of linguistic models of family trees and punctuated equilibrium.

The comparative method and language contact

The comparative method in diachronic linguistics has often been allied to migration scenarios. The model has as its central mechanism the differentiation of a proto-language into dialects and then into separate languages, which in their turn split into yet another language (Figure 2). Commonly this process is aligned with an expansion and dispersal of the speakers of the proto-language, although this is not strictly part of the model.

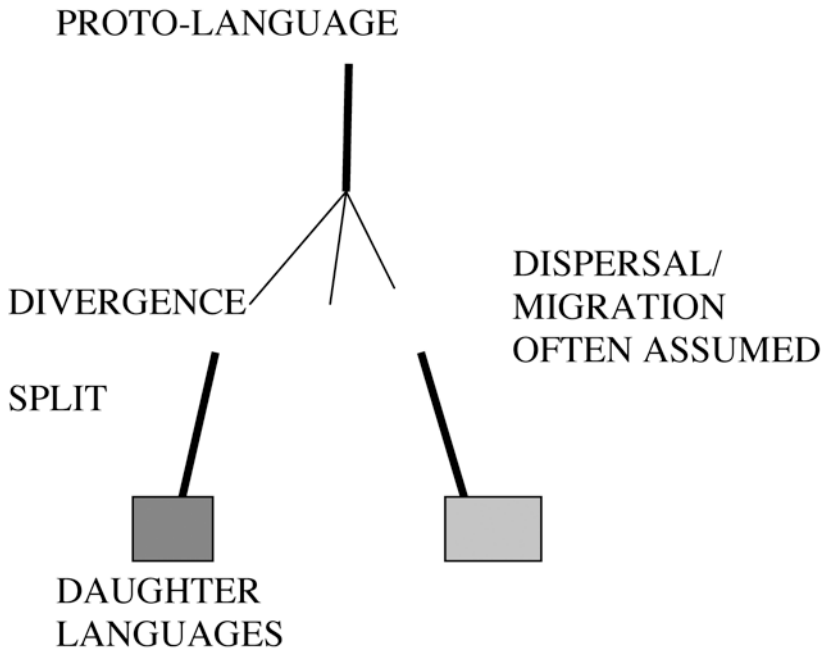


Figure 2. The Family Tree Model of Change in Linguistics.

The nature of the trees linguists can construct using such methods has also been thought valuable in forming hypotheses about where the homeland of the proto-language was and therefore where languages (and by inference the groups speaking them) travelled from there. For instance the idea, stemming from Sapir, that the area in which the greatest diversity of languages is found in a family or subgroup is probably close to the homeland, is still used frequently as a first approximation in such work, although in fact historical contingencies can render this method less useful in many cases. The fact that such theorising was called 'Migration Theory' gives an indication of how close the connection between language divergence and migration has been considered to be in linguistics.¹⁴

Another aspect of language spread, apart from divergence and dispersal, is that unless the expansion is into unoccupied territory, speakers of the expanding language will encounter speakers of other languages. There is usually some effect on the language of both the expanding group and the encountered group. This may involve

1. diffusion of some traits in one or both directions and/or
2. language shift on the part of one group to that of the other

Language shift has also been a major issue in recent work by archaeologists drawing on linguistic evidence. The leading studies¹⁵ have put forward a strong case that language spread and language shift are most strongly associated with the spread of farming. As Anthony points out this is often linked to an argument that the more intensive food production practices increase populations and produce numerical dominance, which triggers language shift on the part of the less intensive hunter-gatherers.¹⁶ This type of argument has also been used to support the idea that hunter-gathers with intensive foraging practices also outnumber and spread their languages to those who have less. A strictly demographic approach has been criticised by Anthony, who thinks that socio-cultural factors may play an independent additional role in triggering language shift: we return to this issue below in discussing marriage systems.

¹⁴ Dyen 1956.

¹⁵ Renfrew 1987; Bellwood 2005.

¹⁶ Anthony 1997: 27.

Despite the efforts of Anthony, archaeologists have drawn little on the various conceptual schemes involving social network theory in migration studies, but the inclusion of an article by Leslie and James Milroy in the book edited by Chapman and Hamerow was a significant attempt to introduce archaeologists to social network approaches in sociolinguistics. The Milroys stress the indexical functions of language differences in symbolising group identity and draw parallels with the analysis of the social-symbolic function of artefact styles by archaeologists.¹⁷ They point out the value of contemporary sociolinguistic studies of language variation and language shift as assisting in understanding prehistoric situations. Alongside the ideas of language divergence (discussed above in relation to the comparative method) they stress the importance of instances of linguistic convergence and what is known as ‘focussing’, which are forms of language maintenance acting to counter divergence. Their hypothesis is that close-knit networks make for language maintenance, and loosening of close-knit ties makes for language change.¹⁸ This work can also be linked to other studies of linguistic convergence effects within migrant communities in recent historical times, such as koineisation (merger of dialects). The resultant *new* dialects¹⁹ or *immigrant koines*²⁰ include the Hindi/Bhojpuri varieties spoken in Fiji, Mauritius and South Africa, and New Zealand and Australian English,²¹ of which further below.

*Challenges and modifications of the family tree model:
Punctuated Equilibrium*

Punctuated equilibrium as applied to the field of diachronic linguistics by Dixon takes the view that the kind of divergence which is the basis for the family tree model in linguistics is only applicable to certain periods of ‘punctuation’.²² For much of prehistory, though, according to Dixon, the major force in language dynamics was not divergence but convergence through massive multidirectional diffusion of traits across large ‘linguistic areas’, which can be as wide as whole continents

¹⁷ Milroy and Milroy 1997:73.

¹⁸ Idem: 77.

¹⁹ Trudgill 1986.

²⁰ Siegel 1985:364; Kerswill 2002.

²¹ Trudgill 2004.

²² Dixon 1999, 2002.

in the case of Australia. Such has been the effect of such diffusion and convergence that language families which might have been formed much earlier on are no longer discernible in the data, according to this hypothesis—Australia is adduced as a prime example. (Figure 3). The convergence scenario is associated with long periods of lack of significant migration.

For Australia, most historical linguists disagree with this picture and believe that there is strong evidence for language families of the classic type, including very large ones like Pama-Nyungan which covers a large part of Australia except for the central north. While diffusion is clearly at work,²³ as elsewhere, many linguists believe that its effect has been overstated by Dixon and some others.²⁴ As to the incidence of migration internally in Australia, this is still to be investigated empirically

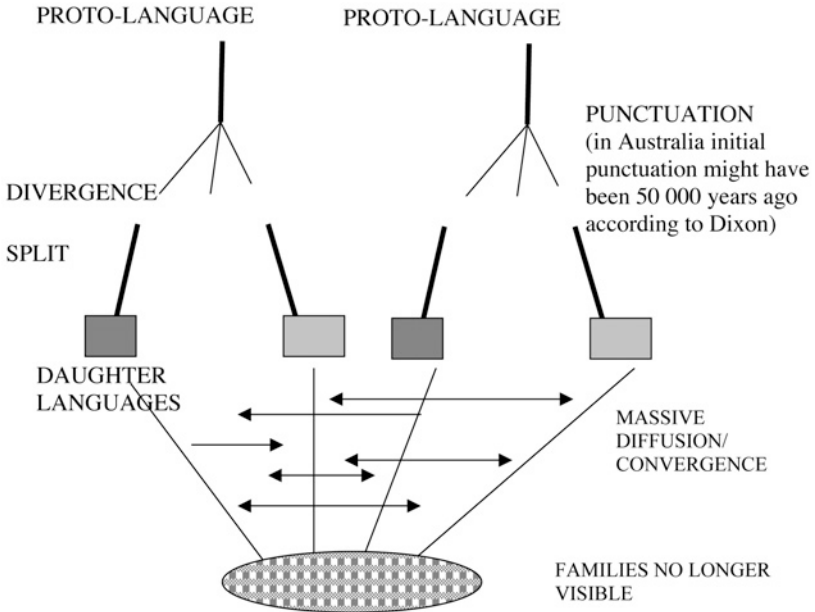


Figure 3. Punctuated Equilibrium Hypothesis.

²³ Heath 1981, 1984.

²⁴ Alpher 2005; Evans and Mason 2005; Bowern 2006.

by a combination of evidence from bio-genetics, archaeology and linguistics.

Renfrew seems to accept Dixon's characterization of the Pama-Nyungan family in Australia as formed by areal convergence and places a lot of weight on that in his latest revised model of Indo-European spread.²⁵ In fact most Australianist linguists believe that Pama-Nyungan is a language family formed by divergence as others elsewhere.²⁶ Clendon also develops convergence-based ideas for Australia,²⁷ but comments in the debate following the article²⁸ are critical of his approach. Note that it is not argued here that linguistic convergence never occurs, for instance between dialects, during some phases of divergence, and this is for instance what Garrett argues for some parts of early Indo-European.²⁹ Later the sociolinguistic situations which may underlie some level of resistance to divergence and even convergence during some phases of migration and language spread are discussed.

Hunter-gatherers and farmers

Bellwood provides cogent evidence for language expansion associated with farming dispersal.³⁰ There is a tendency for some writers to claim that the demographic profiles and migration behaviours of hunter-gatherers were very different from those of farmers and pastoralists. The position that the 'Neolithic Revolution' brought about a great change in the way people related to land, and the behaviour of languages, is most explicit in the work of Nettle.³¹ A similar set of ideas which influenced Nettle but was originally not so explicitly linked to the hunter-gatherer/food-producer divide is the 'punctuated equilibrium' framework of Dixon, discussed above.³² There is certainly a great deal of evidence that hunter-gatherers have led migrations that have spread large language families, throughout the world, but relatively little attention has been given to these.³³

²⁵ Renfrew 2003:20.

²⁶ Bowern & Koch 2004, Evans 2005; Alpher 2005.

²⁷ Clendon 2006.

²⁸ Including McConvell 2006.

²⁹ Garrett 2006.

³⁰ Bellwood 2005.

³¹ Nettle 1999.

³² Dixon 1997.

³³ See papers in Güldemann, McConvell and Rhodes forthcoming.

LANGUAGE SPREAD

Spread zones and the Upstream-downstream model

Nichols has developed a notion of 'spread zones' for areas in which successive language spreads take place.³⁴ McConvell has combined this idea with that of the 'pulsating heart',³⁵ which Sutton applies to Australia,³⁶ to yield a model of language spread applied initially to Australia. More recently Hill has applied the model to North American hunter-gatherer language spreads with some success.³⁷

Upstream spreads are those in which groups spread into lightly populated corridors, usually in the arid inland. These groups are highly mobile and, in the case of Australia at least, take advantage of a smaller and lighter tool kit. They interact with others from the original offshoot group but not greatly with others outside the corridor, at least initially. Their language is spread by movement of speakers and changes rather slowly with norms being reinforced by high levels of interaction with same language speakers and low levels of pressure from other languages.

After expanding through such corridors, the same groups can enter a downstream phase, where they interact with people in richer environments outside the corridor. This interaction may involve violence and raiding, in combination with intermarriage and ritual alliance. While some movement of people is involved in this phase, language spread is also a result of language shift by the people on the corridor margin to that of those in the corridor to a much greater extent, including the adoption of the new language by children of mixed marriages.

Many writers have called attention to the wide extent of range, particularly of hunter-gatherer groups, in relatively arid zones. Nichols distinguishes between 'locus' (a focal area, which could be equivalent to the initial upstream expansion area) and 'range', a broader zone travelled and used by speakers of a language. The range expands along an internal 'corridor' relatively devoid of other groups.

³⁴ Nichols 1992, 1998.

³⁵ McConvell 1996, 2000; McConvell & Evans 1997; Evans and McConvell 1998.

³⁶ Sutton 1990.

³⁷ Hill 2002. Hill (forthcoming) applies the hypothesis to two branches of the Uto-Aztecan family, Takic and Numic and finds some that some predictions of the hypothesis apparently do not work for these branches. See further below for discussion.

One aspect of this range in its early stages at least could be that it maintains a relative homogeneity of language despite its extensive size. One possible explanation for this is the maintenance of quite dense ties (including kinship, marriage and quasi-kinship) between people in the range. This grouping also impinges very little on any other groups and languages and is thus little affected by language contact influence.

The following diagrams depict a typical sequence which may be followed in language spread, modelled on a situation like Australia with an arid inland and relatively wet and fertile nearer the coast in many areas. In initial upstream spread a segment of a group on the edge of the more fertile belt ventures further into the inland and begins too establish a more far-reaching range (Figure 4–5). Figure 6 shows what is proposed to be the typical situation of groups in an upstream phase, with high mobility in the expanding corridor and maintenance of dense networks. Figure 7 pictures a downstream spread back into the fertile belt, with language shift on the part of those resident in the fertile belt playing a part.

*Genetic, linguistic and archaeological signatures of
upstream and downstream*

The two phases should produce distinctive bio-genetic signatures. Upstream phases will continue the features of the homeland population with perhaps some ‘founder’ bottleneck effect if the numbers of the migrants are relatively small. There will be a sharp bio-genetic division between these upstream people and those outside the corridor in the downstream area, except that there will be some closer connections with the people of the origin area if their descendants are still there.

On the other hand the downstream phase involves high levels of intermarriage and language shift on the part of the resident population, so those outside the corridor in the downstream periphery may switch to a new language but will continue the bio-genetic features of the resident population with some admixture from the corridor upstream population.

In linguistics, an upstream phase generally involves no language shift and little contact with other languages, since it is similar to ‘initial colonization’, as it is assumed that the area into which the migrant speakers are moving is sparsely populated. Language change is internally

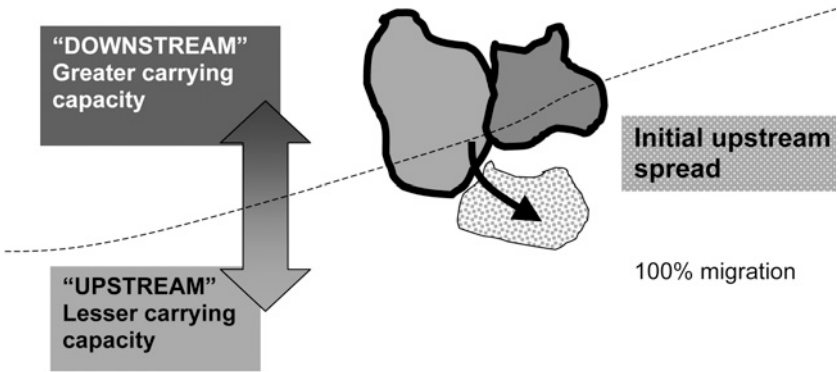


Figure 4. Initial Upstream Spread.

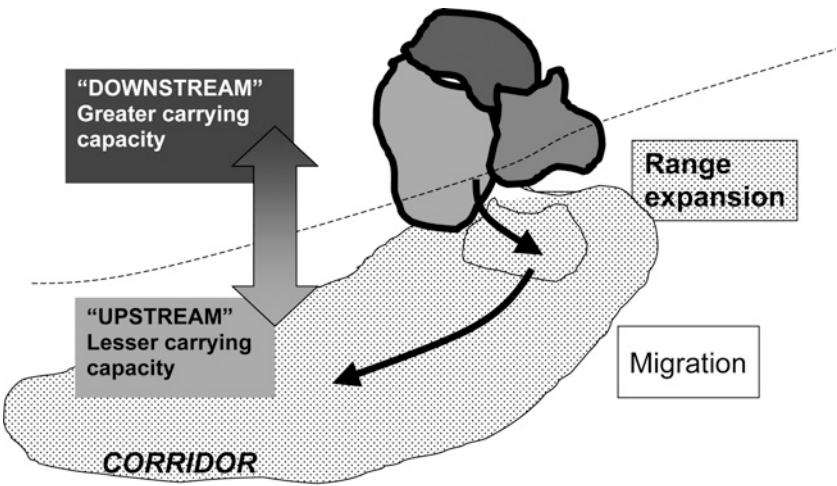


Figure 5. Range Expansion.

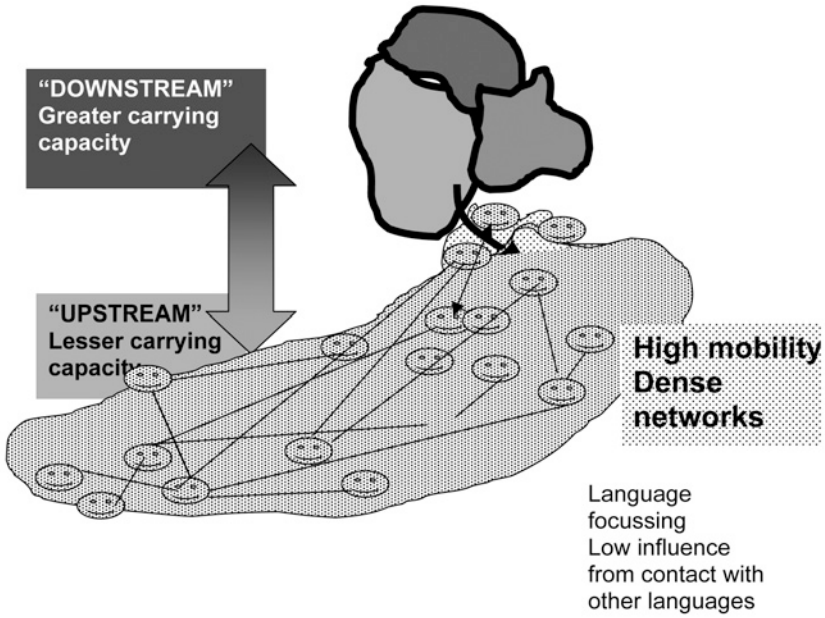


Figure 6. High mobility, Dense networks.

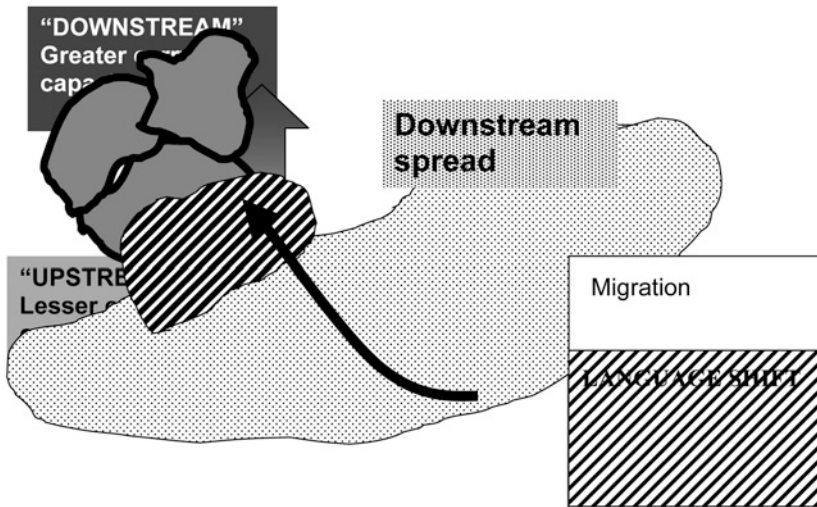


Figure 7. Downstream spread.

motivated, and this should be capable of being distinguished in most cases from contact-induced change. For instance there is more likelihood that meanings of environmental vocabulary will change, or new terms be coined, as people move into new ecological zones, since the option of borrowing terms from neighbours is less available.³⁸ Further the idea is being considered in this paper that this phase can also involve homogenisation or convergence of differences which may have been present in the initial upstream-migrant group, and/or resistance to development of differences.

The downstream phase will be distinctively different in its linguistic consequences. Innovations will proliferate both from direct influence of the contact of languages in the downstream zone and the breaking of networks which tended to maintain homogeneity in the upstream phase. Environmental vocabulary will be borrowed from the newly encountered groups living in the downstream zones, often massively, rather than change in meanings of terms, and cultural vocabulary will also be borrowed, either supplanting or supplementing existing terms.

The downstream phase not only involves borrowing of vocabulary and some grammatical features because people are interacting and becoming proficient in each other's languages, but also, according to the hypothesis, involves language shift. This may be language shift of the upstream people to the downstream people's language (migrants adopting host language) but also language shift of the downstream people to the language of the incoming upstream people (hosts adopting migrant language). Since this is not, in Australia or in many other situations, a case of 'elite dominance' as usually understood, the social dynamics of the latter case has to be a focus of scrutiny. Judging from Australia, at least at some periods there are elements of violence involved with the upstream people raiding the downstream people, often to take away women and children. However a more peaceful and regularised form of marriage exchange may evolve in which upstream men may acquire multiple wives from among the downstream people and impose the use of their language on the children of such unions. It may be the case that prestige of the ritual of the upstream people and along with it their language also reinforces this pattern leading to language shift.

³⁸ McConvell, forthcoming b.

In the last twenty years especially a lot more attention has been given to different patterns of language and social interaction by historical linguists, including the specific outcomes of language shift versus other less radical contact episodes. A watershed was the publication of Thomason and Kaufman, where language shift was said to involve 'imperfect learning' of the target language in many cases.³⁹ Although they discuss the difficulty of distinguishing between shift (substratum) outcomes and borrowing without shift, they do point out that the influence of the substratum language in shift will be particularly strong in phonology, syntax and lexical semantics.⁴⁰

Archaeologically, the upstream phase is likely to show an adaptation to greater mobility and scarcer resources. In Australia the correlates are a lighter-weight more streamlined tool-kit. Greater reliance on more reliable but more labour intensive strategies such as seed-grinding seems to be also associated with this change of lifestyle. The downstream phase will show a partial readaptation to the less mobile life of the downstream residents and to some extent their technology, but elements of the technology used in the upstream phase may be retained.

Additionally oral histories or legendary stories of migrations and interactions of groups in the past can also be useful in reconstructing prehistory. While anthropologists have often tended to be sceptical of the reality of the episodes described, and ascribed symbolic meanings to them having more to do with recent political realities than actual past events, they are still likely to be grounded in actual events and are a legitimate source of evidence about prehistory.

Pama-Nyungan: upstream and downstream phases

The Pama-Nyungan language family (PN) includes the languages throughout about 80 percent of the Australian continent, except for the tropical central north where a number of other smaller Non-Pama-Nyungan language families are located.

PN is a large and complex grouping which is no doubt the result of a cumulation of language expansions over several thousand years mainly in the mid-Holocene, but continuing until more recent times.

³⁹ Thomason and Kaufman 1988.

⁴⁰ *Idem*: 50; 119.

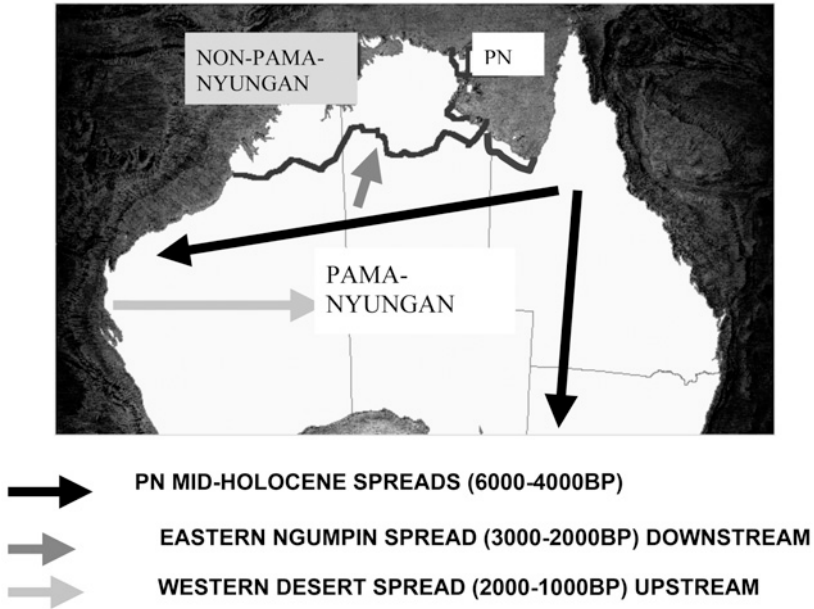


Figure 8. Pama-Nyungan.

The main point to be made here is that the component spreads are not all of the same type, but include both upstream and downstream spreads.

Earlier genetic studies showed a correlation between genetic profile and the PN-NPN divide indicating that there is a significant migration component to PN spread. Moving on to recent Y-chromosome studies, Kayser et al. also report that ‘the high frequency of the DYS390.1del/RPS4Y711T haplotype in Australians can be explained by a population expansion in Australia that started about 3700 years ago in a few hundred individuals [a figure of about 4700 years ago is also yielded by another study].⁴¹ They also note that this is in ‘remarkably good agreement with archaeological evidence for a mid-Holocene ‘intensification’ in Australian prehistory beginning ~4000 years ago’.

⁴¹ Kayser et al. 2001:185.

Van Holst Pellekaan et al. point to different characteristics of the mitochondrial DNA of two populations which they call AD (Australian Desert, based on samples from Warlpiri people) and AR (Australian Riverine, around the Darling/upper Murray in New South Wales),⁴² and this is supported by more recent studies.⁴³ The first group, AD, are Pama-Nyungan speakers and of a group within an 'upstream' migration as discussed below. The second group are also Pama-Nyungan speakers but one of the components (Paakintji) is a riverine group whose language diverges from other PN languages. Internal differences in this sample group seem to reflect less and more of the 'desert' component.⁴⁴ An interpretation of this could be that in the case of the Murray-Darling peoples, their adoption of Pama-Nyungan came about through a 'downstream' spread in which language shift played a dominant role, allowing strong retention of original genetic patterns, as well as linguistically some quite heavy interference from substrate languages.⁴⁵

In archaeology, as well as the evidence for 'intensification' in the mid-Holocene, the distribution of the 'backed artifacts' type of blade has a very good fit with the distribution of the PN family of languages; in the north where there are non-Pama-Nyungan languages a different type, the 'bifacial blade' is found. Backed artefacts are found in the north-east of Australia as early as the late Pleistocene, over 10,000 years ago and at sites around the east coast in the early Holocene, but the great proliferation of this tool type came across the east of the continent in the period 5000–4000 years ago and in the west somewhat later.⁴⁶ This chronology is very suggestive of a correlation with Pama-Nyungan expansion. Hiscock links this surge to the occupation of the interior due to the amelioration of the climate in the early-mid Holocene.⁴⁷ It is certainly not always the case that technologies spread with people, or with languages, but in this case this is a reasonable hypothesis.

⁴² Van Holst Pellekaan et al. 1998.

⁴³ Van Holst Pellekaan and Harding 2006.

⁴⁴ Van Holst Pellekaan et al. 1998, Pardoe 2003.

⁴⁵ Unlike in the north, there are no relic non-Pama-Nyungan languages (apart from Tasmanian, about which we know very little) so it is more difficult to substantiate a specific substratum hypothesis.

⁴⁶ Hiscock and Attenbrow 2005.

⁴⁷ Hiscock 2002.

As Jones remarks ‘there is quite suggestive genetic, linguistic, and archeological evidence for a fairly recent (from about six thousand years ago) demic expansion’ in Australia.⁴⁸ The occupation of the inland in this main early phase of Pama-Nyungan expansion would have presumably been led by a series of ‘upstream’ migrations which are only sketchily represented by arrows on the figure 8. In what follows I will focus on two later spreads that form part of the general Pama-Nyungan spread in the late Holocene: the upstream spread of the occupation of the Western Desert by Wati speaking people; and the downstream spread of the Eastern Ngumpin languages into the Victoria River District of the Northern Territory. The characteristics of these two types of spreads will be illustrated by these two cases.

A downstream spread: Ngumpin-Yapa

The Ngumpin-Yapa subgroup of Pama-Nyungan is the northernmost subgroup in the central part of the family, in the western part of the Northern Territory and the north-eastern part of Western Australia (the southern Kimberleys). It abuts on to several non-Pama-Nyungan in the north. It has been shown to be a well-defined subgroup by the standard technique of identifying a bundle of shared innovations.⁴⁹

The southern languages of Ngumpin-Yapa (Yapa and Western Ngumpin) are found in the Tanami and Great Sandy Deserts, but the Eastern Ngumpin languages are found in the riverine areas north of the desert. They appear to be jutting up from the main body of Pama-Nyungan languages and intrude between two branches of a non-Pama-Nyungan family Mirndi.⁵⁰ This geographical scenario supports a hypothesis that the languages broke away and moved north from the southern Ngumpin-Yapa languages. This looks like a classic ‘downstream spread’. The timing of this move is uncertain but a combination of archaeological and linguistic evidence suggests between 3000 and 2000 years ago.⁵¹ Clarkson suggests that archaeological changes in the same area (Victoria River District) are related to the more extreme phase of the El Nino Southern Oscillation in the period 3500–2000

⁴⁸ Jones 2003.

⁴⁹ McConvell and Laughren 2004.

⁵⁰ Harvey 2008.

⁵¹ McConvell and Smith 2003.

years ago which led to less predictable and less abundant resources.⁵² Although Clarkson does not draw this conclusion, this climatic change could also lie behind the downstream spread of the Eastern Ngumpin languages north into the Victoria River District.

Linguistically the Eastern Ngumpin languages have innovated mainly under the influence of the neighbouring northern non-Pama-Nyungan languages. It seems likely that these effects are at least in part a result of non-Pama-Nyungan speakers shifting to Eastern Ngumpin—that is what is known as ‘substrate’ influence.

Around 40 percent of the vocabulary of Gurindjii, a central Eastern Ngumpin language, are loanwords from non-Pama-Nyungan northern neighbours. For instance the word for ‘meat, animal’ in Eastern Ngumpin is *ngarin*, a northern Jarragan loanword, whereas the word in Yapa and Western Ngumpin is *kuyu/kuyi*, an old Pama-Nyungan word for ‘fish’ originally, later ‘meat, animal’.⁵³ The proportion is higher in environmental domains, indicating that the need for new vocabulary in the new ecological zone was satisfied by borrowing as predicted in the ‘downstream’ phase. There are some loans in more ‘core’ domains such as body parts, but grammatical elements such as pronouns, demonstratives and inflecting verbs are not borrowed, and the systems of nominal and verbal inflection in the neighbouring Pama-Nyungan (Eastern Ngumpin) and non-Pama-Nyungan languages remain completely distinct.

In this area verbal concepts are expressed mostly by a combination of a non-inflecting ‘coverb’ element with an inflecting ‘light’ verb and the coverbs are heavily borrowed from non-Pama-Nyungan languages. This pattern of contact borrowing is found around the world where similar complex verbs are found and in the case of Eastern Ngumpin the existing ‘preverbs’ became more like their Non-Pama-Nyungan coverb counterparts in terms of syntactic position and behaviour, which facilitated borrowing. This can be taken as an example of syntactic influence of the substrate.⁵⁴

⁵² Clarkson 2007.

⁵³ McConvell 1997 and forthcoming b. Incidentally this continuation of the same root with a meaning changing with environmental factors is typical of the upstream spreads which drove much of Pama-Nyungan expansion and contrasts with the borrowing or substratum retention of *ngarin* in the Eastern Ngumpin downstream case (McConvell forthcoming a).

⁵⁴ Thomason and Kaufman 1988.

In phonology the Eastern Ngumpin languages underwent a sound change of lenition (a pattern in consonant shift) whereby words like *ngapa* ‘water’ became *ngawa*. This sound change appears to have originated in northern and western Jarragan languages (non-Pama-Nyungan) which were spoken in areas which subsequently became Eastern Ngumpin speaking, and are currently still spoken to the north-west of Eastern Ngumpin. Thomason and Kaufman emphasise the importance of phonological interference of the substrate.⁵⁵

While Thomason and Kaufman do not themselves adduce examples of lexical semantic influence of the substrate, they predict that this will be present. This is found in instances of where polysemy patterns—multiple meanings of a word—derive from the substratum, not from the original pattern in the language group. So for instance in the rest of the Ngumpin-Yapa subgroup the concepts ‘hill’ and ‘rock’ are expressed by the same word whereas in Eastern Ngumpin the words ‘head’ and ‘hill’ are expressed by the same word—a pattern also found in all the northern non-Pama-Nyungan neighbours.⁵⁶ Similarly in the rest of the Ngumpin-Yapa group and more widely among desert languages the words for ‘throw at’ and ‘grind’ are the same, but in Eastern Ngumpin this is not so—the polysemy is between ‘sharpen’ and ‘grind’ as in the northern Non-Pama-Nyungan languages.⁵⁷

This linguistic evidence is quite suggestive of a language shift having taken place. The bio-genetic evidence, which can be so helpful in deciding this issue, is not available in fine-grained enough detail to be of assistance for this area,⁵⁸ and archaeological work in the Victoria River District, while providing some incidental support for the model, is not specifically directed at such questions. Local legends are somewhat ambiguous on this point also. Several myths refer to groups of beings or men entering the Victoria River District from the south

⁵⁵ Ibidem.

⁵⁶ McConvell 2002.

⁵⁷ McConvell and Smith 2003. In this paper it is also suggested that extension and change in meaning of words occurs also in upstream spread, without language shift. The two types of change are different, however: the upstream case results from such phenomena as needing a term for something newly encountered and adapting existing vocabulary to that purpose, whereas the case in downstream shift involves substrate ethno-classification/semantic organisation.

⁵⁸ As noted earlier, there has been work on mitochondrial DNA for a sample taken from Warlpiri people who belong to the southern ‘upstream’ branch of Ngumpin-Yapa from whom the eastern Ngumpin split off, but there is no comparable sample from the Eastern Ngumpin speaking population available for study.

and fighting battles with indigenous groups, often named as local non-Pama-Nyungan groups such as Ngaliwurru, at points south of where these groups currently live. This could be interpreted as a scenario of driving the previous residents out. However other legends speak of the *Warlman* people coming north (*Warlmanpa* being the name of a Yapa desert dwelling group) and teaching new ceremonies to people as well as fighting, which implies accommodation and intermarriage, and thus probably language shift. Another important myth is that of the *Yawarlwarl* pigeon who quarrels with her sister over a grindstone used for grinding cereal seed and carries it north down the Victoria

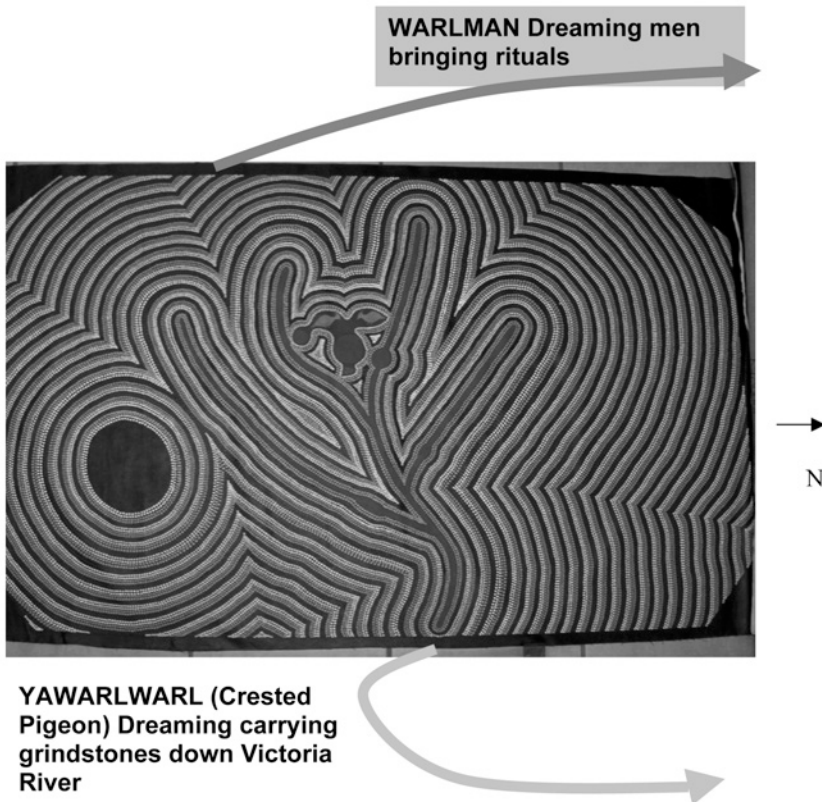


Figure 9. Painting (map) of *Kulungurru* (head of Victoria River District) by Spider Banjo.

River, finally letting it go at the point which marks the current boundary between Pama-Nyungan and non-Pama-Nyungan languages. This myth, illustrated by the painting by Spider Banjo in Figure 9 seems to refer to the extension of the seed-grinding economy to the north along with the Eastern Ngumpin.⁵⁹

An upstream spread: Western Desert

As mentioned earlier, the Western Desert of Australia, which covers a huge expanse of inland Australia has been the focus of hypotheses that the culture and people have changed little over the last 10,000 years. It is looking more and more likely that this is very far from a true picture. In fact major movements of people and changes in language and culture have gone on throughout the Holocene including in the last two millennia, and this is beginning to be recognised.

Linguists who come equipped with a standard training in comparative linguistics are likely to have come to this conclusion on the basis of the superficial picture of languages alone. The Western Desert is covered by over twenty closely related dialects, and people thousands of kilometres away from each other can understand each other. The first explanation that comes to mind is that this language spread over this area relatively recently, perhaps in the last millennium or so, and has not had time to diverge into separate languages. It is argued here that this is basically correct. The possibility of retardation of divergence and higher than usual levels of convergence in 'upstream' spread is also considered here (see below) but this could not provide a total alternative explanation of the similarities between forms of language throughout the Western Desert.

The main thrust of the spread of the Western Desert is an 'upstream' migration of people into an area which had been occupied from time to time since the Pleistocene but had been largely abandoned at the time that the Western Desert speakers began to recolonise it. Thus there is little interaction with other groups of people at least in the early stages of the expansion, and no language shift unless perhaps by small groups encountered. Later as the migrating Western Desert people encountered other groups at the edge of the desert, dif-

⁵⁹ McConvell and Smith 2003.

ferent kinds of interaction occurred including ‘downstream’ spread. This includes borrowing of vocabulary from peripheral languages and probably cases of language shift to Western Desert language by speakers of some other languages.

The archaeology shows the increase in human activity at sites in the desert in the last 1500 years and particularly in the last 1000 years on the eastern side, which can be identified with the spread of the Western Desert language and its speakers.⁶⁰ Once again there is a notable correlation with climate change—the end of the severe El Niño Southern Oscillation (ENSO) variability, and increased and more predictable rainfall in the period from 1500 BEP which may have opened up the desert for migration and reoccupation. The bio-genetics shows a probable source of the Western Desert people as being in the western Pilbara, and this may be among Kartu-speaking people, whose languages may be the linguo-genetically closest to the Wati subgroup (Western Desert and Warnmarn). It also shows a striking ‘bow-wave’ pattern of genes, including that of tawny hair⁶¹ crossing the desert from west to east. At the eastern edge of the desert in Central Australia, where the Western Desert language abuts on to Arandic languages, there is a sharp discontinuity in the genetic clines called ‘the Aranda scarp’ by Birdsell.⁶² This indicates a recent meeting up of the desert and Central Australia groups which Birdsell estimates as taking place about between 500 and 1250 years ago, but favoring the older date, which we now know is similar to what archaeological evidence is telling us about new activity in the eastern Western Desert.⁶³ These are signatures of a migration episode.⁶⁴

Aside from some innovations at the periphery the linguistic prediction in such a case of ‘upstream’ migration is that there will not be a great deal of innovation and indeed central Western Desert dialects do appear generally conservative phonologically, and syntactically.

⁶⁰ McConvell 1996, Smith 2005.

⁶¹ Birdsell 1993:196.

⁶² *Ibidem*: 453.

⁶³ *Ibidem*: 454.

⁶⁴ Birdsell (1993:453) cites a different hypothesis, from Stephen Wurm, about the migration which produced this pattern—that of Arandic people migrating from the north-east. While it may be that such a migration did occur it was probably much earlier and is not the reason for the observed pattern.

NORTH AMERICAN LANGUAGE SPREADS WHICH ARE LARGELY
UPSTREAM (MIGRATIONS)

Athabaskan

Athabaskan is a widespread family of languages with its heartland in north-western Canada and south-eastern Alaska, but with a number of offshoots far to the south, with pockets along the west coast of the USA and a large grouping of Apachean languages in the mid-west extending in recent times to the south-west. It has usually been considered quite separate from other Amerindian families, forming a separate phylum in Greenberg's scheme;⁶⁵ it is assumed to have arrived from Siberia later than the bulk of Amerindian languages but before Eskimo. Evidence showing quite plausible detailed connections between Na-Dene (Athabaskan-Eyak-Tlingit) and the Yeniseic Siberian language Ket have recently been presented,⁶⁶ but we will not be concerned with the early out-of-Asia phase of migration here.

According to Ives,⁶⁷ the Athabaskan proto-language would have been spoken in north-western Canada around 3000–3500 years ago, expanded inland and to the south through western Canada around 1900 years ago, and on a broad front through the prairies with outliers nearer the coast around 1250 years ago. The latter expansion was quite rapid and was fuelled in large part by the specialisation of southern Athabaskan groups as buffalo (bison) hunters. By 600 years ago the Athabaskan hunters had left these areas or been locally absorbed, leaving only a few isolated pockets still speaking related languages. The Apachean subgroups continued moving south where they are represented by groups such as the Navaho.

Jane Hill writes that early movements of the Athabaskans, including the move into Oregon and California, probably took place at the expense of autochthonous groups, and may have involved some technological advantage, probably the use of the bow and arrow.⁶⁸ Other movements, especially the migration of the Apacheans, probably involved movement through territories that had been depopulated by

⁶⁵ Greenberg 1987.

⁶⁶ Vajda 2008.

⁶⁷ Ives 2002; Ives & Rice forthcoming.

⁶⁸ Hill 2002.

drought. Where we have evidence for possible language shifts, this is consistent with the Evans and McConvell proposals.⁶⁹

Admixture of genes from the north and east seems to support the idea, however, that 'downstream' language shift could have been involved in the earlier stages of migration,⁷⁰ while the later stages of the migration of Apacheans into the south-west initially seemed to support an 'upstream' spread without language shift. There is however evidence that mitochondrial DNA (which is passed down the female line) from non-Athabaskan neighbours also came into Apachean groups in the south-west, but did not move in the opposite direction.⁷¹ Inter-marriage between these groups has been rare in recent times as the matrilineal clan system tends strongly to promote endogamy within the language/ethnic group, but Hunley and Long proposed that these constraints were looser at some period closer to the arrival of the Athabaskans in the south-west. This evidence does seem compatible with an earlier phase (before Apachean social and linguistic boundaries became nearly impermeable) of some language shift, in the sense at least of children of marriage with non-Apachean women growing up speaking Apachean languages.

Linguistic evidence for Apachean migration was drawn from changes in meaning of vocabulary in an early classic article by Sapir.⁷² He compares meanings of words in Navaho and Apache with cognates in Canadian and Californian branches of Athabaskan. In many cases the meaning has shifted to accommodate the new situation—e.g. new plants used for different functions, and farming practices. A root meaning 'animal's horn' in the north (and retained in Apache with that meaning) was used in compounds meaning 'spoon' since horns were crafted into spoons. The Navaho word for 'gourd', a plant not found in the northern homelands or staging points of Athabaskan migration, is called by a reflex of this same 'horn' root. It is polysemous, also meaning 'gourd dipper or ladle'. The function of spooning provides the bridge between the old and new meanings. An expression in Navaho used in farming for 'seeds lying on the ground' is related to an old root meaning 'snow lying on the ground' in the northern languages. There seems to be a preference for adapting existing meanings

⁶⁹ Evans and McConvell 1998.

⁷⁰ Brown et al. 1998.

⁷¹ Hunley and Long 2005.

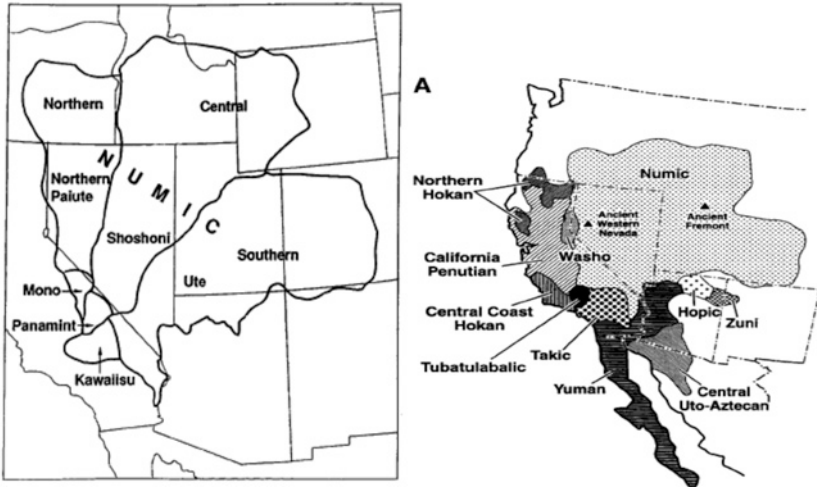
⁷² Sapir 1936/1949:214 ff.

to new meanings as opposed to borrowing words from neighbours, which may relate to the 'upstream' nature of the the main southern thrust of the Athabaskan spread.

Numic

Numic is a northern branch of Uto-Aztecian, found in the deserts of the Great Basin. Unlike other branches of Uto-Aztecian, most Numic speakers were hunter-gatherers. A number of scholars regard these groups as being in the lead of an expansion of hunter-gatherers, who were not converted to farming. Hill however had argued strongly that they were once farmers, some of whom 'reverted' to foraging when they entered the arid environments where they lived.⁷³

Numic divides up into three branches which appear to 'fan out' from the south-west, as in Figure 10, and the weight of evidence does appear to support the idea that this is indeed what they did, historically. This expansion of Numic has been the object of intensive



Distribution of modern Numic languages at contact. After Madsen and Rhode (1994).

Source: Kaestle & Smith 2001

Figure 10. Numic.

⁷³ Hill 2003.

interdisciplinary enquiry probably equal to any devoted to any group, certainly to any group of hunter-gatherers.⁷⁴

More recently, mitochondrial DNA evidence has shown that the expansion of the languages and cultures was largely also a migration or migrations of new people, not just a diffusion via language and culture shift.⁷⁵ The source of the new genes in the Numic zone was in the south-west (California), confirming the 'traditional' view of the origin of the Numa.⁷⁶

Hill argues that the evidence from this area does not support some of the predictions of the 'upstream-downstream' model. In particular there is no significant difference in the amount of innovations in Numic, which looks like an 'upstream' migration episode, as opposed to Takic which has much more the appearance of a 'downstream' incursion into the Californian 'accretion zone' and may have involved more language shift.⁷⁷

But while the genetic evidence probably supports a migration scenario for Numic, there is some doubt about whether the Numic spread was as free of involvement with resident populations in the initial occupation of the desert as Western Desert speakers were in Australia. As Madsen writes, according to archaeological evidence 'two populations with technologically distinct tool kits [hunter-gatherers, probably Numic speakers and farmers, probably non-Numic] co-existed; one may eventually have absorbed remnant elements of the other,⁷⁸ but one could not have *become* the other'. If, as the genetic evidence appears to show, there was little language shift to Numic in the desert, we come back to the question of whether we can tell the difference between shift (substratum) influence (possibly the case in Takic) and heavy borrowing (presumably what occurred in Numic) from the linguistics alone. As noted above, Thomason and Kaufman did single out areas which are more heavily affected in shift (phonology, syntax and lexical meaning), and further research might home in on discovering in more detail what are the characteristic linguistic signatures of shift.⁷⁹

⁷⁴ See the papers in Madsen and Rhode 1994.

⁷⁵ Kaestle and Smith 2001.

⁷⁶ Madsen & Rhode 1994:214. The conclusions of Kaestle & Smith have been cast into some doubt by more recent work using a more sophisticated type of simulation by a team including Kaestle (Cabana, Hunley & Kaestle 2008).

⁷⁷ Hill (forthcoming).

⁷⁸ Madsen 1994:29.

⁷⁹ Hill (forthcoming) also uses measures of how 'marked' (unusual) typologically the Takic and Numic languages are to test the upstream-downstream hypothesis.

CONVERGENCE IN UPSTREAM SPREAD

Retardation of linguistic change and dialect levelling

The idea that language change happens more slowly in colonised isolated outposts of migrants is well-known in linguistics because of cases like Icelandic where the rate of change in basic vocabulary over 1000 years has been calculated at 4 percent whereas that in Norwegian is around 20 percent.⁸⁰ It also appears to be the case that different dialects of languages spoken by migrant groups tend to become mixed and levelled at least where these groups are in unpopulated territories or are relatively isolated from any surrounding population socially, as illustrated below by dialect convergence among Australian white settlers. Migrants who are spreading into new areas under similar circumstances may maintain high levels of social relations between each other despite distance and be relatively slow to develop linguistic differences until and unless social divisions begin to appear, as appears to have occurred in the earlier stages of Polynesian expansion into the Pacific.

The same retardation of dialect and language differentiation, and even convergence, may occur in what has been called here 'upstream migration' as opposed to the relatively rapid innovation found in 'downstream migration' cases where there is substrate and adstrate contact influence coupled with breaking of social networks with the origin group in the upstream corridor. Finally in this section, the role of marriage patterns and networks in the 'upstream' and 'downstream' spread types and the transition between them is briefly considered.

Australian English dialect convergence

The example of development and maintenance of English dialect uniformity in settler Australia is cited as supporting the Milroys' hypothesis about 'focussing' but the situation here is characterised as that

This is presumably related to Thomason and Kaufman's argument that 'simplification' of language structures accompanies imperfect learning in language shift, (more characteristic of the downstream spread), which can be taken as meaning marked features are reduced, among other possible interpretations. On Thomason and Kaufman's own admission though, evidence of a correlation between 'simplification' and language shift is not particularly strong.

⁸⁰ Bergsland and Vogt 1962.

of ‘numerous weak ties’ rather than strong ties. Different explanations are offered by Bernard that the new dialect arose independently among working class children of the first generation born in the colonial towns;⁸¹ and by Horvath,⁸² who attributes convergence to the high mobility of the early settlers.⁸³

Polynesian: convergence and internal migration

According to Marck, Hage and Shutler after the Polynesian groups set out from the south-west Pacific around 3000 years ago, colonising islands as they went, the total population remained relatively low across the great range of their migration for hundreds of years. But they say

...the average person moved around a great deal...often simply to visit, find an eligible marriage partner and so forth.⁸⁴

This mobility and the importance of maintenance of inter-island networks while population was low and spouses of a sufficient genealogical distance were sought after, were the major factors in limiting divergence of dialects and preventing formation of separate languages.

However by around 2000 years ago the population had begun to rise significantly and marriage partners were easier to find on the same island or in nearby islands. As a result, languages in the different island groups became quite distinct. Language cohesion is a function of internal-migrant-years. As internal-migrant-years decline as a proportion of people’s lives when populations become larger and internal migration becomes less common on average, language cohesion declines.

⁸¹ Bernard 1969.

⁸² Horvath 1985.

⁸³ Collins 1989:16–17. Recent debate on the issue of colonial mixed dialects (Trudgill et al. 2008; Barrett et al forthcoming) has focussed on the issue of whether the process of mixing is automatic, arising from accommodation between speakers alone, and their frequency of interaction, or motivated by the formation of a sociolinguistic identity by speakers—an emergent ‘national identity’ in the case of settler Australia and similar situations. In these situations people typically immigrate from different locations with different dialects and congregate in one area. While this may have occurred in some places in prehistoric Australia, America, or the Pacific, it is not the typical situation in what is being called here ‘upstream spread’ so analogies can only apply to a limited extent.

⁸⁴ Marck et al. 2005.

There may be parallels here between the upstream phases of migration as in the Western Desert case in Australia where people were extremely mobile within the corridor, kept in touch with relations and contracted marriages with their own people (speakers of dialects of the same language) over very long distances. While social network size and language cohesion is claimed to be self-limiting in the Polynesian case by population increase, it is doubtful if the same applies in the typical upstream migration case in inland indigenous Australia, where population increase is generally severely limited by carrying-capacity of the land and unpredictability of rainfall. The option of further migration was available in some parts of the Pacific (e.g. in the colonisation of Aotearoa/New Zealand). In the case of upstream migration in Australia the main option for people suffering hardship in desert conditions and looking for a better life and new marriage partners was to move 'downstream' into touch with residents of the peripheral riverine areas.

Casting the marriage net

The discussion of the Polynesian case stresses the importance of availability of marriageable partners, given that most human groups avoid any suspicion of incest by trying to find partners who are genealogically remote. If the population is low as it was in the early Polynesian colonisation of the Pacific, and in the Western Desert, there is pressure to find distant spouses. In the Western Desert and similar situations this will heighten the importance of maintaining long-distance relations with speakers of the same language in the upstream corridor. As well as avoiding 'incest' this strategy provides other affinal ties which can be utilised in times of shortage or other problems in the home area. This may well add to 'language cohesion' as in the early Polynesia case. 'Marriage rules' which restrict possible marriage partners probably function to extend these networks, which are beneficial, but may also exacerbate difficulties of finding spouses especially when there is drought, lack of food and a small population pool.⁸⁵

This could be an important factor in turning people towards a 'downstream' solution. This may be accompanied in its early stages by upstream people raiding and 'stealing' wives from downstream

⁸⁵ See also White and Denham 2008.

people, and the formation of more regular marriage alliances with the downstream people can follow. This allows upstream people to forage in the downstream areas, and also to introduce some of their culture and ritual, encouraging shift to their language. However as the interaction with the downstream people becomes more intense, the networks linking those moving in on the downstream people to their upstream countrymen weaken and their languages diverge, especially as the 'imperfect learning' of that language takes effect through language shift.

It is likely that the kinship and marriage systems of the peoples involved are both moulded by these population dynamics and have an effect on them. As Jones notes:

... the *interaction* between kinship as a social institution and population processes like migration and diffusion may be a particularly rewarding topic for future investigation. For example, prehistorians commonly argue that demic expansions are driven by innovations in subsistence, especially domestication. But which groups spread and both when and how they did is sometimes a function not just of material technology but of social structure... Instead of kinship systems being passively carried along by population expansions and diffusion like neutral genetic polymorphisms, they may play an active role in these processes, which may in turn feed back to influence kinship.⁸⁶

This is not a topic which can be adequately covered in this paper. It may be noteworthy though, that in those cases which we have labelled 'upstream', similar changes in kinship and marriage systems occurred. In Numic and Western Desert, there is quite good evidence that a Kariera type of kinship and marriage system was the original one, but that this gave way to a system with less obvious emphasis on Dravidianate and Kariera characteristics. This kind of development is also paralleled in the development of 'Mackenzie Basin' systems from earlier Dravidianate systems in Athabaskan, again probably in situations of bands occupying difficult and sparsely populated peripheral terrain.⁸⁷

In the opposite kind of expansion (called 'downstream') kinship systems of an original Kariera type also adapt but in a different way

⁸⁶ Jones 2003.

⁸⁷ Ives 1990:350. Kariera/Dravidianate systems make a strong distinction between 'cross' and 'parallel' kin e.g. a cross-cousin like a mother's brother's daughter is not called a sister, but often a 'wife' or a special term, whereas a parallel cousin like a mother's sister's daughter is called a 'sister'. In the more poorly resourced zones where people migrated mentioned above, this strong distinction starts to break down.

than in the case of Western Desert, Numic or northern Athabaskan. Two kinds of change are found widely: (a) unilineal systems—Omaha or Crow; and (b) asymmetrical cousin marriage systems. While these are different they both have the functional effect of widening and dispersing alliances.⁸⁸ Arguably the second cousin marriage and Aranda system have a similar effect.

These are strategies which allow for successively deeper extension of marriage ties from the incoming migrants. Unlike in the upstream case of loosening the notion of cross-cousin marriage and associated terminology, here the idea is retained but the potential partners become more distant as certain options are eliminated.

CONCLUSIONS

Migration is only just re-emerging as a respectable concept in archaeology, especially in Australia. In linguistics, the central model of language divergence over time has been often associated with migration, and this has been less stigmatised than in archaeology, but nowadays is to some extent under the shadow of theoretical frameworks which emphasise equilibrium, convergence and stasis.

It is clear however that migration is the most important driving force in spreading languages and cultures in all eras, among hunter-gatherers as well as among farmers and pastoralists. There is often debate in discussions of language spread, between those who emphasise population replacement or displacement and those who emphasise language replacement (language shift on the part of a resident population when contacted by migrants). Both occur, often in complex combinations, and linguistic, archaeological and particularly recently bio-genetic research are assisting us to differentiate cases. For instance in this paper the occupation of the Western Desert of Australia by speakers of one language, and the expansion of Numic and Athabaskan in North America were largely carried out by migration without significant language shift by indigenes.

However this is not to say that language shift to migrant languages by residents is not important as a secondary peripheral affect following on migration. A model of language spread has been presented, in

⁸⁸ McConvell 2001, McConvell and Alpher 2002.

which ‘upstream’ spread is primarily purely by migration and ‘downstream’ spread at least partially by language shift.⁸⁹ The characteristics of these phases have been compared with other models of language differentiation and convergence, and examples are presented from Numic and Athabaskan in North America and Pama-Nyungan in Australia. The task of listing the distinctive signatures of these types of language spread, in genetics, linguistics and archaeology has begun.

Two issues which emerge from this model have been particularly highlighted

1. the apparent presence of a period of language expansion without significant divergence, which I have identified with the ‘upstream’ phase;
2. the role of marriage and related kinship systems in the termination of this phase and engagement with other groups in what I identify as the ‘downstream’ phase.

Similar concerns arise about issue 1 in the work of Jeff Marck and others on the pattern of Polynesian break up,⁹⁰ indicating that we are dealing here with a phenomenon which is not confined to hunter-gatherers or arid continental landscapes.

The issue of marriage patterns and the feedback between this and change in kinship systems and terminologies in these different situations is also raised, in this context. It is argued that not only do upstream groups look for spouses outside their own group in the downstream phase but that this affects the type of marriage rules used. Previously marriageable partners in a prescriptive system are rendered unmarriageable by various changes including Omaha skewing, which are traceable from linguistic evidence.⁹¹ Such changes cause increasing marriage dispersal in both the upstream and downstream populations leading ultimately to language shift.

The question of how to muster evidence to decide if the spread of a language or cultural traits was by migration or language shift, or some combination, is crucial to those studying prehistory. For many

⁸⁹ McConvell 2001.

⁹⁰ Marck et al. 2005.

⁹¹ “Omaha skewing” is a pattern in kinship terminology that identifies members of a person’s mother’s patrilineage by a single term across two or more adjacent generations.

of those studying historical or contemporary migration this is not so much of an issue, as the basic facts of the migration episodes are already known. What may be of more immediate relevance are the approaches developed by archaeologists and linguists to how linguistic and cultural change occurs and is propagated in and between groups. Here archaeolinguistic prehistory has drawn on contemporary sociolinguistics and anthropology including social network theory.

It is suggested that linguistic (and perhaps other cultural) maintenance and even internal dialect convergence, while not as significant as some ultra-diffusionists suggest, can play a role within some migrant groups at certain initial phases, which I have labelled 'upstream'. This possibility does however raise an issue that we need to attend to. In a case like the Western Desert, the similarity of language across a vast area has been explained here by the simple reasoning that it is a result of a *recent* migration. However another mechanism has also been discussed, that of linguistic maintenance, dialect mixing and convergence, which may operate in such cases to slow down change. In the case of the Western Desert the archaeological and bio-genetic evidence indicates that we are indeed looking at a recent migration, so if the maintenance/convergence factor has been active, it has not had a major effect. We do however need to carefully isolate and weigh up these two factors of divergence and convergence in language histories.

The issue of what social forces and feedback processes lead to the termination of the upstream migration phase, and the transition to a 'downstream' spread via language shift and associate linguistic divergence within the migrants' language is a broad one which may be studied in many contexts, not just among arid country hunter-gatherers, so has a more general interest for scholars of global migration. The issue of how these transitions relate to questions of endogamy and exogamy, types of marriage rules and types of kinship systems, similarly is surely a common issue for all.

PART IV

ANTHROPOLOGICAL APPROACHES

ANCIENT IMMIGRANTS: ARCHAEOLOGY AND MARITIME MIGRATIONS¹

Jon M. Erlandson

Our African Exodus was the greatest of all human journeys, a global endeavor that took our ancestors over every conceivable obstacle thrown up by nature. . . . It is a testimony to human resilience and resourcefulness that we overcame these hurdles in a few dozen millennia, leaving only a handful of ocean islands and the polar caps unconquered until recent times.²

INTRODUCTION

From early hominid movements out of Africa to the global diasporas of the last few centuries, migrations have played a fundamental role in human history. The spread of humans out of Africa into the previously unoccupied continents of Eurasia, Australia, and the Americas, then to other regions (the Pacific Islands, Iceland, Greenland, etc.), had major cultural and ecological impacts around the world. Ancient civilizations emerged, were challenged, and sometimes collapsed due to migrations and their far-ranging consequences. In some cases, the diseases or domesticates that accompanied migrating humans into their new homelands were responsible for some of the most devastating effects. Ultimately, the outcomes these societies engineered depended on a variety of factors, including the effectiveness of their leaders and the responses crafted to address societal challenges.

¹ Unless otherwise indicated, all dates in this paper are expressed in calendar years. I want to thank Patrick Manning, Leo Lucassen, and Jan Lucassen for encouraging me to write this chapter, their patience, and their editorial guidance. While researching and writing this paper I was supported by a Knight Professorship of Arts and Sciences from the University of Oregon, support that has allowed me to travel and explore avenues of research that might not otherwise have been available to me. Finally, over the years I have profited intellectually from discussions or collaborations with Geoff Bailey, Scott Fitzpatrick, Nic Flemming, Rob Foley, Doug Kennett, Marta Lahr, Madonna Moss, Mike Morwood, Torben Rick, Peter Underhill, David Yesner, and many others. Nonetheless, the contents of this paper are solely my responsibility.

² Stringer and McKie 1997:149.

Given the potentially profound effects of current and future migrations on modern geopolitical structures, it is imperative that we learn from the successes and failures of these ancient examples.³ Understanding the historical repercussions of ancient migrations, and the many cultural collisions and environmental problems that resulted from such movements is essential. With a history of hominid migrations spanning nearly two million years, however, reconstructing the environmental, technological, demographic, social, and economic contexts under which such demographic movements took place is a complex endeavor.

Clearly, a complete understanding of the history of human migrations cannot be limited to a single discipline.⁴ Today it requires the expertise of archaeologists, biological anthropologists, geneticists, geographers and geologists, historians, linguists, paleontologists, statisticians, and other scientists. Fortunately, scholars now have powerful and sophisticated tools with which to address past migration processes, including well-documented historical examples, comparative linguistic studies, analysis of DNA and other biological traits (blood proteins, skeletal morphology, etc.) from modern and ancient populations, detailed climatic and environmental records, and a variety of data generated by archaeologists.

In this paper, I examine several examples of how archaeology can illuminate our understanding of past human migrations, focusing on four maritime migrations that played an important role in human history over the past 100,000 years, the methods used to reconstruct the social, demographic, and ecological effects of such migrations, and the increasing importance of interdisciplinary collaboration in the study of human migration processes. My emphasis is on archaeological and anthropological examples of major coastal or maritime migrations that significantly expanded the geographic distribution of humans, with major repercussions for world history. These migrations include: (1) an early migration of anatomically modern humans (AMH, *Homo sapiens sapiens*) from eastern Africa along a hypothesized “southern dispersal route” that followed the south coast of Asia and resulted in the maritime colonization of greater Australia (a.k.a. Sahul) approximately 50,000 years ago; (2) an Upper Paleolithic movement of maritime

³ Diamond 2005.

⁴ See Manning 2006a.

peoples into the Ryukyu Islands and Japan that ultimately may have contributed to the peopling of the Americas; (3) a much later radiation of Austronesian and Polynesian peoples from Southeast Asia into the islands of remote Oceania; and (4) the movement of Viking and later European peoples to the far reaches of the globe. In examining these migrations, I show that many of the most important migrations of the past 100,000 years have been coastal or maritime in nature and that an early development of seaworthy boats had profound implications for human history. I also explore some of the fundamental methods and problems inherent in the archaeological study of human migrations, demonstrating that the most effective and comprehensive study of ancient migrations involves interdisciplinary approaches that use multiple and independent lines of evidence to reconstruct the past.

MIGRATION STUDIES IN ARCHAEOLOGY

As long as there have been philosophers and natural historians, scholars have been confronted with fundamental questions about where the human occupants of a region came from, when they first arrived, how they got there, and who they were related to. Once the antiquity of humanity and the basics of evolutionary theory were established, anthropologists, archaeologists, historians, and other scientists grappled with such questions. As knowledge of world cultures, their historical underpinnings, and the biological diversity of human populations accumulated, the answers to such questions grew increasingly detailed and sophisticated—if not always correct. As new methods were invented and applied to such questions, hypotheses or theories have been proposed, tested, and modified as needed.

Prior to the 1960s, archaeology was explicitly linked to history and invention, migration, and diffusion were the basic processes by which changes observed in archaeological cultures were explained. Most archaeologists relied on the 'direct historical approach' to reconstruct the culture history of an area, starting with ethnographic societies and projecting their more tangible cultural traits (technology, architecture, etc.) backward in time to understand their origins. When a discontinuity was identified—a distinctive artifact type, architectural feature, or a constellation of cultural traits in a given region—archaeologists often scanned the known world for similar artifacts, features, or traits. If similar manifestations were identified, sometimes across

vast distances of empty space (e.g., pyramids in Egypt and Meso-america), arrows were drawn suggesting that the two archaeological cultures were linked by migration. Some of the hypothesized connections were eventually proven, but numerous far-fetched connections stretched credulity to such an extent that the study of long-distance migration was marginalized by a generation of archaeologists who viewed it as non-explanatory. Interest shifted to explaining why demographic expansions took place, with population growth, environmental change, resource shortages, and social stress among the most popular archaeological explanations.

From the 1960s to the 1990s, due to the excesses of an earlier generation of archaeologists and amateurs that often invoked migration to explain superficial cultural traits or convergence, the study of long-distance migrations or contacts—especially maritime or trans-oceanic examples—was marginalized in anthropological archaeology. These changes were part of a broader intellectual movement, especially evident among American scholars, that archaeological research should be driven by anthropological, ecological, and evolutionary theory rather than explicitly historical approaches. These changes aggravated a deep and longstanding methodological and intellectual divide between ‘prehistoric’ archaeology and the more historically-based disciplines of classical and historical archaeology.⁵ Since many of the best-documented and most interesting migrations in human history took place during historical times, such division further peripheralized the study of migration processes in anthropological archaeology.

For decades, most anthropologists and archaeologists also believed that modern humans evolved from discrete regional populations of *Homo erectus* that had lived in Africa, Europe, and Asia for a million or more years. This model of “multiregional evolution” provided a long chronology for understanding the dispersal, development, and diversity of human cultures around the world. Within this framework, there was little reason for archaeologists to look for evidence of ancient human migrations within the Old World, at least until humans first colonized greater Australia, the Americas, and the Pacific Islands. In the 1980s, driven initially by genetic evidence later supported by archaeological and paleontological data, a very different model of later human evolution emerged—the Eve Hypothesis or Out of Africa theory. This new

⁵ See Lightfoot 1995.

theory, proposing that anatomically modern humans (*Homo sapiens sapiens*) arose in Africa roughly 200,000 years ago and spread rapidly around the world over the past 100,000 years—replacing our archaic hominid cousins—has contributed to the rejuvenation of archaeological, genetic, and interdisciplinary studies of human migration.⁶

THE ANTIQUITY OF BOATS, SEAFARING, AND MARITIME MIGRATIONS

Discoveries over the past few decades have also reinvigorated the archaeological study of fishing cultures, seafaring, and maritime migrations in human history. Historians have long recognized the significance of ships and maritime technologies in the demographic, economic, military, and political developments of the past several millennia. Until recently, however, most anthropologists and archaeologists believed that coastal adaptations, boats, and maritime migrations were very late developments in human history, limited to the last 10,000 to 15,000 years. In the late 1960s, two prominent anthropologists argued that:

During most of human history, water must have been a major physical and psychological barrier and the inability to cope with water is shown in the archaeological record by the absence of remains of fish, shellfish, or any object that required going deeply into water or using boats. There is no evidence that resources of river and sea were utilized until this late pre-agricultural period...for early man, water was a barrier and a danger, not a resource.⁷

Such interpretations were reiterated by numerous archaeologists and other scholars, including archaeological summaries of the history of seafaring, maritime peoples, and boats.⁸ Gamble listed the major habitats encountered by our hominid ancestors as they spread around the globe,⁹ for instance, none of which were marine or aquatic. How did *Homo erectus* migrate from Africa and to East Asia almost two million years ago without at least rudimentary abilities to cross water barriers, including rivers or narrow straits?

More recently, I have argued that aquatic capabilities, coastlines, and maritime migrations played a much more important role in human

⁶ See Stringer and McKie 1997; Wells 2002; Oppenheimer 2003.

⁷ Washburn and Lancaster 1968:294.

⁸ E.g., Bass 1972; Greenhill 1976; Johnstone 1980; Yesner 1987.

⁹ Gamble 1994.

prehistory than previously thought.¹⁰ Support for this idea came from Morwood's¹¹ discovery of 800,000 year old artifacts on the Southeast Asian island of Flores—apparently separated from the Asian mainland by the 10–20 km wide Lombok Strait even during glacial low-stands. The colonization of Flores by *Homo erectus* represents the earliest evidence for a hominid maritime migration and Bednarik interpreted the crossing of Lombok Strait as evidence that *Homo erectus* in Southeast Asia had offshore fishing and seafaring skills.¹²

Based on current evidence, however, the distribution of hominids in island Southeast Asia is limited to the same islands reached by land mammals (e.g., the primitive elephants known as stegodonts) with only limited oceanic dispersal capabilities.¹³ Hominids also do not appear to have made the additional voyages required to colonize New Guinea and Australia until some 750,000 years later and there is no clear evidence that *Homo erectus* or even archaic *Homo sapiens* crossed comparable water barriers such as the Straits of Gibraltar. Earlier hominids clearly had some aquatic foraging and dispersal skills (wading, swimming, simple flotation devices, etc.), but there is no evidence of true seafaring skills until AMH developed more sophisticated boat technologies.

ANATOMICALLY MODERN HUMANS, COASTAL ADAPTATIONS, AND EARLY SEAFARING

After two decades of vigorous and often rancorous debate,¹⁴ the Out of Africa theory—supported by a growing body of genetic (DNA), paleontological, and archaeological data—has attracted a general consensus of scholarly support. It proposes that anatomically modern humans evolved in Africa roughly 200,000 years ago, then spread around the globe during the last 100,000 years, replacing all archaic hominids in the Old World and colonizing Australia, the Americas, and many remote island groups for the first time in human history. It is not clear what enabled this phenomenal geographic expansion and demographic

¹⁰ Erlandson 2001; Erlandson and Fitzpatrick 2006; see also Bailey 2004; Manning 2006.

¹¹ Morwood et al. 1998, 1999.

¹² Bednarik 2001, 2003.

¹³ Michael Morwood, pers. comm., 2006.

¹⁴ Stringer and McKie 1997.

success of our species, but the appearance of AMH is associated with a number of behavioral changes and technological innovations during the Middle Stone Age and Upper Paleolithic that suggest greater intelligence, problem solving, and planning capabilities. These include: (1) a reliance on blade-based chipped stone technologies and the first appearance of formal bone, ground stone, weaving, ceramic, and other technologies; (2) the first widespread evidence for artistic and symbolic expression, including the regular use of red ochre, beads, and other ornaments; (3) considerably larger exchange and interaction networks; (4) the more diversified and intensive use of marine and other aquatic resources, including fish; and (5) the earliest evidence for planned maritime voyaging.¹⁵

There is archaeological evidence for shellfish collecting and simple aquatic foraging (scavenging, etc.) by earlier hominids,¹⁶ but the earliest evidence for more intensive and diversified aquatic foraging is found among Middle Stone Age peoples in Africa. Along the South African Coast, several Middle Stone Age shell middens have produced evidence for the mixed use of both terrestrial and marine resources.¹⁷ The latter include shellfish, seals, and penguins, but fish remains are rare in most sites. Bone points and fish bones have been found in 75,000 year old strata at Blombos Cave, however, and at the freshwater Katanda site in Zaire.¹⁸ The barbed and symmetrical Katanda harpoons, believed to be between 80,000 and 90,000 years old, represent a technological sophistication unrivalled by anything produced by archaic hominids. Shell beads and red ochre were also found in the 75,000 year old stratum at Blombos Cave,¹⁹ as well as sites in Morocco, Algeria, and Israel dated between about 80,000 and 135,000 years ago.²⁰ These ornaments are widely considered to be evidence for the appearance of “modern” human behavior and they suggest that AMH may have settled much of the African Coast by approximately 100,000 years ago. More intensive exploitation of aquatic foods may have provided a more diverse and stable resource base that fueled population growth and the expansion of AMH out of Africa.²¹

¹⁵ See McBrearty & Brooks 2000.

¹⁶ See Erlandson 2001.

¹⁷ Parkington 2003.

¹⁸ Yellen et al. 1995.

¹⁹ Henshilwood 2004.

²⁰ Bouzouggar et al. 2007; Vanhaeren et al. 2006.

²¹ Erlandson 2001; Lahr & Foley 1998:168.

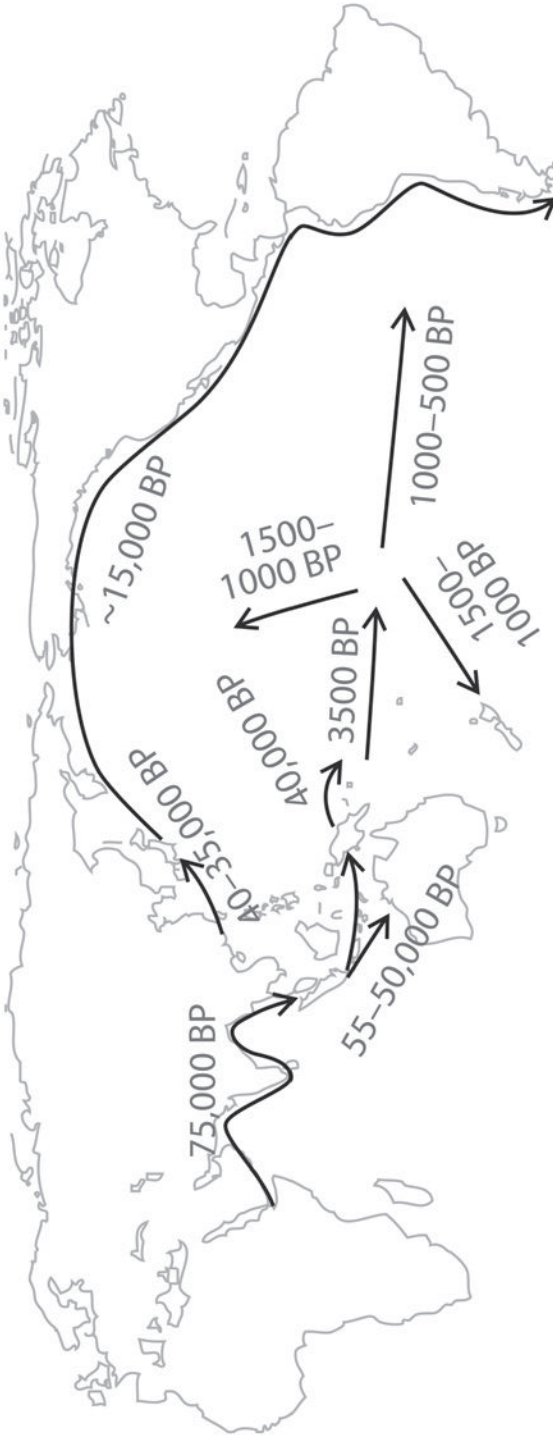


Figure 1. Major maritime migration corridors of Homo sapiens sapiens in the Indian and Pacific Oceans.

The movement of AMH out of Africa represents the beginning of the most momentous migration in human history, the initial steps in the spread of humans like us to the far reaches of the globe. The timing and dispersal routes involved in this series of migrations are not yet completely understood, but tremendous progress has been made by scientists in the past two decades. One of the earliest successful migration corridors involved in the migration of AMH out of Africa, sometimes referred to as the southern dispersal route (see map Figure 1), may have started from the Red Sea area in northeast Africa and followed the south coast of Asia eastward.²²

There is currently only limited archaeological evidence from south-central Asian coastlines to support this theory, but studies of DNA among living peoples of southern Asia provide some support for such a route²³ and the peopling of Island Southeast Asia, Australia, and New Guinea provides important supporting evidence that such a migration may have taken place.

FROM SUNDA TO SAHUL: SEAFARING AND THE SETTLEMENT OF GREATER AUSTRALIA

During glacial periods, the geography of Southeast Asia, New Guinea, and Australia was transformed as lower sea levels exposed broad expanses of now submerged continental shelves and connected many modern islands into larger land masses. Even in full glacial times, however, the larger landmasses known as Sunda (Southeast Asia) and Sahul (Australia, Tasmania, and New Guinea) were separated by a series of deep marine straits, with strong currents that form a major biogeographic barrier. Crossing from Sunda to Sahul through the islands of Southeast Asia was a formidable journey few terrestrial animals have successfully completed.

Prior to about 1970, archaeological evidence from Australia suggested that even humans did not reach Sahul until near the end of the Pleistocene—consistent with the idea that maritime adaptations and seafaring were very late developments in human history. In subsequent

²² See Bulbeck 2007; Lahr & Foley 1998; Mannino & Thomas 2002; Oppenheimer 2003; Stringer 2000.

²³ Endicott, Gilbert et al. 2003; Endicott, Macaulay et al. 2003; Macaulay et al. 2004; Oppenheimer 2003; Wells 2002.

decades, however, Australian archaeologists steadily pushed back the antiquity of the human colonization of Australia and New Guinea (and seafaring) to 33,000 years ago, then 40,000 years ago, and now 50,000 or more years ago.²⁴ The colonization of New Guinea and Australia required several separate sea crossings, including voyages of at least 80 km.²⁵

For a time, some scholars clung to the idea that the peopling of Australia was accomplished by accident. In the late 1980s, the discovery of several Pleistocene sites in the Bismarck and Solomon Islands of western Melanesia²⁶ laid to rest any doubts about the role of deliberate maritime voyaging in the peopling of Australia. Settlement of these islands, now dated to roughly 40,000 years ago,²⁷ added several substantial voyages to those required to reach Sahul. Some of these early Melanesian sites were located along shorelines with very steep bathymetry, so they remained near coastal habitats even when sea levels were considerably lower than today. Several of these sites contained shell middens with the marine shellfish and fish remains expected of maritime peoples. The Melanesian evidence also suggests that maritime voyaging capabilities improved between about 35,000 and 15,000 years ago. While the settlement of Sahul, New Britain, and New Ireland required voyages of up to 100 km, colonization of Buka in the Solomon Islands about 30,000 years ago required a minimum sea voyage of 140 km and possibly 175 km.²⁸ By roughly 20,000 years ago, Melanesian seafarers had also reached Manus Island in the Admiralty group, which required a voyage of 200–220 km, 60–90 km of which would have been completely out of sight of land.²⁹

Archaeological research on the islands between Sunda and Sahul continues to provide additional evidence for Late Pleistocene occupation by AMH, including shell middens in cave sites of East Timor dated to about 35,000 years ago.³⁰ Early sites have also been documented on

²⁴ See Bowler et al. 1970; Groube et al. 1986; Roberts et al. 1990; Turney et al. 2001.

²⁵ Irwin 1992.

²⁶ See Allen et al. 1989; Wickler & Spriggs 1988; Torrence et al. 2004.

²⁷ Allen and Kershaw 1996:185.

²⁸ Irwin 1992:20.

²⁹ Irwin 1992:21.

³⁰ O'Connor et al. 2002; Veth et al. 2005.

the Aru Islands,³¹ which were attached to the coastal margin of Sahul during periods of lower sea level.

Out of Asia, Into the Americas—By Sea?

Further evidence for Pleistocene seafaring by AMH in East Asia comes from Okinawa and the other Ryukyu Islands. The Ryukyus are located between Taiwan and Japan, both of which were connected to the Asian mainland during periods of significantly lower sea level. The Ryukyus are separated from Asia's continental shelf by deep oceanic straits, however, and have not been connected to the mainland in recent geological history. No Pleistocene shell middens are known from the Ryukyus, but the presence of humans clearly demonstrates that boats were used to reach the islands. On Okinawa, human bones were discovered beneath a charcoal-rich stratum in Yamashita-cho Cave dated to about 35,000 years ago. Human remains dated between about 29,000 and 17,000 years have also been found at Minotogawa and other limestone caves on Okinawa and the smaller islands of the Ryukyu chain.³² Several sea voyages were required to reach Okinawa from Japan, including one roughly 75 km long. At Pinza-abu Cave on Miyako Island, moreover, human bones found below a calcareous flowstone were associated with charcoal dated to about 29,000 years ago.³³ Reaching Miyako Island, from either Japan or Taiwan required several sea voyages of up to 150 km.³⁴

While the oldest shell middens in Japan are only about 10,000 years old, evidence for Pleistocene seafaring also comes from the island of Honshu in Japan. Here, Upper Paleolithic archaeological sites dated between about 25,000 and 20,000 years ago have produced artifacts made from obsidian found only on Kozushima Island, located approximately 50 km offshore.³⁵ The geographic extension of early seafaring capabilities into Japan is significant, in part, because it places competent mariners in the cool waters of the North Pacific during the Last Glacial Maximum, early enough for these maritime peoples to have

³¹ O'Connor et al. 2005.

³² Matsu'ura 1996.

³³ Matsu'ura 1996:187.

³⁴ Erlandson 2002.

³⁵ Oda 1990.

contributed to the initial colonization of the Americas.³⁶ From northern Japan, the Kurile Islands stretch northeastward like stepping stones to the Kamchatka Peninsula and the southern shores of Beringia. This northeast Asian coast is also an area of high linguistic diversity that Manning proposed as one of the major dispersal points for AMH.³⁷

It now seems likely that early seafaring peoples in Japan had the capabilities to follow a coastal pathway to the Americas. Whether they made such a journey is still unknown, and the evidence that could resolve the issue—like so many questions related to the evolution of early maritime adaptations—may lie submerged on the continental shelves of the North Pacific. Relying primarily on ecological data related to the potential productivity and distribution of Pacific Rim kelp forests just after the last glacial maximum, Erlandson, Graham et al. argued that the linearity, resource diversity, and ecological similarity of kelp forests may have provided a kind of “kelp highway” that facilitated a coastal migration of maritime peoples from Japan to the Americas (Figure 2).³⁸

A decade ago, most archaeologists probably would have argued that we knew with reasonable certainty when and how humans first entered the Americas. For most of the 20th century, the initial peopling of the Americas was viewed as a solely terrestrial migration, with hunters marching from northeast Asia and across the frigid plains of Beringia, through the fabled ice-free corridor, and into the heartland of North America. Most archaeologists believed that the first Americans arrived about 13,000 years ago and spread rapidly through uninhabited interior regions leaving scattered Clovis points, kill sites, and campsites to mark their presence. American coastlines—according to this story—were not systematically settled until several thousand years later, as large game animals were hunted out of interior regions and people were forced to adapt to the supposedly less productive coastal habitats and resources (shellfish, etc.). Thus, coastlines were largely irrelevant to the initial colonization of the New World and the early stages of cultural development in North America. This story fit comfortably in a larger body of anthropological theory that argued that seafaring and maritime adaptations developed relatively late in human history.

³⁶ Dixon 1999; Erlandson 1994, 2002; Fedje et al. 2004.

³⁷ Manning 2006:144.

³⁸ Erlandson, Graham et al. 2007.

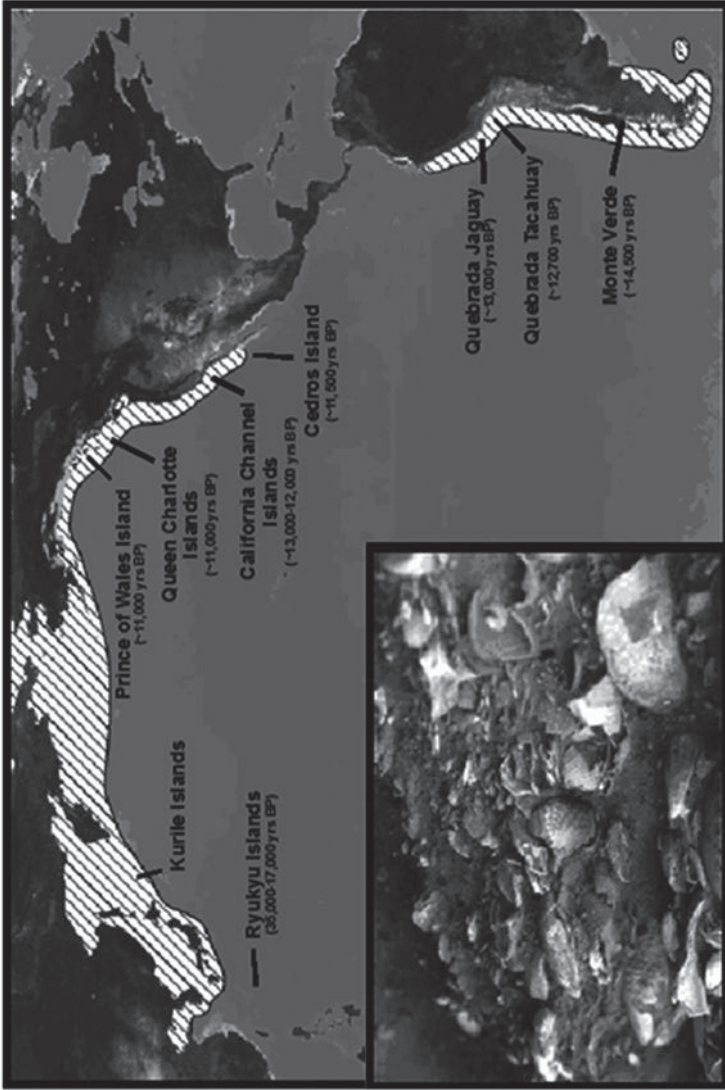


Figure 2. The “kelp highway:” modern distribution of kelp forest ecosystems around the North Pacific, showing the location and age in calendar years of early archaeological sites (adapted from Erlandson, Graham et al. 2007; original drafted by M. Graham; inset shows mussel, abalone, sea urchin shells from a shell midden on San Miguel Island, California).

An alternative, the Coastal Migration Theory, has existed on the margins of American archaeology for several decades.³⁹ Recent discoveries—including widespread acceptance of claims for a 14,500 year old archaeological site of Monte Verde near the coast of Chile—have propelled the coastal migration theory to the forefront of the debate about how and when the Americas were first colonized. Recent geological studies also suggest that the ice-free corridor may not have opened for a millennium after the purported occupation of Monte Verde. The Coastal Migration Theory has also gained credibility in recent years because of new evidence from early sites along the Pacific Coast of the Americas, including terminal Pleistocene sites on islands off Alta and Baja California.⁴⁰ If such an early coastal migration occurred, archaeological, genetic, and linguistic evidence suggest that it was one of several migrations that resulted in the peopling of the Americas.⁴¹ In the last decade, however, the emergence of the Coastal Migration Theory as a viable alternative for the peopling of the Americas, has stimulated a new wave of interdisciplinary research aimed at a more thorough evaluation of the theory.

Austronesians, Polynesians, and the Pacific

As historic and impressive as the late Pleistocene maritime migrations of AMH were, they were limited to coastal waters or islands that could be reached via sea crossings of about 200 km or less. Significantly longer voyages, such as those that resulted in the settlement of the remote islands of the Pacific, Indian, and Atlantic oceans appear to have been limited to the Late Holocene, after about 4000 years ago. These longer oceanic voyages may have posed technological and logistical challenges that could not be overcome until more sophisticated boats were developed, along with the agricultural products needed to survive on more remote and biologically depauperate islands.

One of the best examples of such fully oceanic migration involves the dispersal of Austronesian-speaking peoples from Southeast Asia into many of the island archipelagos scattered through the vast expanses of the Indian and Pacific oceans. Here, in an area spanning almost half

³⁹ See Fladmark 1979.

⁴⁰ Des Lauriers 2006; Erlandson, Moss, et al. 2008; Johnson et al. 2002; Rick et al. 2001.

⁴¹ See Greenberg et al. 1986; Kemp et al. 2006; Manning 2006.

the globe—from Madagascar to Easter Island—linguistic and archaeological evidence has long identified signatures of one of the most amazing migrations in human history. Archaeologically, the details of this migration are best documented in the Pacific Islands, beginning with the migration of agricultural Lapita peoples from island Southeast Asia into Melanesia and western Polynesia.

The origin of these Austronesian-speaking peoples is still debated, but it probably involved maritime agriculturalists moving out of Southeast Asia between about 5,000 and 6,000 years ago.⁴² Archaeological and linguistic data suggest that one branch of Austronesians moved westward along the south coast of Asia and the east coast of Africa, traveling as far as Madagascar by about 2000 years ago. Beginning about 3500 years ago, another branch of the Austronesian migration settled the thousands of islands of Micronesia, including the Palau, Mariana, Caroline, Marshall, Kiribati, and Tuvalu islands. A third branch, marked by distinctive decorated ceramics (Figure 3) that are clearly connected historically, is known as the Lapita dispersal.

Lapita sites along the coasts of New Guinea, the Bismarck Archipelago, and the Solomon Islands have been dated between about 3500 and 3200 years ago.⁴³ Shortly thereafter, Lapita peoples began to colonize more distant island groups in Melanesia, first reaching the Santa Cruz Islands after a voyage of nearly 400 km, then to the Vanuatu Islands and New Caledonia. By about 3100 years ago, Lapita settlements had been established on the islands of Fiji, a remarkable journey that required sailing 850 km against the prevailing winds and currents.⁴⁴ Sailing still further east, Lapita peoples also settled Tonga, Samoa, and other Polynesian islands in the vicinity. Lapita sites are almost instantly recognized by the presence of their distinctive ceramics, but they include a wider range of diagnostic elements, including shell and stone adzes, shell fishhooks and ornaments, and the remains of domesticated pigs, dogs, and chickens.⁴⁵

At least a millennium later, after the loss of the distinctive Lapita and later proto-Polynesian ceramics, the appearance of fully Polynesian peoples is marked by a further migratory radiation that settled virtually every habitable island of remote Oceania between about CE 300

⁴² Kirch 1997:48.

⁴³ Kirch 2000:93.

⁴⁴ Kirch 2000:95.

⁴⁵ Kirch 1997. See also the chapter of Pawley in this volume.



Figure 3. A decorated Lapita potsherd, an “index artifact” diagnostic of the Austronesian expansion from New Guinea into Melanesia, and Western Polynesia between about 3500 and 3000 years ago (photo adapted from the Photographic Archive, Department of Anthropology, University of Auckland.).

and 1000. This rapid migration of Polynesian peoples throughout the Pacific included voyages of up to 2000 km and the settlement of some the most isolated islands on earth, including Hawai’i, New Zealand (Aetoroa), and Easter Island (Rapa Nui). Archaeological evidence supported by DNA data also shows that Polynesian peoples made contact with Andean peoples along the Pacific Coast of South America—roughly 3500 km from Rapa Nui—transmitting the Polynesian chicken to the Americas⁴⁶ and carrying the American sweet potato (*Ipomoea batatus*) and gourd (*Lagenaria* spp) back to Polynesia.⁴⁷ On linguistic

⁴⁶ Storey et al. 2007.

⁴⁷ Kirch 2000:241.

and artifactual grounds, Jones and Klar proposed that Polynesian seafarers also contacted native peoples of the southern California Coast,⁴⁸ but the evidence for such contacts is much more ambiguous and highly controversial.⁴⁹

The rapid radiation of peoples carrying a common Polynesian culture into different island environments provides the opportunity to explore the varied sociopolitical responses of various groups to different environmental challenges—some of them anthropogenic in origin. The Polynesians utilized large, sail-powered, ocean-going catamarans capable of carrying substantial numbers of people and large amounts of cargo, including a variety of domesticated plants (taro, yams, paperbark mulberry, etc.) and animals (pigs, dogs, chickens, and rats) required to survive on the isolated islands of the Pacific. The introduction of these “transported landscapes”—especially when combined with terrestrial hunting, forest clearance, and other landscape modifications—led to the extinction of numerous endemic bird species and other ecological impacts.⁵⁰ As populations grew, evidence for cultural complexity, social stress, and warfare generally increased.⁵¹ On a number of islands, these cultural developments led to the construction of unique examples of monumental architecture, from the famous stone statues of Rapa Nui, to the large ceremonial heiaus (temples) of Hawai’i, and hilltop fortifications on Rapa and Aetoroa. The accomplishments of these intrepid Oceanic explorers have amazed westerners for centuries, ever since Europeans first ventured into the Pacific.

The Vikings: Vanguard of European Colonialism and Globalization

For roughly a millennium beginning in the 7th and 8th centuries CE, Europeans from a variety of nations undertook a series of maritime migrations that fundamentally altered the course of recent human history, with repercussions that continue to frame some of our most pressing world problems today. These voyages of exploration, plunder, and settlement resulted in colonization, commercial enterprises, and cultural exchanges that ushered in the first truly global economy. It could be argued that this era of globalization began even earlier, with

⁴⁸ Jones and Klar 2006.

⁴⁹ See Anderson 2006; Arnold 2007.

⁵⁰ Steadman and Martin 2003.

⁵¹ See Kirch 1984.

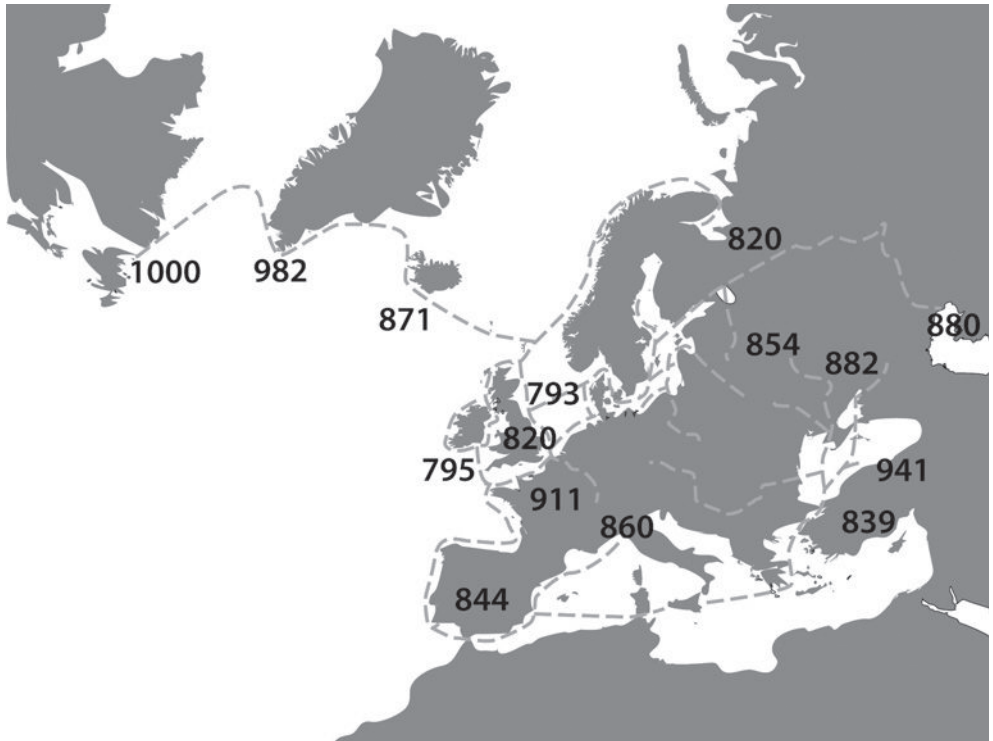


Figure 4. Map showing the chronology of Norse voyages and migrations of the Viking Age.

the exploration of African and south Asian shores by Arab and Mediterranean peoples, but these earlier voyages were tentative forays for the most part that did not result in sustained contacts or colonization.

These voyages of European expansion began early in the Viking Age with the movements of Norse raiders and traders from modern Scandinavia southward along the Atlantic seaboard to the British Isles and Normandy, as well as southeastward from the Baltic up the great rivers of eastern Europe to the Black, Caspian, and Mediterranean seas (see Figure 4).⁵²

Later in the Viking Age, this maritime expansion continued with Norse settlement of Iceland approximately 870, Greenland in 985, and a temporary presence in North America ca. 1000.⁵³ The roots of the

⁵² Jones 1968:241–268.

⁵³ Fitzhugh 2000:13.

Norse expansion lay in population growth resulting from a combination of productive agriculture and fisheries, a period of relatively benign climate (the Medieval Warm Period) between about 800 and 1300,⁵⁴ the development of maritime ship-building skills—especially the shallow-draft Viking longships capable of rapid coastal voyages and oceanic crossings—and a cultural system that encouraged wealth-seeking, ferocity, and death in battle.⁵⁵ Archaeological data have been instrumental in reconstructing the movements of Norse peoples, including the landscapes and seascapes of settlement, conquest, raiding, and trading that typified the historical Viking experience. Similar to the Polynesians, the Vikings were maritime agriculturalists who left behind a distinctive suite of archaeological signatures. These include an architectural preference for wood-framed long houses often built of sod (Figure 5), the skilled use of metallurgy to manufacture iron weapons, jewelry, ring pins (Figure 6) made of brass or iron, and many other artifacts, and occasional use of runes carved in stone.

Norse migrants also transported other aspects of a characteristic Viking landscape with them, bringing domesticated plants (e.g., wheat and barley) and animals (pigs, cows, sheep, horses, and dogs) with them to new lands. The remains of these flora and fauna, when found in securely dated archaeological contexts, are as diagnostic of Norse migrations as their distinctive architecture and artifacts. The extent of Norse trading, raiding, and contacts can also be traced in the distribution of artifacts from far-flung cultures, including Venetian glass beads, hoards of gold and silver coins, and even objects of Arabic or Bhuddist origin.⁵⁶

By the year 1000 much of the Norse world had converted to Christianity, leading to profound societal changes, including the construction of churches, changes in burial practices, and a cessation of the raiding that terrified much of western Europe for several centuries. Here again, archaeology has provided a wealth of information about the evolution of everyday life across this complex “conversion era.” Some of these changes have been illuminated archaeologically at a remarkable complex of Viking Age sites at Hrísrú in the Mosfell Valley of southwest Iceland, where a mixture of pagan and Christian practices has been

⁵⁴ McGovern 2000:330.

⁵⁵ Fitzhugh & Ward 2000.

⁵⁶ *Ibidem*.



Figure 5. Photo of reconstructed Norse-style turf house in Iceland. Similar sod house construction techniques were brought to North America by Scandinavian immigrants in the 19th century (photo by Erik Erlandson).



Figure 6. A Viking Age iron ring-pin from Kirkjuhóll, Mosfell Valley, Iceland (photo by Phil Walker).

documented at two adjacent knolls known as Kirkjuhóll (Church Knoll) and Hulduhóll (Elfin Hill) that appear to have been used contemporaneously.⁵⁷ The chieftain's farm and church at Hrisbrú are mentioned prominently in several of the Icelandic sagas, accounts that illuminate the archaeology of the Mosfell Valley in the Viking Age.

The sagas, written down by Icelandic scholars in the 12th or 13th centuries, also provide a wealth of information on voyages, violence, and everyday life in the Viking Age. Ironically, many Scandinavian scholars rejected the historicity of the Icelandic sagas—the only detailed written accounts of Viking Age life recorded by Scandinavian scholars within 250 years of the end of the Viking Age.

Due to the distinctive architectural, artifactual, and faunal signatures of Norse peoples, however, archaeological research has helped demonstrate that aspects of the sagas are historical. This includes the settlement of Iceland (unquestioned due to modern DNA and linguistic data) and Greenland by Norse peoples, as well as their brief presence in northeastern North America (confirmed at the L'anse Au Meadows site in Newfoundland). Linguistic, historical, and DNA data also support many archaeological aspects of the Norse expansion, although historical and popular portrayals are dominated by British accounts that are profoundly biased.⁵⁸

Norse maritime migrations in the Viking Age were followed by a series of well known European explorations of the Atlantic, Indian, and Pacific oceans from the 15th century on. These led to the European conquest of the Americas and Australia, as well as the competitive political and commercial division of much of the world by western colonial powers. By the 16th and 17th centuries, these European 'voyages of discovery' had led to the establishment of the first truly global economy, waves of disease and violence that decimated the indigenous peoples of Australia, the Americas, and the Pacific Islands, a series of global demographic diasporas, an unprecedented wave of extinctions and ecological changes, and other wrenching cultural, economic, and political upheavals. Once again, much of this European expansion and globalization was either accomplished or facilitated by maritime technologies that included the continuing evolution of ship-building capabilities and naval power. Although this era of European expansion and

⁵⁷ Byock et al. 2005.

⁵⁸ Tveskov & Erlandson 2007.

globalization is well-documented historically, archaeology has played a significant role in elucidating the general migration processes as well as the everyday lives of the immigrants from a variety of continents, cultures, and socioeconomic classes.

SUMMARY AND CONCLUSIONS

My brief archaeological survey of four major maritime migrations highlights both the antiquity and importance of such coastal and oceanic population dispersals in human history. After the evolution of anatomically modern humans in Africa roughly 200,000 years ago, and the gradual development of new mental and technological capabilities over the next 100,000 years or so, something spurred a relatively small group of humans to leave Africa and migrate eastward, probably along the southern coast of Asia. This fateful journey led to a series of incredible and relatively rapid migrations by our ancestors, including the peopling of Island Southeast Asia, greater Australia, the archipelagos of East Asia, all of Eurasia, the Americas, and most of the remote island archipelagos of the Pacific, Indian, and Atlantic oceans.

If the historical importance of recent maritime migrations and political-economic power has long been recognized, the significance of prehistoric seafaring and coastal migrations in deeper human history has not. In this paper, I have argued that for at least 150,000 years—coastal adaptations and dispersals played an increasingly important role in human history and demography around the world. Evidence from archaeology, genetics, geochronology, and paleogeography demonstrate that several of these migrations—from Sunda to Sahul, the Austronesian and Polynesian expansions, and the radiation of Vikings—were maritime in nature, and the settlement of the Americas may have been, as well. To spread from Africa through Eurasia, even early *Homo erectus* must have had the ability to cross some major water barriers—by swimming, on logs or other flotation devices, or in simple rafts or boats. Until the appearance of anatomically modern humans, however, there seem to have been significant technological (and perhaps intellectual) limitations to systematic aquatic travel and exploration. Some archaeological evidence suggests that the Middle Stone Age in Africa was an important major behavioral and technological watershed,⁵⁹ especially

⁵⁹ Klein 2004; McBrearty and Brooks 2000.

between about 125,000 and 75,000 years ago when more sophisticated symbolic behaviors, fishing technologies, and perhaps seaworthy boats were developed. Somewhere along the shores of southern Asia, possibly after AMH reached Southeast Asia roughly 70,000 to 60,000 years ago, relatively sophisticated and seaworthy watercraft were developed, boats that allowed the navigation of substantial sea crossings and strong currents. These Pleistocene seafaring technologies continued to evolve for millennia and enabled humans to colonize island Southeast Asia, Greater Australia, western Melanesia, the islands of Japan, and possibly the Americas. These Pleistocene maritime dispersals left large parts of the world's oceans uninhabited by humans, however, until the invention of effective sailing technologies. Around the world, these new sailing technologies ushered in an era of maritime technological innovation and seafaring that carried humans to the farthest reaches of our planet—from Austronesian and Polynesian voyaging canoes that crossed the vast reaches of the Pacific and Indian oceans, to the Viking ships that allowed the colonization of the North Atlantic, and the other great maritime traditions of the world.

There are major gaps in our knowledge of coastal adaptations and maritime migrations. Some of the gaps are spatial in nature, including the shorelines of western and eastern Africa, southern and north-east Asia, and archipelagos such as the Andaman, Nicobar, and Kurile islands. Other gaps are temporal, especially from the last glacial maximum to the early deglacial (~27,000 to 8,000 years ago), when sea levels were considerably lower, coastlines more distant, and coastal archaeological records are severely deficient. The single largest gap of all—both temporal and spatial—lies beneath the sea on the now submerged landscapes and coastlines where our ancestors once walked, hunted, paddled, fished, and sailed. The search for the deeper history of many maritime societies must include these submerged landscapes and shorelines.

Important progress has been made in the last 30 years, with archaeologists and other scientists overcoming a variety of preservation problems and theoretical pitfalls to better understand the history of maritime peoples and their migrations. Some of these gaps can (and will) be filled through archaeological research, but interdisciplinary approaches are essential to future progress. As I have shown, a variety of disciplines have contributed to what we know about maritime migrations in human history, including ecology, geology, geography, linguistics, human paleontology (biological anthropology) and genetics, and traditional history. Archaeology contributes much to our

understanding of historical migrations, providing invaluable information on the material aspects of life, health conditions, ecological changes, assimilation processes, and the lives of minority or lower class groups poorly represented in historical records. New and innovative ideas often emerge from the margins of a discipline, however, especially in those areas where different disciplines overlap or intersect. In reconstructing the story of the evolution of anatomically modern humans—and the series of dramatic migrations that led to development of the human cultural diversity characteristic of our species—we have a truly compelling example of the power of such interdisciplinary research and collaboration.

THE FAMILY FACTOR IN MIGRATION DECISIONS

Jan Kok

INTRODUCTION

Until recently, migration history was focused largely on European and trans-Atlantic migration streams.¹ Also, economic differentials between regions were generally translated into the decision-making of individual actors, who were supposed to weigh the costs and benefits of migration. This dominant but implicit ‘model’ hid from view the ways in which migration is embedded in family structures, that—across the world—can be very different from the Western European ones. The traditions, values and daily practices related to the family affect migration in many ways. The intensity and composition of migration flows is affected by inheritance customs, household structures, marriage patterns, family strategies and ties between kin. This chapter aims to identify and discuss these ‘family factors’ in a structured form to see whether their impact on migration differs in various regions of the world as well as in different periods. To begin with, I will introduce my definitions of family and migration and discuss my selection of themes within this vast field.

We can define family as ‘socially significant’ kin with whom one shares basic activities.² First of all, family members provide emotional warmth and support to one another. Families take care of reproduction and the socialization of children. Family members who co-reside in *households* are engaged in procuring and processing goods needed for consumption. In their division of labor for these tasks, families act as ‘budget units’, which means they exchange work and goods without internal reckoning. Also, families manage and transmit property from one generation to the next. Finally, families form specific social networks enabling members to leave the household and engage in different economic activities.

¹ Lucassen 2007; Lucassen and Lucassen 2009.

² Harrell 1997.

These widely diverging functions of the family have their own logic and are studied by different scientific disciplines. They are also connected to migration in different ways. For the sake of simplicity, we will make a distinction between three 'domains' of family activities. The first domain encompasses marriage and family formation, household composition and the succession of generations. The rules that structure these activities have been studied extensively in anthropology. The regionally dominant practices of family formation and succession are often summarized in the highly generalized form of 'family structures', or—as we shall call them here—'family systems'. How are family systems—regarding the rules on who marries whom, who inherits, who co-resides with the parents—related to differences in migration propensity by gender and by sibling position? The second domain concerns the economic logic of co-residence in family households. Joint production and consumption give rise to migration dynamics of their own. Balancing the family budget sometimes means attracting household members, sometimes expelling them. Also, families can generate additional income by sending family members to work elsewhere and send their income or part of it home. We take our inspiration for this domain from micro-economy. The third domain relates to the connections between dispersed family members, who may provide information and support to another. The study of family ties and networks is particularly advanced in sociology. The importance of family networks in generating and sustaining migration streams is widely recognized. What are the dynamics of these family networks and how are they related to other social ties and networks?

What is migration? Following Tilly and Moch,³ migration can be defined as those geographical moves that are relatively long-distance and relatively permanent. This definition allows us to separate migration from both permanent but highly short-distance moves (intra-local, residential mobility) and potentially long-distance but non-permanent moves (commuting, tourism). Migration implies a rupture with daily activities and connections and a reorganization of life in a new place. Depending on the distance and the social organization of the move,

³ Tilly 1978; Moch 1992. In Manning's typology of migration (Manning 2005: 3–15), migration is defined as moves within or between communities based on common languages and customs. In the 19th and 20th centuries, because of global language convergence a purely linguistic definition of community has become less revealing.

Tilly describes four distinct patterns of migration. The first one, *local migration* (1), is characterized by short distances and continuing ties with the place of origin. We can think of women moving on marriage to a neighboring parish (marriage migration), of farmers moving after having acquired plots of land in the vicinity (land migration), or male or female workers hiring themselves out to farms in the area. *Circular migration* (2) entails moves over longer distances but with even less intention to stay. This pattern includes the seasonal labor migration that was common in past societies. In many areas, groups of workers left to work hundreds of miles from home, in harvesting, construction work, brick-making et cetera. In *chain migration* (3), the move is more permanent but still embedded in close ties with home. In this pattern, 'pioneers' pave the way for subsequent migrants by sending information to members of their family or village and helping them with a job and a place to sleep. Finally, a much more individualized and permanent form of migration emerges in modern, industrial society in the form of *career migration* (4). In this pattern, people move according to the dynamics of their companies or (state) organizations in accordance with their own career plans.

In this contribution, I will survey the literature on the links between the three family domains we have just described and the first three patterns of migration. First, I will concentrate on the 'structural' determinants of migration emanating from family 'systems'. How did property transmission and the rules of succession give rise to different migration patterns? How do marriage practices relate to gender differences in migration? Do different family systems also imply different age patterns in migration? For instance, is migration of the elderly in Western European family systems different from Asian? Then the micro-economy of households and in particular the household strategies to maintain and improve living standards take central place. Under what circumstances do these strategies give rise to specific migration streams? Finally, I will focus on the relations of family members beyond the household. How are family networks created and sustained and how do they stimulate migration? I will also look at recent attempts of historians to chart spatially extended family networks and to assess their impact on migration decision making. In this context, I will discuss new concepts such as 'spatial capital' and 'family territories'. In Figure 1 the domains and the topics discussed in each section are summarized.

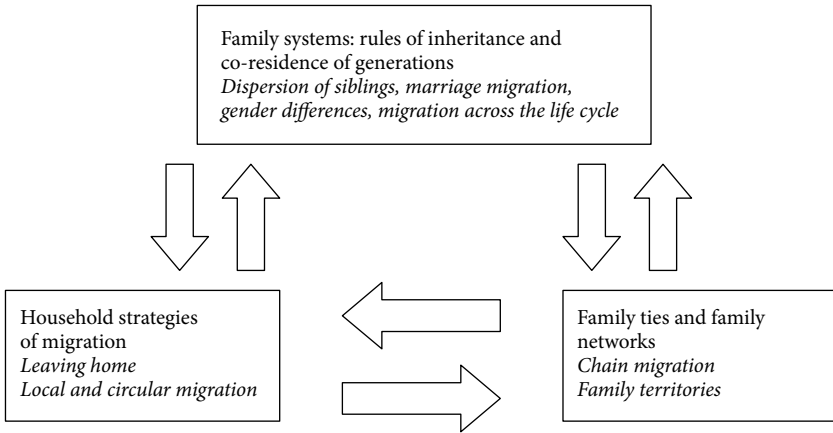


Figure 1. Relation between family domains and patterns of migration.

The family systems form the starting point as well as the main point of reference throughout the paper. Thus, in discussing the migration strategies of households, we will compare them across family systems. Likewise, in the section on family networks, we are interested in whether different family systems generate different family ties and networks. The vertical arrows indicate important feedback mechanisms. Family systems give rise to different household strategies, family networks and migration patterns. Conversely, migration itself may lead to fundamental social changes, including changes in fundamental family values and relationships. Finally, the horizontal arrows indicate that there are obvious and close relations between household strategies of migration and family-based migration networks. Indeed, the existence of networks forms a major factor in the decision-making process of household heads.

FAMILY SYSTEMS AND MIGRATION SYSTEMS

A global typology of family systems

Family systems can be defined as the normative, preferred pattern of family practices.⁴ Although affected by social and economic changes

⁴ Skinner 1997.

and by laws regulating succession, the cultural norms central to family systems are highly persistent. In a sense, these norms constitute a *longue durée* of mentality. At least, that is the interpretation presented by Emmanuel Todd who has written several studies on family systems and their implications for ideological, political and economic history. In his view, family systems stand for elementary inter-personal relationships, which are transmitted from one generation to the next and form the roots of global variation in attitudes towards equality and authority.⁵

In Todd's perspective, cultural norms related to equality originate in inheritance practices. Partible inheritance means equality among siblings, at least among brothers, whereas impartibility sets one favored child apart from the others. Norms related to authority originate from patterns of co-residence. Authoritarian systems prescribe co-residence of married children with their parents, whereas in non-authoritarian systems neo-local residence of married couples is the preferred pattern. By combining these two dimensions, Todd creates a matrix with four different family systems. In doing so, he builds on the pioneering work of Le Play.⁶ The first system is characterized by both neo-local residence and egalitarian inheritance. Todd names this the 'egalitarian nuclear family system'. The second, the 'absolute nuclear family system' also has neolocal residence, but allows for impartible inheritance. The third, the 'authoritarian family system' is defined by coresidence of married couples in two generations and by impartible inheritance. In principle, this implies that the older generation co-resides only with the heir and his/her spouse and children. Finally, the 'community family' combines partible inheritance with co-residence of more than two married couples in two generations or more.

These four forms already cover a large part of the societies of the world. Todd refined the model further by adding another basic anthropological principle: the incest taboo. In most societies, the incest taboo results in rules prescribing exogamy. In some societies, however, these rules are relaxed to allow for marriage between cousins. This holds true for community families in the Muslim world and for some nuclear family systems, e.g. in South East Asia. Since the latter can be seen as a negation of the rule prescribing the separation of siblings, Todd names

⁵ Todd 1985, 1987 and 1990.

⁶ Le Play 1879, see also Therborn 2004: 6–7.

this the 'anomic family system'. Finally, he clusters the highly varied and complex family systems in Africa in a separate group. Where are these systems to be found and do the differences in inheritance, co-residence and exogamy extend to other domains as well? Todd has verified the historical persistence of Le Play's mid-nineteenth classification of European families in the 20th century as well as in hundreds of studies on rural society in the medieval and early modern periods.⁷ For the other continents, his evidence rests on anthropological sources. According to Todd the main systems are the following:

- 1) The *egalitarian nuclear family* system exists in various European regions (northern France, northern Italy, central and southern Spain, central Portugal, Greece, Romania and Poland) and in South America. It is characterized by partible inheritance and neo-local residence upon marriage. Division of plots may be counteracted by endogamous marriages.⁸ The choice of the marriage partner is free and descent (and property transmission) is generally bilateral, that is through men and women alike. The latter factors provide for a relatively good position for women.⁹
- 2) The *absolute nuclear family* system can be found in Denmark, Holland (western provinces), England, North America, New Zealand and Australia. It has the same characteristics as the former, but inheritance may not be equal. The father can make a will favoring only one child.
- 3) The *authoritarian family* system is commonly known as the stem family. It is found in central and northern Europe, Belgium, several areas in France, northern Spain and northern Portugal, Japan and Korea. The authoritarian families are characterized by impartible inheritance, with the male heir co-residing with the parents. However, female succession is not uncommon, thus descent is bilateral.¹⁰ Marriages are exogamous and generally arranged by the parents. In this system, married women hold a strong position. In his later work, Todd creates a subgroup of 'incomplete stem families' in areas such as Belgium where lingering inegalitarian practices and formal egalitarian laws collide.¹¹

⁷ Todd, 1990.

⁸ Augustins 2002; Oris 2003: 202.

⁹ Todd 1985 and 1987.

¹⁰ Goody 1973.

¹¹ Todd 1990.

- 4) *Exogamous community family* systems exist in the Balkans (*zadruga*), central Italy, Finland, Russia, China and North India. The joint families characteristic of this system may consist of parents and several married brothers with their wives and children. The household is generally split up after the death of the father. Thus, a new cycle begins with a nuclear, a stem and, finally, a joint phase. Marriages are arranged by the parents. Inheritance is strictly equal among brothers but descent is patrilineal, leaving women in a rather weak position in the household of their father-in-law.
- 5) *Endogamous community families* predominate in the Arab world. They share the characteristics of the former type but with a strong preference for cross-cousin marriages.
- 6) *Anomic family* systems are found in South East Asia and central America. Neo-local residence, bilateral descent and free partner choice are coupled with endogamy and flexible rules of inheritance.
- 7) *African family* systems are subsumed by Todd under the heading 'unstable households'. In sub-Saharan Africa, both polygyny and divorce are normative rather than exceptional.¹² Furthermore, marriage partners do not inherit from one another. Instead, men transfer their property to other men, with brothers going before sons. Likewise, women inherit from other women.¹³ The descent (and the direction of the transfers) can be either matri- or patrilineal. The instability of households and the relative unimportance of the conjugal family are counterbalanced by extensive kinship ties, that allow for the circulation of children in the system of 'fosterage'.¹⁴

Todd's division of the world in major family system has the benefit of creating order in a bewildering complexity of family practices. As such, it is a good starting point for comparative research. We expect the systems to cause differences in migration patterns in a number of ways. (a) The systems differ in inheritance practices. In community and egalitarian nuclear systems with partible inheritance (types 1, 2, 4, 5, 6) (male) siblings will be less dispersed than in impartible systems (type 3). (b) Also, the systems will generate differences in the gender composition of migration streams. For instance, patrilocal

¹² Todd 1985: 25; Goody 1989.

¹³ Goody 1969.

¹⁴ Isiugo-Abanihe 1985; Oppong 1992.

versus neo-local residence upon marriage leads to strong differences in marriage migration by men and women. In the first case, men bring their wives into their parents households, whereas in the second case the partners leave home to set up a new household. (c) Lastly, 'life cycle' migration (moves associated with particular stages in life) differs strongly between family types, because of differences in the age at marriage and in household composition.¹⁵ For instance, in community family systems (type 4) widows will never live alone, whereas in nuclear family systems (type 1 and 2) specific migration of the elderly (e.g. to old people's homes in the cities) is not uncommon. We will now investigate these issues in more detail.

(Ad a) Inheritance and the dispersion of siblings

The prevailing system of inheritance is potentially a major factor in a region's demographic regime. In the absence of a land-market and of alternative employment, partible inheritance will allow the children to have their own farm. Thus it induces a fragmentation of land, high rates of marriage and population growth. Impartibility, on the other hand, keeps the number of 'niches' fixed, it limits marriage rates and fertility and induces the migration of non-heirs. Indeed, a statistical analysis of French departments showed that (in 1856) regions with impartible customs were highly correlated with net emigration.¹⁶ However, thriving markets in land and non-agrarian employment in (proto)industry or nearby cities were increasingly common in 19th century Europe and elsewhere. Thus, the strongest, unambiguous impact of inheritance rules on migration patterns is to be expected in more or less 'backward', marginal regions.

The relation between inheritance, family system and migration has been studied extensively in France.¹⁷ Authoritarian (stem) families were quite common in Southern France. In particular in the Pyrenees region, they managed to circumvent the Napoleonic laws that prescribed the equal division of property. Thus, there is abundant ethnographic evidence on the 'house-centered' system of the Pyrenees. In this system, the House (that is, the farmhouse and the land) is really

¹⁵ Cornell 1987.

¹⁶ Berkner and Mendels 1978; cf Wegge 1998; 1999 for an analysis on the level of villages.

¹⁷ Bonnain 1996; Duroux 2001; Augustins 2002; Arrizabalaga 2005.

the centre of all family dynamics. The head of the family is considered the sole representative of the estate and the family and only the head disposes of the property rights. Most people in Pyrenean villages were known only by their nicknames which were typically derived from the House. The name was abandoned once one migrated. The House passed (preferably) on to the first-born son (*ainé*), who under the Napoleonic code had to compensate his siblings. Sisters would receive a dowry and brothers a monetary compensation. However, the siblings generally consented in not being compensated fully in order to preserve the House. Quite frequently, a male heir was not available in which case the House was inherited by a daughter. Her husband, a non-inheriting son (*cadet*) from another House, married-in and had to change his name. His position, more or less as a substitute for a daughter-in-law was quite ambiguous.¹⁸ *Cadets* who could not marry a heiress would often leave the region and migrate to Paris or America.¹⁹ Non-inheriting daughters (from the Basque area) rarely went to America, but instead favoured urban destinations. Here, they could secure relatively independent livelihoods, although they tended to return upon retirement.²⁰ An interesting variant of the stem family has been described for northern Portugal. Here, inheritance (of property and names) through the female line was favored in combination with male-dominated out-migration. According to Brettell (married and unmarried) sisters tended to live in close proximity, in order to help each other with the farm work.²¹

The Japanese family system is another variant of the stem family. The term *ie* stands for House as well as household and is imbued with strong significance as encompassing ancestors, present as well as future generations of heirs. Moreover, the households were the locus of legal rights and social status; outside the *ie* an individual had no rights. The distinction between kin with rights (*chokkei*) and non-inheriting kin (*bokei*) is even more radical than in Europe, which is epitomized in the proverb: 'the sibling is the beginning of the stranger.'²² According to Saito, the Japanese variant is marked by the late transfer of headship,

¹⁸ Goody 1973.

¹⁹ Augustins 2002. For a similar pattern of 'devolution-migration' in the Auvergne, see Duroux 2001.

²⁰ Arrizabalaga 2005.

²¹ Brettell 2003.

²² Saito 2000: 27.

well after the heir's marriage.²³ This increased the father's hold over his children. In this system, migration of non-inheriting children is also frequent, but daughters tend to remain under patriarchal control and are expected to return.²⁴

In stark contrast with house-centered stem family systems stand egalitarian nuclear family systems, characterized by strictly partible inheritance of property brought in by both spouses. In fact, the concepts of property and family are very different in this system, which in its pure form was found in, for instance, Brittany. Property is not 'absolute' in the form of a specific House and a specific plot, but it can be seen as a 'bundle' of transferable rights. To farm and to form a family means to acquire and combine enough rights to plots of land. Farm families would move whenever a more suitable combination of plots was found. Household heads entertained close relations with siblings and cousins for cooperation and an efficient exchange of plots. Thus, the family is of prime importance and endogamy (cross-cousin marriages) ensured that land remained within the family. Migration patterns in the two systems were diametrically opposed. House-centered systems knew little local (land) migration but the siblings tended to be dispersed by long-distance and permanent out-migration. Egalitarian nuclear family systems had an intense short-distance migration related to land, but little dispersion of siblings and cousins.²⁵

The above mentioned systems are rarely found in their pure form. Strict partibility was untenable from an economic point of view. When the plots became too small, children would tend to sell their portion to a sibling and emigrate or they might receive some compensation instead of land.²⁶ In the daily practices of farmers, flexibility was much more important than laws or even cultural norms.²⁷ Thus, in most nuclear systems only one child took over the farm, most often the oldest or youngest son. Research among American farm families shows that middle sons had a relatively high risk to migrate to the frontier

²³ Saito 1998.

²⁴ Cornell 1987; Saito 2000.

²⁵ Augustins 2002.

²⁶ Wegge 1999.

²⁷ Berkner and Mendels 1978.

areas.²⁸ The out-migration of children of farmers was also clearly associated with improved opportunities for marriage.²⁹

How about community family systems? In patrilineal joint systems, property devolves to all male descendants. Since women in these systems have no property rights, endogamous marriage strategies cannot be used to prevent land fragmentation. Therefore, this system is more likely to be found in areas where land fragmentation is not problematic, e.g. in highly labor-intensive agricultures. In China, the system leads to highly different migration trajectories for women and men. Since marriages are strictly exogamous (in terms of lineages) and many villages are occupied by same-surname families, most women will leave the village upon marriage. Men, however, stay behind unless they are sent to 'sojourn' in cities or abroad, with an inalienable right to return. However, the division of households (often after the death of the father) was associated with emigration. Clearly, some of the sons preferred to abandon their family plots and start afresh elsewhere.³⁰

(Ad b) Gender differences

As I described in the previous section, family systems generated strong gender differences in local migration flows. In Western Europe and North America, young couples did form their own household, but often resided near the parents of the man. Inheritance practices tended to favor sons over daughters and inheriting brothers would buy their siblings out. This means that, in general, sisters were geographically more scattered than brothers and may have encountered greater difficulties in maintaining contact with their family.³¹ In Western Europe, free partner choice, combined with a high age at marriage and the practice of service in different households created a situation where most marriage partners were sought and found in a region within a 20–30 km radius of one's place of origin. The geographical range varied with social status, with the lower classes marrying relatively often within the community. Remarkably, during the late 19th and early 20th century the advent of trains, bicycles and motor vehicles hardly

²⁸ Adams and Kasakoff 1992; Bonneuil et al. 2008.

²⁹ Gjerde and McCants 1999.

³⁰ Campbell and Lee 2001.

³¹ Egerbladh et al. 2007; Kok and Bras 2008.

expanded the scale of the marriage 'field'.³² In regions with a high level of endogamy, the marriage field is likely to be restricted as well. In stem family systems, as we have seen, inheritance of the House will tie at least one married child to his or her birthplace. Unmarried siblings are generally allowed to remain, provided they contribute to the family economy.

In sub-Saharan Africa, women generally did not bring in their own goods to the marriage, as was the case in Europe. Instead, men had to accumulate the bridewealth for his in-laws.³³ According to Goody this explains why, at least initially, men dominated in early 20th century rural-urban migration in Africa and why African towns lacked the conspicuous presence of young, unmarried women found in many European towns.³⁴

In community family systems, at least in China, the daughters left home upon their marriage which took place at an early age and which concerned almost all women. Marriages were always arranged, often through the mediation of a semi-professional marriage broker who was paid for her services. Virilocal marriage was the norm, that is, the bride was supposed to live in the household of her parents-in-law. However, many exceptions to this rule existed. Families without sons could 'summon' a man to marry their daughter and live with them, often for a stipulated period of time. In some Chinese regions, such as Taiwan, such an 'uxorilocal' marriage also took place when families were in need of additional labor.³⁵ Although the marriage of young adults was preferred, in some regions (e.g. Taiwan) many families would seek out a prospective bride for their son almost directly after his birth. The infant girl was brought to the home of her parents-in-law and raised as a foster child. Ideally, the marriage was made official soon after the menarche of the girl.³⁶ This practice is related to a well-known problem in Chinese demography, the shortage of women. The major cause for this was female infanticide. However, in northern Taiwan skewed sex ratios were primarily caused by heavy male migration to this tea-exporting region. The resulting pressure on the marriage 'market' (in this case not just a metaphor) triggered a mechanism on the

³² Van Poppel and Ekamper 2005.

³³ Oppong 1992.

³⁴ Goody 1989.

³⁵ Pasternak 1983; Wang et al. 2008.

³⁶ Wolf and Huang 1980.

parallel 'market' of adoptions.³⁷ Increasingly, the match makers would seek out families with infant girls, persuading them to give them away. They would expand their activities to adjacent markets as well. In the whole region, the age of adoption went down. Some researchers suggest that marriage migration is not only related to the demographic pressures on regional marriage 'markets'. In India, for instance, deliberate spreading of daughters to (relatively) distant villages is interpreted as yet another variant of family risk-spreading strategies. This presupposes, of course, the practice of monetary transfers of sons-in-law to their wife's parents.³⁸

(Ad c) Life cycle migration

The fact that individual migration propensities are strongly determined by the life cycle is well-known.³⁹ What interests us here, is the question whether and how this patterning differs from one family system to the next. We will both look at the life cycle (age and marital status) of individuals and the life cycle (or domestic cycle) of families (presence and ages of children).

A conspicuous element of the Western European pattern of family formation was the long period of relative freedom to work and migrate before marriage between roughly the age of 15 and 25 (women) and 28 (men).⁴⁰ As we have noted, research into the background and life course implications of historical youth mobility has intensified recently. This has also led to a renewal of interest in comparable systems of labor exchange between families in other parts of the world. Labor could not always be provided by one's own household, even when it was strongly preferred. In particular at the beginning and the end of the domestic cycle, additional labor was needed. Apparently, in East-Asia and Africa this was more often solved by creating 'fictive' kin-ties through respectively adoption⁴¹ and fosterage⁴² than by simply hiring temporary labor. In the stem family system of Japan, migration for service was quite common and generally took the form of 'pawn service'.

³⁷ Wolf and Huang 1980.

³⁸ Lucas 1997: 750–751.

³⁹ Kok 1997; Dribe 2003: 251, 254.

⁴⁰ Hajnal 1982.

⁴¹ Wolf and Huang 1980; Pasternak 1983.

⁴² Goody 1996.

That is, the family borrowed money against a family member's wage as servant. Men were more often sent into service than women, and they were more often married than unmarried.⁴³ Married men were considered more likely to return than single men.⁴⁴ Thus, the age pattern in servant mobility was much less conspicuous than in Western Europe. According to Saito, female farm service was less important in Japan due to the very high exploitation of married female labor.⁴⁵ Likewise, the age gradient of migration in China appears to have been less steep than in Western Europe.

In (sub-Saharan) Africa, many children are sent at an early age (starting from age five onwards) to live with (real or fictitious) kinfolks. Recent surveys disclose strong regional variation with the estimates of children fostered ranging between 10 and 30 percent.⁴⁶ In a sense, this system of fosterage fulfils the same functions as domestic service did in other parts of the world: the burdens weighing on large and poor families are lifted by smaller and richer families. The children provide labor, but on the other hand, receive a training or education that improves their chances. In particular, the transfer of children takes places from rural families to urban relatives, keeping the extended kinship intact.⁴⁷ Fosterage is related to other aspects of African family forms: thus children whose mothers live in polygamous unions or who are divorced tend to send their children away more often.⁴⁸

The migration of entire families is closely related to the domestic cycle and to the presence of other kin in the locality.⁴⁹ Thus, 'younger' families move more often than older, and the proximity of relatives outside the household discourages out-migration. Young families, with a growing number of dependent children, may have sought a larger house or more land to accommodate the family and they may also have been forced to relocate because the consumption pressure forced the head to seek better employment in another place.⁵⁰ In the later stages of the domestic cycle, migration was less likely, in particular when adolescent (working) sons were present. In this stage, staying and pooling

⁴³ Kurosu 2004.

⁴⁴ Nagata 2004.

⁴⁵ Saito 1998.

⁴⁶ McDaniel and Zulu 1996.

⁴⁷ Isiugo-Abanihe 1985; Bigombe and Khadiagala 2003.

⁴⁸ McDaniel and Zulu 1996.

⁴⁹ Miller 1976.

⁵⁰ Dribe 2003.

income from several sources was probably a better strategy than moving because the head of the household could obtain a better position elsewhere.⁵¹ Everywhere, landed property tied families down and thus migration was much more frequent among landless peasants and tenants than among freeholders.

Western European household formation was based on the economic independence of a couple. Without either husband or wife, it became much more difficult to sustain the household. According to Peter Laslett's 'nuclear hardship' hypothesis, widows and orphaned children were marginalized in those areas where the nuclear family predominated.⁵² Supposedly, their only hope lay in charity or in out-migration. Indeed, in northern Italy widowed individuals living in simple households were more likely to leave the village than those living in extended households.⁵³ Widows left more often than widowers. These findings are in line with the 'nuclear hardship' hypothesis. However, it was discovered that relatives living in the village outside the household were also important providers of support. Thus, the less kin 'beyond the household', the higher the chances of outmigration. Surprisingly, this was true for extended and simple households alike. Thus, extended households did not take over all the functions of a supportive kin network. These findings for Italy were recently corroborated in a study of localities in Eastern Belgium.⁵⁴ Native women who became widows tended to stay and rely on their relatives, whereas widowed immigrants migrated again. They could find a place in the households of their married children living elsewhere, an option much less available to elderly men.⁵⁵ Community families, as existed in China, were not always a source of protection for widows. Their position depended on their having produced sons for their in-laws.⁵⁶

The impact of migration on family systems

To a certain extent and for a certain period in time, migration reinforced rural society and rural family systems. Actually, this was the

⁵¹ Kok 2004.

⁵² Laslett 1988.

⁵³ Kertzer, Hogan and Karweit 1992.

⁵⁴ Alter et al. 2002.

⁵⁵ Neven 2003.

⁵⁶ Campbell and Lee 2002.

raison d'être of circular migration.⁵⁷ Due to the remittances of workers engaged in circular migration, farms could be sustained. After their 'sojourn', the migrants would return home to take up farming. When circular migration shifted into patterns of chain migration, this did not lead to a dramatic 'uprooting'. During the nineteenth century, migrants to the cities tended not to return to their native villages, but instead became nuclei attracting relatives and other villagers to move to the city as well. Many studies describe how these migrants maintained their local cultures in a new urban context, or even abroad.⁵⁸ We have seen how in patrilineal joint family systems, temporary migration is enabled and encouraged as a way to improve the communal economy. In this context, migration positively strengthens the joint family because migration of a married man increases the dependency of his conjugal unit on the collective. Harbison also emphasizes the flexibility of joint family households that allows them to serve as intermediaries in migration.⁵⁹ Since living with (distant) relatives is common, the option of migration to distant places increases once kin is present.

Migration certainly changes families as well. The absence of a partner creates tensions in families that are evidenced by an increase in divorces among migrant families.⁶⁰ The relative independence of the women who stay behind, may lead to changes in (norms related to) gender relations, but the effects are rarely lasting.⁶¹ In the long run, migration may change family structures themselves. A survey of the influence of migration on traditional families noted the potentially corroding effects of circular migration.⁶² In Africa, the ability of a migrant to dispose of a wage inevitably put him in an improved position in the family's hierarchy. In fact, his earnings may be so high as to allow his wife and children to live apart from his family. She may either prefer to live with her own family or to live completely independent. However, in India similar effects of labor migration on joint families were not found. All in all, extended families (in particular joint families) are more capable of sustaining circular migration than nuclear families, but when migration becomes more permanent, the nuclear family

⁵⁷ Oris 2003.

⁵⁸ Moch 1992; Brettell 2002.

⁵⁹ Harbison 1981.

⁶⁰ De Silva 2003; Bigombe and Khadiagala 2003.

⁶¹ Abril and Rogaly 2001; Lourens and Lucassen 1999: 57–58.

⁶² Solien de Gonzalez 1961.

predominates in new (urban) settings.⁶³ In Africa, 'nucleation' seems to take a specific form. Here, rural-urban migration has reinforced the practice of polygyny. Thus, men support different households, headed by their women, who are unable to share resources and who have to cope with the divided loyalties of their husband.⁶⁴

In this section I have explored how structural differences between family systems could have led to differential migration patterns. Thus, I have looked at the potential dispersion of siblings through different forms of inheritance, at marriage migration through different residential rules and at patterns of leaving home, family migration and moves of the elderly associated with different family life cycles in each family system. Obviously, norms and rules are only part of the setting in which the lives of individual families unfold in a complex game of continuous adjustment. We will now move to the level of actual migration decision-making.

HOUSEHOLD STRATEGIES OF MIGRATION

Studying migration strategies

The study of household strategies of migration forms a thriving sub-discipline of the sociology of developing countries. Pioneering work has been done in South-East Asia, in particular in the Philippines and Thailand. With detailed retrospective surveys, migration histories of individuals and their families were analyzed. For instance, scholars have wondered why rural Philippine families so often preferred to send daughters instead of sons to work in the cities, although their work was less remunerative.⁶⁵ Their outcomes suggests that although women earned less, their jobs (domestic service and clerical work) were relatively secure and daughters could be trusted more than sons to actually send their money back home.⁶⁶ The overriding concern for family security also dictated that children were sent into different labor markets, not per se the most profitable ones. Thus, migration strategies served primarily the short-term interests of the family, not the

⁶³ Ibidem.

⁶⁴ Bigombe and Khadiagala 2003; Goody 1989.

⁶⁵ Lauby and Stark 1988.

⁶⁶ Trager 1984.

long-term interests of the children.⁶⁷ The recognition that households are always embedded in larger social groups, has led to the development of quite elaborate (multilevel, contextual) regression models. These statistical models combine characteristics of the household (size and composition, social position, educational attainment) with characteristics of the community (socio-economic development, accessibility, migration history). These studies clearly show how the decision-making process differs by local setting.⁶⁸

Historians who want to employ the notion of household strategies are faced with serious difficulties with respect to their research design. People can no longer be questioned for their motives, which have to be inferred from their actions. Obviously, this entails the danger of circular reasoning.⁶⁹ And what exactly were the power relations within the family when it came to determining the family's goals and means? Historians have also doubted that people could actually plan for the long term because of the uncertainty, unpredictability and incompleteness of information that characterized the past.⁷⁰

In several historical studies, however, the family strategy concept has been used with success, in particular with respect to local and circular migration. Most new studies in this field are based on large-scale and detailed household reconstructions that have become possible with the advent of personal computers and the increase of their storage capacity. Now, detailed information on individuals and their families can be stored and processed. Households can be classified by their size and type (broken, nuclear, stem family etcetera), their socio-economic status and their worker-consumer ratio. Individuals can be labeled by sex, age, position in the sibling order and their relation to the head of the household (close kin, distant kin, non-kin). With these datasets and concomitant techniques for analysis, a host of new questions are addressed. How did the mobility of individual youths relate to both their parental household composition and that of their employers? Is the background of the parents (e.g. their migration history) relevant for the destinations of their children? Was the experience of servant

⁶⁷ Harbison 1981; DeJong 2000.

⁶⁸ Findley 1987; Bilsborrow et al. 1987.

⁶⁹ Engelen 2002.

⁷⁰ Viazzo and Lynch 2002.

girls in urban households translated in their later geographical mobility and partner choice?⁷¹

A core question of these studies is: how do we know that individual migrations are more inspired by collective than by individual interests? This question is addressed in three ways. Firstly, the timing of the move is related to the economic situation, both of the family and the society at large. For instance, in adverse economic situations, farming families can opt to replace hired labor by sons, and vice versa.⁷² In non-farming families, the departure of children can be related to the need to save on the budget. Second, the relative 'success' of migration can be assessed by comparing life courses of movers and stayers. Frequent local and circular migration were often associated with low rates of upward social mobility. These moves seem to have been mostly inspired by the immediate needs of the household. On the other hand, youth migrating over long distances and those going from rural places to cities had fairly good chances of ascending on the social ladder.⁷³ Finally, qualitative material exists that—in combination with quantitative methods—can be used to reconstruct motives and intra-family deliberations behind migration. For instance, diaries and letters of servants confirm the overriding role of the parents in choosing timing and destination of, at least, the first moves from home.⁷⁴

Leaving home and local labor migration

In historical demography, a whole new literature on the subject of leaving home and servant mobility has sprung up. In traditional migration history, adolescent mobility was often neglected since it hardly made an impression on regional net migration. However, it was by far the most important component in local and circular migration flows. In comparing leaving home patterns between nuclear and stem family systems, it seems that the notion of youth mobility being an integral and typical part of 'the' Western European nuclear family system has to be revised.⁷⁵ Everywhere, many children remained with their parents until marriage, whereas in various regions nuclear systems existed

⁷¹ Alter 1988; Dribe 2000; Bras 2004; Dribe and Lundh 2005.

⁷² Dribe 2000.

⁷³ Kok and Delger, 1998; Bras 2002.

⁷⁴ Bras 2002; Bras and Kok 2004.

⁷⁵ Van Poppel and Oris 2004.

without any 'life cycle service' at all. On the other hand, the stem family system of Japan had its own variant of youth mobility (see below).

Little is known on leaving home in Asian (community) families, due to underrecording in the sources. For the 18th and 19th centuries, the best Chinese sources relate to frontier populations of hereditary 'bannermen' who fell under military rule and who were not allowed to emigrate. In a pioneering study of illicit migration of such a (northern) Chinese population, it has been demonstrated that underprivileged household members (unmarried uncles, brothers, cousins and nephews of the head) were most likely to flee.⁷⁶ Even less is known on women. Generally, girls lived and worked at home until their marriage at a very early age. Strong subjection to patriarchal authority and the custom of foot-binding clearly limited their mobility.⁷⁷ Interestingly, when female labor in the Southern Chinese silk industry became highly remunerative, more leeway for working girls was created, including the option to delay marriage or to forego it altogether. When the silk industry declined, many of these single girls were sent to the cities or abroad.⁷⁸ For Europe, Kertzer and Hogan have studied the joint families of sharecroppers in Northern Italy, including their mobility patterns.⁷⁹ These sharecroppers had only very short term lease contracts and were forced to concentrate as much labor as possible. These large households often included life cycle servants and individuals migrated from complex households less frequently than they did from non-complex households.

Is the rationality, the 'calculus' behind family migration strategies different when we compare across family systems? Or are concerns regarding maximizing income and containing risks leading everywhere to the same patterns of expulsion and retaining specific family members? Future comparative research needs to put this question on the agenda. A comparative study of past demographic behavior in various Eurasian societies suggests that there were indeed important differences. In Western Europe, (defending and augmenting) property seems to have been more central to the strategies of household heads, whereas in East Asia the family itself was perceived as the crucial asset. Defending the family in periods of crisis even could imply that the

⁷⁶ Campbell and Lee 2001.

⁷⁷ Gates 2005.

⁷⁸ Topley 1975.

⁷⁹ Kertzer and Hogan 1989, 1990.

household heads and their first-born sons had to (temporarily) relinquish their privileged position.⁸⁰

Circular migration

Family systems differ in the extent to which the older generation can dominate the younger as well as in what constitutes 'collective interests'. In nuclear systems, parental authority ends upon marriage of the children. In stem families, at least one child remains under the authority of the parent(s), but here the timing of headship transfer is crucial. In community family systems, headship is never relinquished and all sons remain effectively subjugated to the father. As long as individual members have a stake in the collective family property or enterprise, they are more likely to conform to parental authority. Non-inheriting, married children in nuclear or stem family systems are 'free' to pursue their own goals, whereas inheriting children in stem systems and sons in community systems have a clear interest in conformity. As an example, we will describe how the migration of sons from Chinese joint families fits both the interest of the family as well as their own.⁸¹

A Chinese family (*jia*) is both a socio-political, economic and religious unity. Chinese law made membership of a *jia* obligatory. The heads were liable to pay taxes and were held responsible for misdemeanors by *jia* members. The heads were invested with considerable authority and headship was transferred by fathers to their eldest sons (primogeniture). However, sons had equal claims to property and the *jia* (as long as it was undivided) was a large production unit. This should not be interpreted in any altruistic sense. The relationship between family members can be seen in terms of implicit contracts: 'Parents owe children the expenses of rearing them; children owe parents at least an equivalent return, on which parents may sustain themselves in old age.'⁸² The spread of wage labor meant that mutual obligations became commoditized, that is, expressed in money. Chinese family members are acutely aware of the money worth of each one's contribution to the collective property or enterprise. Finally, the *jia* served a religious function. In the Chinese ancestor cult it was of vital importance that

⁸⁰ Bengtsson, Campbell and Lee 2004.

⁸¹ See also Moch 2007.

⁸² Gates 1996:97.

the funeral tablets of the ancestors, and eventually of oneself, were worshipped by male descendants, preferably in the house altars.⁸³

Whereas the *jia* was the basic family unit, it was generally embedded in a wider kinship group, the lineage (*tsu*). These lineages consisted of patrilineally descended kin, who shared surnames and who were strictly exogamous. Often, Chinese villages consisted of surname groups. These lineages served very important functions as intermediaries between family and the quite rapacious Chinese state. Again, the role of the ancestor as the (mythical) founders of the patrilineage is of importance. They provided their descendants with 'sacred' property that was inalienable by the state. Such property could be land, but also a shop, a brick kiln et cetera. Lineage property and pooled capital could evolve into huge family enterprises, that Gates aptly calls 'patricorporations'.⁸⁴ Powerful lineages were successful in evading taxes. The lineages also invested in the social mobility of their members, depending on their personal qualities. Gifted sons or nephews could be trained for the examination that gave entry to officialdom. The entire lineage was liable to reap the benefits of this political leverage.

Lineages typically 'pooled' human capital. Boys could be exchanged (through adoption) in case an heir was lacking or additional labor was needed. Likewise, lineages or associated local organizations send kinfolk to work as 'sojourners' in cities or overseas, in the expectancy of support by successful migrants. For the migrants, there were strong incentives to comply to these expectancies. First of all, many of them were married (sojourners are often named 'married bachelors') and their wives and children were taken care of by their parents and brothers. Second, they had a powerful sense of obligation to the lineage or communal organization that had provided their passage, took care of letters and payments, enabled them (or their corpse) to return home. Their lineage remained their frame of reference, not the host society. This is because their option to return and take their rightful place in the family was secured.⁸⁵ Despite the huge changes in 20th century Chinese society, important elements of family structure have survived

⁸³ Wolf 1974.

⁸⁴ Gates 1996.

⁸⁵ Woon 1983.

or even reemerged.⁸⁶ And up to the present day, lineages form the core of successfully Chinese corporations operating on a global scale.⁸⁷

In (sub-Saharan) African societies the extended family, which consists of many members who may live widely apart, is more important for migration decision-making than households. The extended family includes parents, siblings, uncles, aunts, cousins and nephews, and even more distant relatives and friends.⁸⁸ As I have described earlier, through fosterage African children are transferred between households of relatives who thus share the costs and responsibilities of raising children. In a similar way are children selected to emigrate, in order to work or receive an education. A recent study of migration from Cameroon to Germany had identified the key decision-makers as well as the criteria for the selection of the migrants. The decision is made by an authority figure (parent, older sibling), who invests in the child through providing information and contacts and who raises the money within the family to make the move possible. According to Arthur, women have the best contacts, both abroad and at home, and are key figures in the process.⁸⁹ The 'chosen one' needs to have special skills, such as fluency in language and the capacity to 'handle white people'.⁹⁰ Clearly, benefits in the form of remittances are expected and the pressure on the migrants is correspondingly high.⁹¹ Thus, they are discouraged to start relationships that may lead to a marriage: staying single is the best guarantee for unfaltering loyalty towards their extended family. Only after the migration has yielded rewards for the family can the migrant start thinking about marriage.

The hold of the family on migrated members depends on cultural norms, mechanisms of social control as well as the interest of the migrants themselves to support the family. How long do migrated children continue to support their aging parents? Can a strategy of migration actually be detrimental to the well-being of parents in the long run? An interesting new field of research is the study of remittances.⁹² A study of the elderly in rural South Korea discloses that investing in migrating indeed pays dividends: migrated (married) sons

⁸⁶ Rowland 1992.

⁸⁷ Goody 1996a: 138–161.

⁸⁸ Fleischer 2007.

⁸⁹ Arthur 1991.

⁹⁰ Fleischer 2007.

⁹¹ See also Tiemoko 2004 on migrants from Ghana and Ivory Coast.

⁹² Stark 1991; Gozzini 2006.

and (unmarried) daughters continue to assist their parents financially, although it is inversely related to distance. Lee expects that these intergenerational transfers will be diminished when state welfare provisions expand and when Confucian family values are corroded by individualism.⁹³ Studies on Mexican migration are less confident that remittances compensate for the fact that elderly parents of migrants tend to live alone and have to do without the (traditional) comfort of close relatives nearby.⁹⁴ Indeed, it will be interesting to compare across family systems to see whether lifelong attachments and support of parents differ.

The interests and strategies of households are only part of the story, albeit a vital one. As we have seen in the case of Africa, the extended family often plays a more important part than specific households in migratory moves of individuals. In the next section, we explore this theme further by looking at the role of networks in migration.

FAMILY TIES AND FAMILY NETWORKS

Vanishing systems, persistent values

In the preceding sections, I have shown how family systems contributed to the formation of specific patterns of migration and to differences in the composition of migration streams in terms of gender, age and sibling position. Family systems were rooted firmly in familial production and the inheritance and residential practices of rural societies. However, proletarianization, industrialization and urbanization—if not migration itself—have changed these rural societies strongly. What is the relevance of traditional family systems for understanding migration in modern societies?

I have already noted that for Todd, the essence of family systems was those persistent values and norms that regulate the way ‘family’ is perceived and translated in behavioral patterns with respect to authority, contact, communication and support among kin.⁹⁵ Persisting family values form the core of various studies dealing with comparisons between collectivist and individualist cultures.⁹⁶ They also play a role

⁹³ Lee 2000.

⁹⁴ Kanaupuni 2000; López-Ramírez 2005.

⁹⁵ Todd 1985, 1987, 1990.

⁹⁶ Triandis 1995.

in a number of studies that try to explain contemporary regional differences in demography. In an influential article, Reher contrasts two European family systems, characterized by weak and strong family ties.⁹⁷ In Northern Europe, the weak family is currently reflected in a relatively early age at leaving home, a relatively long period of independence before marriage, late marriage, high rates of singles and one-parent families, high institutionalization of elderly, and, finally, high rates of suicide. In the strong family system of the south of Europe children still live at home until marriage. Because the parents support the children for a longer period, they tend to have accumulated less saving than their northern European counterparts. However, they live far more often in the homes of their children at old age. These differences were visible in the past as well, for instance in the strongly diverging incidence of service in north and south.

These persistent ties are not a residue of customs associated with (rural) inheritance and residence patterns. The values are even older and seem to have conditioned inheritance patterns. For instance, in northern stem-family areas care for the elderly was arranged by written contracts, whereas in southern stem family areas such care was normative and thus implicit.⁹⁸ Empirical research into the connection between inheritance system and ties between siblings suggests that—contrary to what one would expect—impartible inheritance was associated with strong sibling ties, whereas partibility (apparently through creating intrafamilial strife) was associated with weak ties among siblings.⁹⁹ The regionally different meanings attached to the concepts 'individual' and 'family' have also been invoked to explain recent trends in European fertility.¹⁰⁰ In a similar vein, authors writing on East-Asian families have emphasized the resilience of traditional family ties in the face of rapid social change.¹⁰¹

The persistence of norms regulating family relationships implies that social networks of people will be different, depending on their culture. That is, the relative importance of kin versus friends within these networks will differ as well as the frequency and content of contacts. The frequency of face-to-face contacts with kin, including extended

⁹⁷ Reher 1998.

⁹⁸ Reher 1998: 210–211.

⁹⁹ Salamon 1982; Segalen 1984; Bras and Van Tilburg 2007.

¹⁰⁰ Micheli 2000.

¹⁰¹ Saito 1998; Thornton et al. 1984.

kin, is much higher in southern and eastern Europe than in western Europe.¹⁰² Thus, there appears to be a lasting impact of historical family systems on social networks, although much empirical work remains to be done in this respect.¹⁰³

Dynamics of migration networks

Students of migration have increasingly become aware that individual acts of migration engender new moves. People who have migrated once are more likely than others to do so in the future. Also, people who are related to persons with migration experience, may receive information or practical help that lowers their own costs of moving.¹⁰⁴ Access to networks, such as ties to migrants, has been described as 'social capital'.¹⁰⁵ Possessing this capital may explain why some persons are more liable to migrate than others, and why they benefit more from migration than others. A lot of new research is devoted to explore how and when the migration experiences of some create 'social capital' for others. What is the role of kin in this process?

The concept of social capital directs attention to non-family relationships that are important for individual (social or economic) achievements or the lack of them. In social capital theory, it has been recognized that closely-knit networks are by no means always beneficial. Networks of 'strong ties' of persons sharing the same characteristics (such as religion, occupational status, ethnicity) do have capacities for 'bonding', that is creating emotional support. However, they also form sources of 'negative social capital'. Firstly, the tight control of some (e.g. ethnic) networks on (e.g. economic) activities excludes outsiders. Second, network members may put excessive claims on others, thus preventing their economic success. Lastly, tight networks presuppose strong internal social control that restricts personal freedom and initiatives and inhibits innovation.¹⁰⁶ Thus, an 'ideal' personal network should be a mixture of 'strong' and 'weak' ties. Weak ties are secondary relations with friends, neighbors and acquaintances.¹⁰⁷ In

¹⁰² Höllinger and Haller 1990.

¹⁰³ Micheli 2000; Plakans and Wetherell 2003; Bras and Van Tilburg 2007.

¹⁰⁴ Massey et al. 1993.

¹⁰⁵ Bourdieu 1986.

¹⁰⁶ Portes 1998.

¹⁰⁷ Granovetter 1973.

particular relations with people outside one's immediate group are of importance. It is precisely in 'bridging' contacts between socially heterogeneous persons where the opportunities of networks to innovate and to expand reside.

In recent years, social capital theory has also become an important framework for understanding migration patterns.¹⁰⁸ By migrating, persons acquire knowledge, skills and contacts that enlarge the total social capital of their group. Migration networks have their own logic in facilitating and sustaining migration flows.¹⁰⁹ Their existence stems from the basic rationale behind family strategies: the reduction of risk and uncertainty in a world of non-transparent markets. Families need to diversify their sources of income, rather than maximize them by specialization. Families do not have complete access to reliable information, credit and job opportunities. For this reason, networks of personal contacts are crucial in providing information and assistance and in lowering the huge costs and risks of migration. In enabling migration, particularly over long distances or from a rural to an urban setting, numerous people are involved, providing credit, transport, housing, jobs and the exchange of money and news. The migrants are bound to these people through 'migration contracts', more or less implicit agreements to repay the family's or community's investment, through remittances or otherwise.

Because of the large number of participants and the complex nature of transactions and 'contracts', migration networks have become 'institutionalized', that is they have developed into 'quasi-autonomous systems, with rules and norms, allowing specific individuals and organizations to attain their objectives.'¹¹⁰ As institutions, migration networks have a number of specific characteristics. First, their growth is a self-generating, cumulative process. The explanation for this is that the more people are involved in the network, the lower the costs of migration for aspirant migrants becomes. Cumulatively lowering costs explains why migration flows continue, even when receiving regions seem 'saturated' or when income differentials between sending and receiving regions have largely diminished. In addition, the remittances and displayed wealth of return migrants tend to increase social

¹⁰⁸ Bras and Neven 2007.

¹⁰⁹ Guilmoto and Sandron 2001.

¹¹⁰ Guilmoto and Sandron 2001: 144.

inequality in the local communities. Through a mechanism of 'relative deprivation,' more people are motivated to migrate and to partake in the migration network.¹¹¹ Second, migration networks tend to be more hierarchical when there are more risks involved. In some regions of the world, families and villages make sure the migrants are closely supervised in their new surroundings, for instance by paid intermediaries and 'sponsors.'¹¹² Social control also operates through fostering psychological attachment of migrants to their home villages and through instilling them with shame when not repaying their debts. Third, it is crucial to recognize that networks are path-dependent. They are products of historical circumstances and contingencies and not necessarily the 'optimal' solutions from a purely economic point of view. Once in existence, they tend to channel and even to monopolize migration decisions. Migration becomes 'partitioned' in specific migration streams between sending and receiving regions. This works from both ends: the network sends people to particular destinations and not to others, whereas employers at the receiving end prefer to hire people from trustworthy networks. Last, the networks have the tendency to change the composition of migration streams. That is, the 'chain' migrants who follow in the wake of 'pioneers' have different characteristics, e.g. in terms of age, marital status and wealth.

The cumulative character of migration networks does not imply that they will simply become more important over time. Their development may be perceived as a cycle. In the first stage, pioneers move without the benefit of a network. These are migrants with the lowest relative costs. This may be because they are relatively wealthy. More likely, however, is that they have not much to lose (typically young and single men) or because their migration is organized and paid for by the recruiting sector.¹¹³ An example of the latter is the indentured labor from India and China in the colonial period. In the second stage, the pioneers form the core of a rapidly expanding network. The costs of migration decline and migration flows accelerate. In the third stage, the migrants become integrated in the receiving countries and it becomes increasingly difficult for the sending families and local communities to ensure that their investments are returned. Meanwhile, all sorts of

¹¹¹ Stark 1991.

¹¹² Guilmoto and Sandron 2001: 154.

¹¹³ Moch 1992: 154.

economic transformations or political obstacles can operate against the network and result in its weakening or disappearance. Sometimes, migration networks have attracted too many and too poor newcomers in too short a period to be able to help them in their new setting. The tensions ensuing from this situation are disruptive to the network as a whole.¹¹⁴

Kin are generally considered the most important, most stable elements of migration networks. This had been ascribed to the fact that family ties and relations have an enduring character, as we have seen above. Also, information stemming from or translated through relatives tends to be more trusted than information from other sources, such as recruiting agencies.¹¹⁵ Finally, migrated family members are liable to become 'role models' for the stayers.¹¹⁶ In personal networks, even today, relationships with close kin are extremely important. The strength of these relationships does not depend on proximity.¹¹⁷ However, the importance of 'weak ties' for the success of migration networks has been recognized as well. Successful networks can not operate only with relatives, not even those formed from broad kinship groups such as clans.¹¹⁸ How important was the family component in historical migration networks? And is it possible—empirically—to determine what impact migrated family members had on decisions of the others?

Chain migration and social capital in historical research

Migration historians have worked very fruitfully with the concept of chain migration.¹¹⁹ In fact, the centrality of networks to the generation and maintenance of migration streams has become something of a paradigm in migration history.¹²⁰ Recently, however, some scholars have begun to question this received wisdom. In various studies, it had been noted that many immigrants did not live 'clustered' by origin communities or regions as more or less predicted by the chain migration thesis. The archetypical way Italian community life was 'transplanted'

¹¹⁴ Menjivar 1995.

¹¹⁵ Fontaine 2007.

¹¹⁶ Fawcett 1989.

¹¹⁷ Plakans and Wetherell 2003.

¹¹⁸ Guilmoto and Sandron 2001: 150.

¹¹⁹ E.g. Moch 1992.

¹²⁰ Lucassen and Lucassen 1997.

to America was often not found in other settings. In their article 'Is there life outside the migrant network?', Lesger, Lucassen and Schrover emphasize the importance of non-network migration. In this type, the decision to move does not depend on the expectation of help from kin or friends, in other words, social capital does not play a role. The move may be simply inspired by more or less concrete knowledge of employment opportunities. This type of migration appears to predominate in the case of the many Germans who came to work in the bustling port city of Rotterdam.¹²¹ Likewise, Moch recently questioned the importance of kin networks for Bretons who flocked to Paris in large numbers in the late nineteenth century. Analyzing among others the witnesses at the marriages of the migrants, she concludes that the immigrants made crucial contacts *after* arrival. These contacts were typically 'weak ties' with neighbors and newly found friends.¹²²

Migration historians generally focus on long distance migration and the (ethnic) communities formed by immigrants. Depending of the extent to which the immigrants are 'clustered', conclusions are drawn about the role of networks in the migration process. However, this approach does not allow firm conclusions on the role of networks in triggering the original out-migration. A less attractive but potentially more rewarding approach is to focus on households and communities in the sending regions, and to search for empirical evidence of the 'cumulative causation' of migration. Did the prior migration of family members indeed have an effect on others and how?

A number of researchers work with genealogies that allow for a detailed reconstruction of kinship networks, including spatially extended ones. This type of genealogy is rare, because most (amateur) genealogists concentrate on the family trees of the sedentary population. Recently, a number of large historical databases have been built that allow for reconstructing migration trajectories of several generations of families.¹²³ Although this material is often limited to male descendants, it does allow to reconstruct the logic behind the dispersion of families, e.g. the type of occupation, access to land et cetera.¹²⁴ Locally extended

¹²¹ Lesger et al. 2002.

¹²² Moch 2003b.

¹²³ E.g. for France, see Dupâquier and Kessler 1992; for Flanders, Matthijs et al. 2005, for the American North, Adams and Kasakoff 1992.

¹²⁴ Bieder 1973; Bideau et al.1995; Widdis 1992.

kinship networks seem to have lowered the chance of out-migration.¹²⁵ The role of migrants in triggering moves of family members can also be studied. In his 'micro-historical' study of the role of family networks in migration, Rosental closely studied the shifting spatial and socio-professional configurations of three generations of a hundred rural French families. Sisters who had moved upon marriage seem to play a vital role in introducing younger brothers to socio-professional alternatives, that included the option of migration.¹²⁶ However, Rosental confirmed that families embedded in networks characterized by 'weak ties' (studied through witnesses on marriage certificates) were more prone to include long-distance migration in their migratory projects.

Rosental described the area where family members tend to concentrate as the 'family territory', recognizing that it is always shifting and expanding with each new generation. Elaborating this concept further Kesztenbaum sees the various places in which family members have dwelt as the family's 'portfolio of places' or as the family's 'spatial capital'.¹²⁷ In other words, by migrating to different places, a family gradually expands its common fund of knowledge of conditions in places, useful contacts et cetera. To what extent do individual migrants make use of this 'spatial capital'? In his study on French families between 1800 and 1940, Kesztenbaum concludes that the size and diversity of the portfolio itself increases the chances of migration, but that many migrants choose destinations outside the 'portfolio'.

The notion of migration-specific social capital is intuitively very appealing, but on close inspection difficult to prove. The observations that migration streams from particular locations accelerate in time and that consecutive migrants are related to one another is not evidence in itself of social capital. These observations may be accounted for by other causes. First, the initial migration may have increased the demand for transport facilities and infrastructure that lower migration costs for all members of a specific community. Second, prior migration of community members may have induced value changes in the community, creating a 'culture of migration', again stimulating all members equally.¹²⁸ Third, the fact that people who are related tend to migrate more often, may be a consequence of the fact that they share specific

¹²⁵ Bieder 1973.

¹²⁶ Rosental 1999: 130, 210.

¹²⁷ Kesztenbaum 2008.

¹²⁸ Guilmoto and Sandron 2001.

characteristics. Thus, it is not their relationship that is vital in increasing their likelihood to migrate, but their common characteristics. Finally, the migration of kin, such as siblings, may be part of household strategies of risk diversification. In other words, the first child is sent by the parents to one location and another may be sent later to the same place or elsewhere. Their migrations in themselves do not contribute to the 'social capital' of the family. Palloni et al. developed a rather rigorous methodology to assess the impact of social capital in the form of migrated siblings, while controlling for family background and community characteristics. Using data from 39 communities in Mexico with a high level of migration to the United States, they found that the migration of older siblings significantly increased the chance of younger ones to migrate as well.¹²⁹

Some researchers have applied similar methods to historical data. The analysis of migrations of unmarried women between age twelve and thirty in two rural areas in Belgium and The Netherlands (1829–1940) shows that prior moves of siblings affected one's migration chances, although the mechanism depended on the regional and gender-specific labor markets.¹³⁰ In the commercialized rural region of Zeeland, young women who wanted to escape field work opted for domestic service on farms or, even better, in cities. In this respect, the prior experiences of their sisters were helpful, not those of their brothers. In the Belgian Pays d'Herve domestic service was less important and migrating young women mostly left for industrial work in the Walloon cities. In this choice, they were affected equally by their brother's and sister's experiences or 'social capital'. These results reaffirm the need for closer inspection of the gender differences in the creation and experience of social capital.¹³¹ On the other hand, in their study of first migrations (19th century France) after marriage, scholars found very little evidence that the dispersion of siblings influenced the chance and distance of migrations.¹³² A preliminary conclusion could be that migration experiences of siblings were of particular importance for unmarried persons seeking a livelihood in a 'new' setting. However, more studies of this type are needed to reach firm conclusions on when

¹²⁹ Palloni et al. 2001.

¹³⁰ Bras and Neven 2007.

¹³¹ Curran et al. 2005. For a recent exploration of gender differences in networked migration, see Wegge 2008.

¹³² Bonneuil et al. 2008.

and how members of families affected each other's migrations. Also, we still know next to nothing on the role of networks based on the 'weak ties' of friendship or acquaintance.¹³³

DISCUSSION

In this chapter, I have employed a typology of family systems to disclose global differences in family determinants of historical migration patterns. The inheritance practices integral to family systems generate different forms and streams of migration. In community and egalitarian nuclear systems with partible inheritance (male) siblings are not as dispersed as in systems practicing impartibility. Likewise, the marriage rules generate differences in the gender composition of migration streams. For instance, patrilocal versus neo-local residence upon marriage lead to strong differences in marriage migration by men and women. In general, both marriage and inheritance rules lead to a greater dispersion of female than male children. Differences between family systems in the age at marriage and in household composition lead to differential 'life cycle' migration, or moves associated with particular stages in life. For instance, in community family systems widows will never live alone, whereas in nuclear family systems specific migration of the elderly (e.g. to live near the children) is not uncommon.

The systems also differ strongly in the parental authority over children. In nuclear systems, this authority ends upon the marriage of the children. On the other extreme, in community family systems headship is never transferred and all sons remain obedient to their father. This implies an entirely different impact in terms of effectiveness and lifelong duration of family strategies related to local labor and circular migration. In joint families, circular migration of married men may still be part of a long-term strategy of the household, often embedded in a wider kinship group. In African family systems, 'parental' authority may be transferred to another member of the extended family who organizes the long-distance migration of adolescents, from which the entire family expects benefits.

Apart from these 'structural' effects related to inheritance and household composition, family systems are also associated with specific family

¹³³ Palloni et al. 2001, p.1295; see Lourens and Lucassen 2007 for an exception.

values which permeate society in many ways, including the patterning of migration. Joint families in particular forge close ties between male relatives that are also the building blocks of migration networks. However, recent research suggests that efficient networks need to contain non-family contacts ('weak ties') as well. The role of family networks or 'spatial capital' in stimulating short or medium-distance migration is still debated.

In this chapter, I have looked at migration decisions from the family perspective, and concentrated on the sending regions. I have focused on decisions taken by the migrants themselves or by authoritative family members who decided for them. This means that forms of forced migration, such as slavery, have not been considered. My approach has to be qualified in other respects as well. To be considered an option at all, migration has to be *feasible* (permitted by the law, facilitated by infrastructure) and *desirable* (information on destination is available, and benefits are expected to outweigh the costs).¹³⁴ In other words, the relative importance of the family factor should in principle be considered alongside a host of other, economic, demographic and political determinants. Also, the actual migration and accommodation to new surroundings often drastically changed the lives—including family norms and family practices—of the migrants themselves. This dimension of the subject, and the potential feedback effects on the sending region, awaits further exploration.

In fact, research on many of the addressed topics has just begun. For one thing, we need more local, contextualised studies to give both regional and historical diversity in inheritance patterns and household formation their due. Goody warned against characterizing whole societies on the basis of rules without allowing for mechanisms for changing these rules.¹³⁵ Indeed, such changes in family systems occurred frequently. In addition, there is much more regional and even local diversity than suggested in schemes of family systems.¹³⁶ A huge problem is that comparative studies of household composition are often based on census-type 'snapshots' of families, in which small, nuclear families often predominate. However, when we consider the demo-

¹³⁴ Harbison 1981.

¹³⁵ Goody 1996b.

¹³⁶ Caldwell 2001.

graphic constraints (longevity of the parents, frequency and age at marriage of their children, fertility) it becomes clear that only a limited number of families can be expected to be a stem family (let alone a joint one) even if this was the 'rule'.¹³⁷ Also, the classification in systems is based mainly on practices observed among landowning families. In many authoritarian (stem) and community (joint) family systems only the most well-to do among the landowners are able to live up to the cultural norms of their societies.¹³⁸ Much less diversity is found among propertyless and urban families,¹³⁹ whereas commercialization and the increase of land markets allow for more flexibility in dealing with inheritance rules.¹⁴⁰ A major problem with 'family systems' is their periodization and their class-bias: at what point in time do they cease to characterize certain classes of the population in a particular area? Thus, we need more research into the characteristics and implications of family systems both before the mid-nineteenth century and after the mid-twentieth century. Also, we need to clarify how the propertyless fit into these systems. Finally, more studies are needed on urban families, their ties to families in both rural and urban places, and their strategies of both horizontal and vertical mobility.¹⁴¹

To understand in more detail how family structures, inheritance practices and household strategies affect migration we need to invest in the reconstruction and systematic comparison of the *life courses* of inheriting and non-inheriting and married and non-married siblings.¹⁴² Preferably, the reconstructed life courses include entire migration trajectories. Typically, migration studies lean on dichotomies, by comparing either in-migrants with natives or movers with stayers. A host of explanatory variables remain hidden in the migration paths themselves. The analysis of trajectories may reveal the impact of life course factors, of family networks, of careers and perhaps even of individual psychology. Moves made during childhood or adolescence influence decisions about whether and where to move at an older age. The experience of mobility, the information on other localities and the availability of family networks form a continuing and cumulative force during

¹³⁷ cf Berkner 1972; Ruggles 1994.

¹³⁸ Goody 1973: 13; Goody 1996b: 7–8; De Haan 1997: 494.

¹³⁹ Mitterauer and Sieder 1977; Wilson and Dyson 1992.

¹⁴⁰ Berkner and Mendels 1978.

¹⁴¹ See for an example Gribaudo 1987.

¹⁴² Durães et al. 2009: for an evaluation of the life course approach, its methods and material, see Kok 2007.

the life course.¹⁴³ Given the huge effort to reconstruct trajectories, it is not surprising that only a few studies have dealt with them.¹⁴⁴

Other fields that await further research include parent-child relations in the past. To what extent were parents supported (financially or otherwise) by children outside the household, living nearby or in distant locations? Also, the social networks in which both movers and stayers were embedded still await reconstruction. How important were friends and acquaintances, both at home and in the new surroundings? Only then can we begin to assess the relative role of kin in migration networks. Finally, to fully understand the role of different family systems in migration, much more comparative work than was feasible in the context of this chapter needs to be done. This work will have to contrast the support for parents in different parts of the world, the ties between family members and the values and norms informing household strategies of migration.

¹⁴³ Massey 1990; Massey and Zenteno 1999.

¹⁴⁴ Martinius 1977; Knights 1991; Rosental 1999; Pooley and Turnbull 1998; Bras 2002.

REFERENCES

- Aberg, G., G. Fosse, and H. Stray (1998). 'Man, nutrition and mobility: a comparison of teeth and bone from the Medieval era and the present from Pb and Sr isotopes', *The Science of the Total Environment* 224 (1-3): 109-120.
- Abril, E. R., and B. Rogaly (2001). 'Migration and social relations: an annotated bibliography on temporary migration for rural manual work.' *CLARA working paper*. Amsterdam, IIAS/IISG.
- Adams, J. W., and A. B. Kasakoff (1992). 'The farm family economy in the American North, 1775-1875: an exploration of sibling differences'. *Continuity and Change* 7: 357-375.
- Adams, W., D. van Gerven and R. Levy. (1978). 'The retreat from migrationism', *Annual Review of Anthropology* 7: 483-532.
- Allen, J., and P. Kershaw (1996). 'The Pleistocene-Holocene transition in greater Australia', in: L. G. Straus, B. V. Eriksen, J. M. Erlandson, and D. R. Yesner (eds.), *Humans at the end of the Ice Age: The archaeology of the Pleistocene-Holocene transition, plenum*, New York: 175-199.
- Allen, J., C. Gosden, and J. P. White (1989). 'Pleistocene new Ireland'. *Antiquity* 63: 548-561.
- Alpher, B. (2005). 'Review of Dixon 2002', *Language in Society* 34: 795-805.
- Alter, G. (1988). *Family and the female life course. The women of Verviers, Belgium, 1849-1880*. Madison, Wisconsin University Press.
- Alter, G., C. Capron, M. Neven and M. Oris (2002). 'When dad died: household economy and family culture in nineteenth century East Belgium', in: R. Derosas and M. Oris (eds.), *When dad died. individuals and families coping with distress in past societies*. Bern, Peter Lang: 389-420.
- Alves-Silva, J., M. da Silva Santos, et al. (2000). 'The ancestry of Brazilian mtDNA lineages', *American Journal of Human Genetics* 67: 444-461.
- Ambrose, S. (1982). 'Archaeology and linguistic reconstructions of history in East Africa', in: C. Ehret and M. Posnansky (eds.), *The archaeological and linguistic reconstruction of African history*. Berkeley, University of California Press.
- Anderson, A. (2000). 'Slow boats from China: issues in the prehistory of Indo-Pacific seafaring', *Modern Quaternary Research in South-East Asia* 16: 13-50.
- (2006). 'Polynesian seafaring and American horizons: A response to Jones and Klar', *American Antiquity* 71: 759-763.
- Anthony, D. (1990). 'Migration in archaeology: the baby and the bathwater', *American Anthropologist* 92 (4): 395-414.
- (1997). 'Prehistoric migration as social process', in: J. Chapman and H. Hamerow (eds.), *Migrations and invasions in archaeological explanation*. Oxford, Archaeopress: 21-32.
- (2000). 'Comments', *Current Anthropology* 41 (4): 554.
- Appleyard, D. (1974). *The Semitic basis of the Amharic lexicon*. London, School of Oriental and African Studies.
- Arnold, J. E. (2007). 'Credit where credit is due: the history of the Chumash oceangoing plank canoe', *American Antiquity* 72: 196-209.
- Arrizabalaga, M.-P. (2005). 'Basque women and urban migration in the 19th century', *The History of the Family. An International Quarterly* 10 (2): 99-117.
- Arthur, J. A. (1991). 'International labor migration patterns in West Africa', *African Studies Review* 24 (3): 65-87.

- Augustins, G. (2002). 'The perpetuation of families and the molding of personal destinies', in: D. I. Kertzer and M. Barbagli (eds.), *Family life in the long nineteenth century, 1789–1912*. New Haven, Yale University Press: 322–348.
- Bade, K. J. (ed.) (1992). *Deutsche im Ausland-Fremde in Deutschland: Migration in Geschichte und Gegenwart*. München, Beck.
- (ed.) (1995). *Menschen über Grenzen—Grenzen über Menschen. Die multikulturelle Herausforderung*. Herne, Heitkamp Edition.
- (ed.) (1997). *Fremde im Land. Zuwanderung und Eingliederung im Raum Niedersachsen seit dem Zweiten Weltkrieg*. Osnabrück, Rasch.
- (2000). *Europa in Bewegung. Migration vom späten 18. Jahrhundert bis zur Gegenwart*. München, C. H. Beck.
- (2003). *Migration in European history*. Oxford, Blackwell Publishing.
- Bade, K. J., P. Emmer, L. Lucassen and J. Oltmer (eds.) (2007). *Enzyklopädie Migration in Europa vom 17. Jahrhundert bis zur Gegenwart*. Paderborn and München, Wilhelm Fink Verlag/Ferdinand-Schöningh-Verlag.
- Bailey, G. N. (2004). 'The wider significance of submerged archaeological sites and their relevance to world prehistory', in: N.C. Flemming (ed.), *Submarine Prehistoric Archaeology of the North Sea*. York: 3–10.
- Balasse, M., et al. (2002). 'The seasonal mobility model for prehistoric herders in the south-western Cape of South Africa assessed by isotopic analysis of sheep tooth enamel', *Journal of Archaeological Science* 29 (9): 917–932.
- Bass, G. F. (ed.) (1972). *A history of seafaring*. New York, Walker & Co.
- (2005). 'Introduction: reclaiming lost history from beneath the seven seas', in: idem (ed.), *Beneath the seven seas*. New York, Thames and Hudson: 10–27.
- Bastin, Y., A. Coupeuz and Michael Mann (1999). *Continuity and divergence in the Bantu languages: perspectives from a lexicostatistic study*. Tervuren, Koninklijk Museum voor Midden-Afrika.
- Bavel, B. van (2006). 'Rural wage labour in the sixteenth-century Low Countries: an assessment of the importance and nature of wage labour in the countryside of Holland, Guelders and Flanders', *Continuity and Change* 21 (1): 37–62.
- Bavel, B. van and J. L. van Zanden (2004). 'The jump-start of the Holland economy during the late-medieval crisis, c.1350–c.1500', *The Economic History Review* 57 (3): 503–532.
- Baxter, Gareth, Richard Blythe, William Croft, and Alan McKane (2009). 'Modeling language change: an evaluation of Trudgill's theory of the emergence of New Zealand English', *Language Variation and Change* 21: 257–96.
- Beard, B. L., and C. Johnson (2000). 'Strontium isotope composition of skeletal material can determine the birth place and geographic mobility of humans and animals', *Journal of Forensic Sciences* 45: 1049–1061.
- Bednarik, R. G. (2001). 'Replicating the first known sea travel by humans: the lower Pleistocene crossing of Lombok Strait', *Human Evolution* 16: 229–242.
- (2003). 'Seafaring in the Pleistocene', *Cambridge Archaeological Journal* 13: 41–66.
- Behar, D. M., R. Villems, et al. (2008). 'The dawn of human matrilineal diversity', *American Journal of Human Genetics* 82: 1130–1140.
- Bellwood, P. (1978). *Man's conquest of the Pacific*. Auckland, Collins.
- (1995). 'Austronesian prehistory in Southeast Asia: homeland, expansion and transformation', in: P. Bellwood, J. J. Fox and D. Tryon (eds.), *The Austronesians: historical and comparative perspectives*. Canberra, Dept of Anthropology, Research School of Pacific and Asian Studies, Australian National University: 96–111.
- (1997). *Prehistory of the Indo-Malaysian archipelago*. Honolulu, University of Hawaii Press.
- (2005). *First farmers. The origins of agricultural societies*. Oxford, Blackwell.

- Bellwood, P., J. J. Fox and Darrell Tryon (eds.) (1995). *The Austronesians: Historical and comparative perspectives*. Canberra, Dept of Anthropology, Research School of Pacific and Asian Studies, Australian National University.
- Bender, B., F. Jackson, et al. (2003). 'Proto-Micronesian reconstructions I & II', *Oceanic Linguistics* 42: 1 (1–110); 2 (271–358).
- Bengtsson, T., C. Campbell and J. Z. Lee (eds.) (2004). *Life under pressure: mortality and living standards in Europe and Asia, 1700–1900*. Cambridge Mass., MIT Press.
- Benmayor, R., and A. Skotes (1994). *Migration and identity*. Oxford, Oxford University Press.
- Bentley, R. A. (2006). 'Strontium isotopes from the earth to the archaeological skeleton: A review', *Journal of Archaeological Theory and Method* 13 (3): 135–187.
- Bentley, R. A., R. Krause, T. Douglas Price and B. Kaufman (2003). 'Human mobility at the early Neolithic settlement of Vaihingen, Germany: evidence from strontium isotope analysis', *Archaeometry* 45 (3): 471–486.
- Bentley, R. A., T. D. Price and Elisabeth Stephan. (2004). 'Determining the 'local' 87Sr-86Sr range for archaeological skeletons: a case study from Neolithic Europe', *Journal of Archaeological Science* 31 (4): 365–376.
- Bergsland, K., and H. Vogt (1962). 'On the validity of glottochronology', *Current Anthropology* 3 (2): 115–153.
- Berkner, L. K. (1972). 'The stem family and the developmental cycle of the peasant household: an eighteenth century Austrian example', *The American Historical Review* 77 (2): 398–418.
- Berkner, L. K., and F. F. Mendels (1978). 'Inheritance systems, family structure, and demographic patterns in Western Europe, 1700–1900', in: C. Tilly and L. K. Berkner (eds.), *Historical studies of changing fertility*. Princeton, Princeton University Press.: 209–223.
- Bernard, J. R. (1969). 'On the uniformity of spoken Australian English', *Orbis* 18: 62–73.
- Bideau, A., F. Foroni and G. Brunet. (1995). 'Migration and the life course: mobility in Haut Bugey (France) during the nineteenth and twentieth centuries', *Journal of Family History* 20 (2): 127–138.
- Bieder, R. E. (1973). 'Kinship as a factor in migration', *Journal of Marriage and the Family* 35: 429–439.
- Biggs, B., and R. Clark (2006). *POLLEX. Proto Polynesian lexicon*. Computer files. Auckland, School of Languages and Linguistics, University of Auckland.
- Bigombe, B., and G. M. Khadiagala (2003). 'Major trends affecting families in Sub-Saharan Africa'. *Report for United Nations, Department of Economic and Social Affairs, Division for Social Policy and Development, Program on the Family*. New York.
- Bilsborrow, R. E., T. M. McDevitt, S. Kossoudji and R. Fuller (1987). 'The impact of origin community characteristics on rural-urban out-migration in a developing country', *Demography* 24: 191–210.
- Birdsell, J. (1993). *Microevolutionary patterns in Aboriginal Australia: a gradient analysis of clines*. Oxford, Oxford University Press.
- Birge, B. (2003). 'Women and Confucianism from Song to Ming: the institutionalization of patrilinearity', in: P. J. Smith and R. L. von Glahn (eds.), *The Song-Yuan-Ming transition in Chinese history*. Cambridge Mass., Harvard University Press: 212–240.
- Blench, R., and M. Spriggs (eds.) (1998). *Archaeology and language II*. London, Routledge.
- Blust, R. A. (1980). 'Early Austronesian social organization', *Current Anthropology* 21 (2): 205–226.
- (1995a). 'The prehistory of the Austronesian-speaking peoples: a view from language', *Journal of World Prehistory* 9 (4): 453–510.
- (1995b). 'The position of the Formosan languages: method and theory in Austronesian comparative linguistics', in: P. J.-K. Li, C.-H. Tsang and Y.-K. Huang (eds.),

- Papers for the international symposium on Austronesian studies relating to Taiwan.* Taipei, Institute of Historical Philology, Academia Sinica: 585–650.
- (1995c). *Austronesian comparative dictionary*. Computer file. Department of Linguistics, University of Hawaii.
- (1999). 'Subgrouping, Circularity and extinction: some issues in Austronesian comparative linguistics', in: E. Zeitoun and P. J.-K. Li (eds.), *Selected papers from the 8th International Conference on Austronesian Linguistics*. Taipei, Academia Sinica: 31–94.
- (2009). *The Austronesian languages*. Canberra, Pacific Linguistics.
- Boas, F. (1912). *Changes in bodily form of descendants of immigrants*. New York, Columbia University Press.
- Bonnain, R. (1996). 'Houses, heirs and non-heirs in the Adour valley: social and geographic mobility in the nineteenth century', *History of the Family. An International Quarterly* 1 (3): 273–295.
- Bonneuil, N., A. Bringé and P.-A. Rosental (2008). 'Familial components of first migrations after marriage in nineteenth century France', *Social History* 33 (1): 36–59.
- Bosma, U. (2007). 'Sailing through Suez from the South: The emergence of an Indies-Dutch migration circuit, 1815–1940', *International Migration Review* 41 (2): 511–536.
- Bourdieu, P. (1986). 'The forms of capital', in: J.G. Richardson (ed.), *Handbook for theory and research for the sociology of education*. New York, Greenwood: 241–258.
- Bouzouggar, A., N. Barton, et al. (2007). '82,000-year-old shell beads from North Africa and implications for the origins of modern human behavior', *Proceedings of the National Academy of Sciences of the United States of America* 104 (24): 9965–9969.
- Bownern, C. (2006). 'Another look at Australia as a linguistic area', in: Y. Matras, A. McMahon and N. Vincent (eds.), *Linguistic areas: convergence in historical and typological perspective*. Houndmills, Palgrave-Macmillan: 244–265.
- Bownern, C., and H. Koch (eds.) (2004). *Australian languages: classification and the comparative method*. Amsterdam, John Benjamins.
- Bowler, J. M., R. Jones, H.R. Allen and A.G. Thorne. (1970). 'Pleistocene human remains from Australia: A living site and human cremation at Lake Mungo', *World Archaeology* 2: 39–60.
- Boyce, A. J. (ed.) (1984). *Migration and mobility: biosocial aspects of human movement*. Philadelphia, Taylor and Francis.
- Bras, H. (2002). *Zeeuwse meiden. Dienen in de levensloop van vrouwen, ca. 1850–1950*. Amsterdam, Aksant.
- (2004). 'Social change, service and youth in the lives of rural-born Dutch women, 1840–1940', *Continuity and Change* 19 (2): 241–264.
- Bras, H., and M. Neven (2007). 'The effects of siblings on the migration of women in two rural areas of Belgium and the Netherlands, 1829–1940', *Population Studies* 61 (1): 1–19.
- Bras, H., and T. van Tilburg (2007). 'Kinship and social networks: A regional analysis of sibling relations in twentieth-century Netherlands', *Journal of Family History* 32: 296–322.
- Brettell, C. (1986). *Men who migrate, women who wait: population and history in a northern Portuguese parish*. Princeton, Princeton University Press.
- (2002). 'Migration', in: D. Kertzer and M. Barbagli (eds.), *Family life in the long nineteenth century 1789–1912*. New Haven, Yale University Press: 229–247
- (2003). *Anthropology and migration: Essays on transnationalism, ethnicity and identity*. Walnut Creek, Altamira Press.
- Broadberry, S., and B. Gupta (2006). 'The early modern great divergence: wages, prices and economic development in Europe and Asia, 1500–1800', *Economic History Review* 59 (1): 2–31.
- Brown, M. D., et al. (1998). 'Haplogroup X: An ancient link between Europe/Western Asia and North America?', *American Journal of Human Genetics* 63: 1852–1861.

- Bulbeck, D. (2007). 'Where river meets sea: A parsimonious model for *Homo sapiens* colonization of the Indian Ocean rim and Sahul', *Current Anthropology* 48 (2): 315–321.
- Burley, D. W., and S. P. Connaughton (2007). 'First Lapita settlement and its chronology in Vava'u, Kingdom of Tonga', *Radiocarbon* 49 (1): 131–137.
- Burmeister, S. (2000). 'Archaeology and migration', *Current Anthropology* 41: 539–567.
- Byock, J. L., P. L. Walker, et al. (2005). 'A Viking age valley in Iceland: The Mosfell archaeological project', *Medieval Archaeology* 49: 195–218.
- Cabana, G. S., K. Hunley, et al. (2008). 'Population continuity or replacement? A novel computer simulation approach and its application to the Numic expansion (Western Great Basin, USA)', *American Journal of Physical Anthropology* 135 (4): 438–447.
- Caldwell, J. C. (2001). 'What do we know about Asian population history? Comparisons of Asian and European research', in: T. J. Liu, J. Lee, D. S. Reher, O. Saito and W. Feng (eds.), *Asian Population History*. Oxford, Oxford University Press: 3–23.
- Campbell, C., and J. Z. Lee (2001). 'Free and unfree labor in Qing China. Emigration and escape among the bannermen of North-east China, 1789–1909', *The History of the Family. An International Quarterly* 6: 455–476.
- (2002). 'When husbands and parents die. Widowhood and orphanhood in late imperial Liaoning, 1789–1909', in: R. Derosas and M. Oris (eds.), *When dad died. Individuals and families coping with distress in past societies*. Bern, Peter Lang: 301–322.
- Canny, N. (ed.) (1994). *Europeans on the move. Studies on European migration, 1500–1800*. Oxford, Clarendon Press.
- Carvalho-Silva, D. R., et al. (2001). 'The Phylogeography of Brazilian Y-Chromosome Lineages', *American Journal of Human Genetics* 68: 281–286.
- Cavalli-Sforza, L. L. (1998). 'The DNA revolution in population genetics', *Trends in Genetics* 14 (2): 60–65.
- (2005). 'The human genome diversity project: past, present, and future', *Nature Reviews Genetics* 6: 333–340.
- Cavalli-Sforza, L. L., P. Menozzi and A. Piazza (1994). *The history and geography of human genes*. Princeton, NJ, Princeton University Press.
- Chami, F. (1994). *The Tanzanian coast in the First Millenium AD: An archaeology of the iron-working, farming communities*. Uppsala, Societas Archaeologica Upsaliensis.
- (2006). *The unity of African ancient history: 3000 BC to AD 500*. Dar es Salaam, E & D Ltd.
- Chapman, J., and H. Hamerow (eds.) (1997a). *Migrations and invasions in archaeological explanations*. Oxford, BAR International Series.
- (1997b). 'On the move again—migrations and invasions in archaeological explanation', in: idem (eds.), *Migrations and invasions in archaeological explanations*. Oxford, BAR International Series: 1–10.
- Chappell, J. (2005). 'Geographic changes of coastal lowlands in the Papuan Past', in: A. Pawley, R. Attenborough, J. Golson and R. Hide (eds.), *Papuan pasts: Studies in the cultural, linguistic and biological histories of Papuan-speaking peoples*. Canberra, Pacific Linguistics: 525–539.
- Chevalier, L. (1973). *Labouring classes and dangerous classes in Paris during the first half of the nineteenth century*. London, Routledge & Kegan Paul.
- Chuang, Y.-C., T. Engelen, and A. P. Wolf (eds.) (2006). *Positive or preventive. Fertility developments in Taiwan and the Netherlands, 1850–1950*. Amsterdam, Aksant.
- Clarkson, C. (2007). 'Lithics in the land of the lightning Brothers: The archaeology of Wardaman country, Northern Territory', *Terra Australis* 25.
- Clendon, M. (2006). 'Australia—Reassessing Australia's linguistic prehistory', *Current Anthropology* 47(1): 39–61.
- Codrington, R. H. (1885). *The Melanesian languages*. Oxford, Clarendon Press.

- Cohen, R. (1987). *The new helots: migrants in the international division of labour*. Aldershot, Avebury.
- Cohn, Raymond L. (2005). 'The transition from sail to steam in immigration to the United States', *The Journal of Economic History* 65 (2): 469–95
- Collins, P. (1989). 'Sociolinguistics in Australia: a survey', in: P. Collins and D. Blair (eds.), *Australian English: the language of a new society*. St Lucia, University of Queensland Press: 3–20.
- Cornell, L. L. (1987). 'Hajnal and the household in Asia: A comparativist history of the family in preindustrial Japan, 1600–1870', *Journal of Family History* 12: 143–162.
- Counter, S. A. (1991). *North pole legacy: black, white and Eskimo*. Amherst, University of Massachusetts Press.
- Cross, M., and H. Entzinger (eds.) (1988). *Lost illusions. Caribbean minorities in Britain and the Netherlands*. London, Routledge.
- Crossley, P. K., H. Siu, et al. (eds.) (2006). *Empire at the margins: culture, ethnicity, and frontier in early modern China*. Berkeley, University of California Press.
- Cunningham, W. (1897). *Alien immigrants to England*. London and New York, Swan Sonnenschein & Co., and The MacMillan Co.
- Curran, S. R., F. Garip, C. Y. Chung and K. Tangchonlatip (2005). 'Gendered migrant social capital. evidence from Thailand', *Social Forces* 84 (1): 225–255.
- Curtin, P. D. (1989). *Death by migration: Europe's encounter with the tropical world in the nineteenth century*. Cambridge, Cambridge University Press.
- Dahl, O. C. (1951). *Malgache et Maanjan: une comparaison linguistique*. Oslo, Egede-Instituttet.
- (1991). *Migration from Kalimantan to Madagascar*. Oslo, Norwegian University Press: Institute for Comparative Research in Human Culture.
- Davies, G. S. O. (2007). 'Understanding and explaining the trafficking of women from Albania to Lyon, France, 1998–2001', PhD thesis, Dpt. of Geography. Brighton, University of Sussex.
- DeJong, G. F. (2000). 'Expectations, gender and norms in migration decision-making', *Population Studies* 54: 307–319.
- Denham, T. (2005). 'Agricultural origins and the emergence of rectilinear ditch networks in the New Guinea highlands', in: A. Pawley, R. Attenborough, J. Golson and R. Hide (eds.), *Papuan pasts: Studies in the cultural, linguistic and biological histories of Papuan-speaking peoples*. Canberra, Pacific Linguistics: 329–361.
- Denham, T. P., S. G. Haberle, et al. (2003). 'Origins of agriculture at Kuk Swamp in the Highlands of New Guinea', *Science* 201: 189–193.
- Des Lauriers, M. R. (2006). 'Terminal Pleistocene and early Holocene occupations of Isla de Cedros, Baja California, Mexico', *Journal of Island and Coastal Archaeology* 1: 255–270.
- Destro-Bisol, G., F. Donati, et al. (2004). 'Variation of female and male lineages in sub-Saharan populations: the importance of sociocultural factors', *Molecular biology and evolution* 21 (9): 1673–1682.
- Diamond, J. (2005). *Collapse: How societies choose to fail or succeed*. New York, Viking.
- Diamond, J., and P. Bellwood (2003). 'Farmers and their languages: The first expansions', *Science* 300: 597–603.
- Dietz, B. (2006). 'Aussiedler in Germany. From smooth adaptation to tough integration', in: L. Lucassen, D. Feldman and J. Oltmer (eds.), *Paths of integration. Migrants in Western Europe (1880–2004)*. Amsterdam, Amsterdam University Press: 116–138.
- Dixon, E. J. (1999). *Bones, boats, and bison: Archeology and the first colonization of Western North America*. Albuquerque, University of New Mexico Press.
- Dixon, R. M. W. (1997). *The rise and fall of languages*. Oxford, Oxford University Press.

- (2002). *Australian languages: their nature and development*. Cambridge, Cambridge University Press.
- Dribe, M. (2000). *Leaving home in a peasant society. Economic fluctuations, household dynamics and youth migration in Southern Sweden, 1829–1866*. Södertalje, Almqvist&Wiksell International.
- (2003). 'Migration of rural families in 19th century Southern Sweden. A longitudinal analysis of local migration patterns', *History of the Family. An International Quarterly* 8 (2): 246–265.
- Dribe, M., and C. Lundh (2005). 'Determinants of servant migration in nineteenth-century Sweden', *Continuity and Change* 20 (1): 53–91.
- Dunn, M., A. Terrill, et al. (2005). 'Structural phylogenetics and the reconstruction of ancient language history', *Science* 309: 2072–2075.
- Dupâquier, J., and D. Kessler (1992). *La société française au XIX^e siècle. Tradition, transition, transformations*. Paris, Hachette.
- Durães, M., A. Fauve-Chamoux, L. Ferrer-Alos, and J. Kok (eds.) (2009). *The transmission of well-being. Marriage strategies and inheritance systems in Europe (17th–20th Centuries)*. Bern: Peter Lang
- Duroux, R. (2001). 'The temporary migration of males and the power of females in a stem-family society: the case of nineteenth-century Auvergne', *The History of the Family. An International Quarterly* 6 (1): 33–50.
- Dutton, T. E., and D. T. Tryon (eds.) (1993). *Language contact and change in the Austronesian world*. Berlin, Mouton de Gruyter.
- Dyen, I. (1956). 'Language distribution and migration theory', *Language* 32: 611–626.
- Eastman, L. E. (1988). *Family, fields, and ancestors: constancy and change in China's social and economic history, 1550–1949*. New York, Oxford University Press.
- Egerbladh, I., A. B. Kasakoff and B. Adams (2007). 'Gender differences in the dispersal of children in northern Sweden and the northern USA in 1850', *History of the Family. An International Quarterly* 12 (1): 2–18.
- Ehret, C. (1971). *Southern Nilotic history: linguistic approaches to the study of the past*. Evanston, Northwestern University Press.
- (1974). *Ethiopians and East Africans*. Nairobi, East African Publishing House.
- (1977). 'Aspects of Social and Economic Change in Western Kenya, 500–1800', in: B.A. Ogot (ed.), *Kenya Before 1900*. Nairobi, East African Publishing House: 1–20.
- (1979). 'On the Antiquity of Agriculture in Ethiopia', *Journal of African History* 20: 61–177.
- (1983). 'Population movement and culture contact in the Southern Sudan, c. 3000 BC to AD 1000', in: J. Mack and P. Robertshaw (eds.), *Culture history in the Southern Sudan*. Nairobi, British Institute in Eastern Africa: 19–48.
- (1998). *An African classical age: eastern and southern Africa in world history, 1000 B.C. to 400 A.D.* Charlottesville, University of Virginia Press.
- (1999). 'Subclassifying Bantu: The evidence of stem morpheme innovation', in: L. Hyman and J.-H. Hombert (eds.), *Bantu historical linguistics: theoretical and empirical perspectives*. Stanford, Center for the Study of Language and Information: 43–147.
- (2001a). 'Bantu expansions: re-envisioning a central problem of early African history', *The International Journal of African Historical Studies* 34 (1): 5–41.
- (2001b). 'Christopher Ehret responds', *The International Journal of African Historical Studies* 34 (1): 82–87.
- (2001c). 'The Eastern Kenya interior, 1500–1800', in: E. S. Atieno Odhiambo (eds.), *African Historians and African Voices*. Basel, P. Schlettwein Publishers: 33–46.
- (2003). 'Language family expansions: broadening our understanding of cause from an African perspective', in: P. Bellwood and C. Renfrew (eds.), *Language and*

- agricultural dispersals*. Cambridge, McDonald Institute for Archaeological Research: 163–176.
- (2005). ‘Equatorial and Southern Africa, 4000 BCE–1100 CE.’, in: W. H. McNeil, J. H. Bentley, D. Christian, et al. (eds.), *Berkshire Encyclopedia of World History*. Great Barrington, MA, Berkshire Publishing Group. 2: 664–670.
- (Forthcoming). *History and the testimony of language*. Berkeley, University of California Press.
- Eltis, D. (1997). Seventeenth century migration and the slave trade: the English case in comparative perspective. *Migration, migration history, history: old paradigms and new perspectives*. J. Lucassen and L. Lucassen Bern, Peter Lang: 87–109.
- (2002). ‘Introduction: migration and agency in global history’, in: idem (ed.), *Coerced and free migration. Global perspectives*. Stanford, Stanford University Press.
- Emmer, P., and M. Mörner (eds.) (1992). *European expansion and migration: essays on the intercontinental migration from Africa, Asia, and Europe*. New York, Berg.
- Endicott, P., M. T. P. Gilbert, et al. (2003). ‘The genetic origins of the Andaman Islanders’, *American Journal of Human Genetics* 72: 178–184.
- Endicott, P., V. Macaulay, et al. (2003). ‘Reply to Cordaux and Stoneking’s “South Asia, the Andamanese, and the genetic evidence for an ‘early’ human dispersal out of Africa”, *American Journal of Human Genetics* 72: 1590–1593.
- Engelen, T. (2002). ‘Labour strategies of families: A critical assessment of an appealing concept’, *International Review of Social History* 47 (3): 453–464.
- Engelen, T., and A. P. Wolf (eds.), (2005). *Marriage and the family in Eurasia: perspectives on the Hajnal hypothesis*. Amsterdam, Aksant.
- Engels, F. (1892). *The condition of the working-class in England in 1844*. London, Swan Sonnenschein & Co.
- Erlandson, J. (1994). *Early hunter-gatherers of the California coast*. New York, Plenum.
- (2001). ‘The archaeology of aquatic adaptations: Paradigms for a new millennium’, *Journal of Archaeological Research* 9: 287–350.
- (2002). ‘Anatomically modern humans, maritime adaptations, and the peopling of the New World’, in: N. Jablonski (ed.), *The first Americans: the Pleistocene colonization of the New World*. San Francisco, UCLA Institute of Archaeology: 59–92.
- Erlandson, J., and S. M. Fitzpatrick (2006). ‘Oceans, islands, and coasts: Current perspectives on the role of the sea in human prehistory’, *Journal of Island and Coastal Archaeology* 1 (1): 5–33.
- Erlandson, J., M. Graham, et al. (2007). ‘The kelp highway hypothesis: marine ecology, the coastal migration theory, and the peopling of the Americas’, *Journal of Island and Coastal Archaeology* 2 (2): 161–174.
- Erlandson, J., M. L. Moss, et al. (2008). ‘Life on the edge: early maritime cultures of the Pacific coast of North America’, *Quaternary Science Reviews* 27 (23–24): 2232–2245.
- Esser, R. (2007). ‘“They obey all magistrates and all good lawes., and we thinke our cittie happie to enjoye them”: migrants and urban stability in early modern English towns’, *Urban History* 34 (1): 64–75.
- Evans, B., and M.-J. Mountain (2005). ‘Pasin bilong tumbuna: archaeological evidence for early human activity in the highlands of New Guinea’, in: A. Pawley, R. Attenborough, J. Golson and R. Hide (eds.), *Papuan Pasts: Studies in the Cultural, Linguistic and Biological Histories of Papuan-speaking Peoples*. Canberra, Pacific Linguistics: 363–386.
- Evans, J., N. Stoodley and C. Chenery (2006). ‘A strontium and oxygen isotope assessment of a possible fourth century immigrant population in a Hampshire cemetery, southern England’, *Journal of Archaeological Science* 33 (2): 265–272.
- Evans, N. (2005). ‘Australian Languages Reconsidered: A Review of Dixon (2002)’, *Oceanic Linguistics* 44 (1): 242–286

- Evans, N., and P. McConnell (1998). 'The enigma of Pama-Nyungan expansion in Australia', in: R. Blench and M. Spriggs (eds.), *Archaeology and language II*. London, Routledge: 174–192.
- Ezzo, J. A., and T. D. Price (2002). 'Migration, regional reorganization, and spatial group composition as Grasshopper Pueblo, Arizona', *Journal of Archaeological Science* 29: 499–520.
- Fahrmeir, A. (2007). *Citizenship. The rise and fall of a modern concept*. New Haven, Yale University Press.
- Fawcett, J. T. (1989). 'Networks, linkages, and migration systems', *International Migration Journal* 23 (3): 671–680.
- Fedje, D. W., Q. Mackie, E. Dixon and T. Heaton (2004). 'Late Wisconsin environments and archaeological visibility on the northern northwest coast', in: D. B. Madsen (ed.), *Entering America, Northeast Asia and Beringia before the last glacial maximum*. Salt Lake City, University of Utah Press: 97–138.
- Findley, S. E. (1987). 'An interactive contextual model of migration in Ilocos Norte, The Philippines', *Demography* 24: 163–190.
- Finlay, R. (2004). 'How not to (re)write world history: Gavin Menzies and the Chinese discovery of America', *Journal of World History* 15 (2): 229–242
- Finney, B. (1996). 'Colonizing an island world', in: W. Goodenough (ed.), *Prehistoric Settlement of the Pacific*. Philadelphia, American Philosophical Society: 57–116.
- Fitzhugh, W. W. (2000). 'Puffins, ringed pins, and runestones', in: W. W. Fitzhugh and E. I. Ward (eds.), *Vikings: The North Atlantic Saga*. Washington DC, Smithsonian Institution Press: 11–25.
- Fitzhugh, W. W., and E. I. Ward (eds.) (2000). *Vikings: The North Atlantic Saga*. Washington DC, Smithsonian Institution.
- Fladmark, K. R. (1979). 'Routes: Alternate migration corridors for early man in North America', *American Antiquity* 44: 55–69.
- Fleischer, A. (2007). 'Family, obligations, and migration: The role of kinship in Cameroon', *Demographic Research* 16: 413–440.
- Flynn, D. O., and A. Giraldez (2004). 'Path dependence, time lags and the birth of globalization: a critique of O'Rourke and Williamson', *European Review of Economic History* 8 (1): 81–108.
- Foley, W. F. (1986). *Papuan languages*. Cambridge, Cambridge University Press.
- Foner, N. (2000). *From Ellis Island to JFK. New York's two great waves of immigration*. New Haven, Yale University Press.
- Fontaine, L. (2007). 'Kinship and mobility. Migrant networks in Europe', in: D. W. Sabean, S. Teuscher and J. Mathieu. (eds.), *Kinship in Europe. Approaches to long-term development (1300–1900)*. London and Oxford, Berghahn Books: 193–210.
- Forster, J. R. (1778). *Observations made during a voyage round the world*. New edition edited by N. Thomas, H. Guest and M. Dettelbach, with a linguistics appendix by K. H. Rensch. Honolulu: University of Hawaii Press, 1996. London, Robinson.
- Forster, P., and S. Matsumura (2005). 'Did early humans go north or south?', *Science* 308: 965–966.
- Friedlaender, J. (ed.) (2007). *Population genetics, linguistics, and culture history in the Southwest Pacific: A Synthesis*. New York, Oxford University Press.
- Friedlaender, J. S., F. R. Friedlaender, et al. (2008). 'The population structure of Pacific Islanders', *PLOS Genetics* 4 (1): e19: 0173–0190
- Gabaccia, D. (1997). 'The "Yellow peril" and the "Chinese of Europe": global perspectives on race and labor, 1815–1930', in: J. Lucassen and L. Lucassen (eds.), *Migration, migration history, history: old paradigms and new perspectives*. Bern, Peter Lang: 177–196.
- (ed.) (2006). *Gender and migration revisited*. Staten Island NY Center for Migration studies of New York.
- Gamble, C. (1994). *Timewalkers: The prehistory of global colonization*. Cambridge Mass., Harvard University Press.

- Garrett, A. (2006). 'Convergence in the formation of Indo-European subgroups: phylogeny and chronology', in: P. Forster and C. Renfrew (eds.), *Phylogenetic methods and the prehistory of languages*. Cambridge, McDonald Institute for Archaeological Research: 139–151.
- Garrigan, D., and M. F. Hammer (2006). 'Reconstructing human origins in the genomic era', *Nature Reviews Genetics* 7: 669–680.
- Gates, H. (2005). 'Girls' work in China and north-western Europe: of guniang and meisjes', in: T. Engelen and A. P. Wolf (eds.), *Marriage and the family in Eurasia. Perspectives on the Hajnal hypothesis*. Amsterdam, Aksant: 319–341.
- Geraghty, P. (1983). *The history of the Fijian languages*. Honolulu, University of Hawaii Press.
- Gerstle, G., and J. Mollenkopf (eds.) (2001). *E pluribus unum? Contemporary and historical perspectives on immigrant political incorporation*. New York, Russell Sage Foundation.
- Gjerde, J., and A. McCants (1999). 'Individual Life Chances, 1850–1910. A Norwegian-American Example', *Journal of Interdisciplinary History* 30 (3): 377–405.
- Gonzales, R. M. (2009). *Societies, religions, and history: Central Tanzanians and the world they created, c. 200 BCE to 1800 CE*. New York, Columbia University Press.
- Goodenough, W. (ed.) (1996). *Prehistoric settlement of the Pacific*. Philadelphia, American Philosophical Society.
- Goody, J. (1969). 'Inheritance, property, and marriage in Africa and Eurasia', *Sociology* 3: 55–76.
- (1973). 'Strategies of Heirship', *Comparative Studies in Society and History* 15: 3–20.
- (1976). *Production and reproduction: a comparative study of the domestic domain*. Cambridge, Cambridge University Press.
- (1989). 'Futures of the family in rural Africa', *Population and Development Review* 15: 119–144.
- (1996a). *The East in the West*. Cambridge, Cambridge University Press.
- (1996b). 'Comparing family systems in Europe and Asia: Are there different sets of Rules?', *Population and Development Review* 22 (1): 1–20.
- Gould, R. A. (1969). *Yiwara: foragers of the Australian desert*. London, Collins.
- Gozzini, G. (2006). 'The global system of international migrations, 1900 and 2000: a comparative approach', *Journal of Global History* 1 (1): 321–341.
- Granovetter, M. S. (1973). 'The strength of weak ties', *American Journal of Sociology* 78 (60): 1361–1380.
- Green, N. L. (2002). *Repenser les migrations*. Paris, PUF.
- Green, R. C. (1991). 'Near and remote Oceania—disestablishing 'Melanesia' in culture history', in: A. Pawley (ed.), *Man and a half: Essays in Pacific anthropology and ethnobiology in honour of Ralph Bulmer*. Auckland, Polynesian Society: 491–502.
- (1994). 'Changes over time: recent advances in dating human colonization of the Pacific basin', in: D.G. Sutton (ed.), *The origin of the first New Zealanders*. Auckland, Auckland University Press: 19–51.
- (2002). 'Rediscovering the social aspects of ancestral oceanic society through archaeology, linguistics and ethnology', in: S. Bedford, C. Sand and D. Burley (eds.), *Fifty years in the field. Essays in honour and celebration of Richard Shutler Jr's archaeological career*. Auckland, New Zealand Archaeological Association.
- (2003). 'The Lapita horizon and traditions—signature for one set of Oceanic migrations', in: C. Sand (ed.), *Pacific archaeology: assessments and prospects. Proceedings of the international conference for the 50th anniversary of the first Lapita conference (July 1952)*. Noumea, New Caledonia Museum: 95–120.
- Greenberg, J. H. (1963). *The languages of Africa*. Bloomington, Indiana University Press.
- (1971). 'The Indo-Pacific hypothesis', in: T. A. Sebeok (ed.), *Current trends in linguistics, vol. 8, linguistics in Oceania*. The Hague, Mouton: 807–871.
- (1987). *Language in the Americas*. Stanford, Stanford University Press.

- Greenberg, J. H., C. G. Turner II, et al. (1986). 'The settlement of the Americas: A comparison of the linguistic, dental, and genetic evidence', *Current Anthropology* 27: 477–497.
- Greenhill, B. (1976). *Archaeology of the boat*. Middletown (CT), Wesleyan University Press.
- Gribaudo, M. (1987). *Itinéraires ouvriers. Espaces et groupes sociaux à Turin au début du XX^e siècle*. Paris, EHESS.
- Groube, L., J. Chappell, J. Muke and D. Price (1986). 'A 40,000 year old human occupation site at Huon Peninsula, Papua New Guinea', *Nature* 324: 453–435.
- Guilmoto, C. Z., and F. Sandron (2001). 'The internal dynamics of migration networks in developing countries', *Population: an English selection* 13 (2): 135–164.
- Güldemann, T., P. McConvell and R. Rhodes (eds.) (Forthcoming). *The languages of hunter-gatherers: Global and historical perspectives*. Cambridge, Cambridge University Press.
- Gungwu, W. (ed.) (1997). *Global history and migrations*. Boulder, Westview Press.
- (2000). *The Chinese overseas. From earthbound China to the quest for autonomy*. Cambridge Mass., Harvard University Press.
- Haak, W., and P. Forster, et al. (2005). 'Ancient DNA from the first European farmers in 7500-year-old Neolithic sites', *Science* 310 (5750): 1016–1018.
- Haan, A. de (1997). 'Migration as family strategy: rural-urban labor migration in India during the twentieth century', *The History of the Family. An International Quarterly* 4 (2): 481–505.
- Hage, P. (1999). 'Reconstructing ancestral oceanic society', *Asian Perspectives in American History* 38 (3): 200–228.
- Hajnal, J. (1982). 'Two kinds of pre-industrial household formation systems', *Population and Development Review* 8: 449–494.
- Hanagan, M. P. (2004). 'An agenda for transnational labor history', *International Review of Social History* 49 (3): 455–474.
- Handley, L. J. L., A. Manica, et al. (2007). 'Going the distance: human population genetics in a clinal world', *Trends in Genetics* 23 (9): 432–439.
- Harbison, R. F. (1981). 'Family structure and family strategy in migration decision making', in: G. F. DeJong and R. W. Gardner (eds.), *Migration decision making: multidisciplinary approaches to microlevel studies in developed and developing countries*. New York, Pergamon: 225–251
- Harrell, S. (1997). *Human Families. Social change in a global perspective*. Oxford, Westview Press.
- Harvey, M. (2008). *Proto-Mirndi: a discontinuous language family in northern Australia*. Canberra, Pacific Linguistics.
- Heath, J. (1981). 'A case of intensive lexical diffusion', *Language* 57: 335–367.
- (1984). 'Language contact and language change', *Annual Review of Anthropology* 13: 367–384.
- Held, D., A. McGrew and J. Perraton (1999). *Global transformations. Politics, economics and culture*. Cambridge, Polity Press.
- Hellie, R. (2002). 'Migration in early modern Russia, 1480s–1780s.', in: D. Eltis (ed.), *Coerced and free migration. global perspectives*. Stanford, Stanford University Press: 292–323.
- (2007). 'Russland und Weissrussland', in: K. J. Bade, P. Emmer, L. Lucassen and J. Oltmer (eds.), *Enzyklopädie Migration in Europa vom 17. Jahrhundert bis zur Gegenwart*. Paderborn and München, Wilhelm Fink Verlag/Ferdinand-Schöningh-Verlag: 314–332.
- Henshilwood, C., F. d. e. Errico, et al. (2004). 'Middle Stone Age shell beads from South Africa', *Science* 304 (5669): 404.
- Heyer, E., J. Puymirat, et al. (1997). 'Estimating Y chromosome specific microsatellite mutation frequencies using deep rooting pedigrees', *Human Molecular Genetics* 6: 799–803.

- Hill, J. H. (2002). 'Language spread among hunter-gatherers'. *Paper to ARCLING conference*. Canberra.
- (2003). 'Proto-Uto-Aztecan and the northern devolution', in: P. Bellwood and C. Renfrew (eds.), *Examining the farming/language dispersal hypothesis*. Cambridge, McDonald Institute for Archaeological Research: 331–340.
- (Forthcoming). 'Uto-Aztecan hunter-gatherers: language change in the Takic spread and the Numic spread compared', in: T. Güldeman, P. McConnell and R. Rhodes (eds.), *The languages of hunter-gatherers: global and historical perspectives*. Cambridge, Cambridge University Press.
- Hiscock, P. (2002). 'Pattern and context in the Holocene proliferation of backed artifacts in Australia', *Archeological Papers of the American Anthropological Association* 12 (1): 163–177.
- Hiscock, P., and V. Attenbrow (2005). *Australia's eastern regional sequence revisited: Technology and change at Capertee 3*. Oxford, Archaeopress.
- Hochstadt, S. (1999). *Mobility and modernity: migration in Germany, 1820–1989*. Ann Arbor, University of Michigan Press.
- Hodell, D. A., R. L. Quinn, et al. (2004). 'Spatial variation of strontium isotopes (87Sr/86Sr) in the Maya region: A tool for tracking ancient human migration', *Journal of Archaeological Science* 31 (5): 585–601.
- Hoerder, D. (2002). *Cultures in contact. World migrations in the second millennium*. Durham and London, Duke University Press.
- Höllinger, F., and M. Haller (1990). 'Kinship and social networks in modern societies: a cross-cultural comparison among seven nations', *European Sociological Review* 6 (2): 103–124.
- Hope, G. S., and S. G. Haberle (2005). 'The history of the human landscapes of New Guinea', in: A. Pawley, R. Attenborough, J. Golson and R. Hide (eds.), *Papuan pasts: studies in the cultural, linguistic and biological histories of Papuan-speaking peoples*. Canberra, Pacific Linguistics: 541–553.
- Horvath, B. (1985). *Variation in Australian English: the sociolects of Sydney*. Cambridge, Cambridge University Press.
- Huff, G., and G. Caggiano (2007). 'Globalization, immigration, and Lewisian elastic labor in Pre-World War II Southeast Asia', *The Journal of Economic History* 67 (1): 33–68.
- Hunemeier, T., et al. (2007). 'Niger-Congo speaking populations and the formation of the Brazilian gene pool: mtDNA and Y-chromosome data', *American Journal of Physical Anthropology* 133: 854–867.
- Hunley, K., and J. C. Long (2005). 'Gene flow across linguistic boundaries in Native North American populations', *Proceedings of the National Academy of Sciences* 102 (5): 1312–1317.
- Hymes, D. (1960). 'Lexicostatistics so far', *Current Anthropology* 1: 3–47.
- Irwin, G. (1992). *The prehistoric exploration and colonisation of the Pacific*. Cambridge, Cambridge University Press.
- Isett, C. M. (2007). *State, peasant, and merchant in Qing Manchuria 1644–1862*. Stanford, Stanford University Press.
- Isiugo-Abanihe, U. C. (1985). 'Child Fosterage in West Africa', *Population and Development Review* 11 (1): 52–73.
- Ives, J. W. (1990). *A theory of Northern Athapaskan prehistory*. Boulder, Westview Press/University of Calgary Press.
- (2002). On the dispersal of Athapaskan peoples in Western North America. *Paper to ARCLING conference*. Canberra.
- Ives, J. W., and S. Rice (Forthcoming). 'Correspondences in archaeological, linguistic and genetic evidence for Apachean history', in: B. Comrie and C. Genett (eds.), *Languages and genes. An interdisciplinary conference*. Santa Barbara.

- Jackson, F. (1986). 'On determining the external relationships of the Micronesian languages', in: P. Geraghty, L. Carrington and S. A. Wurm (eds.), *FOCAL II: Papers from the Fourth International Conference on Austronesian Linguistics*. Canberra, Pacific Linguistics: 201–238.
- Jobling, M. A., and C. Tyler-Smith (2000). 'New uses for new haplotypes the human Y chromosome, disease and selection', *Trends in Genetics* 16: 356–362.
- Johnson, J. R., T. W. Stafford, H. O. Ajie, and D. P. Morris (2002). 'Arlington Springs revisited', *Proceedings of the Fifth Channel Islands Symposium*. Santa Barbara: Santa Barbara Museum of Natural History.
- Johnstone, P. (1980). *The sea-craft of prehistory*. Cambridge Mass., Harvard University Press.
- Jones, D. (2003). 'Kinship and deep history: exploring connections between culture areas, genes and languages', *American Anthropologist* 105 (2): 501–514.
- Jones, G. (1968). *A history of the Vikings*. Oxford, Oxford University Press.
- Jones, G. S. (1971). *Outcast London: a study in the relationship between classes in Victorian society*. Oxford, Clarendon Press.
- Jones, T. L., and K. A. Klar (2005). 'Diffusionism reconsidered: linguistic and archaeological evidence for prehistoric Polynesian contact with Southern California', *American Antiquity* 70: 457–484.
- Joppke, C. (2005). *Selecting by origin. Ethnic migration in the liberal state*. Cambridge Mass., Harvard University Press.
- (2007). 'Beyond national models: Civic integration policies for immigrants in Western Europe', *West European Politics* 30 (1): 1–22.
- Kaestle, F. A., and D. G. Smith (2001). 'Ancient Native American DNA from Western Nevada: implications for the Numic expansion hypothesis', *American Journal of Physical Anthropology* 115: 1–12.
- Kanaiaupuni, S. (2000). 'Leaving parents behind: migration and elderly living arrangements in Mexico'. *Working paper Center for Demography and Ecology*. Madison, University of Wisconsin.
- Karafet, T. M., F. L. Mendez, et al. (2008). 'New binary polymorphisms reshape and increase resolution of the human Y chromosome haplogroup tree', *Genome Research* 18: 830–838.
- Kayser, M., S. Brauer, et al. (2001). 'Independent histories of human Y chromosomes from Melanesia and Australia', *American Journal of Human Genetics* 68: 173–190.
- Keeling, D. (1999). 'The transportation revolution and transatlantic migration, 1850–1914', *Economic History* 19: 39–74.
- (2005). 'The business of transatlantic migration between Europe and the USA, 1900–1914.' PhD thesis, Berkeley.
- Keita, S. (1992). 'Further studies of crania from ancient northern Africa: an analysis of crania from first dynasty Egyptian tombs, using discriminant functions', *American Journal of Physical Anthropology* 87: 254–254.
- Keita, S. O. Y., R. A. Kittles, et al. (2004). 'Conceptualizing human variation', *Nature Genetics* 36 (11): S17–S20.
- Kemp, B. M., R. S. Malhi, J. McDonough, D. A. Bolnick, J. A. Eshleman, O. Rickards, C. Martinez-Labarga (2007). 'Genetic analysis of early Holocene skeletal remains from Alaska and its implications for the settlement of the Americas', *American Journal of Physical Anthropology* 132:605–621.
- Kerswill, P. (2002). 'Koineization and accommodation', in: J. K. Chambers, P. Trudgill and N. Schilling-Estes (eds.), *The handbook of language variation and change*. Oxford, Blackwell: 669–702.
- (2006). 'Migration and language', in: K. Mattheier, U. Ammon and P. Trudgill (eds.), *Sociolinguistics/Soziolinguistik. An international handbook of the science of language and society*. Berlin, De Gruyter. 3.

- Kertzer, D. I., and D. P. Hogan (1989). *Family, political and demographic change, the transformation of life in Casalecchio, Italy, 1861–1921*. Madison, University of Wisconsin Press.
- (1990). ‘Household organization and migration in nineteenth-century Italy’, *Social Science History* 14 (4): 483–505.
- Kertzer, D. I., D. P. Hogan and N. Karweit (1992). ‘Kinship beyond the household in a nineteenth-century Italian town’, *Continuity and Change* 7 (1): 103–121.
- Kesztenbaum, L. (2008). ‘Places of life events as bequestable wealth. Family territory and migration in France, 19th and 20th centuries’, in: G. P. Minneau and T. Bentsson (eds.), *Kinship and demographic behavior*. Berlin, Springer: 155–184.
- Kirch, P. V. (1984). *The evolution of Polynesian chiefdoms*. Cambridge, Cambridge University Press.
- (1997). *The Lapita peoples: ancestors of the oceanic world*. Oxford, Blackwell.
- (2000). *On the road of the winds: An archaeological history of the Pacific Islands before European contact*. Berkeley, University of California Press.
- Kirch, P. V., and Roger C. Green. (2001). *Hawaiki, ancestral Polynesia. An essay in historical anthropology*. Cambridge: Cambridge University Press.
- Klausen, J. (2005). *The Islamic challenge. Politics and religion in Western Europe*. Oxford, Oxford University Press.
- Klein, R. G. (2004). *The human career: human biological and cultural origins*. Chicago, Chicago University Press.
- Klieman, K. (2003). *The Pygmies were our compass: Bantu and Batwa in the history of West Central Africa*. Portsmouth, NH, Heinemann.
- Knights, P. (1991). *Yankee destinies. The lives of ordinary nineteenth-century Bostonians*. Chapel Hill and London, University of North Carolina Press.
- Knijff, P. de (2000). ‘Messages through bottlenecks: On the combined use of slow and fast evolving polymorphic markers on the human Y chromosome’, *American Journal of Human Genetics* 67 (1055–1061).
- Knudson, K. J., T. A. Tung, et al. (2005). ‘The origin of the Juch’uypampa Cave mummies: strontium isotope analysis of archaeological human remains from Bolivia’, *Journal of Archaeological Science* 32 (6): 903–913.
- Kok, J. (1997). ‘Youth labor migration and its family setting, The Netherlands 1850–1940’, *History of the Family. An International Quarterly* 2 (2): 507–526.
- (2004). ‘Choices and constraints in the migration of families. Central Netherlands 1850–1940’, *History of the Family. An International Quarterly* 9 (2): 137–158.
- (2007). ‘Principles and prospects of the life course paradigm’, *Annales de Démographie Historique* (1): 203–230.
- Kok, J., and H. Bras (2008). ‘Clustering and dispersal of siblings in the North-Holland countryside, 1850–1940’, *Historical Social Research-Historische Sozialforschung* 33 (3): 278–300.
- Kok, J., and H. Delger (1998). ‘Success or selection? The effect of migration on occupational mobility in a Dutch province, 1850–1940’, *Histoire et Mesure* 13: 289–322.
- Korusu, S. (2004). ‘Who leaves home and why? Daughters and sons in two Japanese northeastern villages, 1717–1870’, in: F. van Poppel, M. Oris and J. Z. Lee (eds.), *The road to independence. Leaving home in Western and Eastern Societies 16th–20th centuries*. Bern, Peter Lang: 243–271.
- Lahr, M. M., and R. A. Foley (1998). ‘Towards a theory of modern human origins: geography, demography, and diversity in recent human evolution’, *Yearbook of Physical Anthropology* 41: 137–176.
- Lamb, S. (1958). ‘Linguistic prehistory in the Great Basin’, *International Journal of American Linguistics* 24: 95–100.
- Laslett, P. (1988). ‘Family, kinship, and collectivity as systems of support in preindustrial Europe’, *Continuity and Change* 3 (2): 153–175.
- Lauby, J., and O. Stark (1988). ‘Individual migration as a family strategy: young women in the Philippines’, *Population Studies* 42: 473–486.

- Laurence, J., and J. Vaisse (2006). *Integrating Islam. Political and religious challenges in contemporary France*. Washington D.C., Brookings Institution Press.
- Leavesley, M. G., and J. Chappell (2004). 'Buang Merak: additional early radiocarbon evidence of the colonisation of the Bismarck Archipelago, Papua New Guinea', *Antiquity* 78: 301.
- Lee, J. (1978). 'Migration and expansion in Chinese History', in: W. H. McNeill and R. S. Adams (eds.), *Human migration. Patterns & policies*. Bloomington, Indiana University Press: 20–47.
- Lee, J., and W. Feng (1999). *One quarter of humanity: Malthusian mythology and Chinese realities, 1700–2000*. Cambridge Mass., Harvard University Press.
- Lee, R. (2005). 'Configuring the region: maritime trade and port-hinterland relations in Bremen, 1815–1914', *Urban History* 32 (2): 247–287.
- Lee, Y. L. (2000). 'Support between rural parents and migrant children in a rapidly industrializing society: South Korea', in: A. Mason and G. Tapinos (eds.), *Sharing the wealth. Demographic change and economic transfers between generations*. Oxford, Oxford University Press: 282–305.
- Leonard, T. C. (2005). 'Retrospectives: Eugenics and economics in the Progressive Era', *Journal of Economic Perspectives* 19 (4): 207–224.
- LePlay, F. (1877–79). *Les ouvriers européens. Étude sur les travaux, la vie domestique et la condition morale des populations ouvrières de l'Europe*. Tours, A. Mame et fils.
- Lesger, C., L. Lucassen and M. Schrover (2002). 'Is there life outside the migrant network? German immigrants in XIXth century Netherlands and the need for a more balanced migration typology', *Annales de Démographie Historique* (2): 29–50.
- Lewis, D. (1972). *We the navigators*. Honolulu, University of Hawaii Press.
- Li, J. Z., D. M. Absher, et al. (2008). 'Worldwide human relationships inferred from genome-wide patterns of variation', *Science* 319: 1100–1104.
- Lightfoot, K. (1995). 'Culture contact studies: Redefining the relationship between prehistoric and historical archaeology', *American Antiquity* 60 (2): 199–217.
- López-Ramírez, A. (2005). Elders left behind. Migration and Household Structures in Mexico. *Paper for XXV IUSSP conference, Tours France*. Tours.
- Lourens, P., and J. Lucassen (1999). *Arbeitswanderung und berufliche Spezialisierung. Die lippische Ziegler im 18. und 19. Jahrhundert*. Osnabrück, Rasch Universitätsverlag.
- (2007). 'Karrieren lipischen Ziegler: Das Beispiel Delfzijl 1855', *Lippische Mitteilungen aus Geschichte und Landeskunde* 76: 63–80.
- Lu, M. C.-W. (2008). *Gender, marriage and migration: contemporary marriages between mainland China and Taiwan*. Leiden.
- Lucas, R. E. B. (1997). 'Internal migration in developing countries', in: M. R. Rosenzweig, and O. Stark (eds.), *Handbook of population and family economics*. Amsterdam, Elsevier: 721–798.
- Lucassen, J. (1987). *Migrant labour in Europe. The drift to the North Sea*. London, Croom Helm.
- (ed.) (2006). *Global labour history. A state of the art*. Bern, Peter Lang.
- Lucassen, J., and L. Lucassen (1997a). 'Introduction', in: idem (eds.), *Migration, migration history, history: old paradigms and new perspectives*. Bern, Peter Lang: 1–38.
- (eds.) (1997b). *Migration, migration history, history: old paradigms and new perspectives*. Bern, Peter Lang.
- (2009). 'The mobility transition revisited, 1500–1900: What the case of Europe can offer to global history', *The Journal of Global History* 4 (4): 347–377.
- Lucassen, J., and R. Penninx (1997). *Newcomers. Immigrants and their descendants in the Netherlands*. Amsterdam: Spinhuis .
- Lucassen, L. (2004). 'Where to go from here? New perspectives on global migration history', *International Review of Social History* 49 (3): 505–510.
- (2005). *The immigrant threat: The integration of old and new migrants in Western Europe since 1850*. Urbana and Chicago, The University of Illinois Press.

- (2007). 'Migration and world history: reaching a new frontier', *International Review of Social History* 52 (1): 89–96.
- Lucassen, L., D. Feldman, and J. Oltmer (eds.) (2006). *Paths of integration. Migrants in Western Europe (1880–2004)*. Imiscoe Research. Amsterdam, Amsterdam University Press.
- Lucassen, L., and B. de Vries (2001). 'The rise and fall of a Western European textile-worker migration system: Leiden, 1586–1700', *Revue du Nord* 15 (Hors serie): 23–42.
- Lynch, J., M. Ross, and T. Crowley (2002). *The oceanic languages*. Richmond, Surrey, Curzon.
- Macaulay, V., C. Hill, et al. (2004). 'Single, rapid coastal settlement of Asia revealed by analysis of complete mitochondrial genomes', *Science* 308: 1034–1036.
- Madsen, D. (1994). 'Mesa Verde and sleeping Ute mountain: the geographical and chronological dimensions of the Numic expansion', in: D. Madsen, and D. Rhode (eds.), *Across the West: human population movement and the expansion of the Numa*. Salt Lake City, University of Utah Press: 24–34.
- Madsen, D., and D. Rhode (eds.) (1994). *Across the West: human population movement and the expansion of the Numa*. Salt Lake City, University of Utah Press.
- Manning, P. (2003). *Navigating world history. Historians create a global past*. New York, Palgrave MacMillan.
- (2004). 'Migration: a millennium of meso-level analysis', *International Review of Social History* 49 (3): 500–504.
- (2005). *Migration in world history*. New York and London, Routledge.
- (2006a). 'Cross-community migration: a distinctive human pattern', *Social Evolution and History* 5 (2): 24–54.
- (2006b). 'Homo sapiens populates the earth: A provisional synthesis, privileging linguistic evidence', *Journal of World History* 17 (2): 115–158.
- Mannino, M. A., and K. D. Thomas (2002). 'Depletion of a resource? The impact of prehistoric human foraging on intertidal mollusc communities and its significance for human settlement, mobility and dispersal', *World Archaeology* 33: 452–474.
- Marck, J. (1986). 'Micronesian dialects and the overnight voyage', *The Journal of the Polynesian Society* 95 (2): 253–258.
- Marck, J., P. Hage, and R. Shutler Jr. (2005). 'Six Austronesian speaking populations in prehistory: "triangulating" the geographical and cultural path to Polynesia', *Tonga Lapita Conference*.
- Marrero, A. R., et al. (2005). 'Heterogeneity of the genome ancestry of individuals classified as White in the State of Rio Grande do Sul, Brazil', *American Journal of Human Biology* 17 (4): 496–506.
- Martinius, S. (1977). *Peasant destinies: the history of 552 Swedes born 1810–1812*. Stockholm, Almqvist & Wiksell International.
- Mascie-Taylor, C. G. N., and G. W. Lasker, Eds. (1987). *Biological aspects of human migration*. Cambridge, Cambridge University Press.
- Massey, D. S. (1990). 'Social structure, household strategies and the cumulative causation of migration', *Population Index* 56: 2–26.
- Massey, D. S., J. Arango, et al. (1993). 'Theories of international migration: a review and appraisal', *Population and Development Review* 19 (3): 431–466.
- Massey, D. S., and R. M. Zenteno (1999). 'The dynamics of mass migration', *Proceedings of the National Academy of Sciences of the United States of America* 96: 5328–5335.
- Matsu'ura, S. (1996). 'A chronological review of Pleistocene human remains from the Japanese archipelago', in: K. Omoto (ed.), *Interdisciplinary perspectives on the origins of the Japanese*. Kyoto, International Research Center for Japanese Studies: 181–197.

- Matthijs, K., J. Kok, T. Engelen, K. Mandemakers, and F. van Poppel (2005). 'A turn of fate. Life courses in the Low Countries between 1850 and 1940'. Leuven, Centrum voor Sociologisch Onderzoek (CESO). Bevolkings- en Gezinsonderzoek.
- McBrearty, S., and A. S. Brooks (2000). 'The revolution that wasn't: a new interpretation of the origin of modern human behavior', *Journal of Human Evolution* 39: 453–563.
- McConvell, P. (1996). 'Backtracking to Babel: the chronology of Pama-Nyungan expansion in Australia. Archaeology', *Oceania* 31: 125–144.
- (1997). 'The semantic shift between "fish" and "meat" and the prehistory of Pama-Nyungan', in: M. Walsh, and D. Tryon (eds.), *Boundary rider: essays in honour of G.N.O'Grady*. Canberra, Pacific Linguistics: 303–325.
- (2001). 'Language shift and language spread among hunter-gatherers', in: C. Panter-Brick, P. Rowley-Conwy, and R. Layton (eds.), *Hunter-gatherers: social and biological perspectives*. Cambridge, Cambridge University Press: 143–169.
- (2002). Linguistic stratigraphy and native title: The case of ethnonyms. *Linguistics and native title*. J. Henderson, and D. Nash. Canberra, Aboriginal Studies Press: 261–292.
- (2006). 'Comment on Clendon. Reassessing Australia's prehistoric history', *Current Anthropology* 47 (1): 53–54.
- (Forthcoming a). 'The spread of Pama-Nyungan in Australia: semantic change and borrowing as signature of upstream and downstream language spread', in: T. Gildeman, P. McConvell, and R. Rhodes (eds.), *The languages of hunter-gatherers: global and historical perspectives*. Cambridge, Cambridge University Press.
- (Forthcoming b). 'Gurindji loanwords', in: M. Haspelmath, and U. Tadmor (eds.), *Loanword typology*.
- McConvell, P., and B. Alpher (2002). 'The Omaha trail in Australia: tracking skewing from East to West', *Anthropological Forum* 12 (2): 159–76.
- McConvell, P., and N. Evans (eds.), (1997). *Archaeology and linguistics: Aboriginal Australia in global perspective*. Melbourne, Oxford University Press.
- McConvell, P., and M. Laughren (2004). 'Ngumpin-Yapa languages', in: H. Koch, and C. Bownen (eds.), *Australian languages: classification and the comparative method*. Amsterdam, Benjamins: 151–178.
- McConvell, P., and M. Smith (2003). 'Millers and mullers: the archaeolinguistic stratigraphy of seed-grinding in Central Australia', in: H. Andersen (ed.), *Language contacts in prehistory: studies in stratigraphy*. Amsterdam, Benjamins: 177–200.
- McDaniel, A., and E. M. Zulu (1996). 'Fathers, mothers and children: patterns in child-parent living arrangements in Sub-Saharan Africa', *African Population Studies* 11 (1): 1–30.
- McGovern, T. H. (2000). 'The demise of Norse Greenland', in: W. W. Fitzhugh, and E. I. Ward (eds.), *Vikings: the north Atlantic saga*. Washington DC, Smithsonian Institution Press: 327–339.
- McKeown, A. (2004). 'Global migration 1846–1940', *Journal of World History* 15 (2): 155–189.
- (2007). 'Periodizing globalization', *History Workshop Journal* (63): 218–229.
- (2008). *Melancholy order: Asian migration and the globalization of borders*. New York: Columbia University Press.
- McNeill, J. R., and William H. McNeill (2003). *The human web. A bird's-eye view of world history*. New York: W. W. Norton and Company.
- Mellars, P. (2006a). 'Going east: new genetic and archaeological perspectives on the modern human colonization of Eurasia', *Science* 313: 796–800.
- (2006b). 'Why did modern human populations disperse from Africa ca. 60,000 years ago? A new model', *Proceedings of the National Academy of Sciences of the United States of America* 103: 9381–9386; 13560 (erratum).

- Menjívar, C. (1995). 'Kinship networks among immigrants: lessons from a qualitative comparative approach', *International Journal of Comparative Sociology* 36 (3-4): 219-232.
- Menzies, G. (2003). *1421: The year China discovered the world*. London, Bantam Press.
- Micheli, G. A. (2000). 'Kinship, family and social network: the anthropological embedment of fertility change in Southern Europe', *Demographic Research* 3 (13).
- Miller, S. J. (1976). 'Family life cycle, extended family orientations, and economic aspirations as factors in the propensity to migrate', *Sociological Quarterly* 17: 323-335.
- Milroy, J., and L. Milroy (1997). 'Social network and pattern of language change', in: J. Chapman, and H. Hamerow (eds.), *Migrations and invasions in archaeological explanations*. Oxford, Archaeopress.
- Mitterauer, M., and R. Sieder (1982). *The European family*. Oxford, Basil Blackwell.
- Moch, L. P. (1983). *Paths to the city: regional migration in nineteenth-century France*. Beverly Hills, Sage.
- (1992). *Moving Europeans. Migration in Western Europe since 1650*. Bloomington, Indiana University Press.
- (2003a). *Moving Europeans. Migration in Western Europe since 1650*. Bloomington, Indiana University Press.
- (2003b). 'Networks among Bretons? The evidence for Paris, 1875-1925', *Continuity and Change* 18 (3): 431-456.
- (2007). 'Connecting migration and world history: Demographic patterns, family systems and gender', *International Review of Social History* 52 (1): 97-104.
- Mohapatra, P. (2007). 'Eurocentrism, forced labour and global migration. A critical assessment', *International Review of Social History* 52 (1): 110-115.
- Montgomery, J., J. A. Evans, D. Powlesland, and C.A. Roberts (2005). 'Continuity or colonization in Anglo-Saxon England? Isotope evidence for mobility, subsistence practice, and status at West Heslerton', *American journal of physical anthropology* 126 (2): 123-138.
- Moon, D. (2002). 'Peasant migration, the abolition of serfdom, and the internal passport system in the Russian empire, c. 1800-1914', in: D. Eltis (ed.), *Coerced/free migration. global perspectives*. Stanford, Stanford University Press: 324-357.
- Moore, J. H., and J. Campbell (2000). 'Five models of human colonization', *American Anthropologist* 130 (2): 395-408.
- Morawska, E. (1990). 'The sociology and historiography of immigration', in: V. Yans-McLaughlin (ed), *Immigration reconsidered. History, sociology and politics*. New York and Oxford, Oxford University Press: 187-240.
- Morwood, M. J., F. Aziz, et al. (1999). 'Archaeological and palaeontological research in Central Flores, East Indonesia: results of fieldwork 1997-98', *Antiquity* 73: 273-286.
- Morwood, M. J., P. B. O'Sullivan, F. Aziz, and A. Raza (1998). 'Fission-track ages of stone tools and fossils on the East Indonesian island of Flores', *Nature* 392: 173-176.
- Moya, J. C. (1998). *Cousins and strangers. Spanish immigrants in Buenos Aires, 1850-1930*. Berkeley, University of California Press.
- (2007). 'Domestic service in a global perspective: gender, migration and ethnic niche', *Journal of Ethnic and Migration Studies* 33 (4): 559-80.
- Nagata, M.-L. (2004). 'Leaving the village for labor migration in early modern Japan', in F. van Poppel, M. Oris, and J. Z. Lee (eds.), *The road to independence. Leaving home in Western and Eastern societies 16th-20th centuries*. Bern, Peter Lang: 273-311
- Nettle, D. (1999). *Linguistic diversity*. Oxford, Oxford University Press.
- Neven, M. (2003). 'Terra incognita: Migration of the elderly and the nuclear hardship hypothesis', *History of the Family. An International Quarterly* 8 (2): 267-295.

- Nichols, J. (1992). *Linguistic diversity in time and space*. Chicago, Chicago University Press.
- (1998). 'The Eurasian spread zone and the Indo-European dispersal', in: R. Blench, and M. Spriggs (eds.), *Archaeology and language II*. London, Routledge: 220–266.
- Noiriel, G. (1988). *Le creuset français: histoire de l'immigration, XIX^e–XX^e siècles*. Paris, Éd. du Seuil.
- Northrup, D. (1995). *Indentured labor in the age of imperialism*. Cambridge, Cambridge university Press.
- Nugent, W. (1992). *Crossings: the great transatlantic migrations, 1870–1914*. Bloomington, Indiana University Press.
- O'Connell, J. F., and J. Allen (2004). 'Dating the colonization of Sahul (Pleistocene Australia-New Guinea): a review of recent research', *Journal of Archaeological Science* 31: 835–853.
- O'Connor, S., M. Spriggs, and P. Veth (2002). 'Excavation at Lene Hara establishes occupation in East Timor at least 30,000 to 35,000 years on: Results of recent field-work', *Antiquity* 76: 45–50.
- (2005). 'On the cultural history of the Aru Islands: Some conclusions', in: S. O'Connor, M. Spriggs, and P. Veth (eds.), *The archaeology of the Aru islands, Eastern Indonesia. Terra Australis*. Canberra, ANU E Press. 22: 307–314.
- O'Rourke, K. H., and J. G. Williamson (2002). 'When did globalization begin?', *European Review of Economic History* 6: 23–50.
- Oda, S. (1990). 'A review of archaeological research in the Izu and Ogasawara islands', *Man and culture in Oceania* 6: 53–79.
- Oppenheimer, S. (2003). *The real Eve: modern man's journey out of Africa*. New York, Carroll & Graf.
- Oppong, C. (1992). 'Traditional family systems in rural settings in Africa', in: E. Berquó, and P. Xenos (eds.), *Family systems and cultural change*. Oxford, Clarendon Press: 69–86.
- Oris, M. (2003). 'The history of migration as a chapter in the history of the European rural family: An overview', *History of the Family. An International Quarterly* 8 (2): 187–215.
- Pakendorf, B. (2005). 'Language loss vs retention in result of prehistoric migrations in Siberia: a linguistic-genetic synthesis', in: N. Crawhall, and N. Ostler (eds.), *Creating outsiders: endangered languages, migration and marginalization (Proc. FEL IX, Stellenbosch, South Africa, 18–20 November 2005)*. Bath, Foundation for Endangered Languages: 163–167.
- Palloni, A., D. S. Massey, et al. (2001). 'Social capital and international migration: A test using information on family networks', *American Journal of Sociology* 106 (5): 1262–1298.
- Palriwala, R., and P. Uberoi (2005). 'Marriage and migration in Asia: gender issues', *Indian Journal of Gender Studies* 12 (2–3): 5–29.
- Pardoe, C. (2003). 'The Menindee lakes: a regional archaeology', *Archaeology in Oceania* 57: 42–53.
- Parkington, J. (2003). 'Middens and moderns: shellfishing and the middle Stone Age of the Western Cape, South Africa', *South African Journal of Science* 99: 243–247.
- Parreñas, R. S. (2001). *Servants of globalization. Women, migration and domestic work*. Stanford, Stanford University Press.
- Pasternak, B. (1983). *Guests in the dragon. Social demography of a Chinese district 1895–1946*. New York, Columbia University Press.
- Pavrides, C., and C. Gosden (1994). '5000 year-old sites in the rainforests of West New Britain, Papua New Guinea', *Antiquity* 68: 604–610.
- Pawley, A. (1996). 'The Polynesian subgroup as a problem for Irwin's continuous settlement hypothesis', in: J. Davidson, G. Irwin, F. Leach, A. Pawley, and D. Brown (eds.), *Oceanic culture history: Essays in honour of Roger Green*. Dunedin: N.Z., Archaeological Association: 387–410.

- (1998). ‘The trans New Guinea phylum hypothesis: a reassessment’, in: J. Miedema, C. Ode and R. A. C. Dam (eds.), *Perspectives on the bird’s head of Irian Jaya, Indonesia*. Amsterdam, Rodopi: 655–689.
- (2002). ‘The Austronesian dispersal: people, language, technology’, in: P. Bellwood, and C. Renfrew (eds.), *Examining the language/farming dispersal hypothesis*. Cambridge, McDonald Institute for Archaeological Research: 251–273.
- (2005). ‘The chequered career of the trans New Guinea hypothesis: recent research and its implications’, in: idem, et al. (eds.), *Papuan pasts: studies in the cultural, linguistic and biological histories of Papuan-speaking peoples*. Canberra, Pacific Linguistics: 67–107.
- (2007). ‘Recent research on the historical relationships of the Papuan languages, or, What does linguistics say about the prehistory of Melanesia?’, in: J. Friedlaender (ed.), *Population genetics, linguistics, and culture history in the Southwest Pacific: A synthesis*. New York, Oxford University Press: 36–58.
- Pawley, A., R. Attenborough, J. Golson, and R. Hide (eds.) (2005). *Papuan pasts: studies in the cultural, linguistic and biological histories of Papuan-speaking peoples*. Canberra, Pacific Linguistics.
- Pawley, A., and M. Ross (eds.) (1994). *Austronesian terminologies: continuity and change*. Canberra, Pacific Linguistics.
- (1995). ‘The prehistory of Oceanic languages: a current view’, in: P. Bellwood, J. Fox, and D. Tryon. (eds.), *The Austronesians: historical and comparative perspectives*. Canberra, Department of Anthropology, Research School of Pacific and Asian Studies, Australian National University.
- Piper, N., and M. Roces (eds.) (2003). *Wife or workers? Asian women and migration*, Rowman and Littlefield Publishers
- Plakans, A., and C. Wetherell (2003). ‘Households and kinship networks: the costs and benefits of contextualization’, *Continuity and Change* 18 (1): 49–76.
- Polian, P. (2004). *Against their will: the history and geography of forced migrations in the USSR*. Budapest, CEU Press.
- Pomeranz, K. (2000). *The great divergence. China, Europe, and the making of the modern world economy*. Princeton, Princeton University Press.
- Poo, M.-C. (2005). *Enemies of civilization: attitudes toward foreigners in ancient Mesopotamia, Egypt, and China*. Albany, State University of New York Press.
- Pooley, C., G., and J. Turnbull (1998). *Migration and mobility in Britain since the eighteenth century*. London, UCL Press.
- Poppel, F. van, and P. Ekamper (2005). ‘De Goudse horizon verruimd. Veranderingen in de herkomst van Goudse bruiden en bruidegoms’, in: J. Kok, and M. van Leeuwen (eds.), *Genegenheid en gelegenheid. Twee eeuwen partnerkeuze en huwelijk*. Amsterdam, Aksant: 181–211.
- Poppel, F. van, and M. Oris (2004). ‘Introduction’, in: F. van Poppel, M. Oris, and J. Z. Lee (eds.), *The road to independence. Leaving home in Western and Eastern societies 16th–20th centuries*. Bern, Peter Lang: 1–29.
- Poppel, F. van, M. Oris, et al. (eds.) (2004). *The road to independence: leaving home in Western and Eastern societies, 16th–19th centuries*. Bern, Peter Lang.
- Portes, A. (1998). ‘Social capital: its origins and applications in modern sociology’, *Annual Review of Sociology* 24 (1): 1–14.
- Potts, L. (1986). *Weltmarkt für Arbeitskraft: von der Kolonisation Amerikas bis zu den Migrationen der Gegenwart*. Hamburg, Junius.
- (1990). *The world labour market. A history of migration*. London, Zed Books.
- Price, T. D., L. Manzanilla, and W.D. Middleton (2000). ‘Immigration and the ancient city of Teotihuacan in Mexico: a study using strontium isotope ratios in human bone and teeth’, *Journal of Archaeological Science* 27 (10): 903–914.
- Price, T. D., V. Tiesler, and J.H. Burton (2006). ‘Early African diaspora in colonial Campeche, Mexico: strontium isotope evidence’, *American Journal of Physical Anthropology* 130 (4): 485–490.

- Rainbird, P. (2004). *The archaeology of Micronesia*. Cambridge, Cambridge: Cambridge University Press.
- Reeder, L. (2003). *Widows in white: migration and the transformation of rural Italian women, Sicily, 1880–1920*. Toronto, Toronto University Press.
- Reesink, G. (2005). 'West Papuan languages: roots and development', in: A. Pawley, R. Attenborough, J. Golson, and R. Hide (eds.), *Papuan pasts: studies in the cultural, linguistic and biological histories of Papuan-speaking peoples*. Canberra, Pacific Linguistics: 185–218.
- Reher, D. (1998). 'Family ties in Western Europe: persistent contrasts', *Population and Development Review* 24 (2): 203–234.
- Renfrew, C. (1987). *Archaeology and language: the puzzle of Indo-European origins*. London, Jonathan Cape.
- (2003). 'Time depth, convergence theory and innovation in proto-Indo-European: 'Old Europe' as a PIE Linguistic Area', in: A. Bammesberger, T. Vennemann, and Carl Winter (eds.), *Languages in prehistoric Europe*. Heidelberg, Universitätsverlag: 17–48.
- Richards, E. (2004). *Britannia's children: emigration from England, Scotland, Wales and Ireland since 1600*. London.
- Richards, M., H. J. Bandelt, et al. (2006). 'A model for the dispersal of modern humans out of Africa', in: H. J. Bandelt, V. Macaulay, and M. Richards (eds.), *Human mitochondrial DNA and the evolution of homo sapiens*. Berlin and Heidelberg, Springer-Verlag.
- Richmond, A. (1988). 'Sociological theories of international migration. The case of refugees', *Current Sociology* 36 (2): 7–25.
- Rick, T. C., J. M. Erlandson, and R. Vellanoweth (2001). Paleocoastal marine fishing on the Pacific Coast of the Americas: perspectives from Daisy Cave, California. *American Antiquity* 66:595–614.
- Roberts, D. F., N. Fujiki, and K. Torizuka (eds.) (1992). *Isolation, migration and health*. (Society for the study of human biology: symposium 33). Cambridge, Cambridge University Press.
- Roberts, R. G., R. Jones, and M. A. Smith (1990). 'Thermoluminescence dating of a 50,000 year old human occupation site in northern Australia', *Nature* 345: 153–156.
- Roscoe, P. (2005). 'Foraging, ethnographic analogy, and Papuan Pasts', in: A. Pawley, R. Attenborough, J. Golson, and R. Hide (eds.), *Papuan pasts: studies in the cultural, linguistic and biological histories of Papuan-speaking peoples*. Canberra, Pacific Linguistics: 555–583.
- Rosenberg, N. A., J. K. Pritchard, et al. (2002). 'Genetic structure of human populations', *Science* 298: 2381–2385.
- Rosental, P.-A. (1999). *Les sentiers invisibles: espace, familles et migrations dans la France du 19e siècle*. Paris, Éditions de l'École des Hautes Études en Sciences Sociales.
- Ross, M.D. (1996). 'Is Yapese oceanic?', in: B. Nothofer (ed.), *Reconstruction, classification, description: festschrift in Honour of Isidore Dyen*. Hamburg, Abera: 121–166.
- (2001). 'Is there an East Papuan phylum? Evidence from pronouns', in: A. Pawley, M. Ross, and D. T. Tryon (eds.), *The boy from Bundaberg: studies in Melanesian linguistics in honour of Tom Dutton*. Canberra, Pacific Linguistics: 301–321.
- (2005). 'Pronouns as a preliminary diagnostic for grouping Papuan languages', in: A. Pawley, R. Attenborough, J. Golson, and R. Hide (eds.), *Papuan pasts: studies in the cultural, linguistic and biological histories of Papuan-speaking peoples*. Canberra, Pacific Linguistics: 15–65.
- (Forthcoming). 'Defining the Trans New Guinea family: preliminary evidence from pronouns', in: A. Pawley, M. Ross, and M. Osmond (eds.), *Papuan languages and the trans New Guinea family*. Canberra, Pacific Linguistics.

- Ross, M. D., A. Pawley, and M. Osmond (eds.) (1998). *The lexicon of proto oceanic. Vol. 1. Material culture*. Canberra, Pacific Linguistics.
- (2003). *The lexicon of proto oceanic. The culture and environment of ancestral oceanic society, vol. 2. The physical environment*. Canberra, Pacific Linguistics.
- (2008). *The lexicon of proto oceanic. The culture and environment of ancestral oceanic society: Vol. 3 Plants; Vol. 4 Animals; Vol. 5 People and society*. Canberra, Pacific Linguistics.
- Rouse, I. (1986). *Migrations in prehistory. Inferring population movements from cultural remains*. New Haven, Yale University Press.
- Rowland, D. T. (1992). 'Family characteristics of internal migration in China', *Asia-Pacific Population Journal* 7 (1): 3–26.
- Roy, O. (2004). *Globalised Islam. The search for a new Ummah*. London, Hurst & Company.
- Ruggles, S. (1994). 'The transformation of American family structure', *American Historical Review* 99 (1): 103–128.
- Saidi, C. (2009). *Women's power: gender and society in early East-Central Africa*. Rochester, University of Rochester Press.
- Saito, O. (1998). 'Two kinds of stem family system? Traditional Japan and Europe compared', *Continuity and Change* 13 (1): 167–186.
- (2000). 'Marriage, family labour and the stem family household: traditional Japan in a comparative perspective', *Continuity and Change* 45 (1): 15–45.
- Salamon, S. (1982). 'Sibling solidarity as an operating strategy in Illinois agriculture', *Rural Sociology* 47 (2): 349–368.
- Sanchez-Mazas, A., R. Blench, M. D. Ross, I. Peiros, and M. Lin (eds.) (2008). *Past human migrations in East Asia. Matching archaeology, linguistics and genetics*. London, Routledge.
- Sapir, E. (1949). 'Internal linguistic evidence suggestive of the Northern origin of the Navaho', in: D. Mandelbaum (ed.), *Selected writings in language, culture and personality*. Berkeley, University of California Press: 213–244.
- Sassen, S. (2006). *Territory, authority, rights: from medieval to global assemblages*. Princeton and Oxford, Princeton University Press.
- Schoenbrun, D. (1998). *A green place, a good place: agrarian change, gender, and social identity in the Great Lakes region to the 15th century*. Portsmouth, NH, Heinemann.
- Schrover, M., J. P. van der Leun, L. Lucassen, and C. Quispel (eds.) (2008). *Illegal migration and gender in a global and historical perspective*. Imiscoe Research. Amsterdam, Amsterdam University Press.
- Schweissing, M. M. (2003). 'Stable strontium isotopes in human teeth and bone: a key to migration events of the late Roman period in Bavaria', *Journal of Archaeological Science* 30 (11): 1373–1384.
- Schweissing, M. M., and G. Grupe (2003). 'Tracing migration events in man and cattle by stable strontium isotope analysis of appositionally grown mineralized tissue' *International Journal of Osteoarchaeology* 13 (1–2): 96–103.
- Segalen, M. (1984). 'Avoir sa part': sibling relations in partible inheritance Brittany', in: H. Medick, and D. W. Sabeau (eds.), *Interest and emotion: essays on the study of family and kinship*. Cambridge, Cambridge University Press: 129–144.
- Sengupta, S., L. A. Zhivotovsky, et al. (2006). 'Polarity and temporality of high-resolution Y-chromosome distributions in India identify both indigenous and exogenous expansions and reveal minor genetic influence of central Asian pastoralists', *American Journal of Human Genetics* 78: 202–221.
- Sharpe, P. (ed.) (2001). *Women, gender and labour migration. historical and global perspectives*. London and New York, Routledge.
- Siegel, J. (1985). 'Koinés and koineization', *Language in society* 14: 357–378.

- Silva, I. da (2003). 'Demographic and social trends affecting families in the South and Central Asian region, major trends affecting families: a background document report for United Nations, Department of Economic and Social Affairs, Division for Social Policy and Development, Program on the Family', Tables archived at: <http://www.un.org/esa/socdev/family/Publications/mtdesilva.pdf> and at <http://www.un.org/esa/socdev/family/Publications/mtscatables.pdf>
- Skinner, G. W. (1997). 'Family systems and demographic processes', in: D. I. Kertzer, and T. Fricke (eds.), *Anthropological demography: toward a new synthesis*. Chicago, University of Chicago Press: 53–95.
- Smith, A. L., Ed. (2003). *Europe's invisible migrants*. Amsterdam, Amsterdam University Press.
- Smith, M. (2005). 'Desert archaeology, linguistic stratigraphy and the spread of the Western desert language', in: P. Veth, M. Smith, and P. Hiscock (eds.), *Desert peoples: archaeological perspectives*. Oxford, Blackwell: 222–242.
- Smrčka, V. (2005). *Trace elements in bone tissue*. Praha, Karolinum.
- Sokal, R. R. (1988). 'Genetic, geographic, and linguistic distances in Europe', *Proceedings of the National Academy of Sciences, USA* 85: 1722–1726.
- Solien de Gonzalez, N. L. (1961). 'Family organization in five types of migratory wage labor', *American Anthropologist* 63: 1264–1280.
- Spaulding, J. (1990). 'The old Shaiqi language in historical perspective', *History in Africa* 17: 283–292.
- Specht, J. (2005). 'Revisiting the Bismarcks: some alternative views', in: A. Pawley, R. Attenborough, J. Golson, and R. Hide (eds.), *Papuan pasts: studies in the cultural, linguistic and biological histories of Papuan-speaking peoples*. Canberra, Pacific Linguistics: 235–288.
- Spriggs, M. (1997). *The island Melanesians*. Oxford and Cambridge, Mass, Blackwell.
- Stark, O. (1991). *The migration of labor*. Oxford, Basil Blackwell.
- Steadman, D. W., and P. S. Martin (2003). 'The late Quaternary extinction and future resurrection of birds on Pacific Islands', *Earth Science Reviews* 61: 133–147.
- Steinfeld, R. J. (1991). *The invention of free labor: the employment relation in English and American law and culture, 1350–1870*. Chapel Hill, University of North Carolina Press.
- Stoler, A. L. (2002). *Carnal knowledge and imperial power: race and the intimate in colonial rule*. Berkeley, University of California Press.
- Storey, A. A., J. M. Ramirez, et al. (2007). 'Radiocarbon and DNA evidence for a pre-Columbian introduction of Polynesian chickens to Chile', *Proceedings of the National Academy of Sciences of the United States of America* 104 (25): 10335–10339.
- Strikwerda, C. (1999). 'Tides of migration, currents of history: the state, economy, and the transatlantic movement of labor in the nineteenth and twentieth centuries', *International Review of Social History* 44 (3): 367–394.
- Stringer, C. (2000). 'Coasting out of Africa', *Nature* 405: 24–26.
- Stringer, C., and R. McKie (1997). *African exodus: the origins of modern humanity*. New York, H. Holt & Co.
- Stromquist, S. (2006). *Reinventing "The People": The progressive movement, the class problem, and the origins of modern liberalism*. Urbana and Chicago, University of Illinois Press.
- Summerhayes, G. (2000). *Lapita interaction. No. 15, Terra Australia*. Canberra, Archaeology & Natural History Publications and the Centre for Archaeological Research, Australian National University.
- Sutton, P. (1990). 'The pulsating heart: large scale cultural and demographic processes in Aboriginal Australia', in: B. Meehan, and N. White (eds.), *Hunter-gatherer demography; past and present*. Sydney, Oceania Publications: 71–80.

- Swadling, P., and R. Hide (2005). 'Changing landscape and social interaction: looking at agricultural history from a Sepik-Ramu perspective', in: A. Pawley, R. Attenborough, J. Golson, and R. Hide (eds.), *Papuan pasts: studies in the cultural, linguistic and biological histories of Papuan-speaking peoples*. Canberra, Pacific Linguistics: 289–327.
- Tafari, M. A., R. A. Bentley, G. Manzi, and S. di Lernia (2006). 'Mobility and kinship in the prehistoric Sahara: Strontium isotope analysis of Holocene human skeletons from the Acacus Mts. (southwestern Libya)', *Journal of Anthropological Archaeology* 25 (3): 390–402.
- Templeton, A. R. (2002). 'Templeton Out of Africa, again and again', *Nature* 416 (6876): 45–51.
- Therborn, G. (2004). *Between sex and power: family in the world, 1900–2000*. London, Routledge.
- Thomason, S. G., and T. Kaufman (1988). *Language contact, creolization and genetic linguistics*. Berkeley, University of California Press.
- Thornton, A., M.-C. Chang, et al. (1984). 'Social and economic change, intergenerational relationships, and family formation in Taiwan', *Demography* 21 (4): 475–499.
- Thränhardt, D. (1996). 'European migration from east to West: present patterns and future directions', *New Community* 22 (2): 227–242.
- Tibi, B. (2002). *Islamische Zuwanderung: die gescheiterte Integration*. Stuttgart, Deutsche Verlags-Anstalt.
- Tiemoko, R. (2004). 'Migration, return and socio-economic change in West Africa: the role of family', *Population, Space and Place* 10: 155–174.
- Tilly, C. (1978). 'Migration in modern European history', in: W. H. McNeill, and B. Adams (eds.), *Human migration. Patterns and policies*. Bloomington, Indiana University Press: 48–72.
- Todd, E. (1985). *The explanation of ideology: family structures and social systems*. Oxford and New York, Blackwell.
- (1987). *The causes of progress: culture, authority and change*. Oxford, Basil Blackwell.
- (1990). *L'Invention de l'Europe*. Paris, Editions du Seuil.
- Topley, M. (1975). 'Marriage resistance in rural Kwantung', in: M. Wolf, and R. Witke (eds.), *Women in Chinese society*. Stanford, Stanford University Press: 67–88.
- Torrence, R., V. Neall, et al. (2004). 'Pleistocene colonisation of the Bismarck Archipelago: New evidence from West New Britain', *Archaeology in Oceania* 39 (101–130).
- Torroni, A., A. Achilli, et al. (2006). 'Harvesting the fruit of the human mtDNA tree', *Trends in Genetics* 22: 339–345.
- Trager, L. (1984). 'Family strategies and the migration of women: migrants to Dagupan City, Philippines', *International Migration Review* 18 (4): 1264–1277.
- Treadgold, D. W. (1957). *The great Siberian migration. Government and peasant in resettlement from emancipation to the First World War*. Princeton, Princeton University Press.
- Triandis, H. C. (1995). *Individualism and collectivism*. Boulder, Westview Press.
- Trudgill, P. (1986). *Dialects in contact*. Oxford: Blackwell
- (2004). *New-dialect formation: the inevitability of colonial Englishes*. Edinburgh, Edinburgh University Press.
- (2008). 'Colonial dialect contact in the history of European languages: On the irrelevance of identity to new-dialect formation. (discussion with following responses by other sociolinguists and rejoinder by P. Trudgill)', *Language in Society* 37 (2): 241–280.
- Turney, C. S. M., M. I. Bird, et al. (2001). 'Early human occupation at Devil's Lair, southwestern Australia 50,000 years ago', *Quaternary Research* 55: 3–13.
- Tveskov, M. A., and J. M. Erlandson (2007). 'Vikings, Vixens, and Valhalla: representation in Hollywood depictions of the Norse', in: J. Schablitsky (ed.), *Box office*

- archaeology: refining Hollywood's portrayal of the past*. Walnut Creek (CA), Left Coast Press: 34–50.
- Underhill, P. A. (2003). 'Inferring human history: clues from Y-chromosome haplotypes', *Cold Spring Harbor symposia on quantitative biology* 68: 487–493.
- Underhill, P. A., and T. Kivisild (2007). 'Use of Y chromosome and mitochondrial DNA population structure in tracing human migrations', *Annual Review of Genetics* 41: 539–564.
- Underhill, P. A., G. Passarino, et al. (2001). 'The phylogeography of Y chromosome binary haplotypes and the origins of modern human populations', *Annals of Human Genetics* 65 (1): 43–62.
- Vajda, E. (2008). 'A Siberian link with Na-Dene languages'. Dene-Yeniseic Symposium. Fairbanks March 2008. <http://www.uaf.edu/anlc/docs/vajda-2008.pdf>.
- Van Holst Pellekaan, S. M., M. Frommer, et al. (1998). 'Mitochondrial control-region sequence variation in Aboriginal Australians', *American Journal of Human Genetics* 62: 435–449.
- Van Holst Pellekaan, S. M., and R. Harding (2006). 'Excavating the mitochondrial genome identifies major haplogroups in Aboriginal Australians', *Before Farming* (5) 1.
- Vanhaeren, M., F. d. Errico, et al. (2006). 'Middle Paleolithic shell beads in Israel and Algeria', *Science* 312: 1785–1788.
- Vansina, J. (1990). *Paths in the rainforests: toward a history of political tradition in Equatorial Africa*. Madison, Wisconsin University Press.
- Veth, P., M. Smith, and P. Hiscock (eds.) (2005). *Desert peoples: archaeological perspectives*. Oxford, Blackwell.
- Veth, P., M. Spriggs, and S. O'Connor (2005). 'Continuity in tropical cave use: Examples from East Timor and the Aru Islands, Maluku', *Asian Perspectives in American History* 44 (1): 180–192.
- Viazzo, P. P., and K. A. Lynch (2002). 'Anthropology, family history, and the concept of strategy' *International Review of Social History* 47 (3): 423–452.
- Vigilant, L., M. Stoneking, et al. (1991). 'African populations and the evolution of human mitochondrial DNA', *Science* (253): 1503–1507.
- Vigne, R., and C. Littleton (eds.) (2001). *From strangers to citizens. The integration of immigrant communities in Britain, Ireland and colonial America*. London, Sussex Academic Press.
- Vink, M. P. M. (2003). '"The world's oldest trade": Dutch slavery and slave trade in the Indian Ocean in the seventeenth century', *Journal of World History* 14 (2): 131–177.
- (2007). 'Indian Ocean studies and the new thalassology', *Journal of Global History* 2 (1): 41–62.
- Vossen, R. (1988). *Towards a comparative study of the Maa dialects of Kenya and Tanzania*. Hamburg, Buske.
- Vries, P. H. H. (2001). 'Are coal and colonies really crucial? Kenneth Pomeranz and the Great Divergence', *Journal of World History* 12 (2): 407–446.
- Wallace, A. R. (1869). *The Malay archipelago*. London, MacMillan.
- Waltner, A., and M. J. Maynes (2001). 'Childhood, youth and the female life cycle: Women's life-cycle transitions in a world-historical perspective: comparing marriage in China and Europe', *Journal of Women's History* 12 (4): 11–20.
- Wang, Sp., J. Kok, and J.-C. Chuang (2008). 'Who married how? Modeling marital decisions in early-twentieth century Taiwan', *Journal of Family History* 33 (4): 430–451.
- Wang, S., C. M. Lewis, et al. (2007). 'Genetic variation and population structure in native Americans', *Plos Genetics* 3 (11): 2049–2067.
- Washburn, S. L., and C. S. Lancaster (1968). 'The evolution of hunting', in: R. B. Lee and I. DeVore (eds.), *Man the hunter*. Chicago, Aldine: 293–303.

- Wegge, S. A. (1998). 'Chain migration and information networks. Evidence from nineteenth-century Hesse-Cassel', *The Journal of Economic History* 58 (4): 957–986.
- (1999). 'To part or not to part: Emigration and inheritance institutions in nineteenth-century Hesse-Cassel', *Explorations in Economic History* 36 (1): 30–55.
- (2008). 'Network strategies of nineteenth century Hesse-Cassel emigrants', *History of the Family. An International Quarterly* 13 (3): 296–314.
- Wells, S. (2002). *The journey of man: a genetic Odyssey*. Princeton, Princeton University Press.
- White, D. R., and W. W. Denham (2008). 'The indigenous Australian marriage paradox: small-world dynamics on a continental scale', *Structure and Dynamics* 3 (3).
- Wickler, S., and M. Spriggs (1988). 'Pleistocene human occupation of the Solomon Islands, Melanesia', *Antiquity* 62:703–707.
- Widdis, R. W. (1992). 'Generations, mobility and persistence: a view from genealogies', *Histoire sociale- Social History* 25: 125–150.
- Williamson, J. G., and T. J. Hatton (eds.) (1994). *International migration 1850–1939: an economic survey*. Milan.
- Wilson, C., and T. Dyson (1992). 'Family systems and cultural change: perspectives from past and present', in: E. Berquó, and P. Xenos (eds.), *Family systems and cultural change*. Oxford, Clarendon Press: 31–45
- Witherspoon, D. T., E. E. Marchani, et al. (2006). 'Human population genetic structure and diversity inferred from polymorphic L1(LINE-1) and alu insertions', *Human Heredity* 62 (1): 30–46.
- Wokeck, M. S. (1999). *Trade in strangers. The beginnings of mass migration to North America*. University Park, The University of Pennsylvania Press.
- Wolf, A. P. (1974). 'Gods, ghosts and ancestors', in: idem (ed.), *Religion and ritual in Chinese society*. Stanford, Stanford: Stanford University Press: 133–182.
- Wolf, A. P., and C. Huang (1980). *Marriage and adoption in China, 1845–1945*. Stanford, Stanford University Press.
- Wong, R. B. (2000). *China transformed: historical change and the limits of European experience*. Ithaca, Cornell University Press.
- Woon, Y.-F. (1983). 'The voluntary sojourner among the overseas Chinese: myth or reality', *Pacific Affairs* 56 (4): 673–690.
- Wright, L. E. (2005). 'Identifying immigrants to Tikal, Guatemala: defining local variability in strontium isotope ratios of human tooth enamel', *Journal of Archaeological Science* 32 (4): 555–566.
- Wurm, S. A. (ed.) (1975). *New Guinea area languages. Vol. 1. Papuan languages and the New Guinea linguistic scene*. Canberra, Pacific Linguistics.
- (1982). *The Papuan languages*. Tübingen.
- Wurm, S. A., and S. Hattori (eds.) (1981–1983). *Language atlas of the Pacific area. Vol. 1 (1981). vol. 2 (1983)*. Canberra, Pacific Linguistics.
- Yellen, J. E., A. S. Brooks, E. Cornelissen, M. J. Mehlman, and K. Stewart (1995). 'A Middle Stone Age worked bone industry from Katanda, Upper Semliki Valley, Zaire', *Science* 268: 553–556.
- Yesner, D. R. (1987). 'Life in the "Garden of Eden": constraints of marine diets for human societies', in: M. Harris, and E. Ross (eds.), *Food and evolution*, Temple University Press, Philadelphia: 285–310.
- Zalloua, P. A., Y. Xue, et al. (2008). 'Y-Chromosomal Diversity in Lebanon is structured by recent historical events', *American Journal of Human Genetics* 82: 873–882.
- Zaslavsky, V., and R. J. Brym (1983). *Soviet-Jewish emigration and Soviet nationality policy*. New York, St. Martin's Press.
- Zolberg, A. (2006). *A nation by design. Immigration policy in the fashioning of America*. New York and Cambridge Mass., Harvard University Press and Russell Sage Foundation.

INDEX ON NAMES OF AUTHORS

- Adams, Ruth 8, 11
Adams, W. 157
Anthony, D. 157–158, 160–161
Arthur, J. A. 237
- Bade, Klaus 4
Bednarik, R. G. 196
Bellwood, P. 83, 98, 103–104, 158, 163
Bentley, R. A. 71
Bernard, J. R. 183
Birdsell, J. 177
Blust, R. A. 97–98, 101–102
Brettell, C. 223
Burmeister, S. 157–158
- Canny, Nicholas 7
Chapman, J. 161
Clarkson, C. 173
Clendon, M. 163
Codrington, Robert 87
Cohen, Robin 8
Cunningham, William 4
- Dahl, Otto C. 135
Destro-Bissol, G. F. 49
Dixon, R. M. W. 161–163
- Ehret, Christopher 23–25, 31, 33, 146
Eltis, David 10–11
Emmer, Pieter 7
Erlandson, Jon M. 27–28, 33, 202
Evans, N. 179
Ezzo, J. A. 70
- Forster, Johann R. 78, 86
- Gamble, C. 195
Garrett, A. 163
Gates, H. 236
Goody, Jack 226, 248
Gould, Richard A. 158
Graham, M. 202
Greenberg, Joseph H. 89–90, 178
- Hamerow, H. 161
Harbison, R. F. 230
- Held, D. 15
Hide, R. 95
Hill, Jane H. 164, 178, 180–181
Hiscock, P. 171
Hodell, D. A. 72
Hoerder, Dirk 11, 14
Hogan, D. P. 234
Horvath, B. 183
Hunley, K. 179
- Ives, J. W. 178
Jones, D. 172, 185
Jones, T. L. 207
Jones, Sir William 86
- Kaufman, T. 169, 174, 181
Kayser, M. 170
Keita, Shomarka 22–23, 33
Kertzner, D. I. 234
Kesztenbaum, L. 245
Klar, K. A. 207
Klieman, Kairn 124, 128, 146
Knijff, Peter de 21–22
Kok, Jan 13, 28, 33
- Laslett, Peter 229
Lee, James 8, 13
Le Play, Pierre Guillaume Frédéric 219–220
Lesger, Clé 244
Lewis, Bernard 4
Long, J. C. 179
Lucassen, Leo 244
- Madsen, D. 181
Manning, Patrick 14–16, 48, 202, 216
Marck, Jeff 187
McConvell, Patrick 23, 26, 31, 33, 164, 179
McKeown, Adam 12, 14
McNeill, William 8, 11
Milroy, Leslie and James 161, 182
Moch, Leslie Page 7, 13, 216
Mohapatra, Prabhu 12
Montgomery, J. 70
Mörner, Magnus 7
Morwood, M. J. 196

- Nettle, D. 163
Nichols, J. 164
- Pakendorf, B. 156
Palloni, A. 246
Pawley, Andrew 23, 25–26, 31, 33
Pomeranz, Kenneth 12
Potts, Lydia 8
Price, T. D. 70, 73
- Ray, S. H. 87–88
Reher, D. 239
Renfrew, C. 163
Richmond, Anthony 10
Roscoe, P. 85
Rosental, Paul-André 245
Ross, Malcolm D. 89, 93
- Saito, Osamu 224, 228
Sapir, E. 160, 179
Schmidt, Wilhelm 88
- Schoenbrun, David 146
Schrover, Marlou 244
Sutton, P. 164
Swadling, P. 95
- Tafury, M. A. 71
Thomason, S. G. 169, 174, 181
Tilly, Charles 8, 216–217
Todd, Emmanuel 28, 219–221, 238
- Van Holst Pellekaan, S. M. 171
Vansina, Jan 146
- Wallace, A. R. 87–88
Wang Feng 13
Williamson, Jeffrey 15
Wong, R. Bin 12
Wright, L. E. 72
Wurm, Stephen A. 89, 177
- Zolberg, Aristide 4

GEOGRAPHICAL AND LANGUAGES INDEX

NB1 languages and language groups as well as ethnicities and cultures in italics

NB2 Languages which are mentioned only in figures, and not in the text have not been included; neither have geographical names on maps (but captions of maps have been included!)

- Africa 3, 7–8, 11, 14, 16, 18, 21–23,
27, 31, 34, 39–40, 43, 44, 46, 48–49,
51–56, 61, 69, 72–73, 113, 116, 121,
123, 130, 136–137, 140, 145–146, 192,
194–197, 199, 205, 208, 212–213,
220–221, 226–228, 230–231, 237–238,
247; see also *Bantu*
Cushitic 117, 131–134, 141,
143–144, 147–148, 151, 153
Afar 151
Agaw 132–134, 148
Beja 148
Oromo 147, 151
Soomaali, Somali 147
East(ern) Africa 25, 62, 129,
135–137, 140
Camus 140
Kalenjin 25, 31, 131, 137–139,
141, 143–145, 154
Maa, Ma'a, Maasai 131, 140–145,
151, 153–154
Ongamo 140
Ongamo-Maa 140–144, 151–152
Sampuru 140, 145
Great Lakes 129
Horn of Africa 131, 133–134
Nilotic 141, 143, 152–153
Northeast Africa 34
Northern Africa 46, 62
Saharan Africa 62, 69, 72
Jenne 69
Timbuktu 69
Southern Africa 157
Sub-Saharan Africa, tropical
Africa 46, 49, 62, 226, 237
West Africa 116
Krio 116
Afroasiatic 24, 131
Alaska 178
Algeria 197
Alps, the 66
Americas, the 6–7, 15–16, 23, 27, 53,
69, 78, 157, 184, 191, 193–194, 196,
201–202, 204, 206, 211, 213
Amerindians, Amerind, Native
American 18, 22, 55–56, 89, 178
Central America, Meso America 56,
72–73, 194, 221
North America 16, 18–19, 28, 31,
33, 56, 117, 164, 178, 186, 202,
208, 210–211, 220, 225
Afro-North American 60–61
Apache, Apachean(s) 178–179
Athabaskan 27, 178–180, 185–187
Chipewyan 56
Comanches 119
Cree 56
Crow 186
Navaho 178–170
Numic, Numa 27, 117–121, 130,
137, 139, 164, 180–181, 186–187
Ojibwa 56
Omaha 186–187
Takic 164, 181
South America 5, 7, 14, 26, 28, 54,
56, 110, 206, 220
Andes, the 70
Arabia, Arab, Arabic 34, 49, 208–209,
221
South Arabia, *South Arabian* 25,
132–134
Aryans 18
Asia 6–8, 11–12, 14, 16, 18, 34, 47–49,
61, 78, 110, 192, 194, 199, 201, 205,
208, 212, 217, 234
Central Asia 12, 28, 49, 53
East Asia 29, 53, 98, 112, 195, 201,
212, 227, 234, 239
Northern Asia 12–13
South Asia 53, 136–137

- Southeast Asia 12–13, 18, 28, 49,
 77–82, 90, 95–96, 101, 104, 193,
 196, 199, 204–205, 212, 219, 221,
 231
- Atlantic Ocean, Atlantic regions,
 Atlantic world 5–7, 10–14, 18, 31,
 33, 204, 208, 211, 213, 215
- Australasia 157
- Australia 5, 16, 26–27, 31, 34, 79–80,
 83, 90, 158–159, 162–165, 168–171,
 176, 181, 183–184, 187, 191–192, 194,
 196, 199–200, 211–213, 220
- Aboriginal Australian languages*
 90
- Aranda* 186
- Ngumpin Yapa, Eastern Ngumpin*
 26, 172–174, 176
- Pama-Nyungan (PN)* 26, 162–163,
 169–172, 175, 177, 187
- Wati* 172
- Australian Desert populations (AD)*
 171
- Warlman, Warlpiri* 171, 174–175
- Australian English* 27, 161,
 182–183
- Australian Riverine populations*
(AR) 171
- Northern Territory 172
- Jarragan* 173–174
- Victoria River District 172–175
- Sahul 80, 83, 90, 112, 192,
 199–201, 212
- Tasmania, *Tasmanian* 89–90, 171,
 199
- Western Australia 172
- Great Sandy Desert 172
- Kariera* 185
- Kimberleys 172
- Tanami Desert 172
- Pilbara 177
- Western Desert 158, 172,
 176–177, 181, 184–188
- Austroasiatic* 98
- Austronesian* 24–25, 28, 31, 79–80,
 86–88, 93–94, 96–104, 112, 136, 150,
 193, 204–207, 212–213
- Aztecs* 73
- Uto-Aztecan* 164, 180
- Bahamas 15
- Balkans, the 221
- Baltic, the 208
- Bantu* 24–25, 31, 34, 116, 121–130,
 135–137, 139, 150
- Azanian* 135–137
- Babole* 124–125
- Buneya* 124–125
- Castlands* 124–125
- Luhya* 25, 31, 131, 137–139
- Mbo* 124–126
- Nyong-Lomami* 123–126, 128
- Sangha-Kwa* 124–125, 128
- Forest-Savanna-Bantu* 123–129
- Kota-Wumvu* 125
- Mashariki* 125–129, 149
- Ngondi* 125
- Okani* 125
- Swahili* 150
- Tanga-Bomwale* 124–25
- Basque area, *Basque* 90, 223
- Belgium, Southern Netherlands 9, 220,
 229, 246
- Pays d’Herve 246
- Walloon 246
- Belize 67
- Bismarck Archipelago 26, 28, 79, 82,
 84, 87, 89, 95–96, 100–102, 105, 112,
 200, 205
- Admiralty group 79, 200
- Manus Island, Greater Manus 84,
 200
- New Britain 79, 82, 84–85, 88, 103,
 105, 200
- New Ireland 79, 82, 84–85, 103, 200
- Black Sea 208
- Bolivia 70
- Juch’uyampa Cave 70
- Tiwanaku* 70
- Brazil 22, 54–55
- Burma 13
- Cameroon(s) 69, 237
- Canada 5, 178–179
- New Foundland 211
- L’anse Au Meadows 211
- Carribean (Islands), West Indies 5, 7,
 71, 116
- West Indian creoles 116
- Caspian Sea 208
- Celtic* 94
- Chile 27, 110, 204
- Monte Verde 27, 204
- China 3, 8, 12–16, 29, 98, 100, 221,
 225, 228, 234–236, 242
- Fujian 100
- Guangdong 100
- Shanghai 3
- Yangzi River 98

- Yellow River Basin 98
 Congo, Zaire 197
 Congo River 124, 129
 Katanda 197
 Cuba 63

Dene-Caucasian 48
 Denmark, *Danish* 132
 Dubai 3

 Easter Island, Rapa Nui 77, 96,
 109–110, 205–207
 Egypt 69–70, 194
 Nile Valley 69–70
 Eritrea 131–132, 134
 Tigre 131
 Tigrinya 131
Eskimo 178
 Ethiopia 25, 131
 Aksum 134
 Amharic 131–132
 Ethiopic 132–134, 147–148
 Ge'ez 134
 Eurasia, Eurasian 56, 63, 191, 212,
 234
Euroasiatic 89
 Europe, European, Europeans 5–8,
 10–14, 16, 18–19, 22, 28–29, 31,
 53–55, 57, 69, 77–78, 86, 90, 108, 157,
 193–194, 207–208, 211, 215, 220, 223,
 226, 234, 239–240
 Central Europe 57
 Eastern Europe 3, 9, 208
 Northern Europe 6, 239
 Northwestern Europe 13
 Western Europe 3, 5–9, 12–13,
 52, 217, 225, 227–229, 233–234

 Fiji, *Fijian* 87, 97, 105, 107–108, 161,
 205
 Bauan 97
 Rotuma, *Rotuman* 107–108
 Finland 221
 France 220, 222–223, 244–246
 Brittany, Bretons 224, 244
 Normandy 208
 Paris 223, 244
 Pyrenees 222–223

Germanic 24, 94
 Germany, Germans 8–9, 18, 67, 87,
 157–158, 237, 244
 German 89
 Vaihingen 67, 71

 Ghana 21, 50, 73
 Elmina 73
 Gibraltar, Straits of 196
 Greece 220
 Greek 86, 94
 Greenland 191, 211
 Greenland Inuit 61
 Guatemala 67, 73
 Tikal 73

 Hawaii 26, 77, 96, 107, 109–110,
 206–207
 Hawaiian Pidgin 116
 Himalayas, *Himalayan* 47, 49
Hmong-Mien 98
Hungarian 156

 Iceland 191, 208–211
 Icelandic 182
 Mossfell Valley 209–211
 Hrísbrú 209, 211
 Hulduhóll (Elfin Hill) 211
 Kirkjuhóll (Church Knoll)
 210–211
 India, Indian subcontinent 12–13, 18,
 34, 49, 227, 230, 242
 Andaman Islands, *Andaman* 47,
 89–90, 213
 Bay of Bengal 89
 Nicobar Islands 213
 North India 221
 Hindi/Bhojpuri 161
 Indian Ocean, Indian Ocean rim 10,
 12, 21, 27, 198, 204, 211–213
Indo-European 24, 90, 94, 114, 163
Indo-Iranian 94
Indo-Pacific 89–90
 Indonesia, Netherlands East Indies
 26–28, 34, 77, 86–87, 96–98, 103, 105,
 112, 131, 135
 Aru Islands 201
 Borneo 25, 80, 100, 135
 Maanjan 135
 Halmahera 97–98, 100, 102
 Java, *Javanese* 77, 80
 Moluccas, the 82, 87, 89, 102–103
 Sulawesi 80, 98, 100
 Sumatra 80
 Sunda, Sundaland 80–81, 83,
 199–201, 212
 (Lesser) Sundas, the 80
 Flores 196
 Lombok, Lombok Strait 80, 196
 Sumbawa 98

- Timor 80, 89, 91, 100, 103, 200
Toba Batak 97
 Wallacea 79, 81–83
- Iraq 3
 Ireland 4
 Israel 9, 197
 Italy 220–221, 229, 234, 243
- Japan, Japanese 12, 27, 47, 77, 193,
 201–202, 213, 220, 223, 227–228, 234;
 see also Ryukyu Islands
 Honshu 201
 Kurile Islands 202, 213
- Kenya 117, 131, 136–137, 140–141
 Baringo Basin, Lake Baringo
 140–141, 143
Dahalo 117
 Laikipia Plateau 140–141
 Rift Valley 140–141
 Turkana Basin 140–141, 143
- Korea 220, 237
- Lebanon 21, 52
 Libya 23, 71–72
Garamantians, the 72
- Madagascar, *Malagasy* 25–26, 77, 96,
 98, 131, 135–137, 149–150, 205
Malayo-Polynesian (MP) 97–98,
 101–103, 105
- Malaysia, Malaya, *Malay* 13, 26,
 77–78, 86–88, 98, 103
- Manchuria 12
Mangarevan 109
- Mauritius 161
Maya 67, 72
- Mediterranean, the 3, 28, 46, 208
- Melanesia, *Melanesian* 28, 77–78,
 87–90, 92–93, 95–96, 105, 112, 116,
 200, 205, 205–206, 213
Melanesian Pidgin 116
- Mexico 3, 73, 238, 246
 Campeche 73
- Micronesia 77–78, 82, 97, 101, 105,
 107, 112, 205
 Caroline Islands 105, 107, 205
 Belau, Palau 105, 205
Puluwat 97
- Guam
 Kiribati (Gilbert Islands) 205
 Tuvalu 205
- Mariana Islands 100, 105, 205
 Yap 105, 205
- Marshall Islands 205
Micronesian 101
 Nauru
 Wake
- Middle East 4, 53, 56, 133
 Mongolia 13, 49
 Morocco 69, 197
- Netherlands, the, Dutch Republic 7, 9,
 87, 246
 Holland (western provinces) 220
 Rotterdam 35, 244
 Vlaardingen 35
 Zeeland 246
- New Caledonia 86–87, 105, 205
 Loyalties 87
- New Guinea 25–28, 31, 77–80, 82–85,
 87, 89–91, 93–95, 97–98, 101–103,
 107, 196, 199–200, 205–206
Asmat 85
 Baliem Valley 85
 Bird's Head 90, 98
 Bomberai Peninsula 98
 Cenderawasih Bay 102
 Huon Peninsula 83–84
 Irian Jaya 85
 Kainantu 94
Manam 97
Mimika 85
 Mount Hagen 94
Murik 85
Papuan 79, 88–94, 112
 Sepik (-Ramu) basin 85, 90, 95
 Strickland River 94
Trans New Guinea (TNG) phylum
 25, 31, 93–95
 (Upper) Waghi Valley 85, 94
 Kuk 85
 Vanimo 83
 Lachitu 83
- New Zealand, Aotearoa 5, 26, 77, 96,
 107, 109–110, 161, 184, 206–207 [here
 Aotearoa 2x miss-spelled!] 220
 Auckland Island 110
 Chatham Island 110
 Kermadec Islands 110
 Lord Howe Island 110
Maori 109
 Mackenzie Basin 185
 Stewart Island 110
- Nigeria 34
 North Pole 60
 Norway
Norwegian 182
Nostratic 89

- Pacific (Ocean), Pacific Islands, Pacific Rim, Oceania, South Sea 10, 14, 16, 18, 25, 27–28, 31, 34, 53, 64, 77–79, 81, 83, 86, 98, 100, 104, 109–111, 183–184, 191, 193–194, 198, 202, 204–207, 211–213
 Near Oceania 79–85, 88, 93, 101, 112
 North Pacific 27, 31, 202–203
Oceanic 97–98, 101–102, 112
 Remote Oceania 80–83, 105
 South Pacific 12, 31
 Southwest Pacific 80
- Persia 34
- Philippines, *Filipino* 3, 26, 77, 80, 86, 96–98, 100–101, 103, 105, 231
 Bashi Channel (or Channel) 100–101
Kapampangan 86
Luzon 100
Negrilo 100
 Palawan 80
Tagalog 77, 86, 97
- Pitcairn Islands
 Henderson Island 109
- Poland 3, 7, 220
- Polynesia, *Polynesian* 26, 28, 77–78, 82, 86–87, 101, 107, 109–112, 182–184, 187, 193, 204–207, 209, 212–213
 Central East Polynesia 107, 110–111
 Marquesas Islands, *Marquesan* 26, 107–110
 Society Islands, the Societies 107–110
 Cook Islands, *Cook Islands*
Maori 107, 109–110
 Tuamotu Islands 107
- Portugal 7, 220, 223
- Red Sea 131, 133, 199
- Romance* 94
- Romania 3, 220
- Roman Empire 116, 135
Latin, *Vulgar Latin* 86, 116, 135
- Romany* 157
- Rome 3
- Russia, Soviet Union 3–4, 8–9, 11, 157, 221
 Beringia 202
Even 156–157
 Kamchatka 202
 Siberia 7, 12, 49, 156, 178
Yakuts 156–157
- Yeniseic* 178
Ket 178
- Ryukyu Islands 27, 193, 201
 Kozushima 27, 201 [there miss-spelled Kozushima!]
 Okinawa 27, 201
 Minotogawa 201
 Miyako Island 201
 Yamashita-cho Cave 201
- Samoa 26, 105, 107–111, 205
- Sanskrit* 86
- Scandinavia, *Vikings* 18, 28, 193, 207–213
Norse 208–211
- Semitic* 25, 90, 131–132, 134
- Sino-Tibetan* 24, 48
- Slavic 94
- Solomon Islands 28, 79, 82, 84, 87, 89, 97, 103, 200, 205
 Buka 200
 Greater Bougainville 84
 Bougainville 82, 84, 103
 Choiseul 84
 Santa Isabel 84
Kwaio 97
 Reefs / Santa Cruz 82, 105, 205
- South Africa 5, 27, 51, 150, 161, 197
 Blombos Cave 197
Khoisan 51
- Spain 220
- Sri Lanka 13
- Sudan 3, 131, 140, 145
- Tahiti 109
- Taiwan 3, 26, 77, 96–98, 100–101, 201, 226
Paiwan 97
- Tanzania 135–137, 140
 Lake Tanganyika 129
 Mount Kilimanjaro 140
Thai-Kadai 98
- Thailand 231
- Tibet 47, 49
- Tonga 26, 105, 107–110, 205
 Niuafo'ou 108
 Niuatoputapu 108
Tongan, *Tongic* 97, 108
- United Kingdom, (Great) Britain, British Isles 4, 87, 90, 132, 157, 208, 211
Anglo-Saxon 132
 England 4, 7, 9, 12
English 27, 34, 88, 116

- London 4
 Scotland 7
 United States of America 3-5, 7, 9,
 60-61, 63, 69, 117, 157, 223-224, 244,
 246
 Aleutian archipelago 77
 Arizona 61, 70
 Grasshopper Pueblo 61
 Bridgeport 121
 California 117, 119, 121, 178-179,
 181, 203, 207
 Alta and Baja California 204
 San Miguel Island 203
 Colorado 119
 Death Valley 119
 Great Basin 117, 121, 180
 Idaho 121
 Mojave Desert 119
 Mono Basin, Mono Lake 119, 121
 Nevada 119
 Owens Lake 121
 Oregon 121, 178
 Rocky Mountains 117
 Sierra Nevada 117, 119, 121
 Tehachapi Mountains 119, 121
 Texas 119
 Utah 121
 Wyoming 121
Uralic 90
 Vanuatu 86-87, 97, 105, 205
 Lolomatui 97
 Malekula 86
 Tanna 86
Vikings see Scandinavia
 Wallis (or Uvea) and Futuna 108
 Yemen 133
 Yemeni 132

SUBJECT INDEX

- Art, ornamentation 85, 96, 100, 197, 206, 209
- Chimpanzee 42
- Climate, climate change 80, 172–172, 177, 192, 209
- Demography, demographic shift 160, 163; see also Marriage
- Fecundity 61
- Mortality 16, 112
- Population growth 86
- Urbanization 3
- Food, diets 49–50, 59–61, 63, 67–68, 72, 82; see also Health and Means of subsistence
- Animal food, meat 85, 173
- beef, cow 136, 149, 153–154, 209
- chicken, egg 96, 101, 110–111, 136–137, 150–151, 205–207
- fish, shellfish 85, 147, 173, 203
- game 85, 151–154
- mutton, sheep, ram, lamb 136, 148–149, 151–152, 154
- pork, pig 96, 101, 111, 136, 205, 207, 209
- rat 207
- Food chain 66
- Garden crops 78
- chickpeas
- gourd 85, 179, 206
- sweet potato 110, 206
- taro 85, 94–95, 101, 207
- yam 101, 207
- Fruit crops 78
- Grain crops 101, 151
- barley 133, 148, 209
- millet 83, 98, 101, 148
- rice 83, 98, 100–101, 137, 150
- sorghum 136, 149
- tef 148
- wheat 133, 148, 209
- Tree crops 83, 101, 110
- bananas 85, 95, 137, 150
- sago 85
- Gender, gendered migration, women 9–11, 25, 71–72, 137–139, 154, 217, 220–222, 234, 237–238, 246–247; see also Inheritance systems and Marriage and inheritance
- Genetics, bio-genetics 39–57, 111, 165, 177, 181, 187–188
- Autosomal genetic patterns 21
- Biogenesis 63
- Gene flow 60, 116–117
- Gene trees 21, 39–40
- Genetic admixture 112
- Genetic risk 39
- Genetic variation, gene frequencies 39, 62
- Genomic imprinting processes 44
- Haplogroups 21, 46, 52
- Human genome, encoded in DNA 20–21, 27, 29, 35, 53, 192, 196, 199, 206, 211
- Human Genome Diversity Project 22
- Mitochondrial DNA (mtDNA) for females 21–22, 40, 44, 49, 51–57, 156, 171, 174, 179, 181
- Phenotypical change 22, 34, 55, 78
- Polymorphism of the human Y-chromosome:
- single-nucleotide polymorphisms (SNPs) 21, 41–42, 44–53
- short tandem repeats (STRs) 21, 41, 44–45, 50–53
- Y chromosome DNA for males 21–22, 40–44, 50–51, 54–57, 62–63, 69, 170
- Geochemistry 22, 59–74
- Osteobiography 64, 192
- Soil analysis 23
- Strontium (Sr) isotopes analysis 22–23, 30, 59, 63–73
- Geomorphical change 80
- Health 61; see also Demography and Food
- Illness, disease 65, 191, 211
- Starvation 65

- Hominids, homo sapiens, modern humans 20, 30, 40, 56, 60
- Ideologies and values (democracy, eugenic ideas, individualism, Western values) 4–5
- Kinship, family, household; see also marriage
 Adoption 227–228, 236
 Age ranking, age grades, age 143–145, 152, 154, 217, 227–228
 Children 154, 228
 Clan, clangroup 51
 Community families 219
 Ethnogenesis 63
 Ethnic networks
 Extended family 230, 237–238
 Family 13, 20, 31, 33, 51, 87, 215–250
 Family domains 217
 Family networks 29, 216–218, 238–247
 Family strategies, family security 215, 231
 Family structure 28, 215
 Family systems 216–231, 247–250
 Family territories, spatial capital 217
 Family types 28
 Fosterage 227–228, 237
 Genealogy 31
 Generations 28, 216, 218, 238
 Household, household strategies, household composition 10, 215–216, 218, 222, 231–232, 237–238
 Kinship, quasi-kinship, extensive kinship, kin 165, 185, 215, 221, 227–228, 243–247
 Lineage 236
 Nuclear family 229–230, 232
 Rite of passage, circumcision 143, 152
 Sibling, sibling position, seniority of birth 102, 216, 223, 232, 238–239, 246–247
 Sodalities 61–62
 Stem family 220, 223, 232, 234–235, 249
 Tribe 51
- Labor, work 10; see also Means of subsistence, Migrants, Occupations and Unfree labor
 Wage labor, hired labor 13, 233
- Women's work 138; see also Gender
 Working class 183
- Linguistics, language 77–188
 Bilinguism 141, 144
 Core vocabulary (Swadesh list) 132, 147, 153–154
 Creole languages 116
 Diffusionism 157
 First, second language 117
 Innovations 107
 Isolates, language islands, *Sprachinseln* 89–91, 157
 Language 88
 Language change, divergence, convergence (homogenisation, koineisation), punctuated equilibrium, focussing 24, 26, 31, 113, 161–163, 168, 183, 186–188
 Language classification, world language classification 24–25, 31
 phylum (pl. phyla), phyllic groups 89, 91–94, 178
 Language groups, language subgroups 31, 98–99
 Language contact 113–114, 155
 Language (-based) communities 24, 32, 86
 Language families (and their proto-languages), branches, family trees, daughter languages 78, 80, 88–93, 96–98, 114, 159, 178
 Language shifts 26, 155–157, 160–161, 164–165, 168–169, 171, 174, 179, 185–188
 Lingua franca 134
 Linguistic dating method (glottochronology) 108
 Linguistic stratigraphy 24, 117–130, 142
 Numerals 151–152, 154
 Pidginization 115–116
 Substrate influence 156
 Word borrowing, loanword 25–26, 113–115, 141, 145, 147, 155, 168, 173, 181; see also Language shift
- Marriage and inheritance systems 3, 13, 28–29, 160, 184–188, 215–250; see also demography and Migration—marriage migration
 Age at marriage 222, 225, 247, 249
 Bride service 138–139
 Bridewealth 138–139

- Cross-community marriage,
intermarriage, mixed marriage 26,
112, 139, 164–165, 175, 179
- Cross-cousin marriage 102, 219,
221, 224
- Divorce 221
- Dravidianate and Karriera kinship
systems 185–186
- Endogamy 70, 179, 188, 220–221,
224–226
- Exogamy, out-marriage 72, 109, 188,
219–221, 225
- Gendered character of inheritance
13, 29
- Incest, incest taboo 184, 219
- Marital distance 61
- Marriage exchange 168
- Marriage patterns, marital customs
27, 71, 182
- Matrilineal descent 21, 52, 102, 139,
179, 221
- Patrilineal descent 139, 221, 225,
230, 236
- Patrilocality 50, 222, 247
- Polygamy 228
- Polygyny 50, 168, 221, 231
- Residence, co-residence, neo-
residence (neolocality) 28,
218–220, 222, 247
uxorilocal marriage 226
virilocal marriage 226
- Ritual alliance 164
- Unilineal landholding descent 102
- Widows 222, 229
- Means of subsistence; see also Food
- Agriculture, farming 25–26, 28, 31,
34, 39, 78, 80, 85–86, 94, 98, 101, 103,
111, 117, 133, 138–139, 146, 148–150,
153–154, 160, 163, 179–181, 186,
204–205, 209, 223–224, 230, 233–234,
246; see also Food
- Cattle farming, cattle-raising
139–140, 143, 153–154
- Domestication of animals or plants
96, 98, 101, 104, 110, 185, 191, 209;
for edible animals see Food
dog 101, 205, 207, 209
horse 209
water buffalo 101
irrigation 140
- Fishing 78, 103, 111, 195–196, 200,
205, 209; see also Food
- Hunting and gathering, foraging 23,
31, 39, 49, 51, 71, 84–85, 98, 100,
111, 117, 154, 160, 163–164,
180–181, 186–188, 207
buffalo (bison) hunting 178
sedentary 84
from seasonal bases 84
- Pastoralism 23, 25, 34, 60, 71–71,
117, 138, 140–141, 143, 153, 163,
186
- Plantation agriculture 13, 226
- Migrants, migrations; see also Gender:
- Career migration 217
- Chain migrants 28–29, 217, 243–247
- Circular migrants, temporary
migrants, sojourners 7, 13, 28–29,
217, 230, 235–238
- Colonial migrants 6–7, 14
- Continental migrants 18
- Cross community migrants, cross-
cultural migrants 14, 34, 139, 146
- “Downstream” spread, migrants 26,
156, 164–176, 187
- Guest workers 7
- Illegal migrants, irregular migrants
3, 8
- Intercontinental (mass) migrants,
Atlantic migrants 15–16, 18
- Internal migrants, domestic migrants
5–7, 18
- International migrants 7
- Intralocal, residential mobility 216
- Invaders 15; see also War
- Itinerants 15
- Labor migrants 3, 6, 9–10, 12, 116
- Lateral transmission of languages
117
- Life (domestic) cycle migrants 29,
222, 227–231, 247
- Local migrants 7, 28–29, 217
- Long-distance migrants 29
- Maritime migrants 27–28, 191–214
- Marriage migrants 3, 217, 227, 231;
see also Marriage
- Migrationism vs. immobilism
157–158
- Migration motives 10–11
- Nomadism 98
- Pauper migrants 5
- Political migrants 134
- Refugees, boat refugees 3, 9–10
- Remittances 237, 241
- Rural to urban migrants 61
- Seasonal migrants 7, 60, 217
- Settlers, settlement, sedentism 15, 29,
84–86, 96

- Unfree (involuntary; coerced)
 migrants 6–11, 13
 convicts 8
 coolies 12, 116
 forced migrants 7–8, 12, 33
 indentured (labor) migrants 7–8,
 12, 14, 242
 prisoners of war 8; see also War
 slave, enslaved migrants 6, 8, 14,
 18, 33, 116, 248
 “Upstream” spread, migrants 26,
 156–157, 164–172, 176–184, 188
- Migration politics
 American quota act (1921) 16
 Aussiedler 9
 Johnson-Reed immigration act
 (1924) 16
 White settler colonies 6, 14
- Occupations; see also Means of
 existence
 Domestic workers, servants 3, 33
 Farmers 25, 78–79, 85
 Fishers 78–79
 Nannies 3
 Peasants 3
 Servant 227–228, 232–234, 239, 246
 Priests 15; see also Religion
 Sheep herders 60
 Soldiers 15; see also War
 Traders, merchants 15, 25; see also
 Transport
 Workers 15
- Oral history, legendary stories, sagas
 169, 174, 211
- Politics 130, 144; see also Migration
 politics and War
 Citizenship 10
 Decolonization 16
 Leadership 191
 National identity 183
 Political mobilization 10
- Religion, religious affiliation, pray 4,
 52, 154
 Buddhism 209
 Burial practices 209
 Catholicism 4, 9
 Christians, Christianity 52, 209
 Confucianism, Chinese ancestor
 cult 13, 235–236, 238
 Conversion 209
 Deification of ancestors 104
 Druze 52
- Islam, Muslims 4, 9, 52, 219
 Jews 4, 9
 Magic 154
 Mennonites 157
 Protestantism 4, 9
- Settlement processes:
 Acculturation 14
 Assimilation 4, 61
 Colonization 109, 157–158, 165
 Columbian exchange 15
 Intrusive enclave settlement
 131–135
 Racism, race 35, 87
 Social interaction 26
- Social structure, social processes
 Affluent class 63
 Ceremonial exchange 109
 City-states, towns 134
 Elite, elite dominance 66, 109, 156
 Group identity 161
 Social capital 240–247
 Social change 130
 Social class 68
 Social hierarchy, social stratification,
 social division 85–86, 109, 182
 Social organization 107
 Social prestige 104, 168
 Social units 85–86
 Status 115, 225
 Village formation 85, 98
- Techniques, technology, technological
 innovation 80, 195; see also
 Transport and trade
 Bark cloth 102, 207
 Bow and arrow, quiver 154, 178
 Carving 86
 Containers 86
 Drainage 85
 Grinding, grindstones 169, 174–176,
 197
 House building 86, 96, 101, 209–210
 Metallurgy, ironworking 130,
 209–210
 Plow 133–134, 148
 Pottery, ceramics 79, 95–96, 98, 105,
 136, 197
 Lapita pottery 26, 28, 95–96,
 102–103, 105–108, 111, 206
 Ta-p'en-k'eng 100
 Stone tools 84, 100–101
 adze, axe 96, 205
 blade 171, 197

- Clovis points 202
- obsidian tools 85, 96, 201
- Tools, tool manufacture, tool sharpening 107, 152, 154, 164, 169, 171, 174, 181
- Weaving, cloth 101–102, 154, 197
 - flax 133, 148
 - silk 234
- Transport and trade
 - Commuting 216
 - Double-hulled canoes 108
 - Kelp highway 202–203
 - Long-distance trade, trading colonies 116, 134, 139, 155, 207, 209
 - Outrigger canoe, catamaran 101, 209
 - Sailing, seafaring, watercraft, navigation 27–28, 78–79, 84, 103, 110–111, 116, 135, 195–196
 - Ship building 84, 107, 196, 209, 211, 211, 213
 - Smugglers, traffickers 9
 - Tourism 216
 - Transport revolution 16
- Unfree labor; see also Migration:
 - Debt peonage 8
 - Coolie labor 8
 - Serfdom 8
 - Slavery, chattel slavery, enslavement, slave trade 6, 14, 18, 33, 69, 71