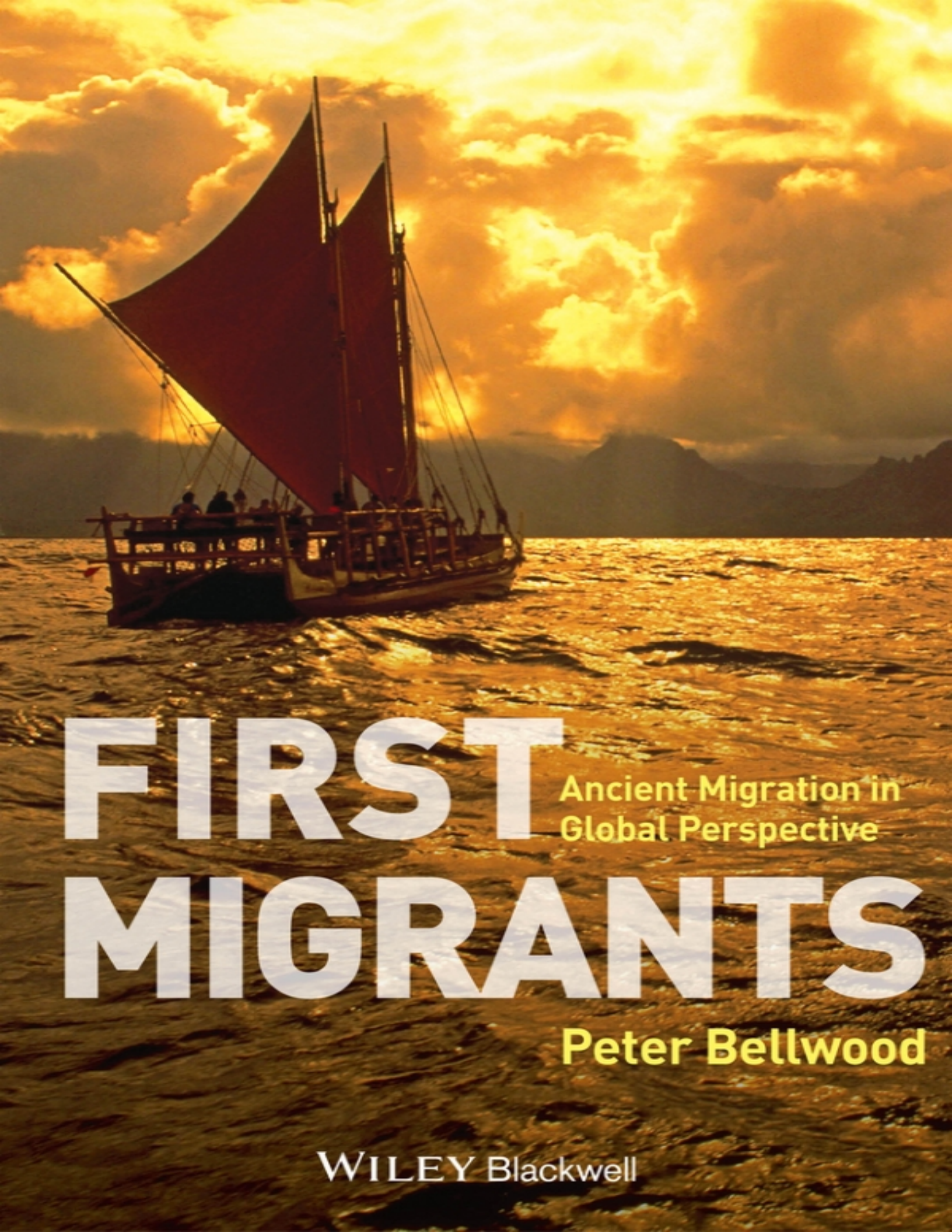

FIRST MIGRANTS

Ancient Migration in Global Perspective

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Preface

All of us alive today owe our very existences to the many layers of migration undertaken by our remote ancestors, going back far into time, even beyond the rise of humanity itself to the prehuman beginnings of life on earth. Working hand in hand with the processes of evolution, migration has spread the evolutionary products of biological mutation and cultural innovation to all regions where humans exist. Our genes, our languages, our systems of food production and technology, all exist *in part* because of migration. I emphasize *in part*, because migration cannot be seen in its own right as a biological or cultural cause of mutation or innovation. But as a mechanism of spread, it often meant that internally generated mutations and cultural innovations in the broadest senses could find new and fertile ground and proliferate to a degree unthinkable if the carriers all stayed at home. If all our ancestors had remained immobile, we simply would not exist as the environmentally demanding and dominating species that we have become today.

This book is about migration in all periods of human prehistory, from the initial spread of hominins out of Africa about two million years ago, down to the continental migrations of agricultural populations within the past 10,000 years. In general, I draw the line when history starts, so the Huns, Goths, Mongols, Conquistadores, and Victorians do not feature. We know something about them from history, even if the history is sometimes rather thin. On the other hand, some nonliterate peoples migrated over huge distances very recently in time, even contemporary with the European Middle Ages, but they did so in their own fully prehistoric circumstances. The Bantu-speaking

peoples in Africa, the Eastern Polynesians, and the Inuit of the North American Arctic were all migrating as Gothic cathedrals arose in Europe, therefore they people the following pages.

As I was writing this book, an invitation from Immanuel Ness in New York gave me the opportunity to edit Volume 1 (Prehistory) of the *Encyclopedia of Global Human Migration* (Ness and Bellwood 2013), an opportunity that allowed me to select and invite as authors some of the world's foremost scholars in the prehistoric sciences of archaeology, human biology and comparative linguistics. One of the developments that surprised me during the editing of this volume was the increased importance given in so many disciplines to processes of migration in human affairs, both ancient and modern. When I was a student of archaeology in the 1960s, migration was becoming an uncomfortable concept for many archaeologists, and home-grown independence or *multiregionalism* was becoming the favored perspective on the past in both human evolution and archaeology. The very different modern view of the 2010s reflects the huge advances in the biological sciences in recent years, especially in genetics, since DNA research now makes it very obvious that migration has always been of great significance. Before the 1970s, archaeologists and comparative linguists could not easily demonstrate the reality of migration without direct historical evidence, and neither indeed could geneticists at that time. Spreading cultures and languages in themselves are not automatic evidence for actual population migration, as opposed to cultural diffusion, although they can be argued to have been so in specific circumstances.

As with modern migration, prehistoric migration always needed a reason. One very common reason in many situations was growth in the size of the human population. A group of prehistoric humans living in complete

demographic and environmental equilibrium would never have needed to move, unless the environment changed in an adverse way or the average couple switched to having more than two children. As we all know, human life has never existed in such idyllic circumstances, neither in the past nor in the present. Populations can grow in numbers, new land can be required, resources can diminish for many environmental and human-impact reasons, enemies can attack and force people to flee and not return, utopias can beckon. Circumstances can induce a group of humans to spread or migrate, whether consciously or unconsciously, by choice and group agreement, or simply through a less conscious transgenerational success in procreation.

In some ways, this book is a sequel to my earlier *First Farmers*, published by Blackwell in 2005, except that here I cover hunter-gatherers as well as farmers and go back much further in time to the beginnings of the genus *Homo* over two million years ago. The chapters are arranged partly in chronological order and partly in geographical order, but the main separation is into hunter-gatherer migrations (Chapters 3–5) and agriculturalist migrations (Chapters 6–9). I commence with two comparative chapters (1 and 2) on migration as a process of human movement and on how the multidisciplinary evidence for it might be perceived and interpreted by prehistorians, these being scientists from many disciplines (not just archaeology) who strive to understand the human past prior to the beginnings of written records.

The writing of this book has been a challenge for me because of the great breadth of information that I have had to collect. I have realized, over many years of research, that simply trying to interpret prehistory from a viewpoint of archaeology, or comparative linguistics, or genetics, or any other discipline alone is really rather a pointless exercise and one that can lead to a remarkable narrowness

of perspective, not to mention time-wasting errors that can penetrate the literature and then echo down through the years. Overall, I have found the collection of multidisciplinary data to be an immensely energetic and stimulating exercise, given the phenomenal rates of publication in newly developing scientific disciplines, and genetics in particular. I stopped reading in February 2013, and any revolutionary observation published since then will not have made these pages.

A Note on Dating Terminology

Chronological statements in this book are always based on solar years, expressed as 'years ago' for periods before 10,000 years ago, and thereafter as years BC (before Christ) or AD (Latin *anno domini*, in the year of the Lord, or after Christ). In a broad scale review such as this, there is no need to refer to individual uncalibrated laboratory radiocarbon determinations.

The terms *Pleistocene* and *Holocene* refer to geological epochs. The former spanned the period from 2.58 million to 12,000 years ago (Gibbard et al. 2009). The latter has spanned the past 12,000 years (or 10,000 uncalibrated radiocarbon years), and is still unfolding. It commenced during the final glacial retreat at the end of the Younger Dryas miniglaciation (circa 13,000–11,600 years ago), and corresponds with the establishment of current interglacial climatic conditions across the world. The Pleistocene was preceded by the Pliocene, within which the earliest recorded stages of human evolution occurred in Africa. None of the events discussed in this book occurred as long ago as the Pliocene.

The Pleistocene is divided into three periods of unequal length (Figure 3.2): Lower (or Early) Pleistocene from 2.58 million years ago to the Brunhes-Matuyama paleomagnetic

reversal at 780,000 years ago; the Middle Pleistocene from 780,000 to 120,000 years ago; and the Upper (or Late) Pleistocene from 120,000 years ago to the beginning of the Holocene, at 12,000 years ago. The Upper Pleistocene contained the penultimate interglacial and final glacial periods, a time of massive change in global environments in which anatomically and behaviorally modern humans were propelled into prominence and all other hominin species finally succumbed to extinction. The Holocene has witnessed the rise of agriculture, civilization, and our current state of overpopulated misery or technological glory, depending upon one’s point of view.

Acknowledgements

In writing this book, I have on occasion had to ask colleagues for help, advice, and information, especially in disciplines or parts of the world with which I am not very familiar. They include Debbie Argue, Robert Attenborough, Vaclav Blažek, Murray Cox, Max Friesen, Colin Groves, Norman Hammond, Jane Hill, Bill Jungers, Ian Keen, Pat McConvell, Campbell Macknight, Marty Magne, R.G. Matson, Mehmet Özdoğan, Nicolas Peterson, Sasha Vovin, and three anonymous reviewers kindly supplied by the publisher. None are responsible for any errors. I would like to thank the Australian National University (ANU) for the research infrastructure that allowed this book to be written, and Multimedia Services in The College of Asia and the Pacific at ANU (especially Kay Dancey, Jenny Sheehan, and Karina Pelling) for some of the base maps, to which I have added my own interpretations using Adobe Illustrator CS5. Peter Johnson of Wollongong also helped me with some tricky aspects of Adobe Illustrator. Finally, my wife Claudia has given me continuous and invaluable support, plus some very valuable help with editing. I could not have written this book without her.

Chapter 1
The Relevance and Reality of Ancient Migration

> *This chapter examines the great importance of migration in human history and in creating human patterns of diversity, both biological and cultural. It also examines some examples of migration as recorded in early historical sources and in the ethnographic records of indigenous peoples made during the early colonial era. An ability and a propensity to migrate over large distances have always been defining features of our human species, Homo sapiens, right across the globe. The focus of this book, however, is on prehistoric and indigenous populations and their migrations, prior to the massive global movements of the past few centuries*.

We only need to look at our neighbors, at large crowds, or television, to realize that the world of humanity is very diverse. Human populations have different kinds of behavior, speak different languages, and look different from each other in biological terms. How has all this diversity come about? Has it evolved in place through the 60 or more millennia since the ancestors of *H. sapiens* first spread across the Old World, purely as a result of differing adaptations to varied natural and cultural environments? To a degree, the answer must be “yes,” given that we can see so much environmentally related biological variation if we compare, for instance, Europeans, southern Africans, and eastern Asians. But does it also reflect the results of successive episodes of population migration, in many different times and places, erasing or mixing the old

patterns and creating strikingly new ones? The answer is emphatically also “yes.”

Recent history tells us a great deal about major population migrations, about how Europeans and Africans migrated to the Americas, Britons to Australia, Russians to Siberia, Dutch to South Africa, and Chinese to Taiwan. Recent history leaves no doubt that migration has been absolutely fundamental in the creation of our modern world, even if some of those migratory episodes occurred with little attention to the basic human rights that concern so many of us today. Going back in time, we read how Arabs migrated from Arabia into Iraq and Egypt, Turks from central Asia into Anatolia (now Turkey), Vikings from Scandinavia to Greenland, and Anglo-Saxons from across the North Sea to England. Before this we have the Roman Empire, Han Dynasty migration from central into southern China, and Greek and Phoenician colonies in the Mediterranean. And before the Greeks? History before 3000 years ago rather lets us down, certainly if we go back beyond the Old Testament and the ancient Indian Rig-Veda. But the research tools of archaeology, comparative linguistics, and human biology are at hand.

What can these three disciplines reveal to us? Old rubbish has a tale to tell. If it did not, there would be no archaeologists, although any archaeologist will rightfully insist that the archaeological record consists of far more than just rubbish. Artifacts, offerings to the dead, art and architecture, ways of acquiring and processing food, technology in stone and metal, and human–environment relations, all play major roles in interpreting the past. When taken together, they allow us to read how ancient lifestyles, as expressed in material culture, migrated hand in hand with human populations across continents and oceans.

Comparative linguistics tells us how related languages have evolved within families, have spread, mixed, and sometimes died. Language families are an absolutely fundamental source of data on ancient migrations. In the historical record, the main mechanism behind their large-scale and long-distance spreads and their establishments as the long-term vernaculars of whole populations, not just elites, has always been migration of their speakers. Large-scale linguistic switching (or 'language shift' in linguistic terms) on a permanent basis without migration of any kind has generally been of limited geographical significance.

Skeletons and genes tell us how biological populations of humanity have evolved and migrated. Living populations such as sub-Saharan Africans, Western Eurasians (including North Africans), eastern Asians (including Native Americans and many Pacific peoples), and Australasians (Indigenous Australians and Melanesians), all form major geographical and biological foci of variation that are of great significance in the human migration story. But all human populations also have blurred biological boundaries and reveal histories of admixture, some no doubt on many occasions if we go back far enough in time.

What is *migration*? More to the point, what might the concept have meant during deep prehistory, before written records began? Historians and sociologists discuss many variations in the modern world.[1] But the many complex categories within the modern concept of migration cannot be identified easily in the records of the prehistoric past. For the purposes of the prehistoric and early historical record of human affairs described in this book, migration was simply *the permanent movement of all or part of a population to inhabit a new territory, separate from that in which it was previously based*. Permanent translocation is an essential part of this definition.[2]

I suggest this simple baseline definition because, as we go further back in time, it becomes more difficult to identify migratory activity in any exact and practical way, for instance, separating warfare or disaster refugees from economic migrants searching for food or land. It also becomes more difficult to determine if the migrants spread gradually and continuously from a source, or if they undertook one or more long-distance jumps (*leap-frogging*) across large areas of intervening terrain. For instance, we know for certain that early humans had achieved the colonization of the habitable regions of the world before the end of the Pleistocene geological epoch, except for Antarctica and some remote oceanic islands. But exactly where the very first Paleolithic colonists in each region placed their footprints in the earth, how many people took part in each component migration, and what languages they spoke will never be known to us with any exactitude.

The concept of migration has another complicating factor. The first migrations were necessarily into regions that had no prior inhabitants. But after our hominin ancestors, both archaic and modern, had established their first colonies across the globe, so new migrants had to enter regions that already had populations in residence, unless they could settle in remote islands or environments too hostile for previous occupation. For this kind of activity we can use the term *immigration*, as used for late prehistoric archaeological contexts by some archaeologists,[3] retaining the term *colonization* for migration into territories previously devoid of human inhabitants.

Migration is more than mere mobility. Hunters, pastoralists, and many species of mammals (including marine ones) and birds move regularly along well-defined routes through territories that are often of enormous size. Ethologists and anthropologists often use the term *migration* in this mode, and it might have allowed certain

groups of humans to learn the distant landscape features that could assist them to undertake a permanent migration, as just defined. But, if involving return to a home territory, this kind of movement is not considered to be migration in the sense used in this book.

Similarly, the migrations of single individuals or very small groups in prehistory cannot easily be recognized within the archaeological, linguistic, or genetic records, except in very rare cases. For instance, strontium isotope ratio analysis of ancient human bone from cemeteries can allow analysts to establish the geochemical location of a person's place of birth and childhood (Montgomery 2010). This analytical technique has developed greatly in recent years, but it is necessarily restricted to ancient *individuals* (sometimes more than one in any given archaeological site), who in many cases are hard to relate to the global sources of the populations to which they belonged. Individuals will always have been migrating locally as they found partners, fell out with relatives, or searched for new resources, exactly as they do now. But such migration is only of direct interest for this book if it can be related to an actual episode of population migration beyond the individual level. The focus is on the large-scale *permanent* translocations of population that changed prehistory, in all cases covering many generations in time, many hundreds or thousands of kilometers in space, and with repercussions on humanity that still live with us today.

How can we recognize the existence of migration in the prehistoric record? Most records are proxy, in the sense that they are not direct representations of ancient biological populations moving in time and space. Only ancient human bones and the ancient DNA contained in them can be witnesses in this way, and then only if the data obtained are interpreted correctly, especially bearing in mind the very small sample sizes that are generally

available for study using these techniques. On a broader level, it is by comparing the patterns implied by the independent sets of data derived from biology, archaeology, linguistics and the paleoenvironmental sciences (to name the most significant data sources), rather than human biology and genetics alone, that the science of reconstructing human population prehistory makes real progress. None of these disciplines alone shows us real populations actually on the move in the deep past. Historical judgment will always matter – we cannot expect significant prehistoric human migrations to become revealed in entirety by one technique, no matter how new or clever.

Migration has always been important for humankind. According to Anthony Marsella and Erin Ring (2003:3), it is "inherent in human nature – an instinctual and inborn disposition and inclination to wonder and to wander in search of new opportunities and new horizons." They add rightly that migration has led to the separation of the human species into "its myriad ethnic, cultural, linguistic, and racial groups." Russell King (2007:16) drives this home by stating "In a sense, humans are born migrants: our evolution is fundamentally linked to the act of migration, to moving from one place to another and adapting to that environment."

For every migration, there will always be a hierarchy of underlying environmental and cultural causes, and these causes need to be identified and understood by prehistorians. The real value of migration is that it imposes new patterns in culture, language, and biology, both through time and in space, that were not present before. As such, it rearranges the component parts of preexisting circumstances and presents new patterns of variation upon which the processes of both biological and cultural evolution can act anew.

Migration in Prehistoric Times

A vast number of migrations occurred within the course of human prehistory, just as they did in historical times. Some were doubtless very minor in extent and importance, but others were immensely significant in laying down very resistant and lasting foundation layers beneath the worldwide patterning of human variation. Language families, religions, domesticated animals and major food crops all exist where they do, at least in part, because groups of humans migrated with them at some time in the past. Of course, biological features can spread through gene flow, religions can spread through conversion, and domesticated animals can be traded or exchanged, but these processes operating alone are not enough to explain the full story.

Although migration has been an eternal factor throughout human prehistory, there are three highly researched phases of migration in overall human evolution that are currently the foci of a great deal of research:

1. migrations of extinct members of the genus *Homo*, such as *Homo erectus* and later the Neanderthals, after 2.5 million years ago, within and out of Africa and through Eurasia;
2. migrations of ancestral modern humans (*H. sapiens*) through most of the world, including Australia and the Americas, between 120,000 and 10,000 years ago;
3. migrations of farmers, herders, and boat builders in many separate groups, across most oceans and in all continents except Antarctica, during the past 10,000 years.

There is, of course, a fourth historical and far more recent migration phase, that of the rather staggering diaspora of

approximately 150 million people in three massive flows peaking between the 1840 s and the 1950s. One went from western Europe to the Americas and Australasia. Another went from India and China to the Indian Ocean rim, Southeast Asia, and the South Pacific. A third migration spread from Russia and China into central and northeastern Asia (McKeown 2004: 156). These three recent streams indicate that, while migration has always been a continuous activity on a small scale, it has also been subject to major pulses separated by periods of relative quiescence. Perhaps I do not need to add that migration, both forced and free, is still a vital element of our modern society. The refugee crisis that currently perplexes the governments of many countries, including Australia, my adopted home country, is continuing evidence of this.

Some prehistoric migrations seem quite extraordinary to us today. The human ability to migrate through vast landscapes and waterscapes to reach and settle new territories is one of the most striking aspects of our shared species history. Easter Island (Isla de Pascua, or Rapa Nui) is isolated across 2000 km of open ocean from its nearest inhabited Polynesian neighbors, Pitcairn and Henderson Islands (Figure 8.4). It was reached soon after AD 1000 by its first Polynesian colonists. They sailed there in one or more outrigger or double canoes with plank sides lashed on to dugout keels, crafted using polished stone tools and propelled by paddles and pandanus matting sails. Between 1000 and 800 years ago, Polynesians achieved this crossing, and many more, to equally isolated islands such as New Zealand, the Marquesas Islands, and Hawaii. Those who might see this as something of a record will be surprised to learn that people related to Polynesians probably made an equally astounding crossing about 2500 years earlier (1500 BC), over 2300 km of open sea from the Philippines to the Mariana Islands in western Micronesia.[4]

Humans, indeed, are the only mammal species to have colonized all regions of the world capable of supporting life *through their own energy and culture*. Our domestic animals and plants traveled with us, as did our commensals such as rats, weeds, and viruses, but it was the humans who made these diasporas possible.

Was there a likely common driving factor behind all successful prehistoric migrations? Accidents and disasters (e.g., a storm at sea, a volcanic eruption, or tidal wave) can trigger minor situations of unplanned migration, but only on a small scale. The eruption of Vesuvius in AD 79 did not drive all surviving southern Italians to the other side of the Roman Empire, or indeed cause any measurable hiccup in the development of Roman civilization. It is becoming fashionable nowadays to look for the causes of ancient migrations in climate change, particularly with respect to severe rainfall and temperature variations. I do not doubt the importance of such natural causes, especially for people living in fragile '*edge of the range'* environments, where unexpected drought or a shrinkage in the average length of the growing season by a few days could have a disastrous impact on food production. But, in my view, the real energy behind the world's major colonizing migrations was human and demographic, in the sense that increasing human populations required new resources, especially territory, and more so if other groups or declining environmental conditions impinged on a long-term basis on the territories they already held. Shrinking populations would never have made successful colonists if they just continued to shrink, unless by migrating to richer habitats they reversed their demographic trajectory.

The question for prehistorians to answer, therefore, is why such demographic engines of expansion evolved in the first place, sufficient to drive peoples, languages, and societies across whole continents? Without migration there would be

no human species, at least not outside a small region of Africa.

Hypothesizing About Prehistoric Migrations

This book deals with major migration episodes in human prehistory that can be reconstructed using multiple and independent sources of information. Whatever the information source, understanding of the prehistoric human past requires that hypotheses be considered against available information. I have presented one such hypothesis earlier, namely that demographic growth can drive migration. It can also be suggested that specific developments in technology, clothing, shelter and subsistence allowed many episodes of population growth and migration to occur, for instance by hunter-gatherers into Arctic latitudes or by early farming populations looking for fertile new lands in which to plant their domesticated crops or graze their animals. The sources of such hypotheses can either lie within recovered data (which are sometimes extremely few, especially if we rely on the archaeological record alone), or they can be drawn from broad comparative considerations of human behavior in the historical, ethnographic, and modern worlds. In reality, they are drawn from both approaches.

For instance, a major hypothesis, used in the later chapters of this book, is that many major language families and their early human speakers migrated together, on many separate occasions in different parts of the world, following the adoption of systematic food production during the Holocene.[5] This early farming dispersal hypothesis is based on worldwide comparisons of archaeological, linguistic, genetic, and other scientific data. It is also based on

detailed region-specific archaeological and biological evidence. My general approach in developing and assessing such hypotheses follows Fogelin's (2007) strategy of "inference to the best explanation," by eliminating explanations that are less well supported by the evidence. I hope that my chosen explanations, especially for migrations during the past 10,000 years, will also accord with Fogelin's call for explanations that are empirically broad, general, modest, conservative, simple, testable, and that address many perspectives.

There are two further points that I wish to make here in order to set the concept of prehistoric migration in a fuller context. Firstly, historical accounts inform us that many relatively recent situations that we tend to think of as '*migrations'* had, in reality, little long-term impact on the subsequent genetic, linguistic and cultural patterns in the areas to which they penetrated. This was because the migrants/conquerors and their descendants existed in relatively small numbers and were absorbed into the larger indigenous communities around them. The populations of many ancient conquest hegemonies and empires met this fate, including those of the Hellenistic kingdoms in Asia and Egypt following the conquests of Alexander the Great, many of the Germanic and Turkic-speaking populations who migrated across continental Europe during post-Roman times, the Vikings in continental Europe, the Normans in England, the Crusaders in the Levant, the Mongols across their vast Eurasian empire, and many European colonial states in tropical Africa and Asia.

Conquest, imposition of government, and taking of tribute can have dramatic short-term effects, but over the long term many such events left few permanent traces, especially in terms of language replacement. Despite the magnificent conquests of Alexander the Great, and a few centuries of Greek influence in central Asia, hardly anyone

living outside Greece and Cyprus today, except for modern migrants to countries like Australia and the United States, speaks Greek as a first language. Examples such as these can tell archaeologists that while material culture and imposed forms of government can often spread far and sometimes have significant cultural impact, they do not necessarily have to be associated with significant levels of permanent migration.

My second point is more philosophical, and it concerns the concept of *origin*. Let us consider two populations who have achieved fame in the world record of ethnography – the Khoe-San populations of southern Africa and the Maori of New Zealand. The Khoe-San, according to current archaeological and especially genetic data, have an ancestry in southern Africa that extends back for at least 100,000 years, perhaps as much as 300,000 years if one accepts a set of new molecular clock genetic calculations for the antiquity of the modern human genome.[6] The ancestors of the Maori arrived in New Zealand in the twelfth or thirteenth century AD, at a time when many famous monuments of Medieval Asia and Europe were under construction. We might rightfully think of the Khoe-San peoples as '*old*' in ancestry and therefore origin, and the Maori as '*young*'. Yet both groups are equally as modern, in human biological terms, as the rest of us. Both have prehistories of equal length, going back into the foundation layers of human origin in Africa. The only real difference is that the Khoe-San developed as distinctive populations within a completely African environment, whereas the Maori developed via many episodes of migration and ancestral residence, through at least 50,000 years, in many parts of tropical Asia and Oceania. Khoe-San ancestors tended to stay at home, Maori ancestors tended to migrate and sail away over the horizon in canoes.

In this sense, the 400 years or so of Maori residence in New Zealand, prior to the European discovery of these islands by Abel Tasman in 1642, are little more than a veneer. The Maori arrived in New Zealand as Polynesian fisher-farmers around AD 1250, just as complex in cultural terms as they were on the eve of the first serious European arrival, in 1769 by the British explorer James Cook (Tasman did not land). It is for this reason that my perspective in this book is focused on human populations and the routes they have traveled through time and space, and not simply on the archaeological records of modern nations. There is far more to Maori population prehistory over the long term than the prehistory of New Zealand, even if we cannot recognize entities in the lands of ancestral occupation, in Africa, southern China, Southeast Asia, or Oceania, that can specifically be termed *Maori*, as opposed to less specific categories such as modern human, Neolithic, Austronesian, or Polynesian (see Chapter 8).

Migrations in History and Ethnography

A most important body of comparative data on premodern migrations comes through history and ethnography, from situations in which writers consciously described what they perceived to be the histories and reasons for actual episodes of migration. Classical authors such as Herodotus and Julius Caesar led the way more than 2000 years ago, but the most remarkable records of kinship-based cultures in migration mode were made by European explorers, missionaries, administrators, and eventually anthropologists in the century between 1850 and 1950. I focus on a sample of these recorded migrations here because the societies described are likely to have resembled prehistoric societies in their sociopolitical and

demographic structures, at least more so than would migrants from the Industrial Revolution in nineteenth-century Europe or modern refugees fleeing ethnic and political oppression.

The Helvetii

Let us start at one extreme of the migration spectrum, that of a large group migration that seems to have occurred as a single event, the first of its kind to be recorded in detail in world history. In 58 BC, according to Julius Caesar, Gaul (modern France) had three parts. The Belgae lived in the north, the Celts in the center, and the Aquitani in the south, with the Germans to the east across the Rhine. One group of Celts, the Helvetii, who lived around Lake Geneva in what is now Switzerland, were short of land, pressured by German tribes from the north, and wished to break out into more productive farming areas. Alas for the Helvetii, the route chosen for entry into Gaul would have taken them into the relatively new Roman province in southern Gaul (Provence, as it is still called today), a move which Caesar opposed. So they switched to a more northerly route across the upper Rhone valley into central Gaul, where they faced the pro-Roman Aedui. The Helvetii lost in their conflict with the Romans and their allies, but Caesar’s description of their behavior is most illuminating:

> …they determined to prepare for emigration by buying up all the draught cattle and wagons they could, sowing as much land as possible in order to secure an adequate supply for the journey, and establishing peaceful and friendly relations with their neighbors. They thought two years would suffice for completing these preparations [during which time their leader Orgetorix died, but the Helvetii did not give up]…As soon as they considered themselves ready, they burnt all their twelve towns and four hundred villages…and also the whole of their grain, except what they intended to take with them; for they thought that, if there was no possibility of returning home, they would be more willing to face all the perils that awaited them (Handford 1951: 29–30).

Caesar's legions, at least according to Caesar himself, brought them to a halt within Aedui territory, west of the Rhone, and the Helvetii were ordered back to their homeland after a military defeat. According to their own records, described by Caesar as written in their own language using a Greek script, the migration into Gaul involved a total of 368,000 people, of whom 92,000 were fit for military service. The migration traveled about 150 km before its eventual defeat.

The Helvetian migration had four interesting elements: a clearly stated intention, a large participating population, land shortage, and pressure from neighbors. It occurred into already-inhabited territory, but it was not successful. Many Classicists have suggested, perhaps not surprisingly, that Caesar may have magnified much of his account to impress the Senate and People of Rome. Perhaps he did, but the point here is that the Helvetii offer us a Roman mind model of what migration in western Europe might have involved 2000 years ago, even if some of the truth might have been distorted.

The migration of the Helvetii into Gaul is the first *detailed* record we have of a specific large group migration attempt within history. Herodotus (circa 440 BC) earlier mentioned the ancestral migrations of other populations, such as the Scythians who crossed the Araxes River, on the border between Iran and Armenia, to settle the Western Eurasian steppes adjacent to the Caspian and Black Seas.[7] But he gave less *on-the-ground* detail and, unlike Caesar, was not a direct eyewitness.

Ancient China

Overlapping in time with Caesar's account, Chinese historical records refer to the government-sponsored migration of a staggering seven to eight million people out of central China between 250 BC and AD 400, one of history's earliest accounts of migration on a scale approximating that of the recent colonial era. The migrants traveled from the alluvial plains of the Yellow, Yangzi and Wei rivers southwards into lands previously conquered by Qin and Han Dynasty armies, extending as far as northern Vietnam. Another two million non-Chinese people apparently moved into China from the steppes to the north at about the same time, further triggering the southward Chinese migrations.[8] Admittedly, this situation involved an ancient state rather than a small tribe, but it is interesting in terms of its size and because more than half of the populations of some Chinese homeland counties joined the migration. Recently, genetic research has supported the concept of north to south male-dominated movement within China from the evidence of both the male-inherited Y chromosome and female-inherited mitochondrial DNA. The archaeology of this period records the same process via a spread of Han Dynasty material culture, such as well-fired geometrically stamped pottery, ceramic tomb furniture, elite burials in brick or stone chamber tombs, and

occasional artifacts with short inscriptions in Chinese script, through large regions of southern China and northern Vietnam.[9]

In cultural terms, the Chinese were migrating into regions already long settled by non-Sinitic populations, especially the Bai Yue, close cultural cousins and possible ancestors for many of the modern Tai-speaking peoples of southern China and Southeast Asia. The Chinese accounts do not give anthropological details, but the situations of linguistic and genetic admixture that accompanied these migrations produced eventually much of the Sinicized cultural landscape that we today term '*China*'. The assimilation was not always one way, however, only in favor of the Chinese. The southern Chinese provinces of Guizhou, Guangxi and Yunnan still contain millions of indigenous Tai speakers today. The Vietnamese maintain a non-Sinitic linguistic and cultural identity, even though the northern half of the country was ruled by China during most of the first millennium AD. Modern Vietnamese is an Austroasiatic language with a significant amount of borrowed Sinitic vocabulary, but it is certainly not a Sinitic language in a genealogical sense. In the long term, both the Vietnamese and the indigenous Tai-speaking populations of northern Vietnam maintained their strong identities under the first millennium AD Sinitic domination, as did many peoples on the fringes of other powerful ancient empires – the Celtic Britons during the period of Roman Conquest (AD 43–410), for instance, or the Nubians on the southern frontier of Ancient Egypt.

Medieval Iceland

Another interesting example of early historical colonization, this time into virtually uninhabited territory, was that of the Norwegian Vikings who settled Iceland in the late ninth century AD.[10] Iceland was seemingly empty of permanent

settlers before the migration, although a few Irish Christian monks and hermits might have visited it on a temporary basis before the first permanent settler population, of 404 men and 13 women, arrived from Norway in 874. Subsequent settlers came from both Norway (the Norse themselves, mostly men) and northern Britain, the latter being the source of the Gaelic wives (eventually 60% of Icelandic settler women) who accompanied many of the Norsemen.

It is estimated that about 10,000 people migrated to Iceland during the settlement period, between 874 and 930, and all available farmland was allotted to settler families within this time. Like their migrant Eastern Polynesian contemporaries in the Pacific, the earliest settlers lived more on fish than on farming or livestock owing to the initial wealth of previously unexploited maritime resources and the need for their herds to increase in size. Notwithstanding, some Icelanders by 980 were ready to move on to colonize southwestern Greenland – perhaps Iceland itself was already starting to feel a little crowded. Apparently, the population doubled every 200 years under Free State conditions, prior to Norwegian rule from the late thirteenth century onwards. By 1300, it had reached a total of about 40,000 people and there were close to 6000 farms across the island.

The Icelandic example points again to demographic success, as in ancient China, but this time in relative isolation. However, both examples were presumably well supported by backup migration from source regions and, unlike that of the Helvetii, did not happen just once. However, we must remember that the Helvetii were certainly not alone amongst their fellow Celts in having migratory inclinations. Many others, such as the Galatians of central Anatolia, the Boii of central Europe, and the Gallic invaders of the Po valley (circa 400 BC) in northern

Italy have also come down to us in history as long-distance migrants.[11]

The Nuer of Sudan

In ethnographic times, especially during the nineteenth and early twentieth centuries, colonial records tell us of the expansions of many specific populations with traditional lifestyles and technologies. The Nuer (Nilo-Saharan language speakers – see Chapters 5 and 9) of East Africa offer a remarkable example of nineteenth-century migratory expansion, between 1818 and 1890, over more than 75,000 km^2, along a 600 km west to east trajectory across the tributaries of the Upper Nile in Sudan. According to Raymond Kelly (1985:1): “Nuer displacement of the Dinka (and Anuak) represents one of the most prominent instances of tribal imperialism contained in the ethnographic record.”

Both the Nuer and the Dinka were related linguistically. Both had similar traditional lifestyles involving cultivation of millets and other grains, fishing, and herding of cattle in a landscape of wet season flooding and dry season pasture, the latter subject to increasing shortage as the dry season intensified. But the Nuer were able to raise huge forces of armed men combined from many tribal groups and were thereby able to expand through vast areas settled by Dinka populations, who were organizationally less able to defend themselves. As the expansion occurred, so the inflow of captive Dinka women, children and cattle fuelled further population growth amongst the Nuer, leading to a snowball that was only controlled early in the twentieth century by the advance of rinderpest, a virulent infectious cattle disease, and colonial era pacification.

How can we explain the level of Nuer success? This is the essence of Kelly’s remarkably detailed book. The Nuer, by

virtue of their widespread extra-tribal systems of patrilineal alliance, were able to call together huge forces of up to 1500 men, often organized to advance on an enemy in several columns. The Dinka, with a more matrilineal emphasis in their social organization, were normally unable to combine in defense beyond the level of the local group, making up just a few hundred men at most. In terms of total population size, relatively few people (mostly males) were killed in the Nuer attacks, but Kelly models the likely demographic advantage for the Nuer vis-à-vis the Dinka of the incorporation of young Dinka females and children. Dinka females were also valuable because of their ability to attract bride-price payments in cattle into Nuer communities, and it is the Nuer bride-price system that Kelly places at the center of his causal chain of explanation.

Nuer marriages at the end of the nineteenth century required that 40–60 head of cattle passed from the groom's to the bride's family, whereas Dinka bride-price requirements were much smaller and offset by return flows from the bride's relations. All in all, the Nuer needed twice as many cattle as the Dinka to support their marriage alliances and to fulfill commitments to the patrilineal kin of the bride, hence twice as much scarce dry season pasture. Thus, they needed access to land, and were prepared to fight for it. The result of all this conquest was that the Nuer population, with its large incorporation of ethnic Dinka, grew from an estimated 127,000 people in 1818 to 200,000 in 1890 (Kelly 1985: 228) and advanced over 600 km to the east of its former homeland. This offers us a classic example of conquest-driven assimilation, with Nuer and Dinka mixing genetically on a huge scale. However, it appears that the Nuer and Dinka identities and languages did not merge as a result of all this genetic admixture, but remained distinct, as they still do today. As Michael Hunley and colleagues (2008) have noted for similar population

interactions in western Melanesia, genes cross population boundaries more easily than do languages, such that genetic interchange with language retention and bilingualism in each of the interacting populations is, in overall terms, more likely than total language replacement.

What started the Nuer expansion? Why did the Nuer demand so many cattle for their bride wealth payments? Those are good questions that are not easy to answer. Kelly places the origins of the system several centuries back in time, far beyond the reach of the ethnographic record and unfortunately far beyond the archaeological record in this troubled part of the world. In another related arena, however, James Barrett 2010 has recently suggested that young men who needed to search for bride-price resources provided one stimulus behind the Viking diaspora in Europe and Russia, in this case involving both plunder and colonization.

The Iban of Sarawak

Another most interesting example of ethnographic population expansion concerns the Austronesian-speaking Iban of Sarawak (western Borneo), rice farmers with long fallow land requirements who successively occupied river basins across a territory of equatorial rainforest stretching over 850 km from northwestern Kalimantan, through Sarawak, to Brunei Bay. Like those of the Nuer, these migrations were encouraged by high population growth and assimilation of captives, and continued for possibly a century until being eventually controlled after the imposition of British rule in 1841.

To an extent, Iban migration, like that of the Nuer, was self-reinforcing because of the constant assimilation of captured groups. The Iban were an ethnic group well defined by language and identity who engaged in fairly

aggressive territorial expansion through success in warfare, headhunting, agricultural production, and the ability to establish new longhouse settlements in areas that previously supported only small populations, often of foragers. Indeed, achievement of the male status position of *raja berani* depended very much on one's possession of the aforementioned skills. Success bred more success, in the sense that a constant inflow of war captives, who were eventually enfranchised into Iban society, fuelled the population growth further, a situation similar to the Nuer incorporation of Dinka populations described earlier.

Derek Freeman 1970: 76 has described the incentives and methods that fuelled the Iban migration process as follows:

> The main incentive behind the remarkable migrations of the Iban has been a desire to exploit new tracts of primeval forest, and the tendency has been for communities to abandon their land as soon as a few lucrative harvests have been reaped, and move on to fresh precincts. In this way, the frontier of advance was pushed forward, first by one community, and then by another moving up from the rear. All these communities, it should be noted, were sections of the same tribe, and their members were all inter-related, in varying degrees, by cognatic ties.

The process was thus assisted by Iban cognatic social organization, in which family groups lived relatively independent lives in dwelling units constructed alongside each other within their raised-floor longhouses. Each family was free to leave its longhouse and join another whenever it desired, meaning that each new community would form around a newly constructed longhouse into which families from different origin longhouses could immigrate. This allowed a kind of social freedom which we might see as particularly useful for people wishing to expand into new

territory in the manner chosen by the Iban. New longhouses could rapidly attract the labor and the warriors needed for successful establishment in a new territory, especially when other potentially hostile populations were present in the vicinity.

In a classic sense, the Iban expansion, like that of the modern Yanomami of the upper Orinoco River of Venezuela, represents a clear case of expansion of food producers into terrain inhabited either by foragers or by other less aggressive food producers. For the Yanomami, continuing migration occurred partly due to disagreements over wife-exchange in situations of male polygyny, as well as to the circumstances of remarkable population growth that required frequent foundation of new villages that could eventually reach 250 inhabitants. Until 1990, recorded average family sizes for Yanomami women who survived to age 50 were 8.2 births, despite high infant mortality rates as well as high adult male mortality in warfare. Even so, the Yanomami expanded their territory by an estimated 200–300% during the twentieth century.[12]

Relevance for Prehistoric Migration?

The examples just described are a mixed bunch, and we can hardly compare state-sponsored migration over many centuries in ancient China with the activities of individual tribal groups such as the Nuer or Iban. The latter were migrating under situations of developing colonial control and circumscription, rather than with the backing of an imperial army. Nevertheless, it is clear that such ethnographic migrations could sometimes be rapid, demographically powerful, and capable of covering quite large distances – many hundreds of kilometers in a century or less in the Nuer and Iban cases. It is quite possible that some of the vast and sometimes shadowy migrations that we will be considering in the following chapters involved