DE GRUYTER

Anthony Harding

BRONZE AGE LIVES

MÜNCHNER VORLESUNGEN
ZU ANTIKEN WELTEN

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Preface and acknowledgements

This book is the written version of a series of lectures delivered in Munich in the academic year 2015–16 to members of the Münchner Zentrum für Antike Welten (MZAW) when I was Gastprofessor für Kulturgeschichte des Altertums in Ludwig-Maximilians-Universität München. The lectures have been turned into a written text rather than a spoken lecture, with bibliography, and have been significantly updated – something that was essential given the huge amount of published material that has emerged in the last few years and continues to emerge, in particular the highly novel and important developments in archaeogenetics. In November 2015, when the first lecture was given, there were only a couple of relevant papers available dealing with the genetic origin of Bronze Age people; since then, three or four papers a year have appeared, shedding light on the whole area in ways that were scarcely imaginable a decade ago.

The book is a series of reflections on the lives of different aspects of the Bronze Age archaeology of Europe. The examples used are inevitably a personal choice which makes no claim to completeness or systematic coverage. They reflect personal interests, which I hope may be interesting for a wider audience – such as was present at the original lectures. There, the audience consisted mainly of staff and students of the MZAW and more particularly of the Graduate School "Distant Worlds". These organisations cover a wide range of disciplines covering multiple aspects of the ancient world, from classical philology to New Testament studies, from prehistoric archaeology to Roman law, from Egyptology to Byzantine art and Sinology. While everyone had an interest in the ancient world in some manner, the specifics of Bronze Age archaeology were of course mostly unfamiliar to them; hence an approach which sought to provide interesting elements that could find a resonance for scholars from these widely differing disciplines.

It is a pleasure to be able to offer my deep thanks to a number of people who invited me to Munich and make my stay profitable and enjoyable. Prof. Dr Carola Metzner-Nebelsick was the initiator of the invitation, which was subsequently issued by Prof. Dr Walther Sallaberger. By the time of my arrival, the Chairman (Sprecher) of the MZAW was Prof. Dr Friedhelm Hartenstein, whose kindness and helpfulness I acknowledge with gratitude. In day to day matters, however, I offer special thanks to Dr Caroline Veit and Anna Waldschütz, MA, for their care of me during my stay. Others who helped in various ways were Emer. Prof. Dr Michael Roaf, Prof. Dr Friedhelm Hoffmann, Prof. Dr Susanne Gödde, Dr Caroline von Nicolai, and all the (then) Masters and doctoral students of

my seminar classes, among whom I would particularly mention Leo Geisweid, Fabian Heil and Anahita Mittertrainer.

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In the revision and preparation of this book, I have benefited enormously from the critical eyes of Dr Matthew Knight (now Edinburgh) and Dr Peter Leeming (Exeter). Dr Gundula Lidke (Greifswald/Berlin) twice critically reviewed my section on the Tollense valley sites and made many helpful suggestions, most of them incorporated into the final text; she is not responsible for my interpretation of the dating evidence. For the provision of advice, articles and illustrations I thank (in alphabetical order) Dr Helmut Becker, Professor Richard Bevins, Professor Karin Frei, Professor Dennis Harding, Dr Bernhard Heeb, Dr Ken Massy, Dr Kristina Mihovilić, Roger Miket, Dr Dalia Pokutta, Professor Jo Sofaer, Prof. Dr Philipp Stockhammer, Emer. Prof. Dr Biba Teržan, Dr Inga Ullén, and Dr Magdolna Vicze.

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Exeter, October 2019

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1 The life of the Bronze Age

This book concerns a period of the past that was dynamic and world-changing, the Bronze Age in Europe. Of course most scholars can make a case that the period they study was just as dynamic, and changed the world just as much as the Bronze Age did, but I shall argue in these pages that what happened in Europe between 2500 and 800 BC was so remarkable that it transcends the achievements of any period that went before it, and foreshadowed the technical and social developments of the Iron Age, themselves a direct prelude to the achievements of the Graeco-Roman world.

The Bronze Age was a period that spanned some 1700 years, from around 2500 BC to around 800 BC – depending on area and definition (e.g. whether the Beaker period is regarded as belonging to the Copper Age or the Bronze Age). Traditionally it has been divided into three main chunks, usually labelled Early, Middle and Late, roughly 2500–1800, 1800–1300, and 1300–800 BC (scholars in individual countries have their own way of describing and dividing the material). In this book I use these labels in a general way, without making any assumptions about exact chronology – though in Chapter 5 I do consider the radiocarbon dates from two sites, with a view to establishing episodes of violence. Radiocarbon dating is now so developed, particularly when large series of dates can be subjected to Bayesian analysis, that it is already possible in some areas to indicate a refined chronology for the period, or at least some parts of it. In areas where there are still not enough dates for this purpose (either because not enough suitable samples have been encountered, or because of local prejudices against the method), the way to get a reliable chronology is now quite clear. Dates given in this book are based on radiocarbon, and should therefore be followed by "cal BC" rather than BC. In reality, however, this account is not about chronology or typology, and anyone seeking to study such matters should look elsewhere.

The Bronze Age as an object of study

Study of the Bronze Age goes far back into the history of archaeology. Our academic ancestors, Oscar Montelius (1843–1921), Joseph Déchelette (1862–1914), Paul Reinecke (1872–1958), V. Gordon Childe (1892–1957), Ernst Sprockhoff (1892–1967), and many others, laid the foundations for our knowledge of the period. They all predate any of today's scholars active in the field, in most cases by many years. The immediate forefathers of my generation, scholars such as Chris-

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topher Hawkes (1905 – 1992), Stuart Piggott (1910 – 1996), Jean Deshayes (1924 – 1979), Hermann Müller-Karpe (1925 – 2013), or Bernhard Hänsel (1937 – 2017), all of whom I knew, built on the foundations of that earlier generation (some of whom they themselves met), and in turn influenced the generation to which I myself belong. Today's leaders in the study of the Bronze Age, people such as Albrecht Jockenhövel (b. 1943), Kristian Kristiansen (b. 1948), or Richard Bradley (b. 1946, the same year and month as me), all grew up academically under the influence of that earlier generation, and while it is not the habit in the Anglo-Saxon world to write fawning acknowledgements of and tributes to our academic mentors, there is no doubt that these titans of research had a major influence on what we ourselves have written and done.

The Bronze Age, like most periods, has undergone the changes that archaeology itself has experienced. In the 19th century and for a large part of the 20th, it was concerned above all with artefacts, and with placing those artefacts into groups that had a meaningful similarity or association, in other words typology. The fact that the period saw a huge production of metal objects, mostly copper or bronze, lent this mode of study importance and credibility. Of course there were also excavations of major sites, in every country of Europe, which revealed houses (e. g. Swiss lake sites such as Cortaillod-Est or Auvernier), fortifications (e. g. the Wittnauer Horn in canton Aargau, Switzerland, or Fort Harrouard, Eure-et-Loir, France) or elaborate burial structures (e. g. the famous sites of Helmsdorf in Thuringia or Leubingen in Sachsen-Anhalt, or the barrows of the Eight Beatitudes in North Brabant, the Netherlands); especially the latter, where total excavation was possible so that complete plans could be recovered (which was not usually the case with settlements or forts). For the most part, however, it was the objects recovered from such excavations that held people's attention. Even with the sensational discovery of the Uluburun ship in 1981, it was above all and understandably the cargo that attracted most attention. It was during this period, too, that two great corpora of material started their lives: *Prähistorische Bronzefunde* in 1969 under the direction of Hermann Müller-Karpe, and *Die Funde der älteren Bronzezeit des nordischen Kreises in Dänemark, Schleswig-Holstein und Niedersachsen* in 1973 under the direction of Ekkehard Aner and Karl Kersten. There had been earlier efforts at the systematic publication of bronzes in the *Inventaria Archaeologica* card series (promoted by the Union International des Sciences Pré- et Protohistoriques) but while a few countries managed to produce a significant number of cards (notably Poland), in general the series produced little reaction in the Bronze Age world. The British Museum, for instance, after an initial burst of enthusiasm which saw the publication of nine card sets (1955 – 1968), later produced something similar in its own series *British Bronze Age Metalwork* (1985 – 1994) before abandoning this type of publication for good.

In the 1960s and 1970s, at the birth of the "New Archaeology", attention turned to environmental aspects of the Bronze Age – both the natural environment in which people lived (above all vegetation), and the economies of Bronze Age societies (animal and plant remains). At the same time, analytical methods derived from the natural sciences enabled the development of techniques for determining the provenance of materials and artefacts, especially metals, for example the huge Stuttgart programme of metal analysis, Studien zu den Anfängen der Metallurgie (Junghans *et al.* 1960, 1968, 1974). In this way pottery, glassy substances such as faience, and stones such as obsidian were tied down to their sources or source areas with greater or lesser degrees of certainty.

The 1980s and 90s saw both a continuation of these techniques and a move towards new ways of interpreting the evidence; this was the period when so-called post-processual archaeology developed, its echoes being found in Bronze Age research as in that of other periods. So we see a classic piece of post-processual archaeology in Chris Tilley's *Phenomenology of Landscape* (1994), or the excavation of the Cornish Bronze Age settlement at Leskernick (Bender *et al.* 1997; Bender *et al.* 2007). It has to be said that this movement found little resonance in the Bronze Age research of other countries, though similar approaches were attempted in Scandinavia and the Netherlands; some of these works are referenced in the chapters that follow.

Many people saw some of the developments in what is loosely called post-processual archaeology as undesirable, in particular the apparent relativism that it promoted – in the sense that multiple interpretations of phenomena were permissible, whether or not the interpreter was "qualified" (through academic upbringing or experience) to express an opinion. In spite of protests by promoters of this line of thought that such confusion was unlikely, many older scholars remained critical of the approach – which indeed has spawned a large industry of "alternative archaeology" (cf below).

The 21st century has seen a remarkable set of developments in Bronze Age research, led above all by advances in genetic and isotopic work. The ability to extract DNA from ancient bones, long thought to be impossible because of the likelihood of contamination, has now become almost routine, provided suitable bones or teeth are available. This, coupled with the existence of large genetic databases of modern populations, has enabled geneticists to build up a remarkable picture of Bronze Age ancestry. At the same time, studies using stable isotopes have allowed analysts to identify not only aspects of diet (for instance marine as opposed to terrestrial food sources) but also the relationship between individuals and the environment in which they lived (geology, groundwater), leading to the ability to detect where they spent their lives, in other words whether they moved their place of residence between different environments

over the course of their life. This has led to remarkable results in many areas where it has been applied.

At present, there seems to be less divergence between different clans of archaeologists than used to be the case. Some younger scholars in some countries continue to produce what one may call "speculative" books and articles, based on a highly restricted perusal of the literature; this tendency is particularly evident in anglophone countries, where anything written in a language other than English is relegated to the "not worth reading" or "can't read" pile, if it is even noticed at all (a tendency also apparent, though to a lesser extent, in France); by contrast, many European countries have embraced a range of approaches derived from wide reading in a number of languages, notably English.[1] Evžen Neustupný proposed that part of this tendency is to be attributed to "mainstream" and "minority" communities of scholars, the former who have a big enough body of scholarship in their own language to be able to ignore the latter, the latter being forced to work with the output of the large ones (Neustupný 1997–98). In general across Europe, however, there has been a welcome move towards the idea that we are all studying the same material and have a range of different ways of doing it. To take one example: in central Europe it always used to be the case that doctoral students would study a group of material culture (artefacts), usually assigned them by their professor; they would catalogue it, order it into types, consider its analogues near and far, and produce a large tome that described all this material in great detail. While this method of study is far from dead, it is reassuring to find that other aspects have now entered the mainstream, for instance environment and ecology, the potential of artefacts to tell us more than what type they belonged to, or the implications of material culture for telling a story of the Bronze Age that sees the people behind the objects.

The Bronze Age has not, however, been immune to the deluge of misinformation and fantasy that has engulfed the world in recent times. Of course this is not new; books such as the zoologist Barry Fell's *Bronze Age America* (1982) were being turned out decades ago. A quick search of the internet will reveal numerous examples of pseudo-scholarly works that provide a version of the Bronze Age unhampered by knowledge or understanding of the evidence, concerned instead to peddle a story about the past that has no foundation in real-world data. In today's world, where scientists are regarded with suspicion and their opinions

1 A study by Kristian Kristiansen and his students showed that the literature in English was embarrassingly short of references to material in other languages: Lang 2000; Kristiansen 2012, 467. While this is true, the statement that Stuart Piggott was restricted in his foreign language reading compared to Gordon Childe is erroneous.

no better than those of film stars or conspiracy theorists, regardless of qualification to pronounce on subjects, this is probably only to be expected. The relativism that has been promoted by various well-respected authorities, which regards "facts" as entirely context and viewer-dependent, has had a large part to play in this. I would of course maintain that interpretations can and must vary; there cannot be just one version of Bronze Age "history". But such interpretations must, in my view, be based on archaeological data. Archaeological "facts" consist of artefacts and ecofacts (in a broad sense). Everything else is interpretation. It is astonishing to me that so many words have been written in recent years that seem to forget this. Speculation has its place, but it must always be labelled as such.[2]

Coda

The Bronze Age has thus had, and continues to have, many different lives. When one looks at those parts of the archaeological record that attract most attention in the semi-popular press, it is often the earliest periods that feature most prominently, from the emergence of hominins in Africa to the discovery of late hominin types such as Denisovans and *Homo floresiensis*, the survival of Neanderthals and the appearance of modern humans. For Neolithic specialists, the recent dating programmes led by Alasdair Whittle and Alex Bayliss (*Gathering Time* and *The Times of their Lives*) have been ground-breaking, though unknown to the general public (Whittle *et al.* 2011; Whittle 2018). In the 1990s the Bronze Age attracted much attention through the Council of Europe's promotion of the *European Campaign for Archaeology*, featuring the Bronze Age – the "First Golden Age of Europe", with conferences and workshops, culminating in a travelling exhibition "Gods and Heroes of the Bronze Age" in 1998 – 99. This was undoubtedly the most visible promotion of the Bronze Age in recent times. Since then, it is hard to think of public presentations that have had the same impact, with one exception: the Nebra sky-disc (Meller & Bertemes 2010). The story of the discovery and recovery of this extraordinary object is well-known; it was a sensation both because of how it was acquired and because of its nature. It was the centre-

2 I refrain from discussing the case of the gold and amber objects emanating from Bernstorf, Ldkr. Freising, Bavaria, other than to point to the fantastical speculation by a classical scholar on how the supposed Linear B signs are to be interpreted (Janko 2015). No established Linear B scholar has accepted his conclusions, which were published in a journal that does not normally cover linguistic or philological matters. It would be interesting to know whether this article was submitted for independent peer review to Linear B specialists.

piece of a magnificent exhibition in Halle in 2004–05 and still amazes visitors with its depiction of the heavenly bodies, even if its interpretation is a matter of intense debate.

Naturally Bronze Age archaeology does not have to be spectacular, but discoveries like this are of interest to more than a narrow circle of specialists. One might say the same for the site of Nola in Campania, destroyed in the Avellino eruption of Vesuvius around 1900 BC (Laforgia *et al.* 2009; Albore Livadie *et al.* 2018; Alessandri 2019); or the recent excavation of Must Farm in Cambridgeshire, eastern England, which has produced large numbers of organic artefacts that were hitherto mostly known from Alpine lake sites (Knight *et al.* 2019). These, and the much larger numbers of "ordinary" sites are what creates the Bronze Age in our lives and minds, and creates a "life" for the period as an entity in itself.

The period we call the Bronze Age was thus created over the last 100 years by a number of people, mostly university or museum archaeologists. The life it possesses also engenders a life in those people who work in it, of whom I am one. These intertwining lives were the rationale for the lectures given in 2015–16, and for this book.

2 The life of people

Introduction

The European Bronze Age world was abundantly peopled (Fig. 2.1). We do not know exactly how many people there were across the continent (though we can make estimates), nor do we know the name of anyone who lived at that time – outside the Aegean world, where the Linear B documents name various individuals and occupations. But we can see from depictions and burial finds that Bronze Age people looked like us, more or less, carried out many of the things we do, such as securing food, clothing and shelter, and no doubt thought and felt many of the same things we do – emotions, rational thinking, planning – as well as many irrational things which we find it hard to explain.

The first task I set myself, then, is to talk about people: the people who inhabited Europe in the period between the mid-third millennium BC and the earlier first millennium BC, a period of almost 2000 years. Who were these people? Did they form a homogeneous ethnic unit, or were they, like today's Europeans, a mixture of many different backgrounds? Did they speak one language or many? How numerous were they? Did they live long and healthy lives, or – more likely – short and disease-ridden ones by present-day standards? How did they regard themselves and each other? Their social relations are of course also of great interest, though I shall say more about that in a later chapter. In short, who were the people who occupied the continent we call Europe, and who must have formed the basis on which the classical civilisations of Greece and Rome, along with their barbarian neighbours, were founded?

A great deal has changed over the course of my career in terms of discoveries and techniques, and the ways in which we view them. In terms of finds, I maintain that the revolution started in 1981 with the discovery of the Uluburun shipwreck, without doubt one of the most important and astonishing finds from the later prehistory of the Old World ever made (most fully accessible in Yalçin *et al.* 2005). The finding of Ötzi the Iceman in 1991 was also extraordinary, but he belongs to the Copper Age rather than the Bronze Age, a thousand or more years before the period I am concerned with here. A year later a Bronze Age boat was found in Dover (Clark 2004), and around the same time, beads of amber of Italian type from the kurgans at Hordiivka in Ukraine (Berezanskaja & Kločko 1998); and gold cups similar to those long known from Fritzdorf and Rillaton were found in Kent, south-east England (Ringlemere) (Needham *et al.* 2006), joined most recently by a somewhat similar piece from northern

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Fig. 2.1: Bronze Age people as shown on bronze figurines and rock art. a) Grævensvænge warrior; photo: Lennart Larsen, Creative Commons licence; b) Sardinian warrior with helmet and bow; photo: British Museum, Creative Commons licence, © Trustees of the British Museum; c) warriors on rock art panel from Fossum, Sweden; photo: author.

Italy (Montecchio).[1] In 2001, we learned of the Nebra disc (Meller 2010), the meaning of which is still controversial, but for most archaeologists a genuine Bronze Age object and truly extraordinary. A host of less spectacular objects have supplemented these most remarkable pieces, all of which have added to the complexity and diversity of the picture of Bronze Age life. This is to say nothing of the results of systematic or rescue excavation, some of which have also been remarkable. At the risk of offending some archaeologists who believe that their site is supreme in this respect, one may mention particularly those sites with good preservation of organic remains, particular wetland sites such as Must Farm, Cambridgeshire (eastern England) (Knight *et al.* 2019), or many sites in the sub-Alpine areas of Europe; Nola in Campania, where the remains of Bronze Age houses buried in an eruption of Vesuvius were found (Albore Livadie 2002; Albore Livadie *et al.* 2018; Laforgia *et al.* 2009), the stratified settlement of Százhalombatta on the Danube south of Budapest (Poroszlai 2000; Poroszlai & Vicze 2005); copper mines in the Austrian Alps (Stöllner *et al.* 2006 (2009)), north Wales (Dutton & Fasham 1994; Williams 2013; https://www.greatormemines.info/) or southern Ireland (O'Brien 2004); or detailed study of funerary monuments like that relating to barrows on the Utrecht Hill Ridge (Fontijn 2010). At the risk of being accused of promoting my own work, I can also mention the remarkable discoveries connected with salt extraction at various locations in northern Transylvania (Romania), notably the site of Băile Figa near Beclean (Harding & Kavruk 2013). As well as excavations, survey work in many places has also added enormously to our knowledge of ancient settlement patterns; while the heyday of extensive surface survey work was in the 1980s and 1990s, many areas continue to benefit from this type of approach, for instance the Benta Valley in Hungary or the Thy landscape in Jutland (Earle & Kristiansen 2010), as well as in many parts of Mediterranean countries.

At the same time, stable isotope studies have added extraordinary detail to what had previously only been inferred from artefact studies about the movement of people, and about diet, while advances in the recovery of DNA from ancient bone has meant that it has been possible to determine crucial aspects of genetic history spanning thousands of years.

It is perhaps ironic that in order to talk about the life of Bronze Age people, one has to rely so often on those same people through their death. It is usually their preserved skeletal remains that are available to us; they can tell us a lot about their life, though it is also how the skeleton was buried, and what with,

1 http://www.archeobologna.beniculturali.it/re_montecchio_emilia/tazza_montecchio.htm, accessed 27 June 2019.

that gives us most information. Here I shall concentrate on more intangible things, starting with the question: who were the people who occupied Europe during the Bronze Age? What were they genetically? And what, if anything, does this tell us about ethnicity and language?

Who were the people of the Bronze Age?

In considering the identity – genetic, ethnic, linguistic – of any past people, we enter a whole area of study that has been something of a minefield for reputations, involving as it does debates about, for instance, the area of origin, and the date of the spread, of Indo-European languages. Since we know that the inhabitants of Mycenaean Greece spoke an early version of Greek, it is evident that Indo-European (I-E) language had penetrated at least the south-easternmost part of Europe by the Late Bronze Age at the latest, and probably considerably earlier. It is uncertain how and when I-E arrived in Greece; its nearest geographical neighbour, Hittite, is generally regarded as akin to I-E but distinct from that family in a number of ways. There are no certain survivals of language or even writing in other parts of the prehistoric Balkans prior to the Iron Age, let alone central Europe, which might come to the help of prehistorians.[2]

As we shall see, some scholars have long supposed that I-E moved into Europe during the Copper Age,[3] and was associated with a particular cultural phenomenon, the Yamnaya Culture in the south Russian and Ukrainian steppe (in German Grubengrabkultur or Ockergrabkultur, formerly called in English the Pit Grave Culture (Russian *yama* = pit), which is what Marija Gimbutas called it in her publications of the 1960s and 70s; it refers to a specific grave type spread across large parts of the Russian and Ukrainian steppe in the Copper Age. Such graves were placed under barrows, or kurgans; hence Gimbutas' development of the idea of "kurgan people" who she saw as being responsible for both Indo-European language and other crucial elements of European Bronze Age culture. This is a purely archaeological argument, based on shared cultural manifestations (grave practices and artefacts), since there are no actual indications of language. Such arguments are notoriously subjective in character, but as we shall see in this case recent work has come to our aid.

2 I except one-off and controversial finds such as the Tărtăria tablets; most recently Merlini & Lazarovici 2008.

3 Most notably Marija Gimbutas, in several works, e.g Gimbutas 1965; Gimbutas 1982.

Archaeogenetics

The astonishing advances of recent years in the field of archaeogenetics have led to a reappraisal of the genetic origins of Europeans, of all periods. Some of these studies have been on modern populations, relying on the identification of specific genetic markers, or rather the changes in the genome known as SNPs (single nucleotide polymorphisms) that have taken place at various times in the past, thus enabling a genetic history of present-day populations to be built up; others, until recently less common because of contamination problems, have relied on the extraction of genetic material from ancient bones or teeth. The last few years have seen regular reports in the scientific press of how human ancestry – and by that I mean the developmental history of past human populations, not just human origins – has become better known. In particular, a series of articles in the last five years has shed light on the origins of later prehistoric peoples in Europe.

A number of articles have dealt with a somewhat earlier period than the Bronze Age, specifically the genetic origin of Neolithic populations, and the extent to which they show an indigenous hunter-gatherer inheritance, and to what extent an inheritance coming from elsewhere. This work goes back to at least 2010, when Wolfgang Haak and colleagues presented data that showed a Near Eastern ancestry for Neolithic farmers in central Europe (Haak *et al.* 2010). But things have moved on since then.

An analysis by Gerling and colleagues of eight individuals from an Early Bronze Age burial mound in Hungary showed the existence of non-local individuals among those buried (Gerling *et al.* 2012). Archaeologically speaking, the kurgan is linked to Northern Pontic Yamnaya groups, because some of the elements in the burial mode were alien to the local area, even suggesting perhaps that the individuals buried in the mound had migrated from the East into the Great Hungarian Plain. Strontium and oxygen isotope analyses reveal an earlier period of "local" burials, spanning the period 3300 – 2900 BC, followed by later burials that exhibit non-local isotopic signatures. The combination of the isotope values and the grave-goods associated with the non-local burials point to the foothills of the Carpathian Mountains as the nearest location representing a possible childhood origin of this non-local group.

In April 2013 an article in *Nature Communications* presented the results of a study of mitochondrial DNA in ancient and modern populations, and specifically haplogroup H, which is dominant in modern western European populations (Brotherton *et al.* 2013). This haplogroup was not common in Early Neolithic farmers in central Europe, and absent in most hunter-gatherer populations, but became commoner during the Middle Neolithic and much commoner by

the Late Neolithic. Of particular interest for the study of post-Neolithic populations is the finding that there were contributions to the emergence of this concentration in central and western Europe from Beaker individuals, while the following Early Bronze Age individuals studied (Únětice culture) continued the same trend – the genetic distance between Early Neolithic and Early Bronze Age was the greatest, in other words, there was a significant input of genetic material from elsewhere during the Neolithic, which became expressed most notably in late Copper Age and Early Bronze Age populations. Interestingly from an archaeological point of view, mitochondrial genomes from Bell Beaker individuals in central Germany display close genetic affinities to present-day Iberian populations. Corded Ware individuals had two distinct mitochondrial genomes, not found in Bell Beaker individuals from the same area; while Únětice individuals show haplotypes linked genetically to modern populations both east and west of central Europe, in other words a mixed genetic heritage. A Sardinian Bronze Age individual had a previously unknown haplogroup subtype. The authors of the paper stress the link between a gene flow (and thus a movement of people) from west to east in the Corded Ware and Beaker periods, and the long-debated question of the nature of the Beaker phenomenon, for which an Iberian origin is now virtually certain, at least for the so-called Maritime element of the assemblage. This may have implications for language as well, as I shall discuss shortly.

An article in 2014 by a different group considered "genome flux and stasis" across the Neolithic, Bronze and Iron Ages in Hungary (Gamba *et al.* 2014). The Neolithic results start with a close correspondence with hunter-gatherer genomes and stayed relatively unchanged for 2.5 millennia; the big change came after that, and for the Bronze Age the two samples lie squarely in the modern Central European genome. The Iron Age saw changes again, with a shift towards East European genomes, suggesting influence from the steppe zone.

Two studies from 2015 looked at the ancestry of later prehistoric populations. One, by a group led by Wolfgang Haak and Iosif Lazaridis, analysed 69 ancient individuals across Eurasia, from the Neolithic to the Iron Age (Haak *et al.* 2015). They looked at the genetic ancestry of populations in western and eastern Europe, identifying separate western and eastern hunter-gatherer ancestral types. But the easterners were very different, in that they had a second genetic aspect, deriving from the Yamnaya. More important still, Late Neolithic groups, notably those who made the pottery known as Corded Ware and spread over much of central and northern Europe, traced a large part of their genetic ancestry to a Yamnaya steppe background. To quote the authors of this paper:

> "Western and Eastern Europe came into contact 4,500 years ago, as the Late Neolithic Corded Ware people from Germany traced 75% of their ancestry to the Yamnaya, documenting a

> massive migration into the heartland of Europe from its eastern periphery. This steppe ancestry persisted in all sampled central Europeans until at least 3,000 years ago, and is ubiquitous in present-day Europeans. These results provide support for a steppe origin of at least some of the Indo-European languages of Europe...
>
> Our results support a view of European prehistory punctuated by two major migrations: first, the arrival of the first farmers during the Early Neolithic from the Near East, and second, the arrival of Yamnaya pastoralists during the Late Neolithic from the steppe. Our data further show that both migrations were followed by resurgences of the previous inhabitants: first, during the Middle Neolithic, when hunter-gatherer ancestry rose again after its Early Neolithic decline, and then between the Late Neolithic and the present, when farmer and hunter-gatherer ancestry rose after its Late Neolithic decline. This second resurgence must have started during the Late Neolithic/Bronze Age period itself, as the Bell Beaker and Únětice groups had reduced Yamnaya ancestry compared to the earlier Corded Ware, and comparable levels to that in some present-day Europeans".

Another study, led by Morten Allentoft and Martin Sikora from Copenhagen, was also published in *Nature* in 2015, and studied the genomes of 101 ancient individuals of Bronze Age date from various parts of Eurasia, from northern Italy and Germany right across to Siberia (Allentoft *et al.* 2015). To quote the authors:

> "By analysing our genomic data in relation to previously published ancient and modern data, we find evidence for a genetically structured Europe during the Bronze Age. Populations in northern and central Europe were composed of a mixture of the earlier hunter-gatherer and Neolithic farmer groups, but received 'Caucasian' genetic input at the onset of the Bronze Age. This coincides with the archaeologically well-defined expansion of the Yamnaya culture from the Pontic-Caspian steppe into Europe. This admixture event resulted in the formation of peoples of the Corded Ware and related cultures.... Although European Late Neolithic and Bronze Age cultures such as Corded Ware, Bell Beakers, Únětice, and the Scandinavian cultures are genetically very similar to each other, they still display a cline of genetic affinity with Yamnaya, with highest levels in Corded Ware, lowest in Hungary, and central European Bell Beakers being Intermediate" (Allentoft *et al.* 2015, 168).

Close genetic similarity was noted between Corded Ware individuals and those from Sintashta in western Siberia, which "suggests similar genetic sources of the two"; and Sintashta would not then derive from Asia or the Middle East, but rather from a western source.

The authors go further than this: they move on to consider the question of Indo-European language, and come down firmly on a correlation between the indicated influence of steppe cultures on Bronze Age Europe (via the Yamnaya) and the supposed movement of Indo-European speakers from the steppe at some stage during the third millennium BC. "Our analyses support that migrations during the Early Bronze Age is a probable scenario for the spread of Indo-European languages", they boldly state (Allentoft *et al.* 2015, 171).

What is more, the Bronze Age populations of most of continental Europe show close genetic similarity to modern day populations of the same area, indicating that in spite of the many migrations and movements that have occurred in historic times, today's Europeans were largely similar in genetic terms to those of the Bronze Age. This is not true of certain southern European groups, notably in Sicily and Sardinia, where the genetic inheritance is much more similar to Neolithic types.

Lazaridis and colleagues examined the genetic origins of the Bronze Age populations of Greece, admittedly in a small sample (Lazaridis *et al.* 2017). They found that Minoans and Mycenaeans were genetically similar, having at least three-quarters of their ancestry from the first Neolithic farmers of western Anatolia and the Aegean, and most of the remainder from ancient populations related to those of the Caucasus and Iran. The Mycenaeans differed from Minoans in deriving additional ancestry from a source ultimately related to the hunter–gatherers of eastern Europe and Siberia, introduced via a source nearer at hand and related to the inhabitants of either the Eurasian steppe or Armenia. These conclusions are remarkable when considered in the context of early Mycenaean material culture, as represented above all in the Shaft Graves of Mycenae, where an extraordinary variety of objects includes pieces that seem to show an ancestry or origin in the steppe zone far to the east, as well as Crete, Anatolia and Egypt.

More recently, a ground-breaking article by Olalde and colleagues (Olalde *et al.* 2018) examined the DNA of 400 individuals from various parts of Europe dating from the Neolithic to the Bronze Age, 226 of them associated with Beaker material. While there was limited genetic affinity between Beaker-associated individuals from Iberia and central Europe, thus excluding migration as an important mechanism of spread between these two regions, there was strong evidence for migration elsewhere, particularly Britain. There the spread of the Beaker complex introduced high levels of steppe-related ancestry and was associated with the replacement of approximately 90 % of Britain's gene pool within a few hundred years, continuing the east-to-west expansion that had brought steppe-related ancestry into central and northern Europe over the previous centuries. The analysis also included a smaller number of Bronze Age individuals, who fitted the same pattern, as had previously been established in an analysis of Irish Bronze Age burials (Cassidy *et al.* 2016).

Mathieson and colleagues, as part of a study of the ancestry of Old World Neolithic populations, analysed the DNA of a small number of Balkan Bronze Age individuals, showing that their genetic make-up was mixed, with both Anatolian Neolithic, Neolithic, Yamnaya and hunter-gatherer ancestry evident (Mathieson *et al.* 2018).

This work continues; papers presented at the conference *Genes, Isotopes and Artefacts* in December 2018 in Vienna included several papers which built on this foundation. Thus Pinhasi, Fernandes and Reich showed very mixed outcomes for the western Mediterranean islands: Sardinian individuals showed no steppe ancestry (perhaps underlining the rather isolated position of the island throughout ancient times), though there was evidence of Iran-related ancestry coming via the Aegean. Sicily, on the other hand, had evidence of both these ancestries, and the Balearics had substantial steppe-related ancestry, though with an increase in Anatolian farmer ancestry over the course of the Bronze Age (Fernandes *et al.* 2019).

Iosif Lazaridis (2018) recently summed up the genetic evidence as follows:

> "Our understanding of the spread of steppe ancestry into mainland Europe is becoming increasingly crisp. Samples from the Bell Beaker complex are heterogeneous, with those from Iberia lacking steppe ancestry that was omnipresent in those from Central Europe, casting new light on the 'pots vs. people' debate in archaeology, which argues that it is dangerous to propose a tight link between material culture and genetic origins. Nonetheless, it is also dangerous to dismiss it completely. Recent studies have shown that people associated with the Corded Ware culture in the Baltics were genetically similar to those from Central Europe and to steppe pastoralists, and the people associated with the Bell Beaker culture in Britain traced ~90% of their ancestry to the continent, being highly similar to Bell Beaker populations there. Bell Beaker-associated individuals were bearers of steppe ancestry into the British Isles that was also present in Bronze Age Ireland, and Iron Age and Anglo-Saxon England....
>
> Steppe ancestry did arrive into Iberia during the Bronze Age, but to a much lesser degree.... This ancestry was also present in the Aegean during the Mycenaean period ~3.5 kya at ~15%, but was absent from the otherwise genetically similar Minoan culture of Crete who represents the most recent sampled European population without any such ancestry. Both Minoans and Mycenaeans and to a much lesser extent Neolithic samples from the Peloponnese and Bulgaria also had ancestry related to Caucasus hunter-gatherers, suggesting that this ancestry did not come to Europe only via migrations from the steppe, but also independently, perhaps reflecting ancestry from different Anatolian source populations" (Lazaridis 2018, 24).

Finally (at the time of writing) another article by Olalde and colleagues has considered the situation in Iberia (Olalde *et al.* 2019). On the basis of 60 individuals analysed, it was shown that steppe influence increased markedly throughout Iberia during the Bronze Age. The earliest ones (2500 – 2000 cal BC) coexisted with locals who had no steppe ancestry, but after 2000 some 40% of the genetic inheritance was of steppe origin, in other words newly arrived people; the Y chromosome evidence was even more emphatic in this regard, with one dominant lineage replacing that found during the Copper Age. What is more, the evidence shows that more males than females entered the peninsula.

These recent analyses seem to show incontrovertible evidence for a range of population movements during the fourth and more particularly the third millennium BC; after that, Bronze Age populations in the second millennium built on that Copper Age background. Who, then, were Bronze Age people genetically? Like most of us today (and coming from Britain, scene of multiple incursions and migrations in historic times, I would be the last person to assert ethnic purity), they were a mixture; there was an eastern component, and there was a western component. Genetically, however, most Europeans had moved on from the "pure" early farmer genome that characterises so much of continental Europe in the early Neolithic. It is clear that a very large element in their genomic make-up came from the east, and specifically from the steppe zone of south Russia and Ukraine.

Recent journalistic accounts of this process, derived from these recent articles, have suggested that the latter centuries of the third millennium BC were dominated by "murderous invaders", "axe-wielding warriors", "almost unimaginably violent people" (Barras 2019). I will return to the question of violence and warfare in a later chapter; for the present, it seems hard to escape the conclusion that there was a major migration at the time of the late Copper Age, as represented by the Corded Ware and Bell Beaker assemblages. The extent to which this picture is correct is uncertain; if it were the case, one might expect more evidence of trauma on the skeletons of the people who were "replaced". Kristian Kristiansen has espoused a variant of this in suggesting that the Late Neolithic populations of Europe were fatally weakened by an outbreak of plague (Rascovan *et al.* 2019; also quoted in Barras 2019), which would have made them easy prey for invaders. In this view, the arrival of the Bronze Age was a violent affair, as Neolithic populations were brutally put down by the invaders. Time will tell if this picture is correct.

The "kurgan hypothesis" of Marija Gimbutas, developed in the 1950s and 1960s (Gimbutas 1956; 1965; 1970) and elaborated by her further in later articles, has always split the archaeological community. For those who saw cultural developments as a clear reflection of migrations, it was the obvious catalyst for the developments of the Copper and Bronze Ages that were so evident in the burial monuments across the continent of Europe. John Chapman has suggested that Gimbutas' concern – even obsession – with migration and invasion stemmed from her personal history as a Lithuanian displaced by Russian and German invasion during her lifetime (Chapman 1998). I myself was sceptical about the kurgan hypothesis, as it seemed to raise more questions than it answered, and did not seem to have any obvious connection with the mound-building cultures of the west and north of Europe (Coles & Harding 1979, 6–7); at the time, explanations based on migrations were becoming unfashionable, development based on

local situations being favoured in some influential quarters (notably Renfrew 1972). Andrew Sherratt was one of those who always favoured migration as the major factor in the spread of barrow burial in Copper Age Europe, a standpoint which probably bore on his espousal of a version of World Systems Theory as applied to the Bronze Age (below, pp. 119 – 20); our discussions on the matter did not lead to any mutually satisfying conclusion.[4] More recently David Anthony has espoused the kurgan hypothesis with compelling arguments (Anthony 2007). In the light of the genetic evidence, it seems clear that I was wrong and Gimbutas and Sherratt (for the most part) right; a striking confirmation of the power of purely archaeological argument. The same can be said for the long-held view by some scholars that the Beaker phenomenon represents a movement of people into lands in which they were not indigenous, a much-debated topic across the twentieth century. Talk of cultural packages, the power of fashion, and the like, while not untrue, seem at last to have given way before the power of DNA analyses.

Language

If the genetic make-up of Bronze Age populations has now largely been established, is it possible to go further and say what language or languages were spoken? I have alluded above to the assertion by at least one of the teams that genomic input from the Yamnaya on the steppe was very likely concomitant with the spread of Indo-European language. This is of course another long-running debate. Many authorities have tried to pin down the date at which I-E language arrived in Europe, as well as a subset of the debate, the formation of Celtic languages and thus Celtic identity (summary in Chang *et al.* 2015). In terms of correlating language with people, the scholarly landscape has not changed greatly over recent decades. The movements suggested as indicating a spread of Indo-European have ranged from the supposed emergence of "Celtic" peoples in the first millennium BC, through the emergence of Greek speakers around 2000 BC, the spread of Beaker cultures a little earlier, or – to prehistoric archaeologists in many ways the most likely scenario – the spread of farming peoples at the start of the Neolithic, two to three thousand years earlier (Renfrew 1987). The demonstration that Linear B is an early form of Greek, following on from the ear-

4 David Anthony has referred to the disjuncture between the enthusiasm of Eastern European archaeologists for explanations involving migration compared with the reluctance of Western archaeologists for them: Anthony 1997; Anthony 2007, 458.

lier demonstration that Hittite is also an I-E language, clearly indicated that I-E speakers were present in the second millennium BC, and thus probably considerably before that. If there was a "Proto-Indo-European" language, from which the developed form emerged as many scholars believe, then we could be talking about an emergence, or arrival, hundreds or thousands of years earlier.

In this context, the conclusion by Chang *et alii* (2015) that statistical phylogenetic analysis strongly supports the idea that I-E came from the steppe zone, at a time period 6500 to 5500 BP (the late Neolithic and Copper Age) seems to add strong weight to this hypothesis. A strong supporter of the "steppe hypothesis" is David Anthony (2007), who has argued forcefully for the notion that the Yamnaya migration to the west brought I-E language with it. This work, argued prior to the advent of the results of genetic analysis, fits well with these latest discoveries, even if one need not agree with every aspect (for instance that there was a Usatovo "dialect" of I-E which spread north and west up the Dniester valley into the TRB area of Poland: Anthony 2007, 359 – 360).

If the recent genetic work is correctly interpreted – and at least for the time being we need to accept the interpretations advanced – we are indeed faced with a movement or movements of people in the Late Neolithic and Copper Age from the Eurasian steppe into central Europe, and from Iberia into western Europe. Since I-E language can be incontrovertibly demonstrated to be in Europe by at least the middle of the second millennium BC, and probably earlier than that, we end up saying that much of the continent of Europe in the Bronze Age was occupied by people ultimately of steppe origin, who were I-E speakers and ancestral in both genetic make-up and in language to the peoples of Classical antiquity, and thus to ourselves. I myself have always been rather reluctant to imagine that all problems of ancestry for European Bronze Age people can be resolved by appealing to the "great unknown" of the Eurasian steppe, but these studies can hardly make one believe anything other than what is suggested. Of course, an eastern origin merely makes one ask the next question, where did these easterners come from (if anywhere), and why did they move westwards? But that is a question to explore in a different context. The steppe of central Asia covers a vast area, home to many rich and remarkable cultures; disentangling how they interacted with or influenced Europe in the Bronze Age is something that will require a lot more genetic evidence.

All this tells us something about the origins of the populations of Bronze Age Europe in genetic terms, and perhaps about the language they spoke, but it hardly brings them to light as individuals. For this we have to turn to other aspects, based on archaeological survival in the ground and the ways of analysing the evidence that is available.

Health and longevity

One scarcely need recall that life expectancy in the Bronze Age was, by our standards, extremely low, though not so much lower than that experienced even in Europe in relatively recent times – in poor urban communities in the 19th century, for instance. Perinatal and infant mortality was very high, as was childhood mortality; if you lived to your teenage years you had a decent chance of getting through your twenties or thirties, though after that your chances declined drastically. The number of people who survived beyond 40 was quite small, and beyond 50 very small. Nevertheless, a few people made it into their 60s, at which point they were very likely something of a wonder to those around them, much honoured and celebrated (unlike today – I suppose the modern equivalent is to live to 100).

Most published analyses understandably concern inhumation cemeteries, usually of the Early Bronze Age; relatively few Late Bronze Age cemeteries have come into consideration, for the obvious reason that they cremated their dead, so the survival of bone is much less good and detailed recording of age and sex much harder. Nevertheless, there are some analyses worth mentioning. At Vollmarshausen, Ldkr. Kassel, for instance, age was determinable in 210 cases in the 260 graves (Bergmann 1997). While there were differences between different areas and grave types, the overall picture was one where one quarter of those buried died before the age of six and a further 14% before the age of 14. Teenagers accounted for another 13.5%, while the largest component in this instance was represented by adults between the ages of 20 and 40 (38.5%). Only 9% lived beyond that age.

At El Argar in south-east Spain, a large sample (563 individuals) was studied (Kunter 1990): life expectancy at birth was 19.9 years, but at age 20 it was still 15.9 years, in other words teenagers had a reasonable chance of making it into their thirties.

At the Austrian site of Franzhausen I, Margit Berner's analysis of an even larger buried population – 658 individuals – showed infant and child mortality at over 30%, with teenage deaths at less than 10% (Berner 1997). The largest single age group at death was of people between 20 and 40 (37%), while 18% died between 40 and 60, and remarkably, 3.5% lived beyond 60 – *senilis* (senile or maybe not[5]) in the official terminology.

In spite of the fact that demographers find the figures for childhood mortality too low, the general picture is clear. While perinatal mortality is perhaps un-

5 "Senile" has a pejorative connotation in English as in German.

derstandable in societies without a modern understanding of the risks and dangers surrounding birth and early childhood, the health issues affecting people who survived childhood are less evident to us – though the absence of antibiotics must count as one of the biggest factors, as in most premodern peoples. Indeed, when one examines health aspects of Bronze Age populations, a series of factors become evident; a range of pathological conditions affected people.

Fourteen of the adults from the Early Bronze Age cemetery at Grossbrembach, Landkr. Sömmerda (Thuringia), had tooth caries, in some cases extensive (Ullrich 1972). On Italian Bronze Age sites, the incidence varied from as little as 3.3% to as much as 19.7% of studied populations, and periodontal disease and dental hypoplasia (deficient enamel) were also found (Borgognini *et al.* 1995). At Unterhautzenthal caries was rare on the individuals studied, but some had lost a lot of teeth, with one woman in late middle age having none at all in her mandible (Rebay-Salisbury *et al.* 2018, 88). An individual from an Early Bronze Age cist grave at Leven, Fife (east-central Scotland), had evidence of a tooth abscess (Lewis & Terry 2004, 43), and a woman in her 40s from an Early Bronze Age site near Inverness in north-east Scotland was generally healthy but had several tooth abscesses (compare a middle-aged woman of Beaker date from West Torbeck near Inverness: M. Kilpatrick http://archaeologyreportsonline.com/PDF/ARO8_WestTorbreck.pdf, accessed 27 June 2019), as did the Amesbury Archer (J. McKinley in Fitzpatrick 2011, 25, 81–2 Plate 27). The bad teeth, complete with abscesses, reminds one of the fate of Thomas Buddenbrook in Thomas Mann's *Buddenbrooks* (1901). Dying from toothache must be very unusual, but one can certainly suffer excruciating pain from it, as he did; an untreated abscess can infect other parts of the body and eventually lead to death, as happened to the fashion designer Hugo Boss.

A large kidney-stone, 35 mm across and over 22 g in weight, was found in the pelvic area of a mature male from Csongrád-Felgyő in Hungary (Boross & Nemeskéri 1963). Examples of pathological features deriving from chronic illness include *Spina bifida*, arthritis, particularly of the vertebrae; inflammation-like changes in the bones of the hand; and osteomyelitis. An interesting interpretation is that relating to the incidence of *Cribra orbitalia* (spongy bone above the eye sockets); it was present on all the subadults and two adults studied at Toppo Daguzzo (Basilicata, southern Italy) (Repetto *et al.* 1988); it was present at Sant'Abbondio, Pompeii (Tafuri *et al.* 2003) and many other sites, and considered to be a reaction to parasitic infections that derive from animal breeding and in particular the consumption of untreated dairy products and cattle meat (Minozzi *et al.* 1994). This feature was also present at El Argar (Kunter 1990, 88 ff.), where it is taken to be an indicator of blood iron deficiency, perhaps caused by malaria, at Blučina in southern Moravia (Smrčka *et al.* 1988), and at Franz-

hausen I, Gemeinlebarn F, Unterhautzenthal and several other sites (Teschler-Nicola & Prossinger 1997; Teschler-Nicola 1994; Rebay-Salisbury *et al.* 2018).

Parasitic infections are also highly evident at the wetland site of Must Farm, Cambridgeshire. A recent analysis of coprolites recovered from the site show the presence of numerous helminths (worms): eggs of fish tapeworm, *Echinostoma* worm, giant kidney worm, probable pig whipworm and *Capillaria* worm (Ledger *et al.* 2019). It appears that the wetland environment of the settlement contributed to parasite diversity and put the inhabitants at risk of infection by helminth species spread by eating raw fish, frogs or molluscs that flourish in freshwater aquatic environments. These parasites are spread through human waste and suggest a poor level of hygiene on the site, in addition to the ingestion of parasites directly from the aquatic food sources.

At some of these sites bone trauma was evident; I return to this question below when considering inter-group violence – though of course some of the trauma may have resulted from the daily activities of life (though perhaps not depressions in the skull).

The recent demonstration (Rasmussen *et al.* 2015) that the plague bacterium *Yersinia pestis* was present in seven out of 101 Bronze and Copper Age samples analysed, across a broad geographical range from Poland in the west to Siberia in the east, sheds extraordinary new light on health – or lack of it – in later prehistory. While this was probably not, according to the authors, bubonic plague, such as was responsible for the Black Death and its later manifestations, and for other outbreaks of plague such as the Justinianic plague in the sixth century AD and the so-called Third Pandemic, originating in China in the 19th century, its manifestation as pneumonic and septicaemic plague must have been quite severe enough to cause major population problems; indeed, the authors suggest that population declines in the late 4th millennium BC and the early 3rd millennium BC may have been caused by such outbreaks. This is speculative, of course; there is no direct evidence for it. But the periods in the ancient past where there are puzzling gaps in human presence may well emanate from health-related problems, rather than the natural disasters that some scholars prefer to promote. This is the explanation offered by another group in 2019 (Rascovan *et al.* 2019); a different plague lineage was present in various parts of Neolithic Europe, and may have been responsible for the drastic decline of Neolithic populations in some areas in the later part of the Neolithic.

Given the multifold dangers affecting Bronze Age people, one might wonder that they managed to do anything at all in their brief lives, but of course that is wrong: their achievements were remarkable, and there were a lot of them. Reconstructing the size of prehistoric populations is an imprecise art, to say the least, depending as it does on various assumptions about site numbers and size. A re-

cent publication covers the matter in exhaustive detail (Nikulka 2016). It is worth pointing out, however, that in the Late Bronze Age, and particularly in period V, the buried population of North Germany and Poland runs into several millions. D.-W. Buck calculated estimated densities of up to 8 people per km^2 for this period, as compared with a figure of 1 per km^2 or less for the Middle Bronze Age (Buck 1997).

Food and diet

The discovery that the Egtved girl (below) had been eating a diet poor in protein (Frei *et al.* 2015, Supplementary information 15) raises a range of questions about the food that people were consuming. In general we know very well that European Bronze Agers were exploiting both animal and plant foods; principally the normal range of domesticates in each case. Cattle dominated the animal spectrum in most areas, the only exceptions being in upland areas where there might have been limited pasture for them; and wheat, barley, and, later on, millet dominated the plants, with plentiful additions of legumes (peas, lentils, later beans) and some other species that are not eaten today, like *Camelina sativa* (false flax, Leindotter). This much is clear and obvious. But stable isotope analysis enables us to distinguish between terrestrial and marine food sources in the diet of individuals, and between C3 and C4 plants (the difference relates to the ability of plants to photosynthesise carbon dioxide; most food plants are C3, the exception being millet). Marine and terrestrial foods are detected through nitrogen and oxygen isotopes, which indicate the "trophic level" of the subject studied (stage in the food chain); nitrogen indicating animal protein (herbivores have lower nitrogen 15 values than omnivores, which in turn are lower than carnivores); carbon isotopes can distinguish between marine and terrestrial foods, and between C3 and C4 plants.

It is evident that food sources changed somewhat during the course of the Bronze Age. While staples like wheat, barley, beans and lentils were present throughout, a major development occurred in Europe in the later centuries of the second millennium BC: a range of new crops began to be intensively cultivated, most notably millet (which starts to appear regularly by around 1200 BC) but also oil plants like *Camelina sativa*, poppy and flax, and there was also a move towards other grain crops such as spelt and rye. In part this may have been a desire for diversification, so that risks were spread; in part it was probably a matter of intensification, since millet is fast-growing and can flourish on a wide variety of soils and environments.

A conference held in Rome in 2015 heard a series of papers dealing with the isotopic analysis of human bones from a range of contexts. The results of one, the spread of values from a Copper Age cemetery at Contrada Scintilia, province of Agrigento, Sicily, is interpreted by the authors as indicating a diet based primarily on C3 farm crops, with some admixture of animal protein (Tykot *et al.* 2015). At the Middle Bronze Age site of Castiglione, the results fall squarely in the area of terrestrial plants, perhaps with some C4 plant food being consumed, and again with a clear indication that animal protein was being included. Interestingly, at this site it was possible to see differences in nutrition between the sexes. A study of diet at several Bronze Age sites in mainland Italy showed that C3 plants, probably wheat and barley, were supplemented by millet at Olmo di Nogara (Tafuri *et al.* 2009). Even in Sardinia, surrounded on all sides by the sea, a recent study showed that marine resources played a negligible role in diet (Lai *et al.* 2013). The same is true for a recent study of Bronze Age individuals buried in the cave of Cova do Santo in the Lugo district of Galicia, north-west Spain (López-Costas *et al.* 2015), which showed that they consumed solely C3 plants and animal food, with no fish at all – perhaps not so surprising given the nature of the terrain here and the distance of nearly 90 km to the sea. Acorns were gathered and apparently used in cooking as well as (potentially) other uses at several sites in Bronze Age Apulia (Primavera & Fiorentino 2013); although Europeans of the present day do not generally eat acorns (apart from creating *ersatz* coffee!), certainly not raw because of the tannin they contain, there is plenty of ethnographic evidence that shows that historically acorns have been eaten.

Many other studies have shown that in coastal environments the presence of fish is indicated – hardly a surprise. The balance between fish and land foods is probably most important in marginal environments, and for periods when major transitions in lifestyles were taking place, notably at the end of the last glaciation, or the start of the farming way of life.

The study of vessel contents is also an important method for reconstructing diet. A recent study of vessel contents in Neolithic and Subneolithic contexts from sites in Lithuania (3300 – 2400 cal BC), including Šventoji, showed that the majority of the vessels were used for processing aquatic products (Heron *et al.* 2015; Robson *et al.* 2019). At one site the data suggest exploitation of freshwater resources and, in the later stages of occupation, dairying. Other substances identified include pine resin or tar, and beeswax. At Must Farm, Cambridgeshire, eastern England, the extraordinary range of finds includes fish traps and many fish bones, as well as nettle stew identified from pot contents, with a wooden spoon still stuck to the bottom of the pot (http://www.mustfarm.com/post-dig/

post-ex-diary-3-some-initial-findings/, accessed 27 June 2019; Knight *et al.* 2019; the excavation reports are in preparation).

Identities and occupations

How people regarded themselves, and how others regarded them, in other words their identities, is a complex matter to which I return in another chapter. But a few things may be mentioned right away. First, we can get some idea of what people actually looked like in life, through depictions of them – either in the round, or as two-dimensional images – or through what they wore and how they presented their hair and skin. In this way various images can be presented, about which I will not say much other than that we presume they have some reality in reconstructing Bronze Age appearances. The well-known and well-preserved clothing items from oak coffins in Denmark need not be dwelt on here, other than to say that we do not actually know how typical they were of particular age and gender sets. Hairstyles seem to have differed widely, for both women and men, perhaps marking age or rank distinctions, marriage status, or special occasions (Fig. 2.2).

There is a lot that could be said about how Bronze Age people actually spent their lives, once they had survived childhood. We know from textual sources in the Near East and Greece of a large range of occupations; the Linear B tablets alone tell us of agricultural workers, shepherds, woodsmen, bronzesmiths and goldsmiths, potters, spinners and weavers, flax-workers, grain-processors, bakers, and many more. In the barbarian world, in the absence of written sources we are obviously much less well informed, but we can certainly be sure of the existence of potters (male or female) and bronzesmiths, no doubt carpenters and other specialists in wood-working too. The smith in particular, to judge from ethnographic and historical or semi-historical evidence, must have occupied a very special place in society. This is probably one of the identities which we can reconstruct with some plausibility; a certain number of graves contain smithing equipment such as moulds and hammers, which are interpreted, rightly or wrongly, as indicating the profession of the occupant of the grave (Jockenhövel 1982) (Fig. 2.3). Smithing was apparently not restricted to men: a grave at Geitzendorf, Lower Austria, contained a body identified as female along with a curious collection of artefacts, including four cushion stones, perhaps used for gold working (Lauermann & Pany-Kucera 2013). The same seems to apply to salt-workers, given the presence of finds of briquetage in certain graves, mainly in northern Germany (Jockenhövel 2012) (Fig. 2.4); and it has also been suggested that women worked in the Hallstatt salt mines as well as men (Pany

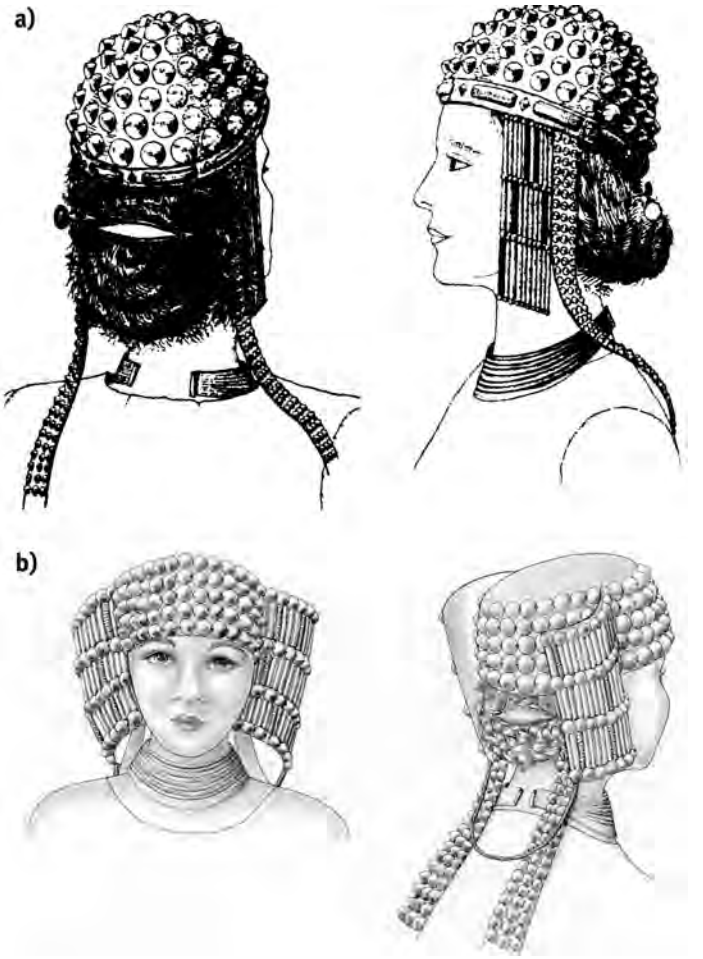

Fig. 2.2: Hairstyles in Bronze Age people. a): Bleckmar; source: Piesker 1958; b): Lüneburg; source: Bergerbrant 2007, after Ulrike Wels-Weyrauch.

& Teschler-Nicola 2007). Mining, for copper as well as other minerals, may well have been conducted by children as well as adults, to judge from the narrowness of the shafts and adits at both the Mitterberg and the Great Orme in North Wales.

One of the things that we know people did in the Bronze Age was to fight, or at least to cultivate a warrior identity. I discuss societal conflict and the role of war in another chapter; the evidence for conflict is extensive and in this, the rise of the warrior is a crucial part of Bronze Age life. The date at which the first indications of the warrior identity appear is disputed; the first weapons bur-

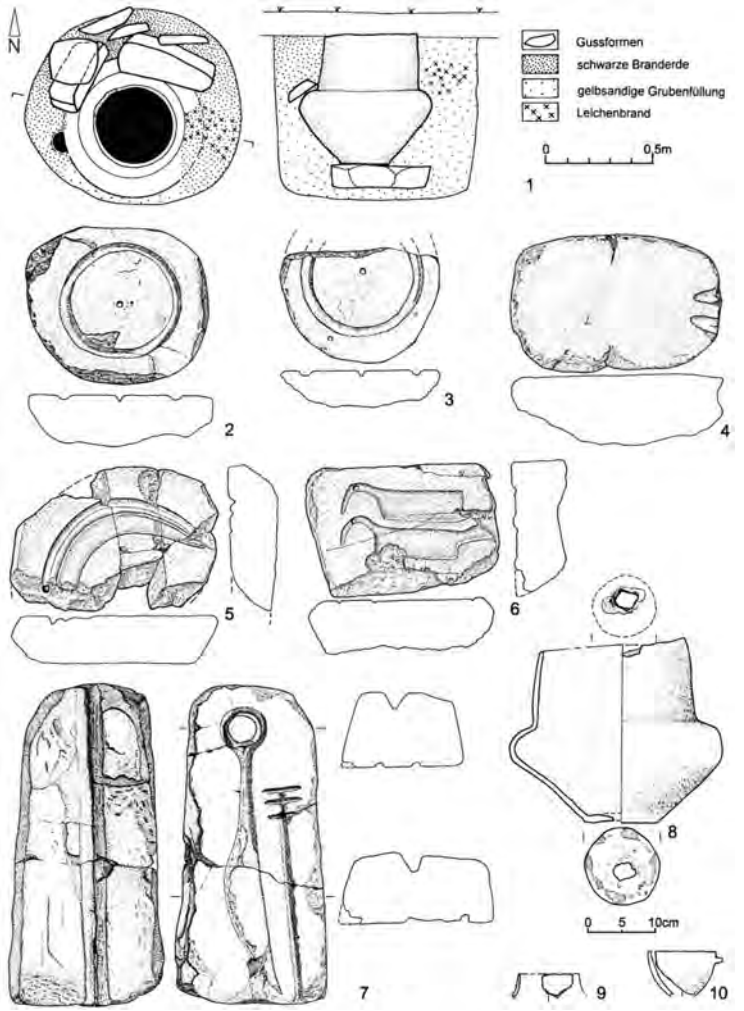

Fig. 2.3: Late Bronze Age graves from Germany containing metalworking equipment. Source: Jockenhövel 2012.

ied with people occur during the earlier part of the third millennium, and Italian archaeologists are adamant that burials of the Remedello culture show incipient warrior status. Further north, Beaker burials often include daggers, and depictions on statue-stelae clearly show us special people bearing weapons (Ambrosi 1988; De Saulieu 2004; Gallay 1995), while the practice of showing armed men on grave stelae continued much later (Grosjean 1961; Almagro 1966) (Fig. 2.5). In my opinion, however, the crucial step towards a fully-fledged warrior society came

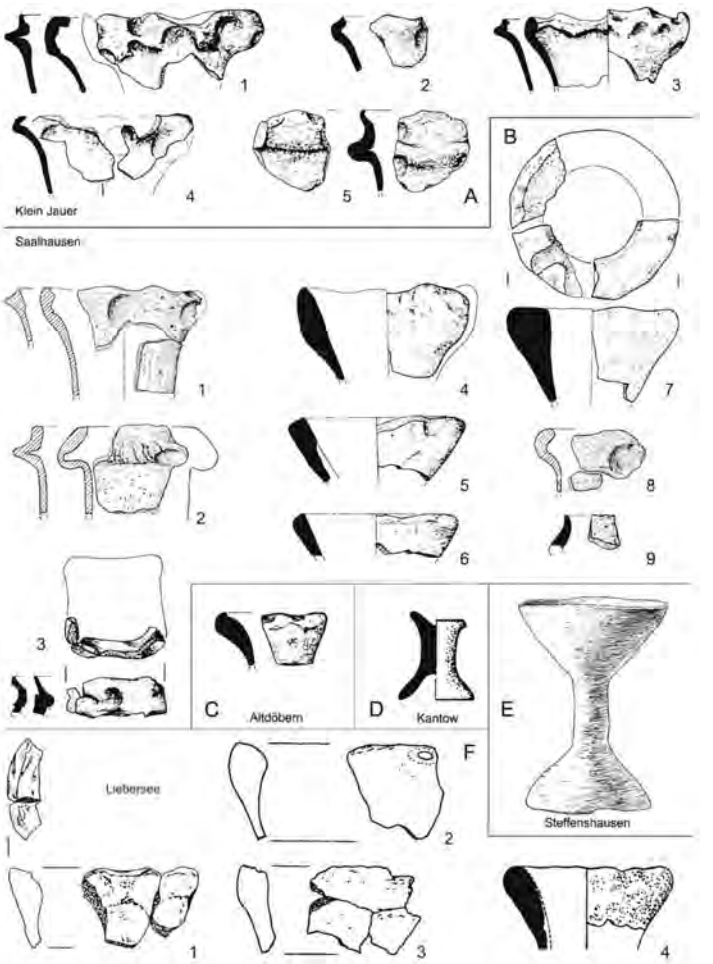

Fig. 2.4: Late Bronze Age graves from Germany containing briquetage. Source: Jockenhövel 2012.

with the invention of an item specifically designed to cause damage to other humans: the sword (Fig. 2.6). You can use daggers and spears in hunting, but you only use a sword against people. From the middle of the second millennium BC graves, usually male, increasingly contain both swords and other war-related equipment like spears, and sheet bronze armour was developed. I have argued in the past that by later stages of the Bronze Age it is likely we are seeing the existence of warrior bands comparable to the *comitatus* of Tacitus or the Gefolgschaft of the early medieval period (Harding 2007, 162ff.). Group warfare re-

placed the small-scale conflict that had been the hallmark of earlier periods. I shall return to these matters below (pp. 112–14).

Fig. 2.5: Grave markers ("statue-menhirs") showing men bearing weaponry. Left: Filitosa, Corsica; right: Magacela, Badajoz, Spain. Source: Harding 1994.

There were probably also other special people around. Sabine Gerloff has suggested that the gold cones found in several parts of Europe served as hats for magicians (Gerloff 1995) (Fig. 2.7), while the gold cape from North Wales obviously marked out some other very special person (Powell 1953). The extraordinary range of heavy Irish gold ornaments (most notably the collars with disc terminals) may indicate special people; the "bullae" known from Ireland and Britain may represent other examples (Eogan 1998; Cahill 2018; Hilts 2019)

Fig. 2.6: Late Bronze Age swords, as formerly displayed in the Archäologische Staatssammlung, Munich.

And if we interpret the Nebra disc correctly as an astronomical device, there were astronomers as well, people with a range of very special knowledge.

Fig. 2.7: The gold cone from Schifferstadt, Rhein-Pfalz-Kreis. Photo: DerHexer, Creative Commons licence.

Traders and travellers

The other identity we can reconstruct through proxy evidence is that of the traveller. We have long believed that people moved around in the Bronze Age; artefact distributions provide strong evidence for it, and the demonstration by Albrecht Jockenhövel (1991) that ornaments in Middle Bronze Age women's graves in parts of central and western Germany very likely indicated movement in marriage was a sophisticated use of artefacts to provide archaeological evi-

dence for such movement. But since then we have the results of stable isotope analysis to bring into play. I need hardly mention the well-known Amesbury Archer (Fitzpatrick 2011), a mature Bell Beaker period man found a few kilometres from Stonehenge, whose birthplace was not in Wessex, or even in southern England, but somewhere in continental Europe, perhaps Germany; or the nearby Boscombe Bowmen, who had moved twice during their lifetimes, being born somewhere with a quite different radiogenic signature, moving somewhere else around the age of 9, and ending up on the chalklands of Wessex. Of the young men from Neckarsulm, Kr. Heilbronn, around one third of the 37 individuals analysed were not indigenous to the area but came probably from some other part of south-west Germany (Wahl & Price 2013); Pokutta (2013, 181ff.) found extensive evidence for the movement of individuals across the territory of Lower Silesia in the Early Bronze Age, including children. One must note, however, the individuals from Singen, Kr. Konstanz, where no evidence for mobility was found (Oelze *et al.* 2012); similar conclusions were reached for Early Bronze Age individuals in cemeteries in central Germany (Knipper *et al.* 2016); there was some evidence from the isotopic data for non-local individuals, but the burial rite alone could not distinguish them. A study of twelve individuals from a collective burial under a Mycenaean building at Thebes, central Greece, found that one person had spent her latter years or months in a different environment from the one where she was buried (Vika 2009).

These important results are now joined by an even more spectacular one, the burial of a young woman at Egtved in Jutland, the original find being made in 1921 (Thomsen 1929). The grave is remarkable for the clothing found with it (Broholm & Hald 1940); it dates to Period II of the Nordic Bronze Age, the last treering preserved being 1370 BC (Randsborg & Christensen 2006, 221). It has now been the subject of a range of biomolecular and biochemical analyses (Frei *et al.* 2015) which have shown that far from being a stay-at-home Danish girl, she was in fact much-travelled and probably from somewhere quite different in continental Europe: the authors suggest the Black Forest as her place of origin (though other areas are also possible). Additionally, the wool used in her clothing mostly came from sheep which were not local to the area. In her last two years of life, and especially in the final months, she had travelled a lot, as analysis of her hair showed. What is more, while she was eating a terrestrial (land-based) diet, she was lacking in protein, in other words she was not the healthy young blonde often depicted, but perhaps something rather less alluring, at least to our modern eyes.

This startling information has been supplemented by the study of another Danish Bronze Age female, the young woman from Skrydstrup (Frei *et al.* 2017), dating to Period III of the Nordic Bronze Age; the recent radiocarbon

date puts it at 1306–1188 BC at 78% probability, i.e. most likely the 12th century BC, with a small probability it lies in the 11th or 13th;[6] dendro dating on the preserved wood was unsuccessful (Randsborg & Christensen 2006, 233). This woman lay on an ox hide in an oak coffin under a large turf mound, and was accompanied by a horn comb and a set of gold spiral rings; her clothing and wool cap survived, along with a belt around her body (Broholm & Hald 1939; 1940) (Fig. 2.8). She was around 17–18 years old when she died, and she moved from her place of origin – outside present day Denmark – to the Skrydstrup area 47 to 42 months before she died. She was thus around 13 to 14 years old when she migrated to that area, where she lived for the rest of her life. This raises interesting questions about the movement of girls and young women, perhaps in marriage – as Albrecht Jockenhövel suggested in 1991.

It is necessary to mention, however, that recent work has raised questions about the use of strontium isotopes for provenance testing, given that lime spread on fields in agricultural activity can cause Sr isotope ratios to change (Thomsen & Andreasen 2019); in this study, the natural variation in Sr isotope ratios in the areas around the Egtved and Skrydstrup burials is said to fall in the range obtained on the burial material. These problems are being addressed by the team that presented the original studies (Hoogewerff *et al.* 2019), and may not invalidate their conclusions.[7]

All these indications tell us something very important. People moved about during the Bronze Age. I have to modify my own published statements in the light of these findings. I have always believed, and stated in print, that most people in later prehistory, including the Bronze Age, were basically tied to the land; they were peasant farmers, who were concerned above all to gain what they needed from the land in order to survive, and of course to take part in the major episodes of monument building that we can discern archaeologically. Now of course we do not know how many people spent their lives travelling like the Egtved girl, or indeed moving just once during their lifetimes, as perhaps the Amesbury Archer did; nor can we be sure that people buried in oak coffins in large tumuli were not very special people, who had done things that most people didn't. I would still imagine that most people did not travel far, or much beyond their immediate confines, for the local exchange of foodstuffs and locally produced commodities like skins, wool, stonework, metal tools and the like. But clearly we have to recognise that some people did travel, and they travelled fre-

6 A date obtained in the 1980s put it rather later.

7 I thank Professor Karin Frei for her thoughts on this matter.

Fig. 2.8: The head of the woman from the Skrydstrup barrow, as found. Photo: Danish National Museum.

quently, and over long distances. I shall return to these topics later, when I consider the nature of the "Bronze Age world" (below, p. 115).

Work currently under way is investigating the movement of people on a very local scale: a study of burials from the Lech valley near Augsburg in Bavaria is showing remarkable evidence for the presence of non-local females, with patrilocality being the dominant residential system; the discussion has also been able to associate sex and kinship aspects with those relating to inequality (differential

access to material goods).[8] Some aspects of this ground-breaking project were published earlier (Knipper *et al.* 2017).

How does this compare with artefactual evidence? It is hardly news that many objects were moved both short and long distances across the continent in the Bronze Age. I shall discuss some of these objects in a later chapter (for instance the extraordinary bronze "drum" from Balkåkra in southern Sweden); objects such as the Cypriote spearheads, found in various places in central and western Europe, are equally striking (Gerloff 1975). Their stories are best told, however, when we come to consider object biographies.

All this would suggest that we can confirm the picture of long-distance trade which I and others have been suggesting for many years. I have always believed that materials like amber were surely transported around the Bronze Age world, so someone must have taken them – in this case from the major sources on or near the Baltic to central Europe and indeed across the Alps to Italy and Greece. Some scholars, Kristian Kristiansen notable amongst them, would go much further and imagine that Europe in the Bronze Age was a constant scene of travel and trade. These latest findings clearly suggest that his maximalist position is becoming more likely. Bronze Age Europe was a place where movement was the norm, not the exception.

Status and role

Identifying what people did is one thing; saying what their role in society might have been is quite another. How did people relate to each other, and how to society as a whole? Inevitably we are here considering the evidence provided by personal possessions as represented by grave-goods. And that evidence very often indicates that grave-goods, and perhaps therefore possessions, are unequally distributed through society: some people are buried with many more objects than others. (For present purposes I ignore the possibility that grave-goods are not personal possessions; even if they are not, an abundance of goods suggests that numerous gifts were offered at the time of the funeral, which in itself suggests an enhanced importance of the individual being buried.) Differential provision of goods may thus be taken to indicate inequality in death; and, one presumes, inequality in life.

8 Paper presented at the Vienna conference "Genes, Isotopes and Artefacts", December 2018, by Corina Knipper and others. Now (September 2019) in press: Mittnik *et al.* 2019.

Here we enter a quite separate discussion, about inequality, which I have discussed in previous accounts (Harding 2015). The way in which inequality is assessed in modern sociology is through the use of the Lorenz curve and the Gini coefficient; a number of authors have applied these methods in archaeology (e. g. Windler *et al.* 2013) though it is arguable whether the results tell us much more than was already apparent from the archaeological finds.[9]

The study of inequality in prehistoric archaeology is by the very nature of the evidence difficult; many prehistorians are reluctant to go beyond the most elementary conclusions derived from grave wealth or house size. Sociologists and anthropologists are less afraid of manipulating what they see as data, however, as recent studies have shown: studies by Turchin, Whitehouse and others study social complexity through the analysis of material assembled in the databank "Seshat" (Turchin *et al.* 2017; Whitehouse *et al.* 2019). These procedures may be valid in the case of literate societies where there is written confirmation of institutions, religious and administrative; but as an examination of Seshat shows, for prehistoric cultures most of the relevant data are missing. Such problems are bound to beset such formulations as "the Axial Age", originally identified by the philosopher Karl Jaspers in a book of 1949 (Jaspers 1953)[10] and the works of those who have subsequently attempted to formalise the concept, and said to fall in the period roughly 800 – 300 BC. In the world of prehistoric Europe, the first millennium BC clearly saw major developments in society and technology, but only with literacy is it possible to identify securely the "moralizing gods" who some have claimed to be responsible for the rise of complex societies in that period.

The end of life

I have talked about various aspects of people in the Bronze Age, who they were and how they lived. As I said at the start, we know most about people from what happened to them when their lives ended – which of course they all did. I shall not discuss here graves or cemeteries; that would turn into a catalogue of different forms, body positions, and so on. But since death is a universal aspect of life,

9 The problem with using this approach is that it depends on income rather than wealth. While there might be a connection between the two in ancient societies, the concept of "income" in the Bronze Age is clearly problematic.

10 *Achsenzeit*, perhaps better translated as "Axis time" or "Revolution time", indicating the notion that the period in question (mid first millennium BC) was a time around which civilisations "revolved".

it is worth looking briefly at what we can say about people's attitudes to death and the dead.

Obviously some of what is visible archaeologically is related to social aspects. So we generally believe that large and lavish tombs, or big mounds, or many grave-goods, mark out people who were high up the social scale. That may well be true; at least, we don't have any better explanation for it. But what about the cases where people are buried in discrete areas of a cemetery, sometimes with indications of genetic affinity, in other words in a family burial area? What about cases with more than one body in the same grave, or of an adult and a child in the same grave (for instance at Trumpington Meadows, Monument I: Evans *et al.* 2018, 36 – 49, Figs 2.8 – 2.14), or the curious double burial from the Jätchenberg bei Westerhausen in Quedlinburg district in Sachsen-Anhalt (Schmidt 2006 and http://www.lda-lsa.de/landesmuseum_fuer_vorgeschichte/fund_des_monats/2004/mai/, consulted 27 September 2019) (Fig. 2.9)? This burial contains two men, both apparently killed by arrowshots. A recent discussion of the cemetery at Unterhautzenthal, Lower Austria, has discussed the question of female graves containing infants or children, suggesting that it is possible to discern mothers and babies, with the possibility of demonstrating breastfeeding through isotopic changes in bone (Rebay-Salisbury *et al.* 2018, with one individual showing a clear signal). Such graves have usually been interpreted as mother and child, others as husband and wife, or something similar. The younger the child, perhaps the more likely this is; and there are examples of women with neonates, plausibly interpreted as those who died in childbirth.

Combinations of bodies in graves have also been considered by Frank Falkenstein (2005) in the context of the North Alpine Bronze Age. He found a great deal of variation in the practice, not just infants or children with an adult. For a start, two bodies in a single grave implies simultaneous or near-simultaneous death, which might suggest a suttee-like practice (or intentional killing of a second person on the death of the first, as with the Great Death Pit and other graves at Ur), or perhaps death as a result of an infectious disease. The matter is complicated by the fact that cremation was sometimes used as well as inhumation, so that the relative dates of death are uncertain. In the well-preserved cases, the commonest combination was of a woman with one or two children, occasionally a man with a child. The next most common was of two adults, usually a man and a woman, less commonly two males; up to four individuals can occur in one grave, which might suggest family groupings. Although Falkenstein is at pains to point out that these combinations represent a cross-section of age and sex in society, nevertheless the fact that more than one person can occur in a grave, *buried at the same time*, suggests unusual (to us) practices or personal or group disasters.

Fig. 2.9: Double burial from the Jätchenberg bei Westerhausen, Quedlinburg district, Sachsen-Anhalt. Source: Schmidt 2006.

Especially where children are concerned, it is reasonable to see sentiment as playing a big part in the attitude to the dead. Thus toys may be present, as with rattles in Urnfield culture graves (Kaus 1971; Manschus 2012; Pomberger 2016, 46 ff.; Schmeiduch 2016) (Fig. 2.10), or miniature versions of full-size objects, as with the so-called halberd pendants of the Wessex Culture, which are likely to be children's versions of the real thing (Woodward & Hunter 2015, 194 ff., 232, preferring a different interpretation). Model carts and miniature pots may fall into this category as well.

Fig. 2.10: Rattles from Lausitz culture sites in Poland. Photo: Muzeum Ziemi Kępińskiej, Kępno (http://www.muzeumkepno.pl/archeologia.html, consulted 8 October 2019).

Special treatment of the dead, for whatever reason, has often occupied prehistorians, whether it is unusual placing of the body, re-use of graves, multiple depositions in a single grave, or other effects (e. g. Lauermann 1992). A notable instance is the evidence for special treatment of the body prior to deposition, perhaps in an effort to prevent bodily decay, in other words embalming or mummification. Such effects have been noted in the Western Isles of Scotland (Parker Pearson *et al.* 2005) and has been considered for the Austrian cemetery of Franzhausen I (Mandl *et al.* 2018). Usually the disappearance of organic remains prevents any such identification; the same is true in identifying the one-time presence of coffins or biers, a topic I considered in a previous publication (Harding 2000, 103 ff.). It is highly likely that coffin burial was originally much more common than now appears to be the case.

The fact that funerals were sometimes important and showy occasions can perhaps be glimpsed from the art on the slabs leading to the grave at Kivik in Scania, showing a procession with cart, horses, and people, as well as some unidentified objects (Nordén 1917/1926/1942; Randsborg 1993; Verlaeckt 1993) (Fig. 2.11); this scene has often been compared to those seen on Greek Geometric kraters. Death was a matter for big occasions, especially if the deceased was special in some way.

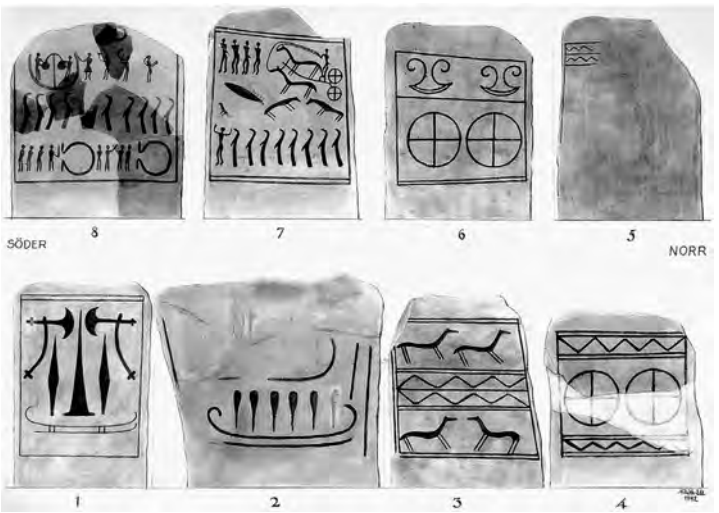

Fig. 2.11: The grave slabs from the massive grave-mound known as Bredarör, Kivik, Scania. Source: Goldhahn 2009.

All these images and finds tell us something about emotions and feelings, which of course we should expect to find in any society. Can we say anything significant about what people thought would happen to them after death? Here I think that prehistoric archaeologists have to admit defeat. We can suppose that large and visible burial monuments would be a constant reminder of important ancestral figures, maybe even known to the living; but that in itself does not imply any sense of an afterlife. We would have to turn to literate societies, Egypt, Greece, Mesopotamia, to give us some kind of notion of what might be involved – with all the dangers of cross-cultural comparison that that would entail. In ancient Egypt, for instance, a lot is known about concepts of the afterlife, and from the things that were put in people's graves we assume that it was believed they would be needed in the hereafter. Whether we can say the same for grave-goods in Europe is impossible to say. But when a grave is filled with personal equipment, and weaponry, such as the so-called Königsgrab at Seddin (Metzner-Nebelsick 1997; May & Hauptmann 2012), it seems reasonable to suppose so.

In conclusion, the life of people in the Bronze Age was one of mixed hardship and success –hardship because life was uncertain in an age before modern medicine, and because times were evidently uncertain; success, because of extraordinary achievements in technology, artistic endeavour, and control of the environment. It is to some of these achievements that I turn in the following chapters of this book.

3 The life of objects

This extraordinary object (Fig. 3.1), usually called a cult drum, comes from a place in Sweden, Balkåkra, north of the town of Svarte in Scania, where it was pulled out of a bog in 1847 (Knape & Nordström 1994). Made of bronze, it consists of an openwork frame of ten sections riveted together, pierced by thirty holes and surmounted by ten wheel-like rings on the upper rim. Along with it there was a flat bronze disc of the same diameter as the bronze frame, decorated with zig-zags, and presumed to fit into the base of the drum. Nothing else like it is known from Scandinavia; it was soon realised that the object is close in form and technique to the metalwork of the Bronze Age Carpathian Basin. This similarity was confirmed when in 1913/14 a very similar object was found in a sand pit at Haschendorf or Hasfalva near Sopron (Ödenburg), just on the Austrian side of the border with Hungary (Gömöri & Kaus 2014; Bünker 1914; Kaus & Kaus 2012). This object, while not in the centre of Carpathian Basin bronze production, is at least close to it, and less surprising in terms of location – even if its form and function remain mysterious.

Both these objects are remarkable, both for their workmanship and for their form (and thus their potential meaning). But the Swedish piece is all the more extraordinary in that it came into the ground so far from its presumed area of

Fig. 3.1: The cult "drum" from Balkåkra, Scania, Sweden. Photo: Swedish History Museum.

https://doi.org/10.1515/9783110705805-004

production, 1000 km or more, the journey from workshop to findplace including a considerable sea crossing. How did this object get from central Europe to Scandinavia, and perhaps more important, why?

These are questions we cannot answer with any certainty, but we can suggest some. Since the objects are not utilitarian in nature, they were presumably connected with performances of some kind, whether cultic, musical, or magical – or all three. The Balkåkra drum must have had a life that extended far beyond the narrow confines of the workshop and settlement where it was made. Like all objects, ancient or modern, its life can be described through a personal history, what some have referred to as its biography. A number of authors have used this approach; in European prehistory one of the first was Robin Skeates with his 1995 study of Neolithic and Bronze Age axe-amulets in Italy and Malta (Skeates 1995).

Most archaeological objects are not as unusual as these. The normal expectation, when you visit a museum, has been to find artefacts sitting in cases, mute, little more than collections of particles, formed into their present shape a long time ago, and for that reason presumed to be of interest and importance. What can we say about an object like the storage vessel shown in Fig. 3.2? We suppose that it once fulfilled a certain function, in this case storage of foodstuffs, and therefore had a presence in a Bronze Age house; it has been reconstructed, so it was found in a fragmentary condition. What more? Not much. It sits in a small regional museum and attracts little attention from the few visitors who come past; as a pot it probably only attracted specific attention in the Bronze Age when it was first installed and then when it broke. In Fig. 3.3 is another pot, in this case a well-known one, with a design of a pair of wheeled vehicles pulled by horses incised on it (Vizdal 1972). That immediately marks it out as unusual and special; but what else can we say? In this case the pot is complete, so it may have been carefully kept, curated, and regarded as different. Now it is an object of interest to scholars, perhaps a curiosity to lay museum visitors. But it too had a life and a history; how can we use that approach to assist in building up a picture of the period from which it emanates?

Object biographies

Much has been written in recent years about objects and their role in the life of people (Kopytoff 1986; Hoskins 1998; 2006; Gosden & Marshall 1999; Holtorf 2002; Joy 2009; Burström 2014; Boschung *et al.* 2015). It has become a popular trope that an object has a life history, a biography, which can be reconstructed and placed in the service of our study of the ancient past. It is of course possible

Fig. 3.2: Bronze Age storage vessel in the Vlastivedné Múzeum Trebišov. Photo: author.

in some instances to reconstruct at least some of the stages in the life history of an object, and perhaps to relate them to what humans, individuals or groups, were engaged in. It is obvious that things are created by people, less so that they create people – in the sense that their very existence determines how people behave towards them. It would be tedious and unnecessary to labour the point; but it applies as much to the Bronze Age as to any other period.

We can apply this approach to any object. I owe to Albert Dietz, at the time one of the doctoral students attending the seminar course I led in Munich, the example of the horses of St Mark's in Venice (Freeman 2004) (Fig. 3.4) to illustrate how objects have a history – and of course changing meanings for those who possessed or viewed them over the years. It is well known that these copper

Fig. 3.3: Vessel with depiction of two-wheeled vehicle drawn by horses, from Vel'ké Raškovce, district Trebišov, in Zemplínské Múzeum, Michalovce. Photo: author.

alloy objects were made in classical antiquity, most likely Roman work of the second century AD; they may have been on the island of Chios at one time, but what is certain is that they were taken to Constantinople and displayed, with the *quadriga* of which they were part, in the Hippodrome, one of the glories of that great city even through its declining years. In 1204, when the city was sacked by the Venetians during the Fourth Crusade, the horses were removed as booty, subsequently brought to Venice under the instructions of Doge Enrico Dandolo, and erected on the terrace of the loggia of the church in 1254. There they remained until 1797 when Napoleon, as part of his dismantling of the Venetian Republic, had them taken to Paris, where they adorned the Arc de Triomphe. In 1815, after Napoleon's defeat at Waterloo, they were taken back to Venice and reinstated at St Mark's (though a replica was created for the Arc de Triomphe). In 1980 they were removed as part of a conservation programme, and replaced by copies; the originals, after conservation, can now be seen in the museum section of the visit to St Mark's. The collars on the horses were added when they were erected at St Mark's, to disguise the join between head and body (or, according to another version, the break happened when the heads were removed to facilitate their transport to Venice).

These objects, or we should probably say "this object", in that the *quadriga* was conceived as a single piece of art, thus has a history of several very distinct

Fig. 3.4: The horses of St Mark's, Venice (reproductions on the cathedral façade). Photo: Nino Barbieri, Creative Commons licence.

phases, though what unites them is the high quality and high status of the piece as an art work, leading to its desirability for people in many different contexts. The person who made it was an artist, presumably fulfilling an order from patrons who wanted a magnificent display object which would reflect well on both themselves and on the location and city for which they were intended, wherever that was. The same motive presumably determined the removal to Constantinople several centuries later, to adorn a public building, perhaps a different one from that for which it was originally intended. For the Venetians the original significance had been lost; they were prized as booty of the highest quality. The display on the loggia of St Mark's was a statement of the power and glory of both the church and the city; the church was of course provided with other magnificent objects brought from elsewhere, above all the Pala d'Oro, the porphyry statue of the Four Tetrarchs, and especially the bones supposed to be those of St Mark, brought from Alexandria in 828 and rediscovered in a pillar in 1094. So the horses now had nothing to do with their original function, or horse racing – or, for that matter, with Christianity. They were a symbol of the power and glory that was Venice.

Napoleon's removal of them was part symbolic, in that he brought the Venetian Republic to an end and removal of one of its most famous objects acted as a metaphor for the loss of power, and part again a statement of power, epitomised

by the placement on the Arc de Triomphe. Again, it has nothing to do with the original function.

Finally, after the restoration to Venice, the object re-acquires something of its original symbolism (though not all, since Venice was no longer the powerhouse it was, and was becoming what it is today, a tourist destination). And now the horses have become yet another thing: a museum object, the subject of the visitor's gaze, the gaze usually brief and uninformed, before the viewer takes person, smart-phone and selfie stick to the next attraction. In the meantime, the horses have been part of the conservator's daily work, yet another function, an object from the ancient past needing to be restored.

So these extraordinary objects have had a long and varied life, which continues today. We could write a biography of them, and of the people and places they have influenced. Several authors have considered such matters in the context of ancient depositions and redepositions (e. g. Bradley & Williams 1998; Bradley 2002; Knight *et al.* 2019). For Knight and colleagues, the horses of St Mark's would come under the category of "reappropriated, reused and recycled objects" (Knight *et al.* 2019, 11); an excellent analogy is provided by the "Hammer of St Martin", a Bronze Age axehead of stone mounted in a medieval silver-plated wooden haft and assuming a Christian function in the medieval Netherlands; subsequently it travelled around the country as an object of veneration (Knight *et al.* 2019, 1–2). Other examples have been cited by these and other authors.

Let me turn now to the Bronze Age, and objects that come from it. First, swords. I have long found these weapons interesting, not for typological reasons but because of their potential for informing us about an important aspect of life: aggression and combat, whether by individuals or groups (see Chapter 5). Some pieces have a history that has more than a little to tell us.

My first example is one that I studied over 30 years ago, in a small museum in Croatia (Harding 1995, 34 no. 73, Taf. 11) (Fig. 3.5). It comes from a place called Rumin, near Bitelić, district of Sinj, and was bought in 1980, part of an old collection. Only the grip and upper blade are preserved, but that is enough to be able to attribute it to a class, what I called the Marina type, datable to the main period of hoard deposition in central and eastern Europe, equivalent to Ha A1 in Germany. The interesting thing about this piece is that it was repaired in antiquity: the midrib of the blade was sawn across, the ribs filed away and a rivet inserted; this was hammered to fill the missing part of the ribs. The repair then broke again. And finally, the sword must have been broken into its present state prior to eventual deposition, probably with other fragmentary bronze objects (information which is unfortunately not available). Why did this rather ordinary sword undergo so many changes in its lifetime? What was its special importance that led to such unusual treatment?

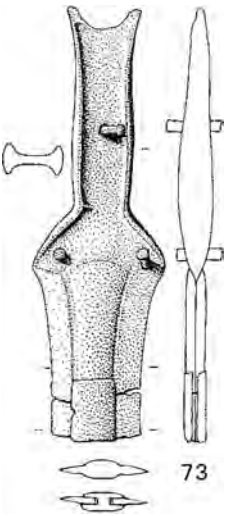

Fig. 3.5: Fragmentary sword from Rumin, Croatia, showing ancient repairs. Source: Harding 1995.

Another special sword is that from the Romanian site of Perşinari, Dîmboviţa county, near the town of Tîrgovişte (Fig. 3.6), an extraordinary gold weapon, with ribs that follow the outline of the curving blade. The hilt end is broken, which makes an accurate assessment of its original form, and thus affinities, difficult. Nevertheless, a series of scholars have gone on record as saying that this is a piece with close affinities to Mycenaean weapons, if not actually of Mycenaean manufacture (Bader 1991, who bluntly calls it Mycenaean; Alexandrescu 1966, who does not list the piece in her catalogue of Romanian swords, let alone as a Mycenaean piece), partly because of the curving ribs, but also because of the gold – though this in fact makes it unique. Twenty years ago, however, Alexandru Vulpe showed that the original form of the sword was quite different, and nothing like any known Mycenaean sword (Vulpe 1995). X-radiography showed that originally it had a rounded heel with two small rivets, obviously to attach a hilt or handle; subsequently it was modified by the addition of the hilt we see today. Vulpe made a case that the original intention was not to create a sword at all but a halberd (a dagger mounted at right-angles to its hilt) or an axe, similar to the gold axes found in the Măcin hoard. This is not very convincing, but what is clear is that the original intention was to make something rather different from what we have today. Again, this is a life history in several stages; and in this case a rather special one, since the weapon was made in gold – something even the Minoans and Mycenaeans did not do, for all their fondness of the metal. Add to this the fact that goldsmithing requires a somewhat different set of skills from bronzesmithing, and the differences are complete.

Fig. 3.6: The Perşinari hoard with gold sword. Photo: National History Museum of Romania.

In fact this piece joins a few others from south-east Europe and Anatolia that form an unusual group of weapons without any clear parallels elsewhere. A recent find from north-east Bulgaria, now in the Varna Museum (Fig. 3.7) (Athanassov *et al.* 2009), shows clear similarities; and the discovery of an unusual sword at Boğazköy, some distance outside the citadel on the south-west side, is also similar in some respects (Fig. 3.8) (Ünal *et al.* 1990 – 91; Hansen 1994a). This last piece is very interesting: from its form we can say that it is not an Anatolian weapon, and though it has similarities to Mycenaean swords it is not a typical example of those either.

The life of this last piece bears especial mention, since it bears an inscription in Akkadian: "As Duthaliya the Great King shattered the Aššuwa country, he dedicated these swords to the Storm-God, his lord". The king is question is presumed to be Tudhaliyas II who reigned in the fifteenth century BC (dating depends on the chronology preferred), and the ravaging of the Aššuwa country must refer to his campaign there, known from the Annals of Tudhaliya. The precise location of Aššuwa is not known, other than that it must have been in north-west Anatolia, inland from Troy. But the addition of such an inscription to a weapon of non-local origin makes this a sword with a real significance through its presumed history (not that we know what that history was). It is not the only such piece: a sword of Naue II type, now in Berlin and allegedly from Tell Firaun in the Nile Delta, has a cartouche of the pharaoh Seti II stamped onto its blade

Fig. 3.7: Sword from north-east Bulgaria in Varna Museum. Source: Athanassov *et al*. 2009.

(Bietak & Jung 2007–08); a similar phenomenon, though not on a European sword, is known from Ugarit, bearing the cartouche of Merneptah (Jung & Mehofer 2005–6 (2008)) (Schaeffer 1956, 172 Fig. 124) (Fig. 3.9). The Egyptian piece is a European form of sword par excellence; it is remarkable enough that such a piece found its way to Egypt at all, but for it then to be Egyptianised is more remarkable still.

In all these cases we might assume that these are swords which had a life, perhaps a name – as with Notung or Hrunting or Hrotti or Excalibur – and a history based on the warriors who wielded it and the enemies they slew with it. Mark Pearce has suggested (Pearce 2013) that the same is true for those La Tène swords which have names stamped on them, and perhaps too for spearheads with exotic decoration of concentric circles that can be interpreted as

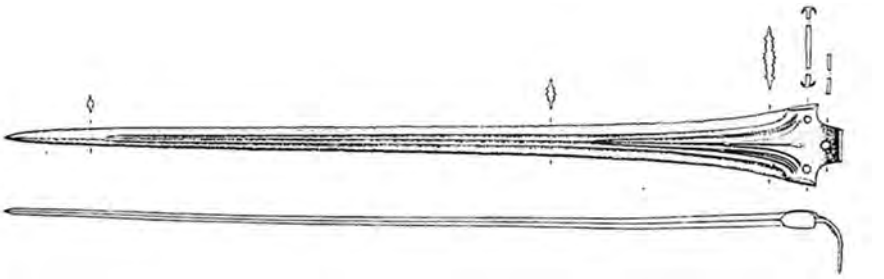

Fig. 3.8: Sword from Boğazköy bearing an Akkadian inscription. Source: Ünal *et al.* 1990–91.

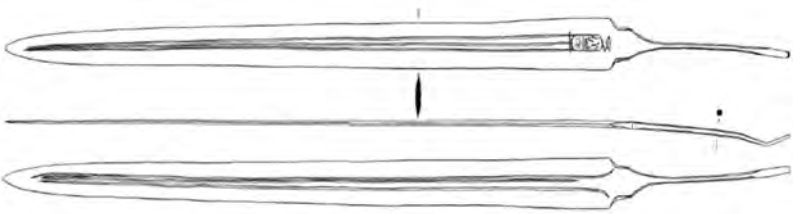

Fig. 3.9: Sword from Ugarit bearing the cartouche of Merneptah. Source: Jung & Mehofer 2005–6.

faces (Fig. 3.10). Are these some kind of representations of individual people? Or merely generic?

It would not be appropriate for me to discuss the Nebra disc, given the amount of attention which it has received in both scholarly and popular literature, but I do want to stress that this too has a complicated biography. Four main phases are recognisable in its creation (Meller 2010, 48 Abb. 10) (the fifth in the published image represents later damage), excluding the damage caused when it was illegally removed from the ground. First the disc with sun, moon and stars was created. In the second and third phases the boat and the so-called horizons were added, as can be seen from the cramped space that was formed by the addition of the boat, while adding the horizons necessitated the removal of some of the stars (it is not quite certain in which order these two events fall). Finally a series of holes was punched into the outer edge, presumably for attaching the disc to something. We do not know how long these processes took; the only dating evidence comes from the swords which were said to accompany the disc and which can be dated to the mid second millennium BC, perhaps around 1600; a single radiocarbon date on a tiny piece of birch bark adhering to the disc is consistent with this.

Fig. 3.10: Bronze spearhead with decoration, perhaps indicating the personal characteristics or identity of the weapon. Source: Abbaye de Daoulas 1988.

The point about all this is that the disc had an original function, presumably as some kind of astronomical device or depiction (different theories have been advanced). This continued, in modified form, in the second and third phases, and it may have existed still in the last phase, in spite of the iconoclastic approach which those who punched the holes adopted – though it is more likely, in my opinion, that by this stage it was no more than a decorative piece, to be looked at but not used.

Objects of personal use

So far I have talked about those objects where we can clearly see a change over time. But not everything underwent such a change, even when it travelled far from its place of manufacture. The travel of objects is full of potential for our interpretation of the past. Turning to swords again, it is clear that these weapons travelled, presumably with warriors. There are swords of genuine Mycenaean type found in North Macedonia and Kosovo (Harding 1995, 20–23 nos 23–25 Taf. 4) (Fig. 3.11). The one on the left is an absolutely typical Mycenaean horned sword, of Sandars type C (Sandars 1963); it has been given special treatment, as only a few of the class have, by having spiral ornament added below the shoulders – and this is not in the Argolid where one might expect such things, but in distant Macedonia. The one on the right is too damaged to be sure exactly what its original form was, but one thing is clear: it has been rehafted, in other words, it has a history. It was found in a grave, so its owner must have died in an area outside the Mycenaean zone. Was he (or she) a travelling warrior? We should remember also that a standard Mycenaean sword was found in the cargo of the Uluburun ship (Pulak 1988, 21–2 Fig. 21), along with weapons of Italian type (Yalçin *et al.* 2005, 621); and a Naue II sword was in the cargo of the Cape Gelidonya ship (Bass 2013; not found in the earlier campaigns: Bass 1967). This may be useful for telling us something about where that ship had travelled, though it is rather harder to say whether those on board were merely traders, or something more.

Here is another example. On the right (Fig. 3.12) are more swords, from the far west, Britain. All are examples of the antenna sword, which was at home in central Europe and Italy, as is well known. The left-hand example came from the River Witham in Lincolnshire, eastern England, one of the hundreds of bronzes dredged out of rivers in Britain (as in many other countries, including Germany) (Colquhoun & Burgess 1988, 122 no. 751 pl. 111).[1] What are these swords doing so far from their place of manufacture? Presumably the intact examples were carried there by warriors; maybe mercenaries, maybe travellers carrying their weaponry with them, for a show of prowess or simply for safety's sake. How then did the sword end up in a river? That brings us to a much-discussed topic, the reasons for the deposition of so much Bronze Age metalwork in places where it could not have been retrieved. With just one object we are not on strong ground; but there are plenty of cases where many pieces were found close together in river beds. As an example, a group of swords was found in the Elbe at the

1 On this reference, see Note on page 131.

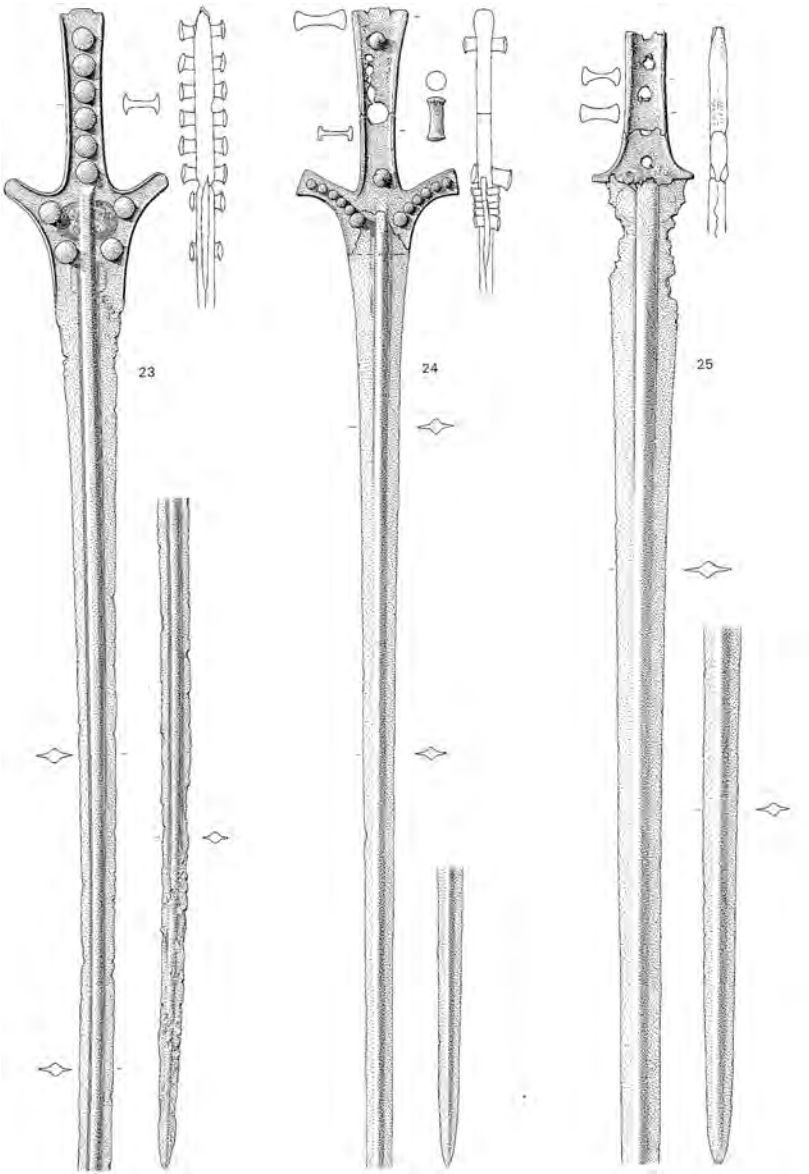

Fig. 3.11: Swords of Mycenaean type from North Macedonia and Kosovo. Source: Harding 1995.

Porta Bohemica (Velké Žernoseky) in northern Bohemia (Fig. 3.13) (Plesl 1961 Pl. 54); we may compare the group of fourteen shields deposited in a bog at Fröslunda (Fig. 3.14) (Hagberg 1988), on the southern side of Lake Vänern, central Sweden. These have sometimes been considered to be the weaponry of a defeated foe, thrown away in an act of symbolic defiance and destruction. Maybe the swords are the same.

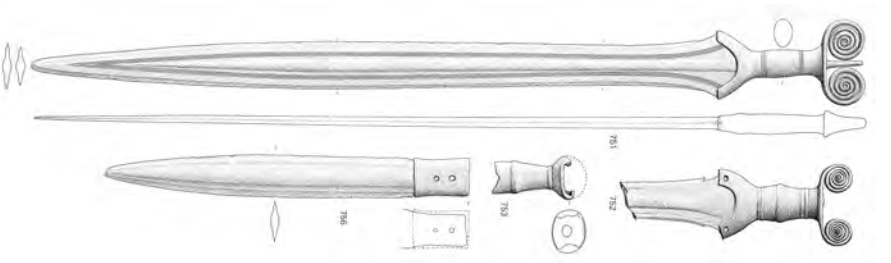

Fig. 3.12: Antenna swords from Britain. Source: Colquhoun and Burgess 1988.

The point about all this is that each object has a history, sometimes obscure, sometimes reconstructable. We could say the same for each one of the hundreds of thousands of bronzes that have survived from the Bronze Age, in theory also for the millions of pots – but that is a step too far for this short discussion.

Turning to other items of personal use, one can hardly do better than refer to the work of Ulrike Wels-Weyrauch, who charted the regional variations in female dress in the Tumulus Bronze Age so effectively (Wels-Weyrauch 1989); this enabled Albrecht Jockenhövel to write his much-cited article on Fremde Frauen (Jockenhövel 1991), in which individual items from one area are found in the territory of another, the suggestion being that women were moving in marriage between communities. One can do something similar with razors for men. A distribution map like those published by Jockenhövel shows rather clearly that there are specific areas where particular razor types appear (Jockenhövel 1980) (Fig. 3.15). Since razors were personal items, probably carried around by individuals, such a distribution strongly suggests that men (one presumes men) moved between different community areas, their razors accompanying them to the grave when they died. Of course razors can potentially tell us something else: whether or not men shaved (Harding 2008). This is something we can chart with some probability, since razors became very common during the course of the Bronze Age – though not in every part of Europe. In the Minoan-Mycenaean world the frequent occurrence of razor-knives, along with the depiction of men as clean-shaven, shows us that shaving was the norm there (the bearded figure on the

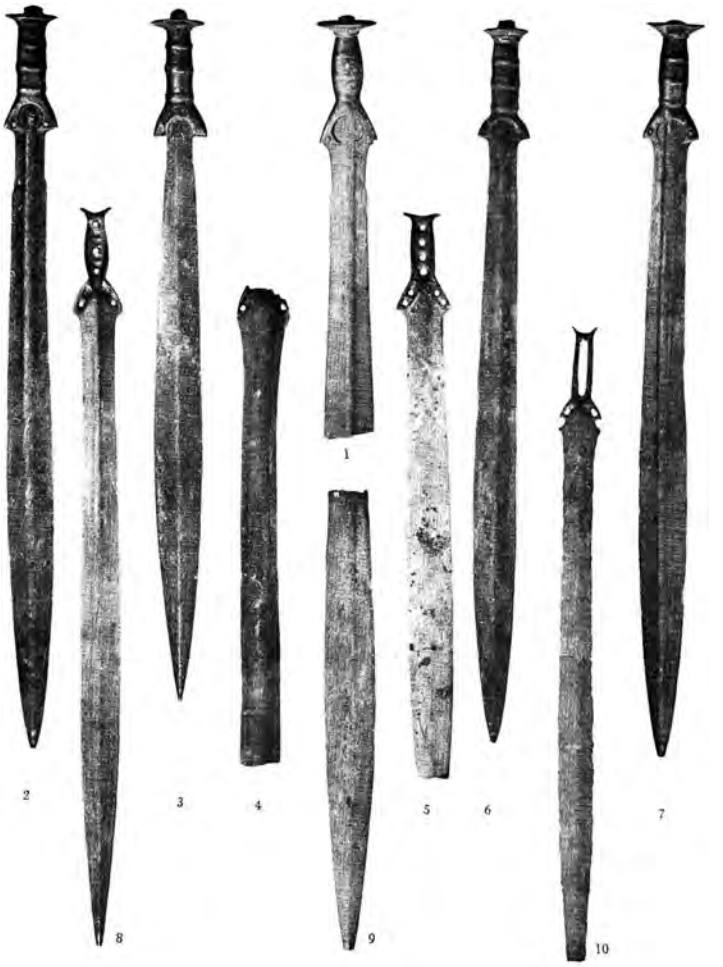

Fig. 3.13: Swords from the river Labe (Elbe) at Porta Bohemica, Velké Žernoseky, Czech Republic. Source: Plesl 1961.

gold mask from Shaft Grave V is an exception). In most of central Europe there are numerous razors, but in the British Isles hardly any (though a few more are turning up through the Portable Antiquities Scheme). This I suppose confirms the widespread impression in Europe, still prevalent, that those in the far West were savage barbarians who didn't know how to behave or dress properly, let alone produce edible cooking.

We should also mention other items of personal equipment, for instance tweezers and combs, commonly found in Late Bronze Age graves, as in the fa-

Fig. 3.14: Shields from Fröslunda, central Sweden, as discovered. Source: Hagberg 1988.

mous Seddin grave (Metzner-Nebelsick 1997; Kiekebusch 1928; May & Hauptmann 2012). Another item that may have been used in this context is the awl, which many people over the years have suggested was used for tattooing, as was the case with Ötzi (Samadelli *et al.* 2015). In this context, I should mention the work of Janet Spector, whose article of 1991 "What this awl means" was fundamental in producing a reassessment of the role of women in preliterate societies (Spector 1991). The awl in question, or rather the metal point and decorated awl handle, were compared with ethnographic accounts which related how young women, at the time of their first menstrual cycle, would be taken to a separate teepee where their mothers would teach them the art of quill embroidery and moccasin making. Spector followed this with a narrative of life in a Dakota village in which the use of the awl plays a significant role (Spector 1993). Her

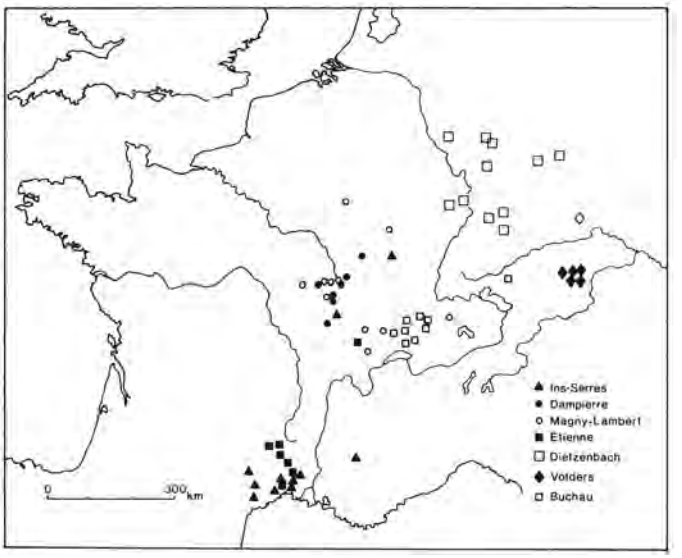

Fig. 3.15: Distribution of certain razor types, indicating specific areas where particular types were at home. After Jockenhövel 1980.

work has been followed by several authors, including (in a Bronze Age context) Mark Pearce, who attempted something similar for early metal-using groups in northern Italy, concentrating on the use of awls for tattooing (Pearce 2000).

One could follow a similar line of reasoning with other objects, for instance the axe, which clearly had a highly significant role in many prehistoric cultures. Although for us the axe is a tool used in carpentry or tree-felling, its use as an object of much wider significance in prehistory is clear. Even if we leave out the double axes that occur frequently in East Mediterranean cultures, the axe appears on rock art in the West from the Neolithic onwards (for instance in the Kilmartin area of Scotland and, most famously, at Stonehenge, probably in the Beaker period). The transformation of the axe as a forestry tool to an object used in fighting – real or ceremonial – has been charted by several authors (e. g. Chapman 1999b). Its appearance as the so-called battle-axe represents the culmination of this process; such objects cannot realistically have been used in battle but rather as the insignia of those who might have been regarded as fighters. In the full Bronze Age, outsize axes, usually called "cult axes" in Scandinavia, are a continuation of this process (e. g. Broholm 1944 – 5, Pl. 28,5;

J. Jensen in Hvass & Storgaard 1993, 155),[2] just as the outsize daggers of Ommerschans type found in Britain, France and the Netherlands (Butler & Bakker 1961; Needham 1990) are a manifestation of the same thing in weaponry (Fig. 3.16).

Destruction and fragmentation

I turn now to a related but distinct matter: the question of whether objects were deliberately destroyed or broken, why, and what the consequences of that wilful destruction might have been. Observers have long been aware that many objects found archaeologically, and not just prehistoric ones, were deposited incomplete or damaged, with no sign of the missing parts and no obvious motive for the deposition when a quick bit of mending would have been possible. The study of fragmentation in archaeology owes a great deal to the work of John Chapman, notably in a couple of influential books (Chapman 1999a; Chapman & Gaydarska 2007). The basic idea is that it is not coincidental that so many objects are broken and incomplete; while post-depositional disturbance might account for some such breakage, there are many cases where it is unlikely to apply. That means that such objects were intentionally broken and intentionally deposited in different places – if they are present at all (if not they must have been taken off site and discarded elsewhere, thrown into the river, or something similar). In this view, nothing was a matter of chance. Chapman went on from this starting point to suggest that after intentional breakage, pieces of object would be given to other people in a process known as enchainment, the creation of a linkage between individuals, related to but not the same as gift-giving. While I do not go as far as Chapman does, since I believe that there is much we do not understand about site destruction over the centuries, I can see that in many cases this thesis is a plausible one. His work with Bisserka Gaydarska has concentrated on Balkan Neolithic and Eneolithic figurines, which as is well known are usually incomplete. Refitting figurines on certain sites, notably Dolnoslav, south-east of Plovdiv in Bulgaria, have shown that at least some of these figurines have pieces found in different houses (Chapman & Gaydarska 2007, Chapter 6). Their study showed a total of 52 refits out of a total of 484 figurine fragments, to form 25 joining pieces. These authors considered this quite a high proportion, but one must remember that the majority cannot be reconstructed; the missing bits are simply

2 Recent finds include Early Bronze Age examples from Boest, near Nørre Snede, Jutland: http://sciencenordic.com/five-massive-bronze-age-axes-unearthed-denmark, accessed 14 August 2018.

Fig. 3.16: The oversize sword from Ommerschans, Overijssel (Netherlands). Photo: Eric de Redelijkheid, Creative Commons licence.

absent – and this is a particularly important site because the later phase, belonging to the Late Eneolithic, has been almost completely excavated.

Since Chapman started these exercises, a series of others have followed. These have been concerned particularly with pottery, a procedure which in fact has a much longer history – though not as long as stone refitting. Thus a student of the late Lawrence Barfield conducted a refitting exercise for the Neolithic site of Rocca di Rivoli (Dalla Riva 2003), and other studies have been done on Hungarian Neolithic and medieval sites. What, one may well ask, about bronzes? Here we enter an area that has long intrigued archaeologists who work on the Bronze Age, because of the very large number of hoard finds containing broken objects. Early attempts to apply the idea to Bronze Age hoards were those by Peter Turk (Turk 1997; 2001), who convincingly demonstrated that certain axe types seem deliberately to have been broken prior to deposition. To discuss the reasons for hoarding would mean another book; this is well-trodden ground. If we ignore those hoards that consist largely of perfect objects, and turn our attention simply to those containing broken pieces, often in large numbers and usually containing many different types, we have many examples to choose from. A typical case is that of a hoard found by metal detectorists in a field at Ainderby Steeple in north-east England, consisting of 114 bronze objects and containing a typical selection of fragmentary swords and spearheads, axes, rings, and other small pieces. The usual explanation for such collections has been that they are scrap metal awaiting remelting and recasting, but though this seems an obvious solution which it is tempting to adopt, there are serious objections to it – not least the fact that so many such hoards were never recovered, which would be strange if metal was in the high demand we suppose. What is more, the selection seems deliberate, not random, as several scholars have pointed out, in a range of different geographical contexts (Hansen 1994b; Willroth 1985; Maraszek 1998). Now, add to that this curious discovery: two joining pieces of the same sword found 3 km apart on two different low hills either side of the River Trent in Staffordshire, central England (Bradley & Ford 2004) (Fig. 3.17). Extraordinary as this is, it actually fits with what we are coming to understand about the motivation behind the deposition of metal in the Bronze Age: it was part of a much more deliberate process than we have believed; and deliberate in a way that is hard for us to comprehend.

Matthew Knight, in a doctoral dissertation from Exeter University, has worked on this very question of destruction (Knight 2017 (published 2019); 2018; 2019). He has created a set of protocols to determine whether and how an object was intentionally destroyed. That is proving to be quite a challenge, since one usually does not know how an object got broken, and how to separate those that might have been broken in use, or for purely practical reasons (like reuse in a casting), or for ritual or cultic reasons. As part of this work, Knight has created a set of replica Bronze Age objects which he then set about breaking, or

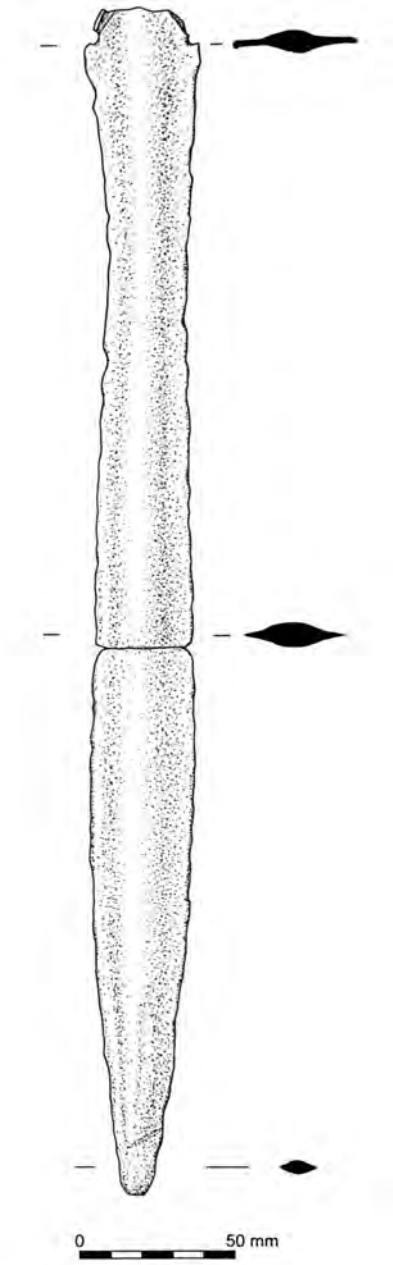

Fig. 3.17: Two fragments of the same sword, from sites on different sides of the River Trent, Staffordshire. Source: Bradley & Ford 2004.

trying to break, so as to examine the fracture patterns and general shape after manipulation (Fig. 3.18).

Fig. 3.18: Matthew Knight experimenting with heating and breaking bronze objects. Photo: courtesy Matthew Knight.

There are in theory plenty of ways you can set about breaking a bronze, or at least putting it out of use. The archaeological record is clearer about some of these than others. There are plenty of examples of swords that have been bent double, for instance. Was this what is usually called "ritual killing", or merely to enable it to fit better into a crucible? Were notches along the edge the marks of fighting, or the result of attempts at breaking the weapon on another sharp object? What about the twisting of a weapon? Why do so many swords lack their hilt – is it just a weakness of design, or an intentional snapping of the handle from the blade, as it were an emasculation of the power of a special weapon? These, and similar questions relating to other classes of object, are those that were the object of enquiry in this piece of research, now finding its way into print.

I mention this work because it is one of the most original enterprises on bronze deposition to come out of recent times, and will, I believe, change the way we look at bronze hoards. Even without it, we have moved on from a simple functional explanation of hoards to something rather more nuanced – even though when we are asked what hoarding was all about, we still struggle to convince a layperson that we really know what we are talking about.

Objects and persons

Where do we see objects from the ancient past, other than on the pages of scholarly publications? The answer is simple: in museums, where we see the past presented to us as a commodity, usually in static form. But that brings us to a different aspect of our treatment of artefacts: the critical gaze. Michael Shanks and Christopher Tilley wrote in 1987 of "The artifact transformed into an object in commodified time" in a critique of how museum displays work (Shanks & Tilley 1987/1992, 69 ff., Chapter 4). Objects are divorced from both their ancient context, and also from their modern archaeological context; the observer views them in a distanced way as commodities for learning, potentially as appreciation for their aesthetic quality; but also of course for a kind of disinterested, unengaged promenade that is typical of many, if not most, visitors. Only the original excavator can feel the excitement of experiencing the newly discovered object for the very first time (as most of us who have worked on excavations have done at some point), but modern display technology has the potential to bring that excitement to even the casual visitor.

Much has been written in recent years about how material objects interact with us human beings; it is said that we make objects, but in turn they make us – this is the argument for "entanglement" that Ian Hodder, among others, has put forward (Hodder 2012). The wrist-watch and the motor car are favourite examples of this, since while they are created by us they become an integral part of us and the way we regard the world. What about objects from the ancient past? Hodder referred as long ago as 1990 to his relationship with Çatal Höyük (Hodder 1990, 20): how each brings each other into existence – he meant of course that the site could not exist without his study of it, nor his academic life without the existence of the site he was studying. We could follow the same argument with objects, especially if we wish to consider their life histories.

In considering the relationship between people and objects, one aspect I have so far ignored is the production of those objects – in some ways the most crucial aspect of all. I shall not go into the specific technological processes involved; that is something that has been discussed many times, and would be the subject matter of a different book. But how a craftswoman or man puts her or himself into the object is a matter of great interest, discussed by several authors in recent years. Joanna Sofaer, for instance, has considered aspects of design and creativity in the making of Bronze Age pottery in east-central Europe (Sofaer 2015; 2018); with Lisa Bender Jørgensen and Marie Louise Stig Sørensen she has considered the same aspects in the context of textiles and metalwork as well as pottery (Bender Jørgensen *et al.* 2018). Particularly important in a Bronze Age context are discussions of craft production and skill in metalworking, and

here the work of Tobias Kienlin, Maikel Kuijpers and Heide Nørgaard are very important (Kienlin 2008; 2010; Nørgaard 2015; 2016; Kuijpers 2018b; 2018a). While Kienlin focused on the relationship between the technological and cognitive aspects of metal production, Kuijpers has considered the implications for metal production of the role of specialization and acquiring the necessary skills to become a true craftsperson, drawing attention to particular tricks in the production of (among other things) Early Bronze Age flanged axes. Nørgaard has considered the Early Bronze Age metalwork of the Nordic region, paying especial attention to ornaments and producing a subtle analysis of the relationship between technological aspects of metal production and craft skills and tricks. These works have provided an entirely new approach to the question of metal production, which has traditionally been concerned above all with the nuts and bolts of metallurgical technology. They affect all the examples I have introduced above, especially where particular tricks of manufacture or repair are concerned, and these deserve fuller consideration than I can provide here.

Coda

Returning to the Balkåkra drum, can we add to the life history of this extraordinary object in the light of the considerations I have outlined? Can we imagine it being observed and admired by a traveller from northern lands in the centre of the continent, followed by a ceremony of gift-giving in which precious goods from the north – such as amber – were presented to the southern host, and the drum being given in return? One hopes that the thrill of receiving it outweighed the obvious disadvantage of transporting it home – rather like being given books at conferences for which you have to pay extra at the airport as your bag is overweight. The recipient was no doubt proud of his or her acquisition, whether or not he knew what to do with it. After all, it would have made a wonderful addition to the *lur* orchestra that was part of the musical scene in Scandinavia in the Late Bronze Age – so perhaps we should imagine the blast of the trumpets accompanied by the banging of the drum in a way that previously no one in Scandinavia could have imagined, one hopes a tasteful way.[3] Objects in the Bronze Age did indeed have a life.

As I and several other commentators have pointed out, this can only result in a view of the prehistoric past which treats it essentially as a kind of history. Artefacts are one of the prime sources of archaeological information, whether

3 One must admit, however, that the true function of the object is unknown.

found many years ago or last year; a detailed knowledge of them is essential for any kind of reconstruction that will find wide acceptance. This does not mean that the study of artefacts has to descend into sterile typologising, though typology has its place in archaeological study; the crucial thing is to use typologies in such a way as to be able to derive meaning from them. If they are not to become mere lists, we need to treat them as bearers of significant information on those who made and used them.

4 The Life of Places

Places might seem, on the face of it, a less obvious subject for a discussion of lives. Yet as I shall try to show in what follows, places too had a changing life and a changing relationship with the people who occupied them.

What was it like to live in a Bronze Age environment? What places were home to Bronze Age people? How did they change over time, and how were they different from how they look today? These are fundamental questions to any understanding of Bronze Age life, yet complex questions to address. In what follows, I must acknowledge the influence which a number of other scholars have had on what I want to say, notably Fokke Gerritsen in his superb book *Local Identities* (Gerritsen 2003), Joanna Brück, and many others.

Modern archaeology recognises the complexity of the issue, but tries to find other ways around the problem. Hence the popularity of approaches that in past times would not have been considered, for instance applications that have been dubbed phenomenological – trying to experience sites and landscapes directly, for example. In this, feelings about one's surroundings include consideration not just of land (topography and vegetation) but also sound, smell and so on. Especially when we start to think about houses these are crucial aspects of experience. It is no coincidence, therefore, that some modern museum displays, or rather experiences, involve such things – the Jorvik Centre in York was one of the first to do this when it first opened in 1984 (it has since been remodelled twice). In that reconstruction of Viking York, cars travelled through the reconstructed streets and the visitor was accosted with a babble of sound as well as a range of smells, to add to the visual experience. Something similar was attempted by a team conducting survey work in southern Italy a few years ago, attempting to incorporate sound, as well as sight, into an exercise in the reconstruction of territories or catchments (Hamilton & Whitehouse 2006).

Of course we cannot literally enter into such a past world; some cynical commentators referred to Jorvik as "heritage porn"; but in terms of fascinating the public and promoting archaeology it was a huge success. The point is that a place something like Viking York existed, but on many levels; it had a life of its own, a dynamic life, never static. It is this aspect I wish to discuss here.

Space to place

Figure 4.1 shows an example of the rock art that is popular in various parts of Europe at different times. This panel comes from the north-east of England, at

https://doi.org/10.1515/9783110705805-005

a place called Dod Law on the sandstone ridge that lies between the valley of the river Till and the Cheviot Hills and the coastal strip and North Sea (Beckensall 1974, 21; 2001, 32–36 Figs 29–36 Pl. 6; n.d. [1991?], 14–18). Another, more famous set of panels comes from the nearby site of Roughting Linn, which has been the subject of several discussions, notably by Richard Bradley (Bradley 1997, Chapter 7; the same work includes a short discussion of Dod Law, p. 123). The art is essentially undated and undatable, but these rock outcrops lie within an earthwork ring that encloses several hut circles; excavation has produced material that appears to date them to the Iron Age or Roman period, though this is far from certain (Smith 1990). These huts overlie some of the art panels, so the art probably belongs to the Bronze Age. But it is the form of the art that is so unusual, in fact unique in Britain: nowhere else does one find subrectangular or square patterns enclosing the more common simple depressions known as cupmarks. In fact, it is very plausible that what we are seeing here is a representation of local enclosures, like that surrounding the rock outcrops at Dod Law, complete with their huts, and the landscape around; in other words a map. While it has not been possible to identify the other elements or the locations represented in the "map" with any certainty, the idea remains attractive; though Ronald Morris, doyen of North British rock art studies, remarked: "I very much doubt if this is more than a coincidence", assigning the interpretation a score of 1 on his ten-point scale in a presentation of 104 possibles (Morris 1979, 25). And if this is the case, then we are looking at a rather particular way of creating a place. The transition from "space" to "place", what cultural geographers have called "inscribed spaces", is something that sociologists, anthropologists as well as geographers have often discussed (Tuan 1977; Casey 1996), and following them, archaeologists (Chapman 1988, 22–4; Tilley 1994, Chapter 1 esp. 14 ff.); here we have a form of "signing" or "inscribing" the landscape, of turning a hilltop into a known and named place (Corlett 2014; David & Wilson 2002; Bradley 1997). This hill overlooks an extensive Neolithic landscape, containing a series of burial and ritual monuments; it lies on a moor where there are a number of Bronze Age burial mounds; and itself, as mentioned above, includes monuments of various dates. This was a place, a place that had a life, or rather several lives; a special place for those who occupied it over the centuries.

We can consider the life of places on a number of different scales; landscapes, settlement sites, houses, and engagement with places in the sense of use, and the deposition of objects. All of these are places; but I should begin by pointing out that before landscapes became "places" they were simply space. It is impossible for us to imagine pure space on this earth. It is occupied by someone or something; if not humans, then animals of various kinds. Animals have territories and therefore turn simple space into something else; we

Fig. 4.1: Dod Law, Northumberland, rock art panel showing quadrilateral shapes containing cupmarks. Photo: Roger Miket, by kind permission.

are special animals but we too have territories, which we defend from aggressors; even without any humans being present pure space is formed into something else, a set of territories. When humans come on the scene, things get more complicated. There are few places on earth that can be considered genuinely wild or pristine, certainly not in the Europe we know (with the possible exception of the Białowieża Forest on the Polish/Belorussian border). But if we go far enough back, to the time when no humans were present, we can in theory chart the progression from unmarked space to space which humans marked out. "Space" has been turned into "place": people know which bit of space to visit for particular purposes, they give it a name, it becomes marked and familiar. It may simply be a natural feature, a spring, a gorge, an upstanding rock, a hilltop. But one of the ways humans create a sense of place is by creating physical marks: a cut on a tree, the removal of a group of trees to create a clearing, or in the previous instance, the engraving of specific signs or marks onto rock to create a permanent sign of presence or ownership. All these matters have been fruitfully discussed by Richard Bradley in a number of works (notably Bradley 2000; more recently Bradley 2017, esp. Chapter 3).

Anthropologists and geographers have long been interested in the relationship between space and place, and how physical space relates to social space. Eric Hirsch, for instance, discussed how these two concepts are related to several others, which represent two poles in the notion of landscape:

foreground actuality	<—>	background potentiality
place	<—>	space
inside	<—>	outside
image	<—>	representation

Those on the left side of the diagram correspond to the context and form of everyday experience, those on the right the context and form of experience beyond the everyday, somewhat detached from what we see as we go about our lives – in Hirsch's words "perceived 'potentiality'", "the way we could be", one implication of which is that (to quote him) "sacred sites and places are sometimes physically empty or largely uninhabited, and situated at some distance from the populations for which they hold significance" (Hirsch 1995, 4).

Marking out place in this way must go back to, and perhaps beyond, the earliest humans. As life got more complicated, such creation of place got more complicated as well: not just cutting down a few trees but large areas of forest; not just creating space for economic activities, but marking cultural features as well, such as spaces for performances of various kinds. So while the place where people lived might be termed "Home", there were other places as well: "Field"; "Quarry" (for stone for axes); "River" or "Lake" where the fishing was good; and "Sacred place", where one engages in non-utilitarian activities. Here one should also introduce the concept of "place value", that is, the assigning of symbolic value to locales, as a result of continuous use, which itself derived from notions of ancestral presence and the creation of a mythology that surrounded that locale.

Others have pointed out that the move from space to place is essentially one that involves social relations: "the social properties of space are based on relations between people... a space is suitable for a function; through personal relations created to fulfil that function, the 'space' becomes a 'place'" (Chapman 1989, 33; cf McBride & Clancy 1976), while "spatial behaviour" is an important aspect of the relationship between space and social relations (Canter 1991). It also involves identity: people identify themselves through the environment in which they move: there is a set of mental steps, from recognition to familiarity to identity.

Changing places

In this context let us take the example of a famous site, with which everyone is familiar: Stonehenge. Stonehenge is an iconic place, and recent work has shown that it had an even more complicated history than had previously been sup-

posed; with the additional bonus that some of the quarry sites in south-west Wales for the so-called bluestones have been identified to precise location (the area has long been known as the likely source of the stones). Two of these, Craig Rhos-y-felin and Carn Goedog, have now been partially excavated and others including Carn Menyn surveyed (Parker Pearson *et al.* 2015; Bevins *et al.* 2014; Ixer & Bevins 2011; Darvill & Wainwright 2014; Parker Pearson *et al.* 2019). The Preseli Mountains, where these outcrops are situated, only rise to a maximum of 536 m, but are windswept and inhospitable today; given the way in which the stone splits naturally to form pillar-like blocks, minimal shaping would be necessary to form what we see at Stonehenge (Fig. 4.2). It was suggested several years ago that these stones originally formed a monument, perhaps a circle, on these hills; the spot has not been found yet (if it exists), but the team say they think it must have lain between two of the outcrops and are confident they will find it (Parker Pearson *et al.* 2017, 5; Parker Pearson *et al.* 2015, 1350; Parker Pearson *et al.* 2019, 60). So Stonehenge apart, these Welsh hills themselves form a place with a life: perhaps a sacred place, certainly one that was of interest over many centuries (radiocarbon dates from the two excavated sites lie between 3400 and 3200 cal BC, whereas the bluestones were not erected at Stonehenge till some 300 years later).

But Stonehenge is basically a Neolithic monument in its major phases of creation, and not my concern here. It lies in the centre of an extraordinary archaeological landscape (Royal Commission on Historical Monuments 1979; Exon *et al.* 2000), which continues through many more centuries than merely the few hundred years that saw the digging of the ditch and the arrival of the various stones that make it seem so special. It has been known for many years that there was a significant phase of activity in the Mesolithic before construction even began (Vatcher & Vatcher 1973) and recent work at a nearby site (Blick Mead) has added greatly to that picture (Phillips *et al.* 2018); in the Neolithic it lies at the heart of a major group of monuments, including the "cursus", other monuments of the so-called henge type (such as the enormous site of Durrington Walls), and a range of burial monuments of which the long barrows (mounds) are the most notable (most obviously on this map at the eastern end of the cursus) (Fig. 4.3). This was the situation in the fourth and early third millennia BC.

When we look at the same map with slightly different eyes (Fig. 4.4), we see that the Neolithic monuments are still there, but they have been supplemented with large numbers of tumuli (round mounds, usually called "barrows") (Exon *et al.* 2000, 76 ff., Fig. 8.1). These mostly belong to the Beaker period or Early Bronze Age, between about 2500 and 1300 cal BC. Do they have something to do with the pre-existing landscape? In themselves they have no direct connection, but

Fig. 4.2: a) Carn Goedog, and b) Craig Rhos-y-Felin, Preseli mountains, south Wales, showing the outcrops known to have been used for Stonehenge bluestones. Photos: Christine Faulkner (Carn Goedog) and Richard Bevins (Craig Rhos-y-Felin), by kind permission.

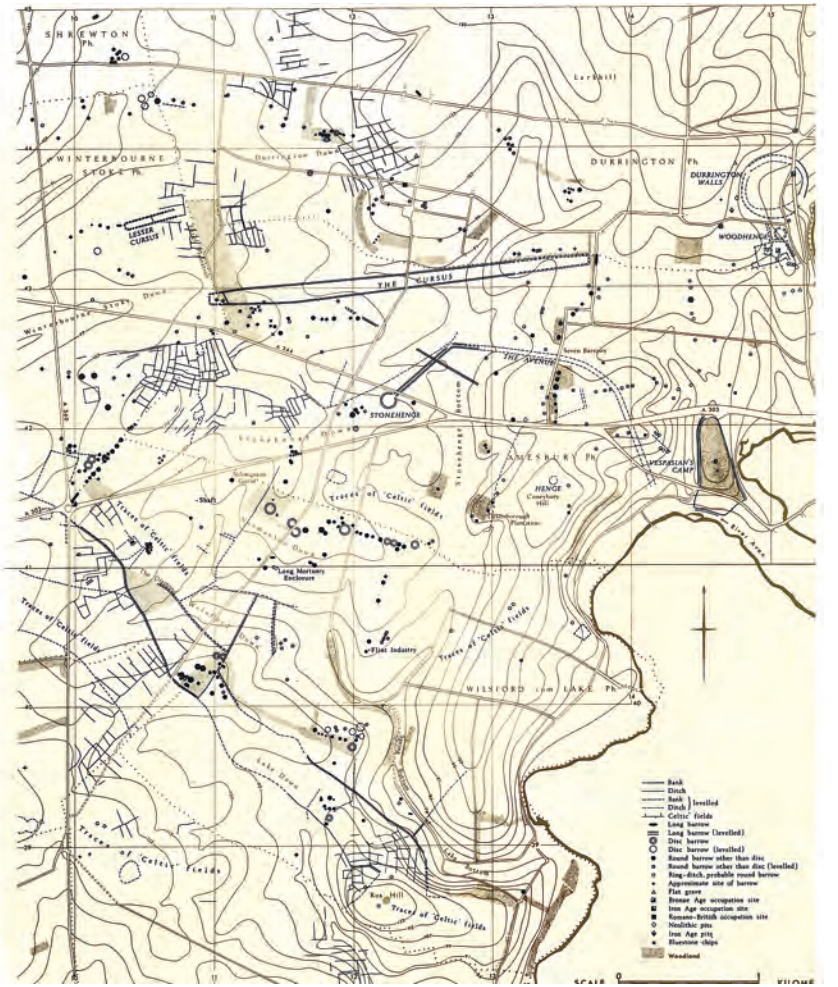

Fig. 4.3: Stonehenge environs, showing all prehistoric monuments. Source: Royal Commission on Historic Monuments 1979.

they are where they are for a reason: the area was special and had been for hundreds or even thousands of years. That is why so many important burial monuments got erected here. When we look at a close-up plan of one group of barrows, we can see that the initial focus of the burial area was a long barrow; later, round barrows got added to it to make a kind of cemetery. And one of those barrows was a famous one: Bush Barrow, excavated in the 1820s, contained what is usually interpreted as the regalia of a chief or similar important person. Bush Barrow is just one of the hundreds of such mounds erected in

the general vicinity of Stonehenge in the Chalcolithic and Early Bronze Age, or indeed in the wider region of what in Britain is known as Wessex (after the Anglo-Saxon kingdom, the heartland of which was the modern counties of Hampshire, Wiltshire and Dorset); not that Wessex was unique in this respect, since north Germany and Denmark are just as well populated with Early Bronze Age burial mounds.

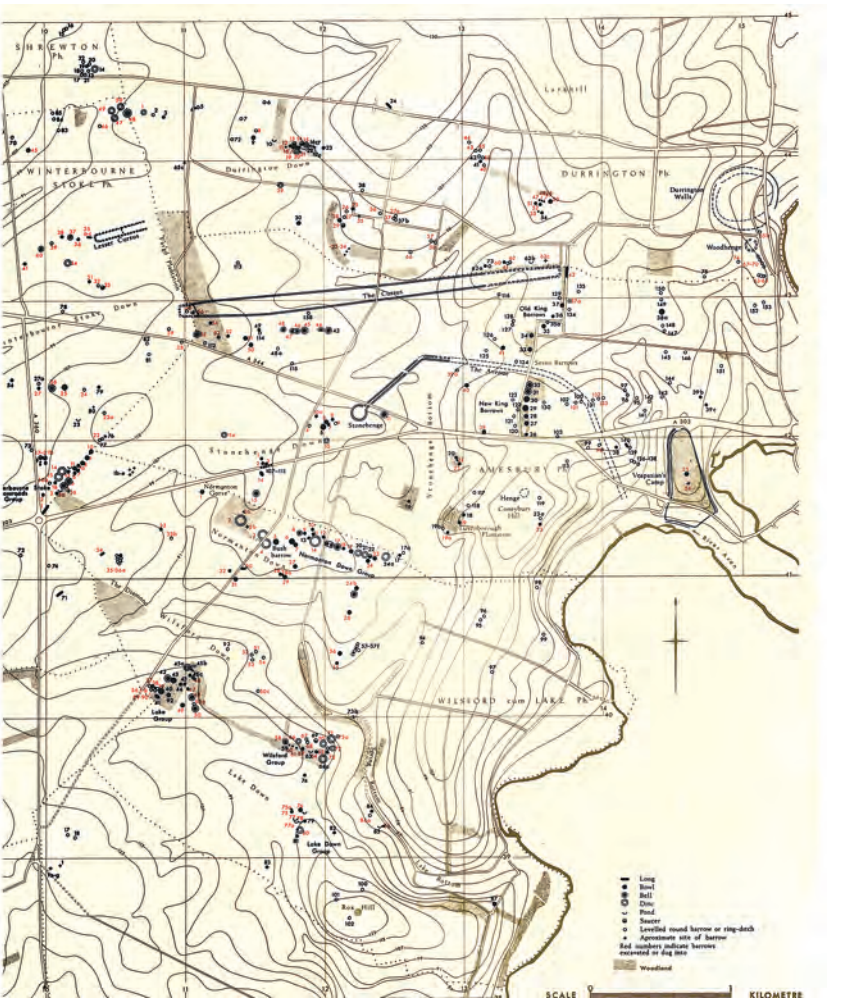

Fig. 4.4: Stonehenge environs, showing the barrows (tumuli) in the area. Source: Royal Commission on Historic Monuments 1979.

But as well as barrows, there are other things on Fig. 4.3: fields, demarcated and detectable only by their boundaries, surviving as low banks or terraces, or, when seen from the air, as the marks left by ditches or fences. The Stonehenge area has many such groups of fields; it is by no means the richest part of Wessex in this respect, but it is fairly typical. Fields could theoretically date to almost any period of the past, and since they consist essentially of blank space it is unlikely the economic or utilised part of them could provide reliable dating evidence. In fact our study of fields is really a study of the edges of fields. Fortunately, there is enough evidence to know that many of these field systems in Wessex, like those further south-west on Dartmoor, belong to the Bronze Age, as we see from cases where there is a stratigraphical relationship (Burgess 1980, 241–2, Fig. 5.14), where fences underlie Bronze Age burial mounds (e.g. Glasbergen 1954, 64ff., 76ff., figs. 23, 29–30), or where the evident associations with other monuments and in some cases radiocarbon dates make a Bronze Age date plain (Yates 2007, esp. 110–112).

Fig. 4.5 shows another part of Wessex, the Marlborough Downs, where field systems are well represented (Gingell 1992, 155–6 Fig. 96). In this example, air photography has produced a more or less complete record of land use, from which it is evident that the fields did not cover the entire area: there was plenty of land which was not so enclosed, and was probably woodland or common grazing land. There are long linear features, often called estate or ranch boundaries, cutting through the field systems and therefore postdating them; there is also a hillfort that looks to be intimately connected with the ranch boundaries. Though such sites are usually attributed to the Iron Age, in fact they frequently began life in the Bronze Age. This is another palimpsest landscape which had depth; it had a life, mirroring the life of the people who worked on it. In recent years, survey using LiDAR has also added significantly to the way in which it is possible to recognise and understand complex landscapes, in many parts of Britain and Europe.

Stonehenge itself was far from typical, so maybe the landscape around it was atypical as well. What we say about it must therefore be hedged with caveats. But this area was clearly one where a special sense of place existed. We do not know why it was originally chosen to be the centre of ritual and burial activity; we only know that there was activity on site before Stonehenge itself was built. The connection with west Wales, in the form of transporting blocks of stone weighing an estimated 2 tonnes over a distance of 220 km – in a straight line, much further as the travel must actually have taken place (the new work by the team excavating on the Preseli Mountains suggests a land route across to the River Severn near Gloucester – Parker Pearson *et al*. 2016, 1347) – shows that both areas were special, and Stonehenge very special. By 3000 cal BC, this

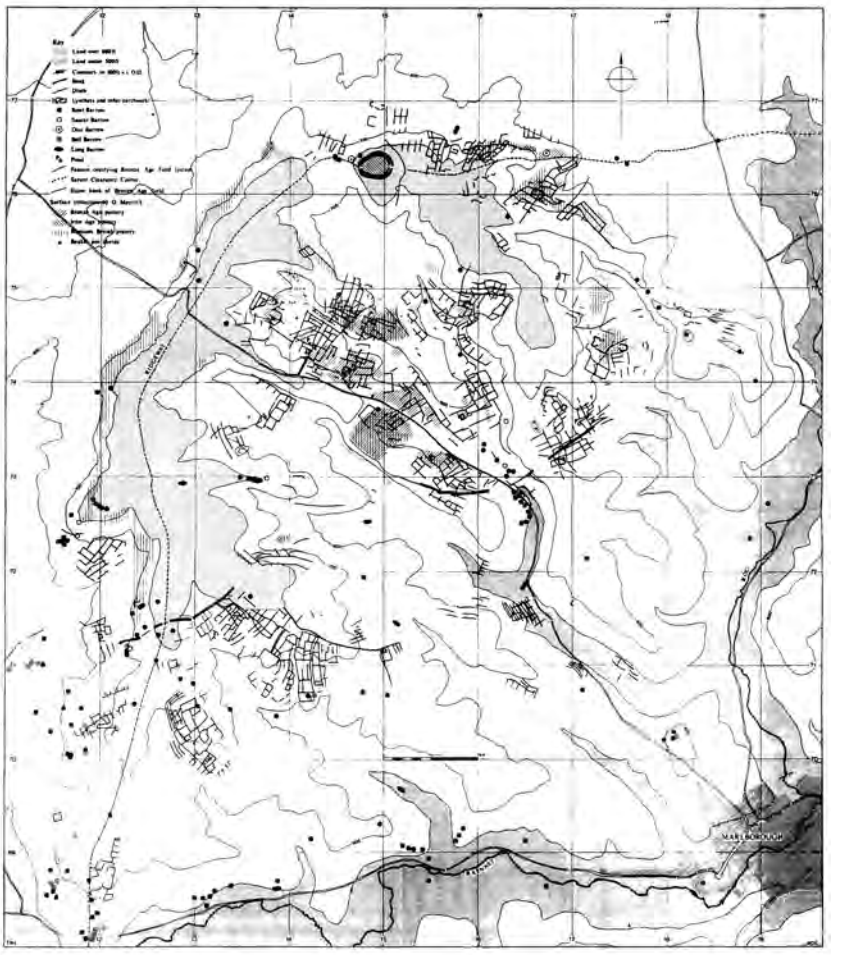

Fig. 4.5: Marlborough Downs, showing field systems, "ranch boundaries" and Barbury Castle hillfort. Source: Gingell 1992.

was a premier place in southern Britain, perhaps even over a wider area; by 2500 cal BC, it was being marked out as a prime burial place for the people who used Beaker pottery; by 1500 cal BC it was a major burial ground for rich Early Bronze Age people; but at the same time, people lived here, farmed here, and died here. This was a place with a life; and the people who lived and died here lived that life with it.

A comparable "history" of a prehistoric landscape has been charted for the Ridgeway in Oxfordshire, around the famous White Horse at Uffington (Gosden

& Lock 1998); the same spot was used not only for this large potentially prehistoric image, but also for burial monuments, settlements, fields, and fortified sites. Landscapes that are similarly "vivid" are present elsewhere, for instance in the Kilmartin valley in Argyll, western Scotland (RCAHMS 1988, 7 ff., 14 ff.; Ritchie & Harman 1996, 41 ff., 135 ff.).

Villages and houses

In some parts of prehistoric Europe, dwelling places – settlements – were occupied for many years, mainly but not exclusively in the Neolithic and Bronze Age. The classic example of this is the tell, as known especially from the Near East but also found in parts of Europe where conditions are right – notably Bulgaria and Hungary. Large mound sites, such as tells, were places where people continued living for many years – decades, centuries, millennia even. Here the concept of place takes on a special significance. Why do tells exist at all? After all, they are not present everywhere, even in places where they could theoretically exist. Two factors make them happen: people, in particular people's attachment to the land; and building material, to be specific mudbrick and/or daub (Chapman 1989). Without these two things, you cannot have tells. This raises the question of why people chose to stay in one place for so long; after all, at the beginning they were not tells, they were flat or terrace sites, but since house building continued year after year on the same spot, they became mounded. Within the space thus defined, houses were built and rebuilt year after year, decade after decade. Attachment to place has here become the norm: in other areas, people came and went, but here they stayed put.

Village plans

Excavations on tells have typically involved digging deep soundings through the multiple layers, cutting parts of houses but not exposing them completely. In relatively few cases in Europe complete, or near-complete, village plans are visible. Even in major excavations like at Çatal Höyük, where James Mellaart published sequences of village plans, the recent work has taken a different approach (Hodder 2014); individual houses are now well studied, especially on the upper levels of the mound. In the European Bronze Age context, work in Hungary and adjacent areas in recent years has also produced plenty of examples of house plans; the situation at Feudvar in the Vojvodina (actually on an elevated plateau) is typical, with rectangular houses succeeding one another, though not changing

much in form and plan over the decades (Falkenstein 2014; Hänsel & Medović 1998) (Fig. 4.6). Does this mean that the social relations between people on this site stayed the same, or just that the force of tradition conquered any desire to change the way neighbours behaved?

Here it is useful to introduce the example of a famous site of the Early Iron Age in Poland, Biskupin. Although excavation has never uncovered the entire site, from the published plans it seems fair to suppose that the whole of the fortified area was built up with long houses (Kostrzewski 1950). This has always been puzzling, in the sense that such a densely occupied site, on an island or peninsula in a lake, would seem both socially and economically unviable – which is probably why the site had such a short lifetime. The same is true of at least some other sites of comparable date: for example Smuszewo, similarly densely occupied (Harding & Rączkowski 2010) (Fig. 4.7); but there is also some variation at other closely studied sites, notably at Sobiejuchy, where there are some unbuilt areas (Fig. 4.8). I have previously suggested (Harding & Rączkowski 2010) that this was in fact an essential for a site to survive: you need to have somewhere where people can congregate, quite apart from the need to get away from your neighbours, or your family. Could you do that on a densely settled tell site?

Recent work on Hungarian tells has focused on the nature of settlement in social terms, in particular through extensive surveys (for instance the work of Tobias Kienlin and Klára Fischl on sites in eastern Hungary (Kienlin *et al.* 2018) and intensive excavation projects, for instance at the site of Százhalombatta-Földvár south of Budapest (Vicze 2013; Poroszlai 2000; Poroszlai & Vicze 2005; Vicze *et al.* 2014; the final report is in an advanced state of preparation). This place lies on the terrace above the Danube (Fig. 4.9), like many others along the western bank of the Danube, and while it is a deeply stratified site, its location makes it somewhat different from tell sites on the Great Hungarian Plain. The excavators have charted evidence for the building and rebuilding of houses generation after generation, noting that there is more variation in how this takes place than one might expect: there are shifts in location, and changes in the plan of individual houses. Some were erected as two-room buildings, others were apparently divided during their life (Vicze 2013); the two-room houses had a hearth in the larger room, while smaller houses may have been primarily for storage or craft activities (Fig. 4.10). Evidence for roadways between buildings, and not just paths or corridors, attest to decisions to keep houses apart from each other, and may even give us some clue into how decisions were taken, and by whom. As the excavators say (Vicze *et al.* 2014, 3), "The internal dynamic of minor but continuously ongoing changes brings out the sense of living communities", since people are not static and unchanging; and nor are the places where they live, at least not

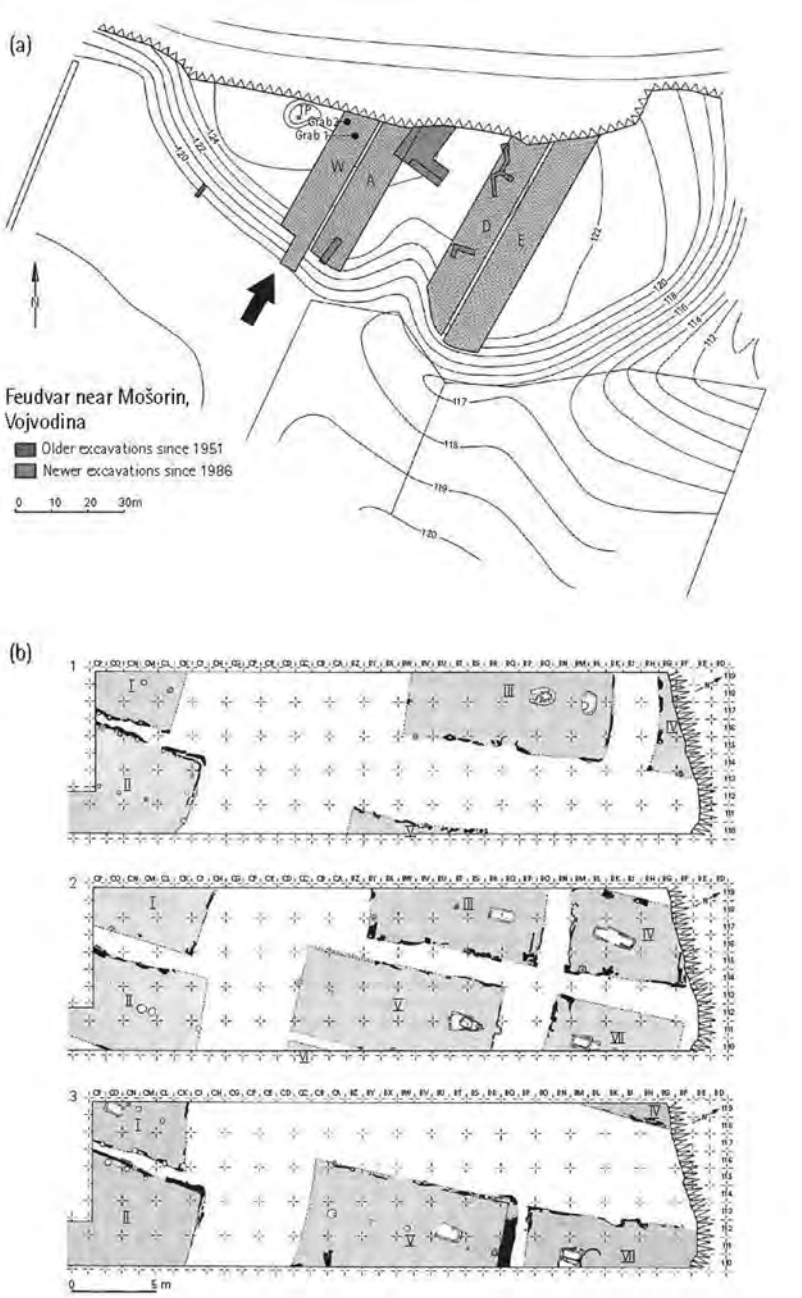

Fig. 4.6: Feudvar, Vojvodina (Serbia): plan of excavated houses. Source: Hänsel & Medović 1998.

Fig. 4.7: Caesium magnetometer plot of Smuszewo, district Damasławek, Poland. Courtesy of Helmut Becker (Becker Archaeological Prospection).

when seen over a timeframe of more than a single generation. Whether house size corresponds to kin units, such as households, is also something on which we can speculate; the change over time from larger to smaller houses would then correspond to changes in how extended family units were viewed. This recalls debates in Scandinavian archaeology about the change from two-aisled to three-aisled houses during the course of the earlier Bronze Age (Bech & Haack Olsen 2012, 14 ff. with refs). Suggestions have ranged from changing subsistence needs, such as an increased need to store foodstuffs within the house, to changing kinship organisation.

The site of Százhalombatta should not, of course, be understood in isolation. Survey work in the adjacent Benta valley has shown the existence of many other contemporaneous sites, including fortified tells like Százhalombatta (Vicze *et al.* 2005); this of course raises the question of how settlement in the area was organised (Earle & Kolb 2010). More than that: the Százhalombatta tell was surrounded by a substantial ditch, in other words it was fortified, as a significant number of tells are. This means that the place we know as a tell site on the Danube has to be seen as part of a wider system of settlement, and moreover one where there was some need to consider security. There is a further point, which I owe to Tobias Kienlin: the use of space inside the fortification line is likely to be different from that outside it (Kienlin 2015, 39 ff. and elsewhere). And where a plan is known primarily from geophysical survey, as for instance at Vráble-Fidvár in Slovakia (Bátora *et al.* 2008; Skorna *et al.* 2018; Bátora *et al.* 2012),

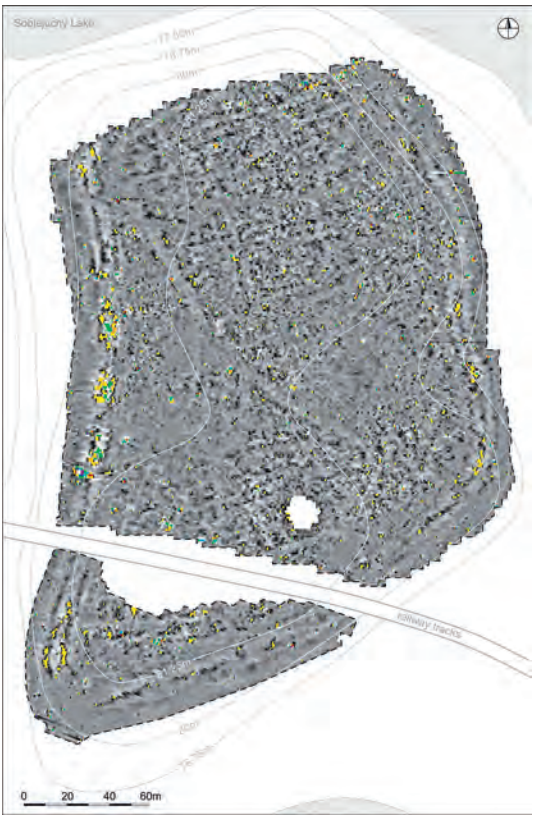

Fig. 4.8: Sobiejuchy: gradiometer plan of the site. Source: Harding & Rączkowski 2010.

we do not know that all the houses were contemporaneous. Only detailed examination through excavation is likely to settle that point.

My next example relates to a quite different environment, but one where settlement was repeated on the same sites time after time, sometimes with a gap in occupation, sometimes with none. This concerns the numerous lake dwelling sites of the circum-Alpine region, found across all the Alpine lands but particularly well studied in Switzerland and Germany. The site of the Siedlung Forschner in the Federseemoor, for instance, has seen excavation and publication of the highest quality (Billamboz *et al.* 2009). The Federsee has long been known as an area where prehistoric sites, mainly Neolithic and Bronze Age, are very well preserved by virtue of the waterlogged nature of the deposits. In a Bronze Age context, the site of the Wasserburg at Bad Buchau is one of the most important (Reinerth 1928; Kimmig 1992), and would be interesting to con-

Fig. 4.9: Százhalombatta, aerial view of the site, showing its position on a terrace above the Danube. Photo and copyright Matrica Museum, by kind permission.

Fig. 4.10: Százhalombatta, view of two excavated houses. Photo and copyright Matrica Museum, by kind permission.

sider in detail in the present context were it not for its unfortunate excavation history in the 1920s and 30s. The apparent change of settlement layout and house form during the Urnfield period from an earlier one with 38 small houses, the difference in size between them slight, to a later one with only nine, one of which was markedly larger than the rest, is intriguing and might be used to suggest (if the plan is to be believed) that the move reflects a social change, from a small quasi-egalitarian community to one based on power vested in major families. In practice the change may not be as great as has been thought, since the buildings of the first phase form a series of natural clusters which may represent grouped residential units or modules. The main change in the second phase is to link these units into a single building; there are several small structures interpreted as outhouses or stores. All this assumes that the plans handed down to us are correct, and that the excavator did not confuse a series of building plans of quite different dates. Kimmig's subsequent examination of the finds and pottery showed that there are in fact five identifiable phases on the site; it is not really clear which pottery phase belongs to which structures. These problems aside, the plans have obvious implications for an understanding of how people regarded the place they lived in, and how their living space should be structured within it.

When we turn to the rather earlier Forschner site (Billamboz *et al.* 2009), differences are again highly visible (Fig. 4.11). In this case, it is not so much that the houses change in size or shape; rather that their location varies, as does their closeness one to another. Small rectangular houses, this time built of wood, were repeatedly renewed, but always within a close-set arrangement. In this case we have the immense advantage of detailed dendrochronological evidence, which shows us the individual construction phases; and in this case it seems clear that the situation is not so different from what we saw on the Hungarian tell site – with certain important differences, of course. Sites like this, and there are many of them, provide an interesting contrast in location and building materials to what we find at the same time on tells further east; yet it is clear that people wished to remain living in the same place, even if the environment was sometimes against them (by which I mean fluctuating lake levels). These factors are hard to determine with any certainty. A recent publication suggests that it was a combination of natural and cultural factors that caused the final abandonment of the so-called lake dwellings (Menotti 2015); some Hungarian tells were also abandoned in the middle of the second millennium BC, but here it is usually cultural reasons alone that were invoked, specifically hostile incursions (this goes back to Mozsolics 1957; Bóna 1958; repeated and elaborated by Gimbutas 1965; recently reviewed by Pusztainé Fischl *et al.* 2013; Vicze *et al.* 2013). One wonders if in fact the factors I mentioned above, involving physical and social

space, might not have been equally significant, especially as some of the lake sites, and hill sites in the hinterland, are fortified. By contrast, it has been plausibly suggested on certain Neolithic tell sites that house destruction was a deliberate act, not just for the renewal of decrepit buildings, but as a significant part of what living in a tell community involved (Stevanović 1997; Chapman 1999).

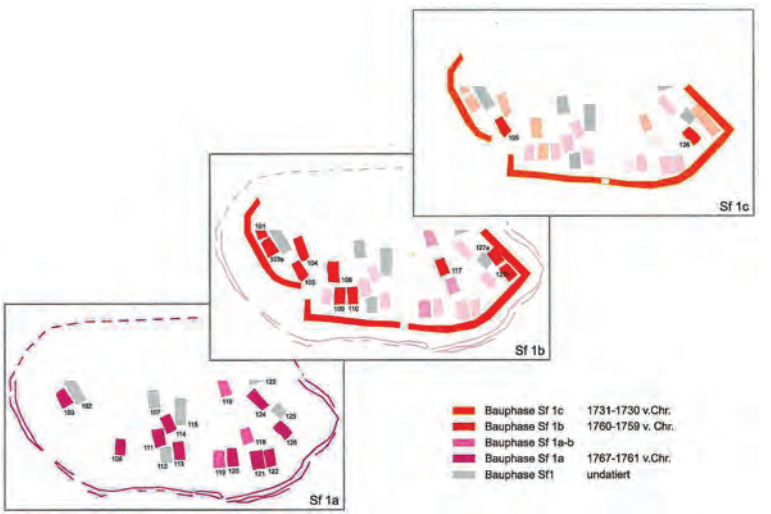

Fig. 4.11: Successive plans of the Forschner site, Federseemoor, Baden-Würrtemberg. The dendro dates show a rapidly changing layout, even within Phase 1 of the site. Source: Billamboz *et al.* 2009.

Houses

People live in houses, large or small; this is the space that they have made their own, where they eat, sleep, talk, are born, reproduce, and die. Nothing is so personal as this particular bit of space that we call home. They are more than just a physical presence; they represent us and our view of the world. They are a significant part of our identity, in prehistory no less than in the 21st century, a location that serves as the centre of social practice. Gerritsen (2003) has also stressed the role of the house is creating and maintaining social identity; his hypothesis, or one of them, is that the life of a house mirrors the life of a kin group or family, perhaps even to the extent of referring to its birth and death. A similar argument was made by Joanna Brück for the Middle Bronze Age houses of southern England (Brück 1999).

Others have stressed that the form of the house acts as a metaphor for the world view of those who lived in it, in other words what has been called the cosmology of the house. This is something that goes back to Claude Lévi-Strauss, but has been enthusiastically adopted by archaeologists in recent years (Lévi-Strauss 1963, Chapter 8). It is usually considered when thinking about the orientation of houses, particularly the direction in which the main entrance faces. I and many others have written that doorways would usually be placed away from the prevailing wind, for obvious reasons of comfort and practicality; this view has been criticised for ignoring the cosmological aspects of house creation. I suppose that some common ground could be found between these opposing views; certainly my view, while based almost entirely on functionality, is one that can be readily tested. I am less sure how one arrives at a commonly agreed view of the cosmological principles behind a house from three or four thousand years ago – other than through appeal to ethnography. Ian Hodder has considered Neolithic tombs from this point of view (Hodder 1994); Parker Pearson and Richards have looked at Neolithic and Iron Age houses (Parker Pearson & Richards 1994); among many others Alistair Oswald concluded the Iron Age house orientation was determined by ritual concerns (Oswald 1997) while Avraham Faust showed that the preference for an eastern orientation of house doorways in Iron Age II Israel could not be explained just by functionality (Faust 2001). A review of the whole issue has been produced by Rachel Pope (Pope 2007).

There are plenty of Bronze Age houses in Europe, large and small, round, square or rectangular, stone, post or turf-built. Not many of them tell us a story about their lives, however. We can look at a wide range of houses, like round ones on British moorlands or on the Aeolian Islands north of Sicily, or rectangular ones from central Europe or Sicily (Fig. 4.12). But these are static, frozen in time; on their own they tell us little, though we can make estimates of how many people lived in them, and what they did there, for instance potting, weaving, leather and bone-working, storage and cooking – as Peter Drewett did for the huts in the southern English site of Black Patch (Drewett 1979; 1982). We can even estimate the length of time a given house might have stood unaltered; if wood or daub-built, probably only a maximum of 20 years, if stone-built, perhaps longer – but not much before repairs were necessary. Even in the Aegean, the stone-founded palaces of Minoan and Mycenaean Greece will surely have become rickety after a decade or two. It is a fallacy, derived from romantic notions of how everything in Greece was more advanced than elsewhere, to suppose that everything was so much better there.

So, how are we to develop ideas about the life of a Bronze Age house? One suggestion came from the Swedish scholar Inga Ullén some years ago, in connec-

Fig. 4.12: Round houses on the Early Bronze Age settlement of Capo Graziano, Filicudi (Aeolian Islands). Photo: author.

tion with the settlement of Apalle, 50 km north-west of Stockholm in a small valley, the settlement area marked off by rock carvings showing ships, circles and cupmarks (the usual repertoire) (Ullén 1994). Forty-five houses are present, though not all have been analysed (Fig. 4.13). They consisted of long houses, shorter rectangular houses, and a few round houses. Parts of two heaps of fire-cracked stones were found, as well as five wells, most of them on the fringe of the site. In the south there was an unbuilt area bounded by pits. Chronologically the site is divided into five phases, but only two principal ones: an earlier one, mainly between the thirteenth and eleventh centuries BC, with eleven or twelve houses, and a younger one, mainly the ninth and eighth centuries with five or six houses. Between these two principal phases there is a transitional phase, during which the houses incorporated features of both the earlier and later settlement (I cite the author's preliminary work here, since her final report is only available in Scandinavia).[1]

One of the things that happened on the site was that rubbish was disposed of differently over time. To begin with, two heaps of stone were created, the houses disposed around them, with cooking pits distributed all around the site. Later,

1 I thank Inga Ullén for providing access to information on the site.

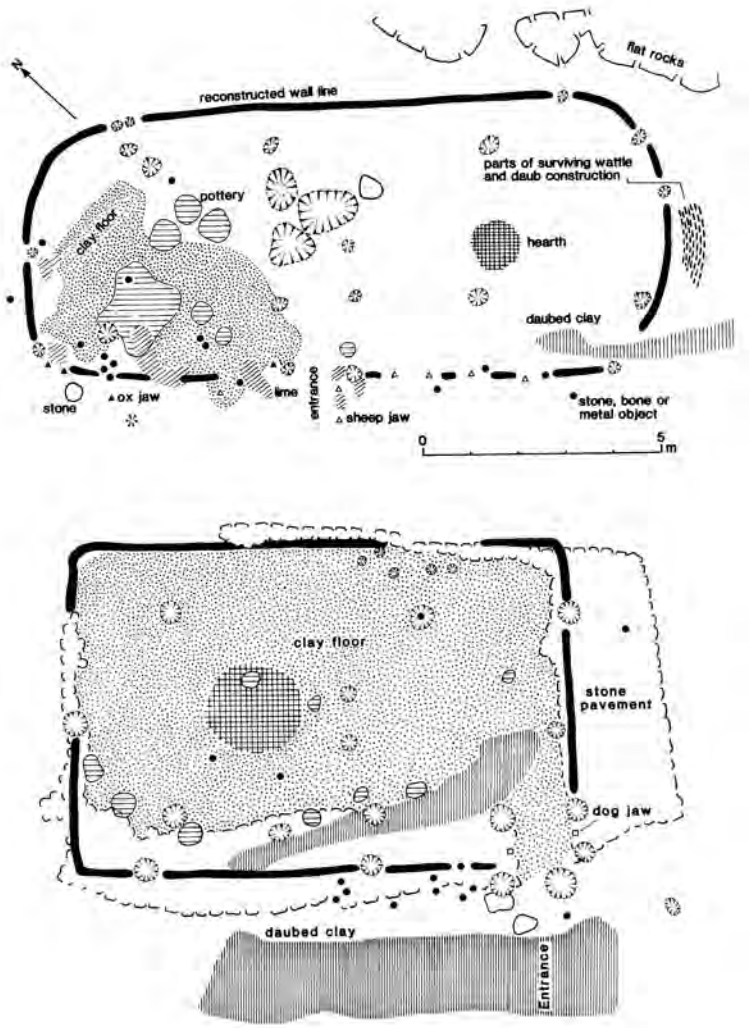

Fig. 4.13: Apalle, central Sweden. Outline plans of House 13 from the earlier settlement (*upper*) and House 2 from the later settlement (*lower*). Source: Ullen 1994.

the earlier heaps were levelled and new disposal areas created, smaller but more numerous, and all placed south of the houses, i. e. in a more peripheral location.

The rubbish heaps were structurally different as well, though that is not my main concern. Instead, it is the change in the treatment of the houses that is important. The later houses were a bit shorter than the earlier, but in both phases

the way space was treated is interesting. The earlier houses had distinct boundaries between different rooms, in the form of post-holes for walls or rows of stones. Usually these houses were divided into two rooms. In one of the rooms there was a clay floor. This is where most of the artefacts, pottery, stone and bronze, were found, but they did not have hearths, which are in the other room. The excavator described these hearth rooms as "more anonymous", with few finds; and they could only be reached from inside the house. Their different character was further illustrated in House 13 by the occurrence of animal bones. In the notional west wall and end wall, parts of jawbones were discovered. Inside the house, as well as outside, there were only scattered bones, none of them cranial or mandibular. The mandibles were distributed in such a way that, below the entrance, towards the south-east, they were exclusively from sheep/goat. By contrast, above the entrance, in the direction of the room with the clay floor, most of the jawbones were from cattle. It was not clear whether they had been deposited in pits or laid there, next to the wall, on the outside or inside. A recognisable pit was found outside the south side of the entrance containing bones and cranial parts from sheep/goat, some of them laid out in a line. Lime was found in several of the earlier houses, in streaks along the walls and next to the roof-bearing posts in the clay-floored room. It was also found by the entrances of two houses. It was exposed towards the inside of the room and has been interpreted as traces of interior painting in this part of the house.

The interiors of the later houses looked quite different. There were no traces of lime, and only hints of room divisions. The whole of the inner room space was clay-floored and the hearth was now positioned in the centre of the house. Most of the finds occurred round the hearth. At least four houses included fire-cracked stones in the bases of the walls, perhaps a link with refuse that was now stronger than before. The piles of refuse now also included quantities of baked daub from burnt-down house walls. It seems likely that some of the fire-cracked stones incorporated in the house structure came from the heaps of stones belonging to the earlier settlement.

In addition to fire-cracked stones and daub, the later piles of refuse also included bones, mainly from domesticated animals, in contrast to the earlier houses where the stone heaps contained far more bones of wild animals. This might recall Ian Hodder's ideas about the domestication of the wild as a kind of metaphor for the whole process of domestication in the Neolithic. Later on, wild animals were ignored, or simply absent, and domestic animals became crucial. In this, the remains of dogs were very important; unlike other animals, these were never butchered and thus probably not eaten. In the earlier phase, dog bones were found in pits along the southern edge of the settlement, including several

complete crania. But in the later phase pits containing dog bones lay close to the entrances and end walls. In two of the houses, two dog mandibles had been buried in the clay floor on either side of the entrance. To quote the excavator, "The migration of the dog from the boundary of the settlement in towards the centre (the house) can be said to symbolise an approach to the new home in the new age" (Ullén 1994, 258). She has also developed a story involving the way in which horse bones were deposited, but that lies beyond my present scope (Ullén 1996).

The excavator's interpretation of what happened is complex. The clay-floored rooms of the earlier houses, with their clear boundaries and entrances, white lime painting, and abundance of artefacts, can be regarded as both domestic and also public, whereas those with hearths are more private. Cooking apparently happened in pits outside the houses, so the hearths were probably for keeping warm. If cooking happened outside the house, the boundary between inside and outside must have been quite fluid; and if cooking happened outdoors, ideas of commensality, sharing of food with family and neighbours, come into play. In the later houses, by contrast, much of the cooking appears to have been moved indoors; there were no cooking pits outside. The hearths were deeper than before and were probably important as a central gathering point in the houses. The form of the interior also suggests that there is little or no distinction between private and public space. Rubbish disposal was also kept apart. This is taken to suggest that there was a different attitude to the treatment of space between the two phases: the house interiors might offer more openness to the outside world, but the space between houses was kept rather definite, almost private, while the attitude to rubbish also changed, so that the remains of previous generations were incorporated into the space around the settlement in a rather definite way.

Is all this an over-interpretation of what is essentially rather scanty evidence? Maybe, but it does have the merit that it treats all the archaeological finds as significant, not a matter of the chances of survival. In this there have been two (or more) schools of thought. One would follow the lines I have described here; this is the approach favoured by, among other people, Richard Bradley and his followers, who seek to interpret every find or group of finds in terms of intentional deposition resulting from a particular set of actions connected with the occupants' world view. Others would say that it is impossible to suppose that every sherd and every bone is significant in its location, given the upheavals to the terrain over the hundreds or thousands of years that have elapsed since deposition. It would appear to be impossible to prove this one way or the other, so it is up to the reader to decide which explanation is better.

The life of a house

This brings us to a consideration in general terms of the life of a Bronze Age house. Are there any common features we can identify? Can we suppose that particular forms of building material, building style, internal features, intentional depositions, or artefact distribution have a significance that we can readily detect and interpret? Or should we just stick to so-called common sense approaches, and say that big buildings mean more people, elaborate fittings or special construction techniques are a sign of high status, and the richness (or otherwise) of artefacts found in houses are a direct reflection of those who used them and discarded them? Here I return to the work of Fokke Gerritsen, and illustrate his diagram of the life cycle or biography of a house (Gerritsen 2003, 40 Fig. 3.1) (Fig. 4.14). Starting at the top, the location is chosen, the site is prepared, and construction begins – note that this is reflected, in Gerritsen's view, by the formation of the household, in other words breeding partnerships and the birth of children. Then the family expands and so does the house; repairs are needed to keep it in good order. As the children grow up, they start to leave and the family contracts; so does the house, or rather it ceases to be maintained, and eventually has to be abandoned. After that, the location might remain special, for storage, or feasting in honour of the previous, now dead, occupants; and then the cycle starts all over again. Obviously much of this reflects modern, or least historical, experience, and is only a guide to the possibilities that house-building represents. But we can recognise in it aspects that accord with our notions of the sequence of building and replacement on many archaeological sites, even those from historical periods. Gerritsen is at pains to point out, however, that at the site level, not everything changed so dramatically; in this example the houses are renewed, but the settlement essentially remains stable.

One may compare this situation with those cases where abandonment of houses appears to have been systematic and planned, as with certain settlements in south-west England (e. g. Trethellan Farm, Cornwall: Nowakowski 1991, 208 – 9; 2001).

The model would seem to work well with houses on tells, and probably too with lake dwellings; it accords with what the excavators of Százhalombatta have suggested about house replacement, and one can imagine it working with the Forschner house replacements. It is impossible in most instances to say to what extent it might apply to simple round houses like those on Dartmoor, where there is little or no stratigraphy and thus phasing, and often no finds. But it can be applied to the Iron Age of north-west Europe quite satisfactorily.

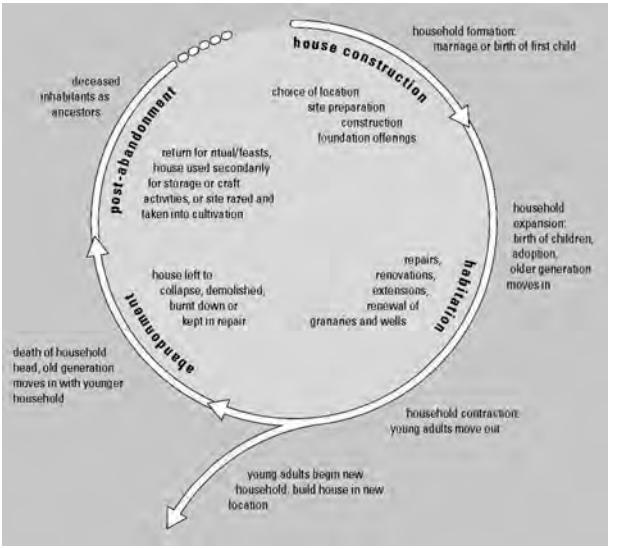

Fig. 4.14: Diagram of the putative life of a prehistoric house. Source: Gerritsen 2003.

One may recall also that on Orkney, a traditional croft house was considered dead if the fire on its hearth went out. Arrangements were made to keep the chimney smoking if the occupants were away.[2] The life of a house can thus be viewed in a number of different ways.

Let me return to the point at which I started, an attempt at understanding how space became place, and how place forms an integral part of the identity of those who occupy it, indeed assigns a part of their identity to them. For the inhabitants of that hillfort in northern England, those simple huts, and that landscape view, formed a part of their identity; and one of the ways in which they marked that identity was by creating a physical map of the world around them on the rock surface, corresponding to the mental map which for them represented the world around them. This phenomenon is widespread in the Bronze Age, and probably earlier and later as well; the practice of inscribing rocks, often just with simple marks, is so common that it can only represent a form of territorial marking, apart from any symbolic value it might have had. Another example is the Iron Age and Dark Age (early medieval) hill of Traprain Law, on a volcanic outcrop some 30 km east of Edinburgh. Some years ago, during fieldwork to investigate the Iron Age occupation, a hoard of Late Bronze Age axes was discovered (Armit *et al.* 2005), and not far from it, cupmarks, i.e. rock art, on the

2 Thanks to Peter Leeming for this observation.

bare rock (Armit & McCartney 2005) (Fig. 4.15). The hill had been marked by previous occupants in a distinctive way. In a small way it recalls Uluru (Ayers Rock) in the middle of Australia, such a notable landscape feature, and one where natural space has been turned in a highly distinctive manner into a prime cultural feature. Across Bronze Age Europe, people were doing just that, in small ways or big ways, using rock art, using the deposition of bronzes, and using the creation of cultural spaces through the manipulation of the environment. Some of these are big and obvious, like the extraordinary art panels of Scandinavia, some are hard to spot. And some became special for many reasons, cultural and natural: in a metaphorical sense, and perhaps occasionally in a physical sense, they were where the pot of gold lay.

Fig. 4.15: Traprain Law, East Lothian, Scotland, viewed from the west. Photo: D.W. Harding, by kind permission.

5 The life of societies

In previous chapters, I have looked at a number of lives – of people, of objects, and of places. I started by thinking about individual people and what they were like, then the objects which inform us about them and their lives, and lastly the places in which they lived. Now I want to broaden my discussion out to encompass the whole environment that people knew, not so much physical as mental and ideological: the ways they interacted with each other, over short or long distances, how the communities within which they lived might have been structured, and how those communities lived together; not just communities at the local scale, but on the widest scale that might have existed in the period, in other words the Bronze Age "world". That means considering not just how large human groups were, and how many such groups might have lived in a given area or territory, but what the nature of their interactions was, peaceful or otherwise.

In this, it is probably easiest to detect those interactions which were *not* peaceful. Just as our news-filled world today is dominated by stories of violence and war, on the grounds that peace and normal life – when nothing special happens – is not newsworthy, so our view of the past is likely to be dominated by those occurrences which indicate something happened, something other than birth, reproduction and death.

In seeking to understand how ancient societies undertook and managed interactions, a range of types of evidence are available to us. Traditionally, archaeologists recognised interactions through the study of artefacts, which would indicate "trade", in other words the movement of raw materials or manufactured objects from one place to another. This movement would indicate that societies were in contact with one another, by means of travellers across short or long distances; it would show that some kind of economic and/or social interaction was taking place. The presence of objects made in one place and found in another relies partly on typological factors, partly on composition analysis; the importance of this method of proceeding has not diminished, but it has been supplemented in recent years by a still more powerful analytical tool: the use of ancient DNA and stable isotopes to determine the provenance and life history of buried individuals. A study of Bronze Age interactions thus has a range of types of evidence from which to work. Before considering the nature of interactions, therefore, some words about the specifics of movement – of people and objects – are necessary.

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Movement of people and artefacts

In an earlier chapter I talked about the increasing evidence for mobility, which is obviously newsworthy in an archaeological sense. Lack of mobility is also interesting, even if it would not be considered newsworthy by today's journalists. So while the information that the Egtved girl from Jutland moved about a lot during her lifetime suggests something important and even exciting (Frei *et al.* 2015), the recently published information that many British Beaker people stayed put throughout their lives, or at most moved within the same country or the same general area, is important to archaeologists but hardly news in a modern sense (Parker Pearson *et al.* 2016). So in this analysis, individuals from Northern Scotland, Yorkshire and the part of England known as the Peak District had relatively high mobility – 13 out of 68 individuals in Yorkshire, for instance, or 16 out of 68 for southern England; the largest proportion actually in northern Scotland at 63% – , those in central England show little evidence for it (one individual out of 30; possibly more if isotopes other than strontium are considered) (Parker Pearson *et al.* 2016, 629 Table 1). Of course this "mobility" need not have been over long distances, merely over different geological and groundwater terrains, which might have been near or far. Nevertheless, the evidence published in 2016, and confirmed by other studies and for other periods, indicates that in the Beaker period a considerable number of people died in a place different from that where they were born and/or grew up (Price *et al.* 1998; 1994; Price *et al.* 2004). As analyses have continued, we know that more of this kind of evidence will be discovered, most notably with the recent demonstrations of more or less complete genetic replacement with the Beaker period, both in Britain (Olalde *et al.* 2018) and to a lesser extent in Iberia (Olalde *et al.* 2019).

Personpower and population

Mobility is of course interesting and important, and it supports the evidence of simple artefacts (of course artefacts are not simple, but they *are* mute – they cannot speak directly to us). As I discussed previously, it is beyond question that some objects moved over long distances; and commodities like copper or tin or salt also moved, of course not by themselves but by the actions of people. But within what social environment, or on what scale, or by whom, is another matter altogether. Was mining, for instance, a highly organised activity, involving considerable numbers of people, or was it a small-scale, home-grown affair, what in English we like to term a "two men and a dog" operation? It is hard to answer such questions in most cases, though it does seem clear that the

scale of some of these operations must have been considerable. Zschocke and Preuschen, for instance, long ago made estimates about how many people would be needed for the extraction and processing of copper ore in the Mitterberg, part of the Bischofshofen mining district and how much copper would have been produced (Zschocke & Preuschen 1932; Stöllner *et al.* 2011; Pernicka *et al.* 2016; Pittioni 1951). Figure 5.1, presenting figures taken from their work, shows that just for the Mitterberg scores of people would have been needed to keep three pits working; there are dozens of such pits in the area (though it is not known how many might have been open at one time, and since the shafts in question no longer exist it will not be possible to check). And this takes no account of the other areas of Austria that were extracting copper during the Bronze Age.

Single opencast pit	
Preparatory stage	6
Production stage I	14
Production stage II	27
Final stage	5
Subtotal	52

Three opencast pits	
Miners	40
Timbermen	60
Dressing ore	20
Ore transport	30
Miscellaneous transport	10
Cattlemen	10
Foremen	10
Total	180

Fig. 5.1: Labour estimates for the copper mining at the Mitterberg. Figures from Zschocke and Preuschen 1932.

These figures are very considerable, and of course presuppose a high degree of organisation in the communities involved. Nowadays we are more conservative in our estimates, but even so, it is impossible to imagine that the Bischofshofen area can have been served by just a couple of dozen people. We have to imagine quite a big operation, even allowing for uncertainties over seasonality, duration of extraction, and so on. And incidentally, although the figure says "manpower", it should really say "person-power", as many of the shafts are too narrow for adults to get into, so children were involved; and if the situation at the Hallstatt salt mines is comparable, women as well as men were probably involved in the work.

I have considered the workforce necessary to mine salt in the part of Transylvania where Valeriu Kavruk and I have been lucky enough to find several major production sites (the most important, and the only one so far excavated, at Băile Figa, near Beclean on the river Someş), though since such estimates are speculative I have refrained from putting them into print. Although we cannot be specific, we imagine that the people actually working the rock face would have been relatively few compared to those needed to fell and transport timber, to work the wood into the necessary forms (large and elaborate troughs and many other smaller items), to arrange for a supply of fresh water, to collect and evaporate the rock salt produced in order to make crystalline salt, to collect the salt crystals thus produced and bag them up for transport; to say nothing of provisioning the workforce, keeping their tools sharp, and so on. The number of people involved could easily amount to several score, more if the transport of the salt to its eventual destination is included. If we just take one pit or shaft reaching down to the rock salt, it is likely that only one or two persons could have actually worked on the rock surface. This does depend, however, on what that process was: if, as has been shown to be the most likely, large wooden troughs were used, allowing fresh water to create depressions in the rock, then several people would be needed just to create a supply of water; once the depressions had been made, two or three people could then break up the rock surface. The supply of timber and water were crucial, to say nothing of the carpentry skills needed to create the troughs in the first place. Putting all this together, we doubt that much salt could have been produced without at least twenty workers on site plus at least as many in support roles, probably more.

Both for metal mining and for salt mining, there are implications for ownership and organisation, which are important but hard to assess (in areas where stone was used, this is potentially true for quarrying as well). It is unfortunate that so little is known of settlement in the immediate areas involved; this has led to the suggestion that the mining area was not a place of permanent settlement but rather one where people from different communities came, perhaps on

a seasonal basis, to work the mineral for some weeks before returning to their home districts. In the absence of systematic survey work this must remain speculative. In the area around Băile Figa the known settlements lie within a few kilometres but no closer; one, at Coldău 5 km to the west, is a valley site on the river with an enclosing rampart on the landward side (Vlassa 1973); another, Dealul Bileag above Becleanuţ, is a hillfort on the north side of the river overlooking the whole area (Florea *et al.* 2007; 2008); excavation has produced Coţofeni and Dacian Iron Age material, but since little has been published it is unknown whether earlier material might also be present.

The numbers of people who would have been involved in other tasks is even harder to estimate (for instance building houses, erecting tumuli or cremation pyres, potting or smithing). Some scholars have made estimates on the basis of settlement and cemetery size.

Settlement size

In the previous chapter I talked about the life of the places where people lived, using the examples of Hungarian tells and co-eval lakeside settlements in the pre-Alpine zone. Thanks to the highly detailed information available from them, we can make good estimates of the number of contemporary houses, and the number of people who could potentially be accommodated in each. Of course the variability is very great when one looks at Europe as a whole, and the Bronze Age as a whole. We can point to times and places where individual farmsteads or hamlets were the norm, probably accommodating no more than a single nuclear family, and to others where large-scale sites suggest a complex form of social organisation. As I described, we can reconstruct a whole landscape in some areas where such farmsteads are scattered across an agricultural landscape; indeed, one might suppose this was the default situation. But individual farms do not get us far in reconstructing the bigger picture.

Let me again take three roughly co-eval sites, dating to the mid second millennium BC. Monkodonja in Istria, for instance, has been interpreted by its excavators as having a tripartite social structure (based on the tripartite form of the site) and a population of around 1000 (range 850 – 1240) (Hänsel *et al.* 2015, 482 – 6). For the tell site of Százhalombatta on the Danube in Hungary the excavators report that in its most intensively settled phase perhaps 150 – 200 houses might have existed at the same time, and if one supposes each housed five people, that would give a total population of 750 – 1000 (double that if there were as many as 10 people per house, which is not impossible) (Vicze 2013). A lakeside site such as the Forschner site on the Federseemoor was small-

er (Billamboz *et al.* 2009); there are some 30 houses in the excavated part of the site, probably more than 50 in the site as a whole, which with five people per house would give a population of some 250. Lest you think that these are unreasonably large population sizes, one must recall that in the Late Neolithic Ukraine some settlements of the Tripyllja culture, such as Taljanky, covered hundreds of hectares and contained thousands of structures, with a population estimated at anything up to 15,000 (Müller *et al.* 2016). Of course there were many Bronze Age sites with much smaller population sizes, but it is these larger and more obvious ones that attract attention, not least because their system of social organisation becomes a matter of debate.

The problem for archaeologists is that such places do not usually tell us much about the organisation involved; Monkodonja may be an exception here, and it is certainly possible that its central area, on the highest point of the hill, the so-called acropolis, was home to an elite of some kind (Fig. 5.2). Much more can be deduced from graves, however; the usual assumption is that richer grave-goods bespeak richer and thus more powerful people. This has been extensively explored over the years by many scholars, so there is no call to discuss it here; rather, simply to stress that there are good grounds for believing that the marked difference between graves with many and rich goods, and those with few or none, has social implications. There can be other reasons as well, and the story is undoubtedly more complex than I am implying, but that would be another book.

Fig. 5.2: Monkodonja, Rovinj, Croatia: aerial view of the site. Photo: Fran Hrzić, by kind permission of the Archaeological Museum of Istria.

Cemetery size as an indicator of population

Here we enter an even more uncertain area of research. While it is true that we can tell how large some cemeteries were, where we can be sure that excavation has uncovered the whole site, in many cases the edges of such sites are disturbed and the number of missing burials unknown. Thus Nikulka's analysis concerned 370 cemeteries (of all periods) of which only 65 were completely excavated (Nikulka 2016, 168). The largest inhumation cemeteries, such as Franzhausen I or Gemeinlebarn F in Lower Austria, have several hundred burials, deposited over a period of several centuries. There are hundreds of such inhumation cemeteries in central Europe.

There are tens of thousands of barrows in western and northern Europe, though most only contain a few burials. Richard Atkinson attempted to reconstruct the population of Early Bronze Age Britain on the basis of numbers of barrows and the time over which they were constructed and used, arriving at an estimate of an average population of 2000 in the barrow-using areas (Atkinson 1972). Peter Fowler (1983, 34) suggested that while the figure could be considerably higher than that, it was unlikely to run into the hundreds of thousands, and was more likely around 10,000. Today, after many years of intensive survey and excavation, such estimates would be regarded as far too low; it would be dangerous to suggest even a tentative figure, but the intensive occupation of the landscape that fieldwork has demonstrated would certainly put the figure for Bronze Age Britain as a whole at least into the tens if not hundreds of thousands at any one time.

Such a scenario is easily compatible with estimates based on the numbers of cremated individuals in Urnfield cemeteries, for instance those of the Lausitz culture in eastern Germany and Poland. Hundreds of cemeteries are known, many containing hundreds of individuals; the period over which they were used is less than that of the Early Bronze Age barrows, perhaps 400 years or less. I have suggested in the past that the buried population of Late Bronze Age Poland alone must amount to several million. Dietmar-Wilfried Buck estimated a rising population from some 40,000 in Period II to around 120,000 in Period V for the area of the Lausitz and Billendorf cultures in Saxony (Buck 1997; Nikulka 2016, 194–5). A single cemetery probably served a relatively small area, perhaps just a single large settlement; this certainly appears to have been the case for the large cemetery at Sobiejuchy in the Pałuky area of Great Poland, close by the large fortified site discussed above (p. 76) (Ostoja-Zagórski & Strzałko 1982).

The size of a living population in a given society can be calculated from numbers obtained from the data in individual cemeteries. Nikulka has shown

that these are very variable (Nikulka 2016, 168 ff., Abb. 17), from just a few people to 100 or more, potentially many more. Transferring such figures to a whole area introduces even more uncertainties. The conclusion has to be that any estimate of the overall population of a given area, such as a modern state, at a given time in the Bronze Age, is tentative in the extreme.

Interactions, peaceful and warlike

We know a lot about the form of the places where people lived, and believe we can make inferences from them about the size of the communities in which they lived and of which they were part; from their burials we can draw conclusions about a range of issues relating to beliefs and ideologies; but it is altogether harder to specify how groups behaved towards each other – unless, as was evidently sometimes the case, those relationships were hostile, resulting in aggressive action.

If that were the normal state of affairs, it would be a story of conflict, of a Hobbesian state of constant war between different groups of people. Now some scholars have made the case in recent years that war, or at least aggression, was the norm in parts of the prehistoric past, including the Bronze Age (Keeley 1996). There are indeed plentiful examples of sites where individuals seem to have died a violent death, but that is not quite the same thing as supposing that warfare was endemic to the communities involved. Indeed, there are many reasons to suppose that for most people life was essentially peaceful, or at any rate not warlike; there was a fruitful exchange of goods and people across wide areas of Europe, and beyond; the arts of peace thrived as well as those of war; and some people at least lived to a ripe old age (see chapter 2). Recent years have seen a dramatic increase in the evidence for the movement of both people and artefacts or raw materials across Europe. Nowhere is this more so than with those materials whose sources are restricted; tin and amber, for instance. In my opinion the most important single find of the Bronze Age in recent times has been the Uluburun shipwreck, with its extraordinary cargo of copper and tin, and hundreds of objects emanating from various parts of the east Mediterranean – as well as some from the central Mediterranean and even the Black Sea (Yalçın *et al.* 2005). As well as tin, the cargo included amber, of Baltic origin, and a host of other exotic objects. Almost as astonishing was another recent cargo find, off the town of Salcombe on the coast of southwest England: a cache of copper and tin ingots, along with gold and bronze artefacts including axes and swords (Needham *et al.* 2013; further finds from a different area of the coast off Salcombe are not yet fully published; Wang *et*

al. 2016; 2018; Berger *et al.* forthcoming). There has been speculation about the tin sources used in the Bronze Age, as at other periods; and while this find does not rule out other sources, it provides strong confirmatory evidence that the tin of Devon and Cornwall was being shipped across the Channel to France and beyond (Berger *et al.* 2019). Another cargo find, at Langdon Bay off Dover, includes a range of artefacts, both local and continental (Needham *et al.* 2013, 23 – 56; 58 – 84) (Fig. 5.3). One object, published as a spear ferrule (Needham *et al.* 2013, 82 – 4 Fig. 3.18 no. 354), has been suggested by Thomas Koch-Waldner of Innsbruck University to be a socketed pick of "Mitterberger form" (Mayer 1977, 226 – 7, Taf. 90 – 92), giving potentially interesting information about the distances over which objects travelled.[1] And one must bear in mind that Dover is the site of a large (and probably complete) plank boat, which can only have been used to cross the Channel (Clark 2004).

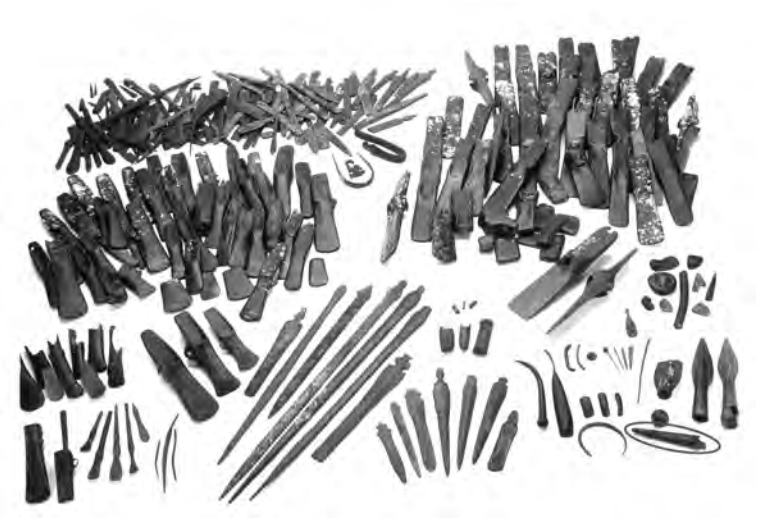

Fig. 5.3: The presumed cargo from Langdon Bay, near Dover. Source: Needham *et al.* 2013.

I mention these finds simply to act as an indicator of how communities were in touch with one another; not just communities in the same land area, but those separated by significant stretches of water. A boat like the Dover boat must have seated a crew of twenty or more (Fig. 5.4); it involved significant technological

1 The object does appear from the drawing, however, to be too slight to fit the criteria for such an object: Fig. 5.3, bottom right, circled.

skill to make, and it may well indicate ownership on the part of someone; can we call that person a trader? Indeed, can we reconstruct the Europe of the Bronze Age as a place where craftsmen (whose presence is so clear) were joined by a group of people whose job it was to travel widely across the continent? All the evidence coming on stream now suggests that it was: there is strong evidence for a system of weights and weighing (Pare 1999; 2013; Rahmstorf 2006; 2010; 2016; Ialongo & Rahmstorf 2019); analytical evidence shows how materials were widely distributed across the continent (e. g. amber, glass); and there are good analogies with what we know of the situation in the East Mediterranean, where records of various kinds indicate the frequent interactions between coastal cities (e. g. articles by H. Matthäus, H. Klengel and H. Genz in Yalçın *et al.* 2005). Sadly that evidence does not include the only part of Europe that was literate, Greece, since the Linear B tablets do not mention trade and traders at all. We do, of course, know a lot about the movement of goods and materials in the Minoan and Mycenaean world, most notably pottery, the source of which can be recognised stylistically but also through programmes of analysis (e. g. Jones *et al.* 2014 for pottery of Mycenaean type in Italy; many other articles cover this ground in Greece and the Near East). The question of the movement of copper is much-discussed (recent overviews: Earle *et al.* 2015; Radivojević *et al.* 2018); clearly those parts of Europe with no sources of their own needed to assure access to it, and there has been considerable success in pinning down the products of the Mitterberg area and Slovakia (Pernicka *et al.* 2016), as well as Cyprus. Recent work has also demonstrated that Sweden was an importer of copper during the Bronze Age, from a variety of sources including central Europe and Iberia, and – it is argued – Cyprus and Sardinia (Ling *et al.* 2013; Ling *et al.* 2014). This, if confirmed, would indeed be a remarkable demonstration that copper was moving right across the European continent; other scholars have, however, expressed doubt about such a movement (Pernicka *et al.* 2016, 41).

Mention of the Dover boat prompts me to recall all the other evidence for the technology of travel in Bronze Age Europe – over land as well as over water. The British plank-built boats of Dover type, previously best known from the examples from North Ferriby, East Yorkshire (Wright 1990), are a remarkable survival; the numerous depictions of boats on Scandinavian rock art show that they were very common, even though no example survives *in corpore*. What we assume are cargoes lost off shore or in river estuaries probably add to that evidence. On land, vehicles are mostly represented either by finds of wheels (initially in wood, later in bronze), or by models or what are believed to be cult vehicles (e. g. Strettweg, Steiermark, Austria: Egg 1996). Their very existence shows us that transport technology was highly developed in the Bronze Age; even if we lack paved roads (except for small sections that have survived by chance) it is possible to make as-

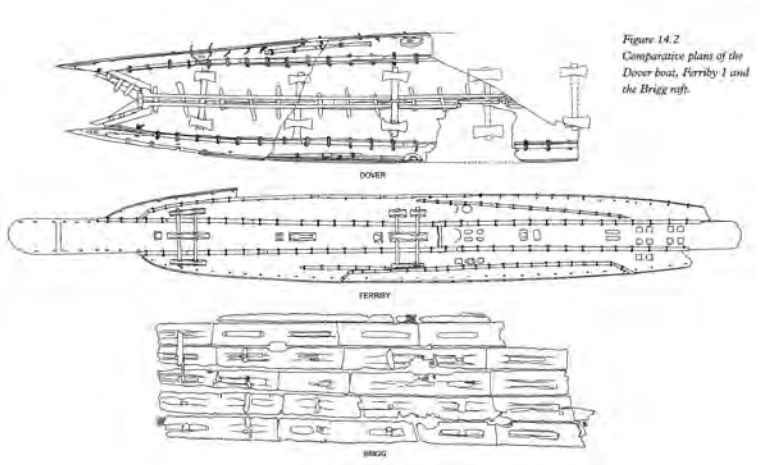

Fig. 5.4: British plank-built boats: Dover, North Ferriby, Brigg. Source: Wright in Clark 2004.

sumptions about ancient routeways by studying landforms and river valleys on the one hand, and the presence of artefacts along potential routes on the other.

If we can suppose, then, that Europe was a continent criss-crossed by trade routes, with traders and travellers conducting the movement, perhaps we can also assume that Europe was a peaceful place that enabled this trade to take place? Yes and no. Obviously people did successfully cross mountains and seas, so to that extent they lived in a peaceful world. But there is a darker side to the story as well. Many of the interactions between groups and societies were not peaceful at all. Much has been written in recent years about war and conflict in prehistoric societies. I think it is now possible to make a good argument for the type of warfare that was practised in later prehistory, and to sketch out a timeline over which conflict developed from a small-scale affair, involving a very few people, to a much larger and more deadly business (I presented my views in an earlier volume: Harding 2007, which proved acceptable to some but not all readers). Here one must make mention of the magnificent exhibition that took place in Halle (Saale) in 2015–16. The Halle team assembled much of the relevant information about prehistoric warfare, both in the exhibition and in the accompanying volume (Meller & Schefzik 2015); their starting point was the mass grave uncovered in rescue excavations near Lützen and emanating from the famous battle of that name in 1632. Archaeologically speaking, there is no big difference between a battlefield of the Thirty Years War and a battlefield of the Bronze Age; both produce, in theory at least, the remains of the unfortunate individuals who lost their lives in the conflict, and sometimes the clothing

and weapons they carried. In practice, of course, interpreting the remains of dead individuals from three or four thousand years ago as evidence of a battlefield is far from straightforward. Nevertheless, recent years have seen intriguing and on the whole convincing evidence for such conflicts.

Much attention has been paid to the ongoing work in the Tollense valley in Mecklenburg-Vorpommern, near the village of Weltzin and the small town of Altentreptow, in the Mecklenburgische Seenplatte district (Fig. 5.5). The published work so far mainly covers the research up to 2011 (Jantzen *et al.* 2011; Jantzen *et al.* 2014b; concise summary in Lidke *et al.* 2018); while more has been done since, partly documented in the Halle exhibition volume, these works give an excellent starting point for discussion of the significance of the area (one cannot really say "site", because the finds are strewn along a 2,5-km stretch of the river valley).[2] Human bone material comes from the river bed (brought up by divers), from dredged material dumped on the river banks, and from *in situ* deposits beneath the dumped material and in the sections opened by erosion. The team have made a strong case for seeing this place as the site of a single battle.

Fig. 5.5: The Tollense valley battle site in Mecklenburg-Vorpommern. Photo: author.

2 I visited in August 2014, and also attended a small symposium in Gross Raden in March 2011 which enabled me to see some of the finds, including those bones with the most evident signs of trauma. Grateful thanks to the excavators for inviting me and to Dr Gundula Lidke for guiding me round the site, supplying offprints, and checking these paragraphs for accuracy.

Up to now some 12,000 human bones have been discovered, 8500 of them from a single findspot, Weltzin 20 (Brinker *et al.* 2014; Brinker *et al.* 2018); the minimum number of individuals represented there lies at 83; over the whole valley the number is 145 (Terberger *et al.* 2018). In some reports (Jantzen *et al.* 2014 (2017), 14), the density is given as one individual per 4.5 m^2, with over 2000 individuals as possible participants in the violence. The bones show a predominance of male individuals, mainly young adults (age span roughly 18 to 35); a few were older and younger (including one young child). Four of the females were adults, one a teenager and one a child. The most important factor, however, concerns trauma on the bones. The most recent article on the human bones (Brinker *et al.* 2018) refers to 100 peri-mortem injuries, as well as a number of healed wounds (the latter is interesting in itself, as it shows that individuals were likely to be involved in aggressive action at different times of their lives). The authors point out that this frequency is far higher than one finds in cemeteries; and of course the figures take no account of wounds that left no trace on bone, hitting soft tissue instead, and just as likely to have been fatal. Large numbers of bronze and flint arrowheads were found, with one humerus having a flint arrowhead embedded in it (Flohr *et al.* 2015), and one skull having an embedded bronze arrowhead; these, along with the skull with a massive impact fracture, leave no room for doubt about the lethal violence that occurred here. As well as arrowheads, there is a smaller number of other weapons, including wooden clubs and a bronze palstave, not previously thought of as a weapon of war (Jantzen *et al.* 2014 (2017), 20 – 21 Fig. 7). A causeway a little further south crossing the river at site Weltzin 13/Kessin 12 was considerably earlier in date; it is uncertain whether this was still in use at the time of the violence, but if it was, it might have been the place where a group of men was crossing when they were attacked; as they scattered, some went northwards and were shot or hit by clubs. Speculatively, the excavators suggest that there may be (or have been) between 400 and 1200 dead, with a potential for between 1000 and 6000 participants in the battle (Jantzen *et al.* 2014a).

The date of the events that occurred here, and their duration, are matters of the highest importance. The bronzes from the valley date predominantly to Period III. In the latest account, some 100 radiocarbon and seven dendro dates are discussed (Terberger & Heinemeier 2014; Terberger *et al.* 2018). They begin in the 19th century cal BC with the causeway at Weltzin13/Kessin 12; some centuries later, the path northwards was altered or another bridge constructed, to judge from a dendro date around 1320 BC, with further adjustments a century later. This, however, does not assist with the dating of the violence that followed. The excavators place strong reliance on two dates obtained from a skull with an embedded wooden arrowhead shaft (Terberger *et al.* 2018, 112 Abb. 13),

both falling close to 3000 BP, and producing a calibrated combined date range of 1269–1208 cal BC at 68.2% probability, or 1292–1158 cal BC at 88.1%, in other words most likely the 13th century BC (the date for the bone is somewhat younger than that for the arrow shaft, but it seems highly unlikely that the two things refer to separate events). Wooden implements, including clubs, have a somewhat more diffuse dating, covering both the 14th and 13th centuries; the dates for the wooden shafts of 22 other arrowheads are said to concentrate in the earlier 13th century, although the diagram illustrating this indicates considerable variation (Terberger *et al.* 2018, 114 Abb. 15).

One of the most remarkable results from the study of the site has been based on the isotope values of enamel from individuals on site Weltzin 20, which shows that two distinct groups of people are present, one of local origin, the other coming from some other area, which might include a wide area of northern Germany, or Bohemia (Price *et al.* 2017). The clear implication of this is that a battle occurred between local people and invaders; something that is suggested for a number of other sites but not (yet) demonstrated by independent means.

While I do not doubt the general interpretations that this was the site of significant fighting, in my opinion there are several points that suggest it was more than one simple battle between armed groups of young men. First, the age and sex profile is quite varied: there were a few women and children present, as well as older men (the females were identified predominantly through skull morphology; only one from the excavated area from the *Os coxa*). One presumably has to see these as camp followers caught up in the conflict and slaughtered as part of the fighting.[3] Second, the bone material includes animal bone as well as human; only horse bones are connected with the "battle horizon", however, while cattle bones are a little later and not necessarily anything to do with the violence. Third, the dates are in fact quite varied, as the authors themselves point out (they have to stress potential systematic effects, such as old wood, fractionation, etc, in order to explain this). Previous accounts stated that two events were evident in the 13th century BC (Terberger & Heinemeier 2014, 114), but more recently obtained dates are more in line with the idea of a single event, which the most recent accounts emphasise.

If we simply take the dates from Weltzin site 20, it is quite evident that there is considerable divergence, even within the human bone group. If one includes the dates from the other sites along the river, the divergences are equally great.

3 Since at least one of the female bones has produced a widely different date from the bulk of the samples (Terberger & Heinemeier 2014, Abb. 1), it is possible that the total number of females involved in the main period of conflict was even smaller than at first suggested (G. Lidke, pers. comm.).

This makes one wonder about the viability of dating in these riverine contexts. If we look simply at Site 20 and exclude the anomalous dates, the picture is still not completely clear. On Fig. 5.6 I have calibrated the dates from human bone along the valley, as published by the team in 2014; I have excluded all those dates that are obviously anomalous (something that strictly one should not do). I have ordered them in the same way as in the plan from the publication (Terberger & Heinemeier 2014, 102–3, Abb. 1–2), without making any assumption about the direction of deposition (in fact the scatter clearly supports the team's assertion that taphonomic factors have played a big part; the river has potentially moved material around, though not over any great distance; the disarticulation of bone is present even in the *in situ* deposits). Even so, it seems clear that no single date can be assumed for the "battle of Weltzin". We might well suppose that Site 32 is earlier than Sites 20 and 13; the other sites have a single date only, but Site 9 fits with Site 32, and Sites 4, 5, 12 and 21 with Sites 20 and 13. If we model the dates on this assumption, we get the outcome shown in Fig. 5.7. There is a fairly clear phase centred around 1200 cal BC; there is an earlier phase, which is not closely defined, and a single date from Site 17 which is clearly later. Dates on wood from Site 20 are rather scattered, but the two on weapons (a club and an arrowhead shaft, and the skull with embedded arrowhead, which one assumes would relate closely to the traumatised human bone) fall somewhat earlier than those on bone, perhaps because of an old wood effect.

My point in labouring the chronology here is to indicate that whatever one supposes happened in the Tollense valley in the Bronze Age, it was not one single event, but at least two, possibly more – though I recognise that the excavators have a different opinion. They have argued strongly against this suggestion (which I have not previously published), on several grounds:[4] the consistency of the "battle horizon find layer"; the lack of animal gnawing on the bones, which one might expect if some had been lying around for anything more than a short time; the homogeneity of the bone depositions; the similar pattern to all the lesions (indicating sharp weapon trauma); the fact that the deposits lie in a boggy area, suggesting that a group of defenders had been driven away from the fighting area, and killed in groups; the similar composition of the bronze arrowheads from different parts of the site; and the similar diet of the individuals studied. Clearly these are all circumstantial arguments which should be considered as part of the overall scenario. The evidence of the radiocarbon dates suggests something different, in my view.

4 I am very grateful to Dr Gundula Lidke for her comments on a previous version of this section, arguing strongly for a single event. She is in no way implicated in my interpretation of the dates.

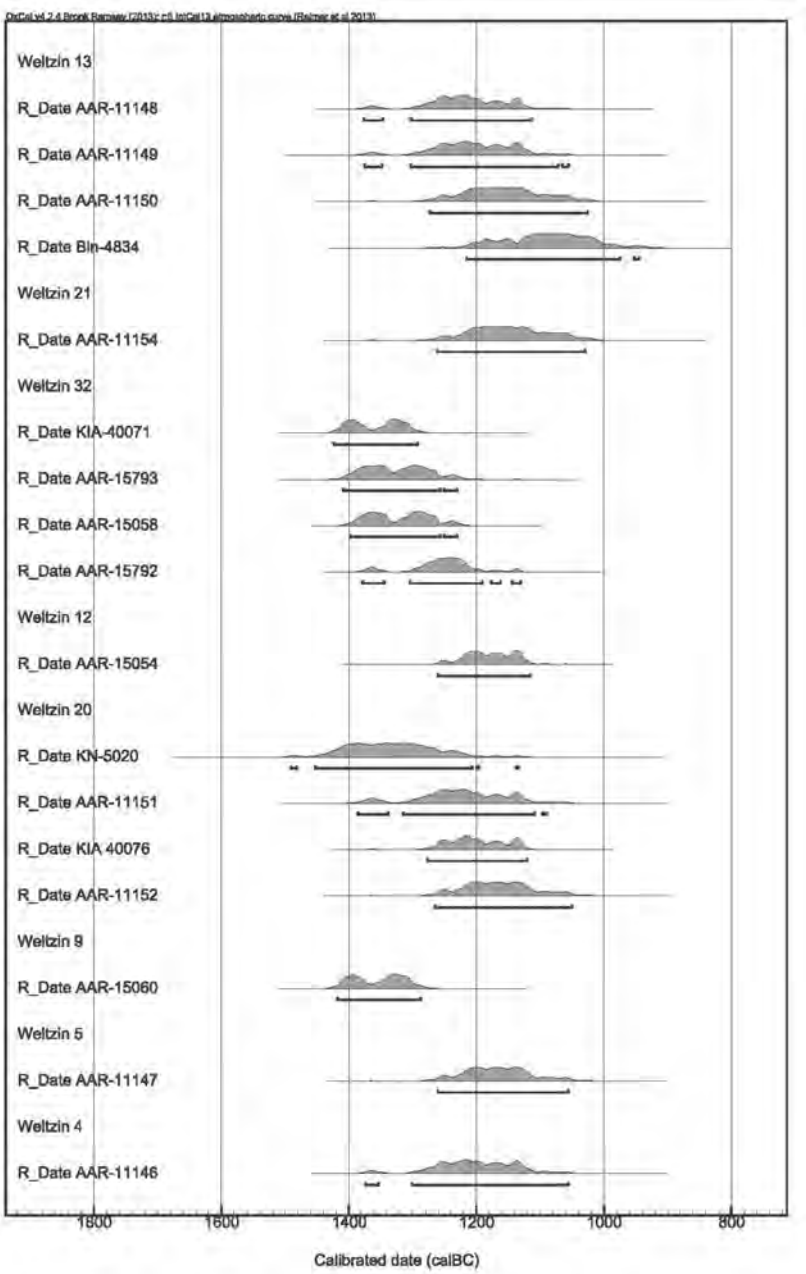

Fig. 5.6: Calibrated radiocarbon dates for the Tollense valley sites, arranged by site from south to north. Data from Terberger *et al.* 2018.

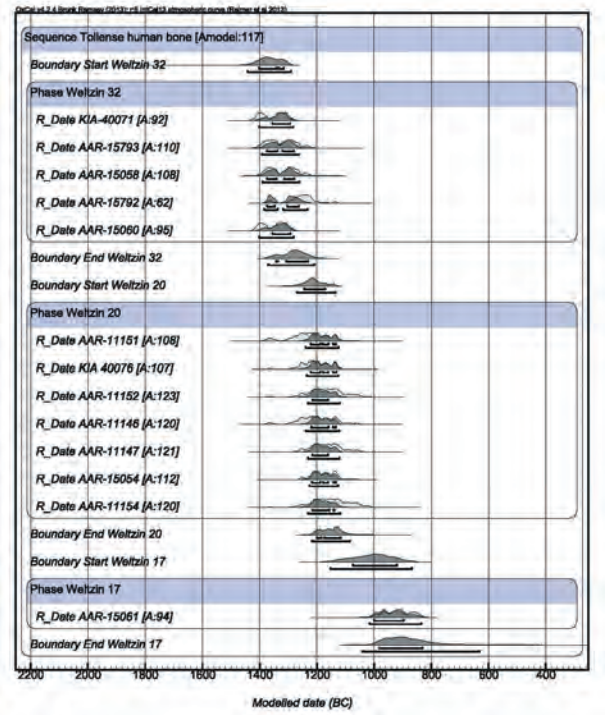

Fig. 5.7: Modelled radiocarbon dates for three of the Tollense valley sites, suggesting that there are at least two phases of deposition and therefore repeated history of violence.

This has implications for our understanding of group aggression in the period, and it leads me on to consider a site that I believe is most similar in many respects to the Tollense valley: Velim in east-central Bohemia.[5] A comparison between the two sites is not altogether easy because of their very different situation and excavation history, and the fact that only a relatively small amount of the Velim site has been fully excavated and an even smaller part studied and published in detail (Hrala *et al.* 2000; Harding *et al.* 2007). Nevertheless, the parallels are striking, in terms of the human bone and its treatment. The site at Velim lies on a low hill above the flood plain of the Labe (Elbe) river (Fig. 5.8); ditch and pit circuits were filled with human bone and other material; the humans were generally thrown into the pits in disorder, without grave

5 Unfortunately the site was not even mentioned in the Halle exhibition, but the Tollense team is well aware of it: Price *et al.* 2017.

goods, many bodies in single spots; in some places there were also cult practices in evidence, like the collecting up and deposition of crania. As at the Tollense sites, numbers of bones had indications of trauma, some clearly from weapon blows. Depending on one's view of the length of the Tollense violence, the fact that the deposition at Velim took place in a number of episodes may be comparable; some of the pits are large and deep, with whole or partial skeletons deposited at different levels (Fig. 5.9). Highly significant is the finding in the Czech excavations of large numbers of arrowheads, indicating an attack involving volleys of arrows (Hrala *et al.* 2000, 255 Fig. VII.20). It is not easy to interpret the findings; on stratigraphical grounds it seems clear that the events that led to the deposition of the human bone took place over a period of time, while there are other features that do not seem relevant to the notion of a massacre site. Nevertheless it is perfectly obvious that major violence occurred on this hilltop, perhaps over a period of time, but perhaps also with one major episode of violent activity.

Fig. 5.8: Velim, near Kolín, east-central Bohemia; view of the site. Photo: author.

The chronology is known in some detail; the finds (including pottery of "Velim type") indicate a date at the end of the Middle Bronze Age and the transition to the Late Bronze Age (Urnfield period), usually seen as a time of major change. At the time of the excavations in the 1990s, only five radiocarbon dates were obtained from Velim (plus one from the Czech excavations, with a very wide error term), none on bone, and most indicating a date in or near the 14th century cal BC (Hrala *et al.* 2000, 265; Harding *et al.* 2007, 83–4); two dates were on

Fig. 5.9: Bone deposits at Velim. Photo: author.

carbonised grain, which might be expected to give relevant dates (3160 and 3125 ± 20 BP, both lying in the decades around 1400 cal BC). This has since been massively enhanced by a big programme of investigation by Dr Dalia Pokutta (Stockholm); at the time of writing 53 further dates have been obtained, all on bone. Leaving aside one date which is much later (Iron Age), the remainder fall across a range from 3145 to 2873 BP (1499 – 1379 cal BC at 83 % probability to 1131 – 928 cal BC at 91 % probability), centring around 3050 – 3000 BP, most likely the 13th century cal BC (and thus close to the dates obtained on carbonised grain) (Fig. 5.10). A closer look suggests that one group falls in the 14th and one in the 13th centuries cal BC, but because of the flatness of the calibration curve in this period it is not possible to tie the dates down to single events.

This suggests that the events in the Tollense valley and at Velim occurred quite close together in time, even if one cannot say they were directly connected. In this context, it is necessary to recall that the date of 1300 was specified by Hermann Müller-Karpe (1959) as the start of phase Br D, the beginning of the Urnfield period, and though subsequent analyses have suggested this should go somewhat earlier (Della Casa & Fischer 1997), the date of 1300 BC has remained in the literature as the accepted one. In fact dates for the Tumulus Bronze Age now appear to confirm that the period may have ended significantly earlier than 1300 BC (Müller & Lohrke 2009 (2011)). Other discussions, relating to other parts of central and south-central Europe, suggest the same thing (e. g. Capuzzo *et al.* 2014; Capuzzo & Barceló 2015), though there are still too few radio-

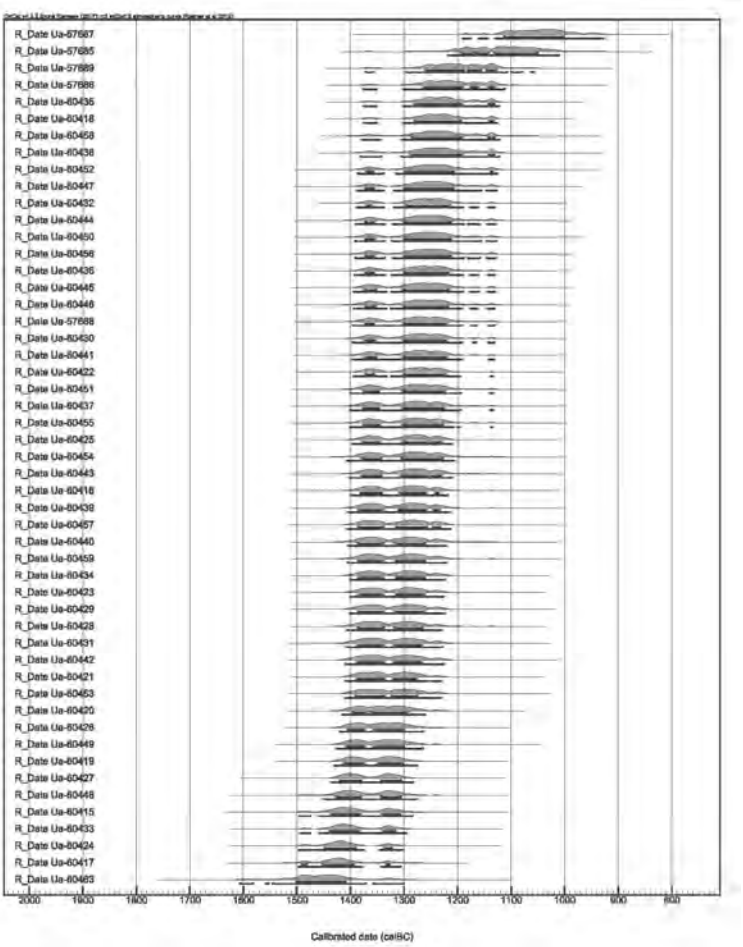

Fig. 5.10: Radiocarbon dates for Velim, showing calibrated range of all available dates on bone from the site. Samples taken by Dr Dalia A. Pokutta (Stockholm) from the material collected by the author, and dated by Göran Possnert and Lars Beckel of the Uppsala Ångström Laboratory.

carbon dates on classic Tumulus period graves in Germany for complete certainty in the matter.

The point about my labouring the chronology is that it has long been recognised that the start of the Urnfield period marked a big change in cultural phenomena across Europe as a whole, and in central and south-eastern Europe in particular. Several scholars, notably Wolfgang Kimmig (1964), observed that this period was one of major upheavals in the Bronze Age world, possibly

even to be connected with events in the Mediterranean (notably the Sea Peoples, known from Egyptian monuments). Some have supposed that we are witnessing an influx of new people at the time, responsible for the changes in burial type – cremation – that appear with the arrival of the new artefact types. Since it is now evident that violence was being practised on a large scale in central Europe at just this time (the 14th and 13th centuries), the case is even stronger.[6]

Other Bronze Age sites include evidence for trauma on or weapons embedded in human bone, such as a young male from Tormarton, Gloucestershire (Osgood 2006), a skeleton with embedded arrowhead from Klings, Thuringia (Feustel 1958, 8, 84–85, Taf. XXXII; Cornelius & Pescheck 1958), or the remarkable assemblage in a pit at Cliffs End Farm, Kent (McKinley *et al.* 2014, 37–52, Plate 2.3, Fig. 2.16; 120–124, Plates 4.6–4.8); at this site an elderly female showed sharp weapon trauma on the skull. A male Beaker burial from Barrow Hills, Radley, Oxfordshire, was accompanied by a damaged barbed and tanged arrowhead in the spinal area, which the excavators say "may have been the cause of death" (Barclay & Halpin 1999, 140). Weapons are a major part of the material culture of the Bronze Age. None of these pieces of evidence, however, on their own provides the unequivocal evidence that one ideally wishes to have in constructing a picture of Bronze Age warfare. Probably the best example of a set of people who both used and suffered from aggressive activities in the Bronze Age is represented by the remarkable cemetery at Olmo di Nogara in the Po valley (Salzani 2005). Here, in a cemetery of over 500 graves (the majority by inhumation), 43 contained swords, extending over all three phases of the site (the last represented by a single example). Furthermore, a number of the dead had traumatic injuries on their bones, including cutmarks and fractures (Canci *et al.* 2015; Canci *et al.* 2009). The excavators have understandably interpreted the site as being the resting-place of a group of warriors, with obvious implications for society as a whole (Cupitò & Leonardi 2005a; 2005b). This cemetery dates close in time to Velim (Italian Middle Bronze Age 3 to Late Bronze Age 1) and thus arguably part of the same phenomenon.

But one can use these types of evidence in a fruitful way to create a scenario that in my opinion is as good as any other. First we have to accept that warriors became an everyday part of Bronze Age life; the dagger changed from being a weapon used primarily in hunting to one marking out warriors; and with the invention of the sword, perhaps too the bronze spear, one has the first clear evi-

6 The ERC-funded project led by Dr Barry Molloy (Dublin), "*The Fall of 1200BC: The role of migration and conflict in social crises at end of the Bronze Age in south-eastern Europe*", will no doubt shed light on these matters.

dence that weapons were intended for use against other humans, not just against animals.

Forts and territories

The other factor of note is the rise of fortified sites. Fortifications were not, of course, new in the Bronze Age; they were present in the Neolithic, sometimes in quite sophisticated form. But in the Bronze Age they are both more complex in construction and appear in many areas (Burgenbau 1982). In some well-studied areas, they arguably lie at the centre of territorial units, as with many cases from different parts of Europe. In the Romanian Banat, for instance, the huge site of Corneşti-Iarcuri (jud. Timiş) is of particular importance because of its extraordinary size (Szentmiklosi *et al.* 2011; Heeb *et al.* 2017) (Fig. 5.11). It should not be seen as an isolated site, however: it lies in an area containing many other fortified sites, notably Sântana near Arad (Gogâltan & Sava 2010), with others across the border in Hungary and Serbia. The same is probably true for central and southern Germany, where several authors have chronicled multiple sites in defined areas, such as Württemberg (Biel 1987) or Hesse (Jockenhövel 1980). In Britain and Ireland they are also sometimes associated with long-distance earthworks that served to divide up large chunks of land – estates or perhaps something more like tribal territories (Gingell 1992; Grogan 2005). In a quasi-territorial pattern like this, it is highly plausible to see the sites as central places in territories; and this leads me to think that the type of warfare involved is essentially one based on raiding.

Type of warfare

And this brings with it further implications relating to the social structure involved. The concept of Gefolgschaft, as known from early medieval times, is familiar (Landolt *et al.* 1997; Steuer 2006), as is the belief that this type of structure goes back to the early Germanic tribes as described by Tacitus, where the chieftain and his retinue or *comitatus* was the type of social organisation through which warfare was conducted (*Germania* 13:2–3, 14.1). I cannot of course prove that this went back as far as the Bronze Age, but I believe it is highly likely that it did; while material culture may develop and differ over the thousand years involved, the pattern of fortified sites strongly suggests that raiding was the predominant type of aggressive activity involved.

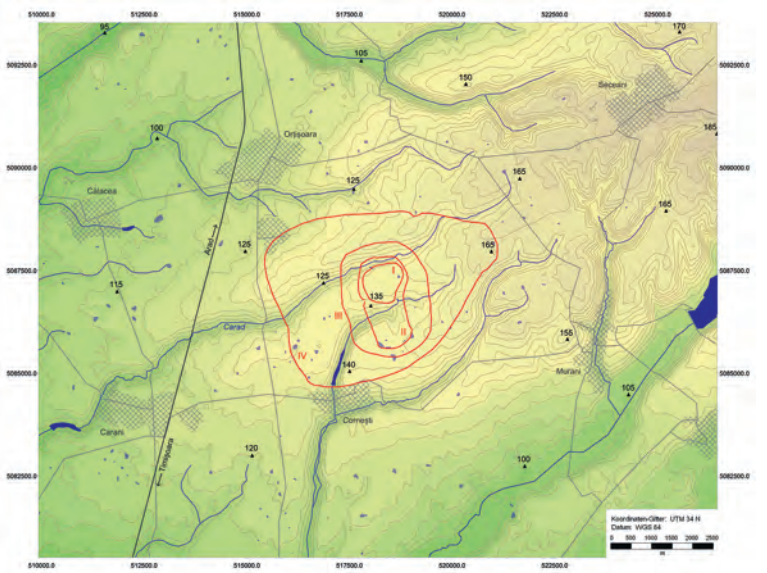

Fig. 5.11: Cornesti-Iarcuri, near Timişoara, Romania: plan of the multi-circuit site in relation to the local topography. Courtesy of Bernhard Heeb, Berlin.

Arguably Velim and Tollense indicate just such a situation: repeated phases of raiding, in these instances clearly successful, but no doubt at other times not. At present we do not know much about the local communities in either place who might have been involved in these altercations; we have to rely on contemporary evidence from other sites, of the kind I have outlined earlier. But I believe we would not be far wrong if we went along the lines of the *comitatus* system I have mentioned, and supposed that groups of young men, numbering in the scores or low hundreds, and serving the interests of a *princeps* or local chief, conducted these raids.

If one wants to look to ethnography for parallels for such activities, I believe one need look no further than the presentation of Dani warfare in West Irian (Heider 1997; 1972), as shown in the famous film *Dead Birds* (1963). Not every aspect of this work is strictly correct, as various commentators have pointed out (Kirsch 2010), but the general picture is one that seems to concur remarkably with what one could believe of Bronze Age warfare. Conflicts were usually over pigs and women, much less often over land rights; before engaging in attack, support would be sought from other groups, in order to create a confederation (political unit) of allies. When it came to hostilities, these might go on for long periods, though the actual fighting was sporadic and might only last a few

hours on a given day. Tall watchtowers were built to guard against sneak attacks; the fighting itself consisted of formal battles in designated areas, as well as in surprise raids. Preparations were elaborate, involving preparing the body with grease and furs, and donning special feather headdresses. Usually there would be less than 200 men on each side. When the fighting started, first of all insults would be traded, then the sides would move within arrow range, more rarely spear range, when long spears might be thrown. The actual fighting typically lasted only 10 – 15 minutes at one time, with 10 – 20 such clashes in a day's fighting; encounters were bloody but fatalities rare – each side would typically end the day with a few wounded warriors. And if it rained, battle would be postponed in order not to spoil the feathers and furs.

Of course this picture, even if accurate for recent groups, cannot be applied directly to what we can reconstruct of Bronze Age fighting, but it does chime well with what we can see in the archaeological record, and reconstruct on the basis of accounts in the Roman authors. It suggests that aggression between groups was a constant of life, even if not a frequent cause of death; and to my mind the sequence seen in the third and particularly the second and early first millennia BC suggests just such a scenario, especially when defended sites become common around 1200 BC.

In this context, a recent attempt by Harald Meller to promote the idea that there were "armies" in the Early Bronze Age must be mentioned (Meller 2015). The justification for this idea comes from the varying contents of graves and hoards, in particular the difference between rich graves containing daggers, and hoards with varying – sometimes very large – numbers of flanged axes; he contrasts the 1174 axes with the 36 halberds, 30 daggers and 11 double axes from Early Bronze Age finds in Middle Germany. Meller sees the numbers of axes as modular (30, 45, 60, 90, 120 – with 300 in the case of Gröbers-Bennewitz). This modularity would, in his view, represent units of fighters, so for 30 axe-bearers there would be one halberd-bearer, for 60 axe-bearers a dagger-bearer, and so on (the basic unit being 15 axes/fighters). These figures might then compare with the situation in the Roman, or indeed the Prussian army.

Intriguing though this suggestion is, it depends on the view that axes were used as weapons, and that the hoards of axes were deposited at some stage as some kind of representation of an army. The obvious problem is that hoard deposition is a highly complex matter, in which personal ownership of individual items is hard to accept. Many writers have wrestled with the question of the meaning and function of Bronze Age hoards; Meller's idea is certainly different, but unlikely to find wide acceptance. It is noteworthy that other authors have attempted similar reconstructions on the basis of hoard finds: Randsborg for the hoard of Smørumovre, Zealand (Randsborg 1995), while attempting to apply a

similar methodology to the Hjortspring boat, and Kristiansen for hoards from Hungary (Kristiansen 1999). Influential though all these authors are, the interpretations remain far from conclusive.

The wider world: interconnections and systems

When we look at various parts of Europe where networks of forts arose in the later centuries of the second millennium BC, we are in my view justified in interpreting them in just such a manner as the Dani example suggests. But this leads me on to consider wider issues of how societies interacted, not just on this local level. Here, the use of World Systems Theory has been particularly influential; so much so that the smaller details of local sites and artefacts have been dangerously ignored.

A danger in prehistoric archaeology, and to some extent also in the archaeology of later periods, is the temptation to over-interpret the data. While it might not be fair to say you can interpret prehistoric material to conclude whatever you want, it is certainly the case that some scholars have been guilty of selective treatment of the data. I am not sure that even now the time is right to make a full assessment of the situation, but things have changed markedly in recent years, partly through new finds, and partly through new analytical techniques which were not dreamt of when World Systems Theory started being employed in archaeology. In the first chapter I pointed to some of the finds which have changed the situation so markedly: the Uluburun shipwreck of course, but also the other cargo finds I mentioned earlier, the evidence for major Mycenaeanising sites in Italy, gold cups akin to those from Rillaton and Fritzdorf in south-east England and northern Italy, and many other individual finds from around Europe (not to speak of the Nebra disc). Of course things have not stood still in the East Mediterranean either; for instance the recent discovery of what is interpreted as a Mycenaean palace at Ayios Vasileios near Sparta, with Linear B tablets and other remarkable finds (https://popular-archaeology.com/article/lost-and-found-the-mycenaean-palace-of-laconia/, consulted 20 September 2018).

Then there is the evidence from stable isotope and DNA studies, which shows both the movement of people and animals, in some cases apparently over considerable distances, and aspects of diet; analytical work on copper, tin and gold, also suggesting long-distance movement of raw materials; and much else.

In fact there is now no doubt at all that the world of Bronze Age Europe was a highly interconnected one. I mentioned the well-known Balkåkra drum in a previous chapter. Each year brings new information. Recent years have brought

news that the composition of glass beads in Denmark suggests a match to that of Egyptian and Mesopotamian glass (Varberg *et al.* 2015; Varberg *et al.* 2016); this joins earlier evidence that a glass bead from Wilsford in southern England has a composition akin to East Mediterranean ones (Henderson 1988; Guido *et al.* 1984), while other work has shown that a number of composition types were around, including one at home in north Italy and known especially from a much discussed but so far only partly published site at Frattesina in the Po valley near Rovigo (Towle *et al.* 2001; Angelini *et al.* 2004). This place is of the highest importance, as it was clearly a major production and trading site, with working in metal, glass, amber, ivory, stone and several other materials taking place; and as I mentioned before, among the amber types produced (here possibly, or certainly at the nearby site of Campestrin di Grignano: Bellintani *et al.* 2015) were the beads of Tiryns and Allumiere type, which were widely exported and even found their way to kurgans in distant Ukraine (Berezanskaja & Kločko 1998) (Fig. 5.12). We know that Frattesina was far from alone in the lower Po valley; recent work by teams from Padova University have explored the site of Fondo Paviani not far away in Legnago district where blue glass has also been found (Cupitò & Leonardi 2010); while other sites in various parts of Italy have also produced glass of East Mediterranean (including Mycenaean) composition (Bellintani *et al.* 2006; Bellintani 2011).

Fig. 5.12: Beads of Tiryns type (above) and Allumiere type (below, third from left and third from right) from Frattesina. Photo: author.

This is not the place to give details of recent work on the movement of metals; as mentioned above, the analyses by Ling and colleagues indicate that Sweden derived its copper from almost everywhere except Sweden (Ling *et al.* 2013;

Ling *et al.* 2014), with the intriguing if controversial suggestion that oxhide ingots are depicted on rock art (Ling & Stos-Gale 2015); and the finding of physical oxhide ingots far from their Mediterranean home is especially telling, notably those in southern Germany (Primas & Pernicka 1998) but also in countries bordering the Black Sea (Leshtakov 2007; Doncheva 2012; Harmankaya 1995; Schuster 2005; Giumlia-Mair 2008–2009 (2011); Rotea 2002–2003 (2004)); to say nothing of their spread throughout the central and western Mediterranean (Lo Schiavo *et al.* 2009).

In other words, the evidence shows us that there is no question Europe in the Bronze Age was highly interconnected. Whether one chooses to impose a model on this interconnection that involves systems is probably a matter of choice. For my part, I am content to chronicle the connections – whether from artefacts (Chapter 3) or from people (Chapter 2) – and leave higher orders of interpretation on one side, pending a fuller understanding of the material.

Society and economy

This brings me to some words about recent discussions on the nature of society and economy in Bronze Age Europe, and in particular the concept of the "political economy" as applied to that time and place. This concept has been developed principally by Timothy Earle, usually in collaboration with Kristian Kristiansen (Earle 1997; 2002). What Earle means by this term seems to be something bound up with trade (particularly in copper), the availability of the new materials, and the "nature of property relationships by which local corporate ownership was individualized and extended over places and things critical for the emergent international metal trade" (Earle *et al.* 2015). In this view, it was control of riverine routes through which trade passed that was crucial; but there were changes in the treatment of the land too: the new pattern of farms and barrows which Earle and collaborators imagine to have "materialized a new property system based on farms with larger and more long-lasting buildings". Such control would also include that over the land producing local commodities; and it implies an integrated system of trade across Europe. Commodity chains might then develop, and control of them would centre on pinch-points or "bottlenecks", that is, places through which the trade had to pass, and which could relatively easily be controlled by local elites, but also technological skills such as were needed to build wagons or, more especially, boats. And furthermore, such control would need to be policed, in other words force deriving from martial equipment and warriorhood would need to be applied (just as in the Viking period trade was accompanied by force when necessary).

Earle and Kristiansen have developed these ideas further, mainly in response to a critique from Tobias Kienlin which denied that the Bronze Age was qualitatively different from the Neolithic, at least as far as tell communities in the Hungarian Plain were concerned (Kienlin 2015; 2012; Kristiansen & Earle 2015). Setting aside the combative language employed, Earle and Kristiansen's main argument is that the Bronze Age saw a critical difference from the Neolithic, in that it shows changes in settlement patterns (in the areas they have themselves worked in), and – crucially – the introduction of an international trade, in metals and "other wealth items", which, through the introduction of "foreign wealth", would have "transformed the political structure and identity in the society" (Kristiansen & Earle 2015, 241).

In practice I think this is largely a manufactured controversy, more to do with different approaches to archaeological data (and perhaps also with a need to bolster academic egos) than with real divergences of opinion. Thus Kienlin concentrates on tell sites in an area he knows well, and sees the world that people lived in in generally local terms. Earle and Kristiansen, as is their habit, see the world in broad, highly generalised terms, preferring to cite their own team's specific work in Hungary (Earle & Kristiansen 2010). What they bring to the discussion is an emphasis on interconnection and interaction – which no one would deny. In my opinion both approaches can be valid. I have in the past used local site maps to indicate how I think most people worked at the local level, for instance in the distribution of sites round Swiss lakes (Harding 2000, 423–4). People in such situations were inevitably concerned firstly with their immediate environment, the needs of subsistence and shelter; and secondly with the requirements of procurement from further afield, whether at their own instigation or the bidding of a superior.

We can pursue this local world further through recent work that takes a novel approach. Mads Kähler Holst from Aarhus and colleagues, for instance, have attempted to view a barrow landscape through a landscape approach, based on the need for sods and turves to construct the barrows, and the ensuing soil impoverishment which would follow repeated turf stripping (Kähler Holst *et al.* 2013) (Fig. 5.13). Particularly in the eastern part of this area, there was clearly a danger that agricultural land might become dangerously over-exploited by the end of Nordic Period II. Since the number of Bronze Age barrows in the relatively small country that is modern Denmark is conservatively estimated at 50,000, mainly constructed over a period of no more than 350 years, the implications are clear. I have suggested in the past that one can make use of barrow distributions, however, to indicate potential group or community territories (Harding 2000, Fig. 13.4); the same would be true for the Jutland example just cited.

Fig. 5.13: A Danish barrow landscape, indicating the area from which turf and soil would need to be stripped for each barrow. Source: Kähler Holst *et al*. 2013.

World Systems: a(nother) critique

So far I have not mentioned a key work in promoting a new approach to the European Bronze Age, the book *The Rise of Bronze Age Society* (Kristiansen & Larsson 2005). Since I have published critiques of this work and the basic concepts of World Systems Theory already (Harding 2006; 2013), I will simply confine myself to a few observations. The basic premise of the work, set out in the early pages, is that it is no good adopting a simple typological approach to the material culture of the past (such as I have adopted), for various reasons. In this analysis, we are told that the typological approach deprives material culture of any symbolic role as a medium of social or ritual meaning; the study of individual objects prevents a contextual or holistic overview and because of this the social significance of imitation is not recognised, or is denied. More mysteriously, we are told that to give "structured similarity (the type) less significance than selective differences (typological elements)" is a distorted approach (Kristiansen & Larsson 2005, 19). Instead, we are urged to bring in textual evidence, and to bring back diffusion as a concept, by means of integrating certain theoretical and interpretational frameworks, but contextualizing it. This will involve consideration not only of the flow of goods and people, but also of the process of interpretation of interactions by focusing on institutions, not least by identifying them in material culture.

The dangers inherent in this approach seem all too evident. How can one validly use textual evidence in a preliterate period? How can one focus on insti-

tutions when the evidence for them comes from later periods and different societal contexts? Why is "structured similarity" in artefact forms more important than "selective differences" (whatever that means)? To be cynical, it really means that one uses those artefacts that fit the pattern one wishes to see, and ignores the rest.

Twenty-five years ago (Harding 1993) I was sceptical about the idea of a far-reaching Bronze Age "world", as it was then promoted by early adherents of a "world system" as applied to the ancient world, certainly the prehistoric world. The problem was that much was assumed on the basis of totally inadequate data, or misinterpreted information, sometimes based on little more than wishful thinking. But this did not stop this particular bandwagon from rolling into action, as more and more people jumped on, with little more propelling them than a desire to follow the leading exponents. I have considered this matter in print several times already and do not need to do more than outline the main aspects here (Harding 2013 with full bibliography). Two assumptions are paramount: first, that in a world system there are centres or core areas and peripheries; second, that there are cycles of boom and bust, rise and fall, flourishing and decline. Centres rely on peripheries to supply them with raw materials of various kinds; peripheries rely on centres to provide them with manufactured goods, but also – and this is crucial to the argument – to stimulate social and economic change.

While there are aspects of this model which can be considered useful, my personal opinion is that it is an imposition on the data rather than a faithful modelling of the actual evidence. It is easy to find fault with individual statements in Kristiansen and Larsson's book; rather, it is the overall idea of interconnection on which one must concentrate – and in this analysis, this means connections not just in physical material, but also in the ideological sphere, through institutions, social and economic. Interestingly, Kristiansen has in recent years moved towards a more evidence-based approach, largely through interaction with research groups working on DNA and isotope methods.

Coda

Can we then write a "history" of Bronze Age societies in a Bronze Age world? Should we even try? Twenty, or even ten years ago, I would have been sceptical about such a possibility. It is still true that we cannot describe in detail the life of a single Bronze Age person, or know her/his name, but since it is now possible to follow the life history of certain individuals in some detail, and to describe human groups in terms of autochthons and incomers, we are much closer to his-

tory, *sensu* life description, than we were. Chris Gosden and Gary Lock (1998) discussed "prehistoric histories", by which they meant either "genealogical" history or "mythical" history – both kinds being ever present in the minds of people who lived prior to the use of writing and written records. For them, what their parents and grandparents – and earlier generations – did was of paramount importance. And they will have told stories about events and persons from the past, who maintained an importance for generations present and future. The landscape is a crucial part of this sense of past, present and future: houses were built and rebuilt, fields were created, adapted, and merged, ritual sites were constructed and reconstructed, perhaps with different meanings over time. All these things helped to create a past and therefore a history.

Bronze Age societies created and partook of that history, just as other past societies have done. Individuals may only have had a lifespan less than half ours; the societies in which they lived lasted much longer. Their societies changed over time, though by our modern standards relatively slowly; but change they did.

In any case there is no need for despair if we cannot write a history of the Bronze Age world. We can say so much about the communities, their interactions, their lives and their deaths, from the abundant data that is now available, and the increasingly sophisticated and penetrating ways of analysing it. The Bronze Age world was not our world, nor can we experience it, even indirectly. We may not have texts to aid us in our understanding of prehistoric Europe, but we do have material that does not lie: material culture. Provided we approach the data carefully, and with respect, Bronze Age societies can come alive for us.

6 The afterlife of the Bronze Age

Many aspects of the Bronze Age had a life, as the previous chapters have discussed. People, objects, places and societies all came into being, lived their life, and then passed away. This is what a study of the ancient past consists of – examination of the surviving data, speculating on its meaning, and attempting to understand and describe the phenomena involved.

But the lives I have outlined remain shadowy. We cannot experience Bronze Age life directly, certainly not in pre-literate Europe. We may suppose that Bronze Age people experienced emotions and states of mind just as we do; they interacted with their families and their neighbours, some of them also with people from far outside their local environment. They fought each other, and they exercised the arts of peace. The things people made were an integral part of their interaction with the world around them; they brought them into being and were in turn influenced by them. The places that people inhabited were changed by them, and in turn changed them; the turning of space into place is a social act and reflects social dynamics. And the societies in which people lived were dynamic things, changing and shifting as the interactions between people changed and shifted; the people who lived in those societies were in turn influenced by them.

These lives went on in parallel with the developments in technology and economy that characterise the 1700 years with which I have been concerned. The achievements of the Bronze Age are most easily seen in the craftsmanship of the products of the period, some of which are spectacular. In bronzework, it may be objected that China led the way; nothing in Europe compares with the extraordinary and intricate vessels and figures produced during the Shang Dynasty, coeval with much of the European Bronze Age. Nevertheless, the Trundholm sun chariot, the *lurs* of Scandinavia or the horns and crotals of Ireland, show a mastery of the medium that reflects a very high degree of skill. The Bronze Age goldwork of Ireland or Scandinavia, or the gold conical hats of central Europe, are on a par with anything produced in gold in China at the same period. The Nebra disc, while not on the same technical level as these objects, is remarkable in a quite different way, indicating as it does an interest in the heavenly bodies that appears to be both developed and sophisticated. In pre-industrial societies, people were obviously much more aware of the bodies in the night sky than we are today; astronomical knowledge was of course highly developed in Egypt and Mesopotamia, and the Nebra disc suggests that there were skilled observers of the night sky in Europe as well. They were also highly skilled in the extraction of minerals from the ground; not just copper and tin, but gold, salt and stone.

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But it was not merely physical objects that reflect the knowledge and skills of the Bronze Age. Inferences may be drawn from the sites they created and the evidence of long-distance travel and trade that are apparent in the archaeological record. While Europe was not as advanced as the developed societies of the East Mediterranean in this respect – no palaces, writing, or monumental tombs to compare with the tholos tombs of Greece or the elaborate tombs of Egypt, for instance – nonetheless the elaborate constructions seen on the Swiss lakes or in Iberia or Sicily show that architectural skills were highly developed.

The evidence for travel and trade has been much discussed in recent years, and some of it is described in the preceding pages. In some ways this is the most exciting development in Bronze Age archaeology, and has been responsible for some of the most enterprising accounts of the period, most notably those by Kristian Kristiansen and his collaborators (e. g. Kristiansen and Larsson 2005). I have tended to be sceptical about accepting apparently Mediterranean objects in continental and northern Europe as genuine importations in antiquity, but with the demonstration that travel was a normal part of Bronze Age life it is hard to sustain a position that denies the possibility of long-distance trade – though I maintain that it is right to treat claims of contact objectively, with a careful consideration of context and form.

In economic terms, it is clear that the domestic economy (as represented by foodstuffs and local industries) was supplemented by the movement of goods, or what we may loosely call trade. To some observers this represents an aspect of the "political economy", in which traded goods serve a role as a means for elites to exercise control over resources. Clearly the "economy" of Bronze Age societies was a rather complex matter, even if it cannot be regarded as comparable to a modern economy, or even that of the Roman world. One might argue that there were two parallel economies: one for those who occupied agricultural hamlets (the majority), and another for those who had access to prestige goods. The two must have interacted on some level, but there are many and obvious imponderables in such an analysis.

Individual roles must have been varied, from the more obvious such as craftspeople, those who made the material goods that survive to us, to those whose role was in the psychological or emotional sphere, such as priests and magicians. Weaponry indicates a role for warriors, who may represent many of those of elite status.

All these aspects go to make up the Bronze Age as it survives to us, its achievements and its legacy. But how did that legacy work out in the succeeding centuries?

The Bronze Age as ancestor to the Iron Age

Although there are many ways in which the European Iron Age differs from the Bronze Age, it is the regular use of iron that is usually taken as critical in marking the separation; in Greece this happened after 1100 BC, in most of continental Europe not until around 800. This of course ignores the fact that iron had been used occasionally for centuries prior to this. Whether the bronze-iron transition in aspects other than metal can be regarded as a break or a change is far from obvious. In purely artefactual and cultural terms the Hallstatt C period, and its congeners in other parts of Europe, differs in many ways from the preceding Hallstatt B, just as B differs from A, or earlier phases of the Bronze Age from one another. Just to take the eponymous cemetery at Hallstatt: there are graves of the previous phases A and B (not given prominence in discussions of the site), though the most famous belong to phases C and D; no great break is visible. The only aspect where a clear break is visible is, ironically, in the salt mining: the extensive Bronze Age exploitation came to an apparently abrupt end in the mid 13th century BC. When it resumed, around 300 years later, the technique of extraction was different. This gap is frustrating, since it is the rich graves of Ha C that are usually regarded as a direct consequence of the access to and trade in salt in the Early Iron Age at Hallstatt. This gap appears to be present at Romanian sites as well, though over a different period of time.

The best known aspect of the Hallstatt C period is the burial evidence, particularly in those areas where richly provided graves occur. Settlement evidence is generally rather poor. While originally the start of the Iron Age was thought to represent the beginning of "Celtic" culture, nowadays scholars are wary of assigning such labels to material culture, and indeed about the idea of a Celtic ethnos identifiable in the archaeological record at all. There is certainly no reason to imagine that the start of Ha C, in other words the beginning of the Iron Age in central Europe, saw any change in the populations involved – nor does the genetic evidence suggest any such thing. In other words, there is nothing to suggest that the start of the Iron Age, at least in central and western Europe, was more than a series of developments in technology, economy and society, developing on the basis of the preceding Bronze Age phases.

Already in the Urnfield period (periods Bronze D to Hallstatt B), fortified sites became widespread; although in some parts of Europe hillforts are attributed mainly to the Iron Age, there are enough Bronze Age examples to show us that the practice of fortifying naturally defensible sites (or even those in lowland areas) was a common practice. In material culture too, there are plenty of examples of motifs and forms continuing through from the Urnfield to the Hall-

statt period, for instance the preference for birds and bird elements in decoration on bronzes.

By the middle of the first millennium BC, only a couple of hundred years after the end of the Bronze Age (perhaps six or seven generations), classical Greek civilisation was fully developed; Roman civilisation was highly advanced and would soon emulate Greek. Is there any connection between the Bronze Age cultures of a few hundred years earlier, and the classical civilisations of Greece and Rome? Obviously not a direct one. In the case of Greece, the fact that Linear B is an early form of the Greek language is highly relevant: speakers of the same language were present in the peninsula at least from the middle of the second millennium BC through to the time of the first written form of the language in the first millennium. Debate has continued about the extent to which "Mycenaean culture" (*sensu* material culture) was extinguished during and after the 12th century BC; there were elements that disappeared and others that continued. There is no genetic evidence for a major change that would represent the "Dorian invasion", often quoted to explain the demise of Mycenaean culture. In other words, in purely Greek terms, there is no reason to suppose that the inhabitants of Greece in the Bronze Age were anything other than the ancestors of the classical Greeks.

The situation in Italy is more complicated, given the presence of a large and influential group of people – the Etruscans – who spoke a language that is only distantly related (if at all) to Indo-European. But archaeologically speaking, early Etruscan culture developed on the basis of the local version of the Urnfield culture, Villanovan and its predecessor proto-Villanovan. While the precise nature of the relationship between Villanovan and Etruscan is much debated, it is generally accepted that one was ancestral to the other – at least in material culture terms and arguably in terms of populations. In other parts of the peninsula, comparable developments occurred as local variants of proto-Villanovan gave way to successor cultures. The eventual emergence of Latin as the standard language of the whole peninsula, and Rome as the dominant force, took several centuries to accomplish and does not reflect the situation in the late second and early first millennia.

It is inadvisable to suppose that the legal, economic and religious framework that characterised classical Greece and Rome was also present in the societies of those countries several centuries earlier. At the same time, there is plentiful evidence of continuity – at least in material culture terms – from one century to another across the course of the first millennium BC. Greek historians described a deep, mythical or semi-mythical, past that was directly ancestral to their own civilisation, most obviously represented in the rich stories of gods and heroes, of the Trojan War and its aftermath, and similar legends. Religion was a crucial el-

ement in this. For Greece, the Linear B texts list a series of deities who are regarded as ancestral to those known from Homer and Classical Greece. Sanctuaries such as Delphi, Dodona, or Delos have a Bronze Age presence, and developed strongly during the Early Iron Age. Some of these places evidently remained sacred from the second into the first millennium.

The pattern of tribal societies that emerges in the Iron Age Balkans (Papazoglu 1978) must similarly reflect a deep past: such groupings are very unlikely to have come together in a matter of a century or two following the start of the Iron Age. These political aspects find many echoes in material culture, with some Balkan cemeteries showing continuity through several centuries in the first millennium.

In Europe outside the Mediterranean, the absence of written accounts prevents any comparable analysis, but it would be strange if similar tales of heroic ancestors and battles were not told. Since we lack such information, it is the evidence of material culture that we must use. Technological innovations of the Bronze Age were not forgotten in the ensuing centuries: skill in the working of bronze and other metals, and the manufacture of glass, are among those that continued unbroken into the Iron Age, along with certain artefact types, of which the sword is perhaps the most obvious.

The civilisations of classical Greece and Rome represent the most important influences on western civilisation as it has developed from Renaissance times on, in spite of the many outside influences that continued to make themselves felt. In this sense one can truly say that the Bronze Age background of Greece and Rome is one of the elements that make modern society what it is. Even with the huge number of migrations that have occurred in the last 2000 years, the genetic legacy of prehistory is still evident in modern populations, most clearly that relating to the steppe ancestry that dominated Copper Age populations and went through into the Bronze and Iron Ages. In these several ways, the Bronze Age has an afterlife that affected not only the societies that came immediately after it, but also the living peoples descended from them – including our own European societies.

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