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Exchange in Chalcolithic and Early Bronze Age (EBA) Ireland: Connecting people, objects and ideas

Volume 1 of 1

Ros Ó Maoldúin BSc

Thesis submitted for examination for the degree of Doctor of Philosophy

August 2014

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Abstract

The Chalcolithic and Early Bronze Age (EBA) in Ireland were periods of great flux, out of which and into which, novel technologies and institutions emerged and were transmitted. This thesis combines analysis of the material culture from that period, with insight drawn from ethnographic and ethnoarchaeological research on exchange, to advance its aim of tracing and understanding that flux. It explicitly challenges assumptions of prehistory, that are either too reliant on experience of the modern western world, or are overly constrained by the academic paradigms in which they were conceived.

The thesis begins with a study of past anthropological, archaeological and ethnoarchaeological approaches to, and perspectives on, exchange (chapter 2). It then considers the constraints and opportunities, natural and cultural, which communities engaging in exchange in prehistoric Ireland faced (chapter 3). The body of the thesis, rather than attempting a complete overview of the period, focuses on those aspects which were found to be most profitable to the study of exchange. It employs concepts such as chaîne opératoire, object biographies, materiality and intercontextual archaeology to analyse diverse aspects of material culture, such as metalwork (chapter 4), ceramics (chapter 5), objects of bodily ornamentation (chapter 6), burial monuments (chapter 7) and burial goods (chapters 5 & 6). This is followed by two regional case studies (chapter 8) in which it is possible to take a more complete overview of the Chalcolithic and EBA remains and where the role of exchange in the diachronic trajectories taken by the communities in those respective areas is considered. Finally, extrapolating back out to the broader picture, the insight from the former chapters is combined to facilitate discussion of the major trends in, and the particular or universal aspects of, exchange in Chalcolithic and EBA Ireland (chapters 9 & 10).
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I would like to express my thanks to all of the staff at NUI Galway, particularly my supervisor Dr Carleton Jones, for his advice and constant support. I would also like to especially thank Dr Michelle Comber, for the opportunity to supervise on her excavations at Caherconnell (a medieval Cashel located within a fantastic prehistoric landscape) and Professor Charlotte Damm, whose lectures at NUI Galway were extremely beneficial to my developing perspectives. I would also like to express my gratitude to the members of my Graduate Research Committee, especially Dr Kieran O’Conor who read and offered advice on my thesis as it neared completion.

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Next I would like to thank Dr Anna Brindley, Mary Cahill at the National Museum of Ireland (NMI), Michael Stanley at the National Roads Authority (NRA), Professor William O’Brien at UCC and the various other people, accredited next to figures in the text, who gave me permission to reproduce pictures or maps. Richard Clutterbuck at NUIG and Dr Caoimhe Muldoon also deserve special mention for helping with figures in the last moments of the preparation of this thesis. I would also like to thank Dr Katriona Becker, Dr Kerri Cleary and Dr Neil Carlin for sending me copies of, and allowing me refer to, their unpublished PhD theses.

As with many other archaeologists, I would never have taken up studying archaeology if it were not for an interest I picked up from my parents. However, especially in relation to my PhD, my debt to my parents, Pat and Damhnait, goes beyond most. Throughout the process they have been a constant source of ‘total’ support: social, moral and economic. To my parents and the rest of my family:

Go raibh maith agaibh go léir, gan sibhse ní bheadh sé déanta go deo.
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Chapter 1 Introduction

‘Archaeology is anthropology or it is nothing’ (Wiley and Phillips 1958)

1.1. Aims

This thesis aims to understand the nature of exchange and its role in social change during the Chalcolithic and Early Bronze Age (EBA) in Ireland. To accomplish this it combines analysis of Chalcolithic and EBA material culture with insights drawn from ethnographic and ethnoarchaeological research on exchange.

1.2. Method and Theory

Archaeological method should always be conceived in concert with theory, and vice versa. Method, devoid of theory, is often predicated on a priori assumptions about prehistory drawn from implicit analogy with an archaeologist’s experience of living in the modern-western-world. Theory devoid of method, or recourse to material culture – the empirical evidence on which archaeology is based, does nothing to advance our knowledge of the past. This thesis, seeks to challenge notions of prehistory, specifically those relating to exchange, that are either too reliant on experience of the modern western world, or are overly constrained by the academic paradigms in which they were conceived.

Key objectives of this thesis include assessing past attempts to understand exchange in prehistoric societies and developing new ways of approaching an understanding. Innovative analytical approaches drawn from recent archaeological studies and the wider social sciences, such as ‘intercontextual archaeology’ (see section 2.36. & 7.7.), ‘chaîne opératoire’ and ‘the social biography of objects’ (see sections 4.2. and 5.2.) are employed, and, issues, such as ‘materiality’, ‘gender’ and ‘the meaning of grave goods’ (see section 6.2.), that have not been sufficiently explored in the past, at least in relation to Chalcolithic and EBA Ireland, are focused upon. Central to all of these analytical approaches and areas of focus is the integration of method and theory.
1.3. Why the Chalcolithic and EBA?

Irish prehistory is a very broad topic studied by a relatively small number of specialists. Consequently, in the past, most Irish academics focused on compiling or synthesising information. This is especially true of Bronze Age (BA) studies where the amount of particularly fine metal objects, often with poor provenance, led to a strong tradition of corpus production, which was then extended to other object types and burials. There has however, been relatively little social exploration of that material (but see Cooney and Grogan 1994). This is not a criticism of the corpus approach; rather I would argue that those corpora provide us with the necessary foundation on which future interpretations can now be built. One reason this thesis chose to focus on Chalcolithic and EBA Ireland was because so many fine corpora exist for that period. It can be argued however, that the lack of theoretical engagement has, at times, led to the acceptance of interpretations that are overly reliant on experiences of the modern capitalist western world. On the other hand, it could also be argued that theoretical trends elsewhere have at times led to the reinterpretation of Irish prehistoric narratives without sufficient reconsideration of the material evidence. One objective of this study is to challenge such ill-founded assumptions about exchange in Chalcolithic and EBA Ireland in a theoretically informed way while remaining firmly focused on the material evidence.

The Chalcolithic and EBA cover a period of approximately one thousand years, from c. 2500-1500 cal BC, or in more human terms approximately 40 generations.¹ It was a time during which societies in Ireland underwent enormous social change; novel technologies and institutions emerged, old power structures collapsed and new forms of identity arose. Those developments did not follow a single unified trajectory and it is unlikely that we will ever understand the full complexity of the period. Therefore, the intent here is not to present a synthesis of exchange over the Chalcolithic and EBA; instead, I have selected and concentrate on several object and monument types that during the course of research were found to provide the most profitable lines of enquiry. These categories of data are the traditional focus of BA studies: metalwork, ceramics, beads, and burials.

¹ This is based on Fenner’s (2005) estimate of 25 years per generation.
1.4. Why exchange?

Human societies are woven together through the exchange of people, ideas and material goods (see chapter 2). Exchange, in its broadest sense, occurs in every interaction; within households when labour is divided but its product shared, between households to obtain what (or who) is locally unavailable, even conversation is an exchange, one of information and ideas. It is, one could say, during the moment of an exchange that social life is constituted. Despite the universality of exchange, or perhaps because of it, the nature and role of exchange is very variable. Some exchanges are equitable, or ‘reciprocal’, while others can actively reinforce unequal relations and any one of those exchanges can be perceived very differently by individual participants or observers. Through establishing the aspects of Chalcolithic and EBA exchange that are universal and those that are particular it is hoped a greater understanding of social life during the period can be gained. In other words, this thesis seeks to be what processualism (Renfrew 1973b; 1984) and critiques of that work (Hodder 1982d; 1985; Shanks and Tilley 1987) have considered ‘social archaeology’.

1.5. Structure of the thesis

Chapters 1, 2 and 3 are introductory chapters. Chapters 4 through to 9 comprise the body of the thesis. Chapter 10 contains the discussion, overall conclusions and avenues for further research.

Chapter 2 is a literature review of relevant theories of exchange. It begins with a look at how anthropological and economic theories share an origin among the political economists of the 18th and 19th centuries, and how they subsequently diverged and occasionally cross pollinated. It reviews some of the dominant theories in economic anthropology (Malinowski 1922; Mauss 2002 [1925]; Lévi-Strauss 1969 [1947]; Polanyi 1944; Sahlins 1972; Weiner 1992; Godelier 1996) and then explores how archaeologists have applied those understandings (cf. Renfrew 1975; 1993; Hodder 1982c; Bradley 1985b; Bauer and Agbe-Davies 2010b) and what they have to contribute to them. It concludes by outlining the theoretical perspective taken by this thesis.
Chapter 3 considers the constraints and opportunities, natural and cultural, which communities engaging in exchange in prehistoric Ireland would have faced. It is careful to distance itself from deterministic models but argues we cannot understand agency without an understanding of the structures within which it is enacted.

Chapter 4 reviews the flow of metal and metal objects, within, from and to Ireland during the Chalcolithic and EBA. It employs a combination of a chaîne opératoire (cf. Martinón-Torres 2002) and object biography (Appadurai 1986) approach to organise the analysis and with the aim of reaching a more social understanding of the production, exchange and deposition of that material.

Chapter 5 combines the recently refined typo-chronology of EBA pottery (Brindley 2007) with insight from a chaîne opératoire approach to ethnoarchaeologically recorded pottery traditions (Gosselain 1992; 2000) to explore the networks of exchange behind the distribution of similar pottery types. In particular, it focuses on the distinction between discursive and non-discursive learning behind aspects of pottery styles and what that can tell us about networks of exchange.

Chapter 6 takes an object biography approach to the beads and buttons from Chalcolithic and EBA burials. It considers different perspectives on the potential meaning behind burial goods (Parker Pearson 1999), and the importance of gender (Strathern 1988; Sørensen 2000) and materiality (Jones 2001), in how objects were valued.

Chapter 7 focuses on the origin of wedge tombs and reconsiders the possibility of influence from Brittany. It suggests that the current standard interpretation of an indigenous development is a result of paradigmatically constrained perspectives rather than a theoretically informed interpretation of the material evidence. It further considers the possibility that an ‘institutional transmission’ (Kristiansen and Larsson 2005) from abroad was involved in the stimulus that prompted this renewed phase of megalith building.

Chapter 8 examines two regional case studies, in which it is possible to take a more complete overview of the Chalcolithic and EBA remains and where the role of exchange in the diachronic trajectories taken by the communities in those
respective areas is considered. It concentrates on County Clare, in which much of my supervisor’s work has focused (cf. Jones and Walsh 1996; Jones 1998; 2003; 2004b), and County Cork, the prehistory of which was the subject of a recent synthesis (O’Brien 2012b).

The second part of the thesis title, ‘connecting people, objects and ideas’, refers to the objective of disentangling what exactly was being exchanged; essentially understanding what lies behind the distribution patterns of material culture from Chalcolithic and EBA Ireland. Do particular distributions represent the movement of people, objects or ideas and what role exchange might have played in that process? These are questions fundamental to archaeology and ones that scientific characterisation studies can substantially contribute to but, alone, do not have much explanatory power. To even know the correct questions to ask with characterisation studies it is essential we do so in a theoretically informed way. Chapter 9 will summarise the progress made in the former chapters in disentangling the movement of people, objects and ideas, understanding the nature of exchange and hopes to point some possible ways forward for future research and characterisation studies on Chalcolithic and EBA Irish material.
Chapter 2 The anthropology and archaeology of exchange

Exchange: the transfer of goods, services, or information between individuals or groups of individuals. Such transfers may not necessarily involve payments or reciprocation with equivalence. The term is often used by prehistorians wishing to avoid the modern connotations of the word ‘trade’. (Darvill 2008)

2.1. Introduction

As in the definition above, the term exchange in this thesis is employed to avoid modern connotations of the word trade; however, more than that, it is also understood as a fundamental social process essential to the reproduction of society.

The literature on exchange is vast and the purpose of this chapter is not to attempt a comprehensive review but rather through highlighting and discussing some of the seminal works on the subject it aims to establish and convey the theoretical perspective taken by this thesis. It begins by reviewing some of the earliest works on exchange which are fundamental to modern conceptions of the term. This is followed by a literature review of anthropological theories of exchange and a consideration of some previous attempts to apply such insight to the archaeological record.

2.1.1. Different perspectives

The recognition that exchange is an important social process has considerable antiquity predating the establishment of the modern social sciences. Aristotle’s mention of exchange ‘for if this not be so, there will be no exchange and no intercourse’ (Eth. Nic., V, 5, 1133a, 24) was quoted in the introduction. He made this comment in a discussion on the importance of equivalence in exchange (Soudek 1952), which arguably reflects a fundamental difference between Classical Greek and modern economic perspectives; in Classical society, an emphasis was placed on the relationship between persons, and groups of persons, whereas in modern societies the emphasis is on the relationship between things (McNeill 1990). That difference is often more broadly cast as a dichotomy between ‘traditional’ and
'modern' perspectives and is also reflected in the division of modern academic disciplines; until relatively recently, only ‘traditional’ or ‘primitive’ economies were considered the purview of Anthropology and modern economies that of economics. These two disciplines have very different views on the origins and nature of economic aspects of human society. However, along with other overlapping social sciences (sociology, archaeology, political science etc.) they owe their inception to a shared milieu in which the political economists of the 18th and 19th centuries were writing.

2.1.2. From the political economists to economics

One of the most influential proponents of the political economy approach was Adam Smith. Smith famously rationalised that the market was a natural progression from

‘a certain propensity, in human nature... to truck, barter and exchange one thing for another’ (Smith 2005 [1776], 18).

He imagined that in less developed economies exchange was profit driven, just without the benefit of money as a medium for exchange. This is a view still held by many modern economists: ‘from the time when language developed some 100,000 years ago, there must have been buyers, sellers, borrowers and lenders’ (Mills 2002, 40), and is one that occasionally appears in archaeological literature. Economic anthropologists would generally agree that this description of human nature as universally economizing is flawed (Carrier 2005); self-interested bartering has been shown to be almost absent among some traditional groups, such as certain Maori groups of New Zealand (Firth 1959), or native groups in the American North-west (Mauss 1970 [1925], 31-32), and where it did exist it was sometimes sharply distinguished from other forms of exchange (cf. Malinowski 1922) or restricted to deals between strangers (but see Humphrey and Hugh-Jones 1992).

2 The political economy approach was defined by Smith (1776) ‘as an inquiry into the nature and causes of the wealth of nations’, and later defined by John Stuart Mill (1831-1833) as ‘the science which traces the laws of such of the phenomena of society as arise from the combined operations of mankind for the production of wealth, in so far as those phenomena are not modified by the pursuit of any other object’ (Groenewegen 2008)
Another feature of the political economy approach was a belief that the value of goods was derived from the labour invested in their production, hence the term the ‘labour theory of value’ (Peach 2008). Socialist critique on the writings of the earlier political economists, and the capitalist system, were famously led by Karl Marx (1970 [1859]). Rather than the natural progression that Smith envisaged, Marx saw a fundamental shift between how economics operated in capitalist market economies and elsewhere. He saw it as a shift from c-m-c to m-c-m: ‘the manufacture of commodities to be exchanged in the market in order to obtain the wherewithal (potentially money) to obtain other specific commodities’ to ‘the transformation of a given sum of money into more of the same by way of a commodity’ (Sahlins 1972, 83). Marx also recognised the importance of social distance in the origin of commodity exchange:

‘the exchange of commodities evolves originally not within primitive communities, but on their margins, on their borders, the few points where they come into contact with other communities’ (Marx 1970 [1859]).

During the 1870s Jevons, Menger and Walras led what is commonly known as ‘the marginal revolution’ (Backhouse 2008). While the political economists were concerned with the broad workings of economic systems and the reproduction of surplus, after the 1870s the concern centred on ‘consumer behaviour under conditions of unlimited wants and limited resource’ (Gregory 1982, 7). The value of commodities was no longer considered in relation to production but rather of its value to the consumer (Backhouse 2008). This can be traced back to Richard Whatley’s famous maxim from the 1830s, who, when rejecting the ‘labour theory of value’, famously stated ‘it is not that pearls fetch a high price because men have dived for them; but, on the contrary, men dive for them because they fetch a high price’ (after Mills 2002, 111). That basic perspective, that price and value are determined through the interplay of supply and demand, rather than through the cost of their production, and a focus on consumer behaviour, largely constitutes orthodox economics to this day. Some would argue that since economic’s ‘radical

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3 Originating with John Locke (Vaughn 1978) and elaborated most influentially by David Ricardo (Peach 2008). The idea however has its roots in Aristotle’s moral concern with the relationship between value and price (Mills, 2002, 44).
departure’ from the insights of the political economy approach, it was anthropologists who took over and further developed the political economy approach (Gregory 1982, 10; Graeber 2001).

2.2. Anthropological theories on exchange

Initially, anthropologists were solely concerned with non-western ‘traditional’ societies and engaged only very rarely with contemporary economic models. During the 1980s, anthropology widened its remit to include modern western societies and it became more common to employ formal economic analysis.

2.2.1. Malinowski and Kula gift-exchange

The first book length treatise of a non-market or ‘gift’ economy was ‘Argonauts of the Western Pacific’ by Bronislaw Malinowski (1922), in which he described Trobriand Islander participation in the Kula exchange network. The Kula has since played a substantial part in the literature as the pivot on which many theories of exchange, and indeed wider anthropological theory, have turned (Mauss 1970 [1925]; Lévi-Strauss 1969 [1947]; Sahlins 1972; Godelier 1996; Graeber 2001; Weiner 1992; Gregory 1982).

So what is Kula? Kula is an inter-tribal, ceremonial, prestige, gift-exchange network, encompassing the communities of the island archipelagos north and east of the east end of New Guinea (Malinowski 1922). At its most basic, it consists of reciprocal gift exchanges of two classes of vaygu’a (Kula valuables): soulava

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4 Malinowski (1922, 2, 84-85) occasionally uses the words ‘trading system’ in describing Kula but is careful to differentiate it from trade as we understand it.

5 As Malinowski argues, many Trobriand words do not have exact equivalents so it is best to use the original language in describing certain items.
The system is closed, in so far as only 'Kula players' can participate, and highly regulated by tradition and convention. Anyone, chief or commoner, can choose to partake; however, rank dictates the number of partners one is likely to have and once one enters into Kula, one is a Kula participant for life. One can only exchange with one's dedicated partners, with whom one enters into lifelong commitments. Even the geographic direction of exchanges is fixed; sou lava pass clockwise and mwali pass anticlockwise.

Each individual exchange is also governed by convention. First, one gives a vaga (opening gift). The recipient can hold onto it for a time, but must eventually pass it on in the appropriate direction. While possessing a particularly fine example increases one's 'prestige' or 'fame', arguably one of the main aims of Kula (Munn 1986), to hold on to it too long would be considered 'mean' and lead to infamy. Next, the recipient must reciprocate with a yotile (a return gift) of equivalence. While determining the equivalence is left to the giver, one must be wary, or risk ending up being considered 'mean'. In the case that one cannot afford to repay with an equivalent gift, one can offer a basi (an intermediary gift), which also requires reciprocal repayment of its own. The final gift given to 'clinch' a deal is known as a kudu (clinching gift). An individual within Kula can actively seek a vaygu'a, and first class examples always attract attention. To do this, one can give gifts of pokala (offerings: pigs, bananas, yams or taro) or kaributu (solicitary gifts: axe blades (beku) or lime spoons of whale bone) (Malinowski 1922, 99). Of course, these also require reciprocal gifts.

It is important to note that Kula is not the only form of exchange which Malinowski recorded Trobriand Islanders engaging in. He identified three main types: Kula, Urigubu and Gimwali. Urigubu is an annual payment of food (primarily yams), a produce of competitive gardening, made by men to their sister's husband's family

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6 Despite Malinowski (1922, 91) clearly discussing commoner participation in Kula, many writers make the mistaken assumption that Kula is restricted to persons of rank. Here most are probably following Mauss, who stated 'Kula trade is aristocratic. It seems to be reserved for chiefs' (1970[1925], 20).
7 Elsewhere in the Kula network where society is less stratified one's social importance still regulates one's number of Kula partners (Malinowski 1922, 91)
8 Malinowski recognised this aim of Kula, however, it was later considerably elaborated on by Nancy Munn on her work with the Gawa (1986), especially in relation to the practice of naming shells.
and to the village chief. It is another way in which Trobriand Islanders compete for prestige, and it enables chiefs, who also tend to have more wives and thus accumulate even more yams, to fund communal projects. *Gimwali* on the other hand is a more prosaic form of trade or barter, and while it often occurs under the cover of *Kula*, each of the differing forms is sharply distinguished. For example, where *Kula* is seen as a ‘reservoir of the highest good’ and success in gardening is seen as a positive social distinction, *gimwali* is seen as a less honourable affair (Malinowski 1922, 513). The way in which the word *gimwali* is used reveals best how it is regarded:

> When scornfully criticising bad conduct in *Kula*, or an improper manner of giving gifts, a native will say that ‘it was done like a *gimwali*’ (Malinowski 1922, 189-191).

As the first comprehensive description of a non-market economy, Malinowski’s description of the *Kula* achieved five important things.

- Firstly, it exploded the notion of primitive economic man, ‘prompted in all his actions by a rationalistic conception of self-interest, and achieving his aims directly and with the minimum of effort’ (Malinowski 1922, 62), so aptly described by Frazer as a ‘kind of bogey who... haunts economic textbooks... and the minds of certain anthropologists’ (Frazer in Malinowski 1922, x).

- Secondly, it showed how the primary reason for Trobriand Islander gift exchanges was the creation of social ties and, while Malinowski generally stressed cultural relativism and the individuality of each culture, he saw this as a phenomenon relatively universal to primitive societies. ‘Apart from any consideration as to whether the gifts are necessary or even useful, giving for the sake of giving is one of the most important features of Trobriand sociology, and, from its very general and fundamental nature, I submit that it is a universal feature of all primitive societies’ (Malinowski 1922, 175).

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9 Richard Bradley (2005, chapter 3) recently used the ritual aspects of Trobriand yam production (Malinowski 1935) in an analogy to explore the interrelationship between domestic and ritual life in prehistoric Europe.
• Thirdly, while Malinowski did not coin the term, he clearly demonstrated the existence of ‘spheres of exchange’, where certain types of items, such as those in Gimwali, could not normally be exchanged for those in other ‘spheres’, such as Urigubu or Kula.

• Fourthly, it illustrated that where exchange operated vertically, within a system of social stratification, it could take the form of ‘redistribution’. In other words, the seemingly one sided gifting of goods from commoners to chiefs enabled those chiefs to fund communal endeavours or otherwise ‘redistribute’ goods.

• Fifthly, Malinowski demonstrated that most gifts were not of free or ‘pure gifts’. In other words, that most gifts demanded a degree of ‘reciprocity’, or an exchange. This led him to categorize gifts, payments and exchanges into six groups, ranging from ‘pure gifts’ where no reciprocity was expected, to ‘trade pure and simple’, where reciprocity and mutual advantage were immediate. This notion of a ‘pure gift’ was later challenged by Mauss who believed the idea of a free gift was a contradiction (Mary Douglas's introduction in Mauss 2002 [1925], x).

On a wider level, Malinowski’s study of the Trobriand Islanders and their economy was important for establishing the method of anthropological fieldwork and also illustrating the distinction between ‘what people do’ and ‘what people say they do’, a distinction later manifested in the terms culture and practice (Carrier 2005).

Furthermore, as a functionalist, he was concerned, not only with recording and describing Trobriand society, but with understanding how the different institutions functioned to satisfy the needs of participants, and how each institution articulated with the ‘whole’. This record and understanding should then, he believed, be used in a comparative approach to human economies. This was not something he managed, however, and his ‘observations on Trobriand reciprocity, and his interpretations of it, moreover, [arguably] only achieved

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10 His student Raymond Firth coined the term in a later study of Polynesian economies (1939, 44) and this was then substantially expanded upon by Levi-Strauss in ‘Les Structures élémentaires de le parenté’ (1969 [1947], chapter V).

11 However as Damon (1980, 278-280) has shown, at least in relation to Muyuw, one can sometimes buy one’s way into Kula with items from another ‘sphere’.

12 This is an observation later elaborated on by Sahlins (1963)
general relevance after being processed, through comparisons by Mauss and Polanyi’ (Kuper 1983, 196).

2.2.2. Marcel Mauss and *Essai sur le don*

Marcel Mauss was the nephew and greatest student of Emile Durkheim, the father of French sociology. His *‘Essai sur le don, forme archaïque de l’échange’, or ‘The Gift’ (Mauss 1970 [1925]; 2002 [1925]),*¹³ is perhaps the most quoted of works in all of anthropology, and a reinterpretation, or at least summary, seems a requirement for any subsequent anthropological works on exchange or value (cf. Godelier 1996; Graeber 2001, chapter 6; Weiner 1992, chapter 2; Sahlins 1972, chapter 4; Lévi-Strauss 1969 [1947], chapter 5; Carrier 2006).

Prior to examining the subject of ‘The Gift’, in order to contextualise it, we should consider Mauss’ motivation for writing it. Throughout his life Mauss was an active participant in socialist politics and ‘The Gift’ was as much a statement about morality and ethics, which sought political and economic conclusions for the present of 1925 as it was about exchange in primitive economies. As Mary Douglas (2002 [1925], x) has pointed out, ‘a fancy archaeological insight was not Mauss’ objective’. He was in fact, engaging in intellectual discourse over the direction of nineteenth century social change, ‘the rise of individualism... [and] the rise of the market as the main medium of human relations,... [and] The Gift can be read as an exploration of the notion of the social contract’ (Graeber 2001, 152). Mauss’ use of ethnography and ancient law texts was an attempt to locate the origin of the ‘social contract’, in what he saw as its proper context, before the formation of the state.¹⁴ However, in this, the interests of this study coincide with ‘The Gift’; we seek to explore the nature of exchange in a period prior to state formation.

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¹³ There are a number of translations. I have chosen to work from two, between which there are a number of interesting differences, notably including the frequency with which the word ‘gift’ is used and the translation of ‘prestation’. I follow Cunnison’s translation (Mauss 1970 [1925]), the older of the two, in retaining the French word ‘prestation’, for which there is no easy translation to English. It means ‘any thing or series of things given freely or obligatorily as a gift or in exchange; and includes services, entertainments, etc., as well as material things’. Hall later translates this as ‘total services’ (Mauss 2002 [1925]).

¹⁴ From Thomas Hobbes to Herbert Spencer, many writers had placed the origin of the social contract with the development of political power, imagining a gradual lessening of violence through human history (Graeber 2001, 152-153).
In ‘The Gift’, Mauss made the important point, that in ‘archaic societies’ gift exchange is not solely an economic transaction. Instead he viewed gift-exchange, and indeed other social phenomena such as technology (Mauss 1992 [1934]), as ‘total social phenomena... [where] all kinds of institutions find simultaneous expression: religious, legal, moral and economic’ (Mauss 1970 [1925], 1).

Mauss broke gift exchange into three constituent parts, giving, receiving and reciprocating, of which he largely concentrated on the third. He began with a two part question about the same:

‘What rule of legality and self-interest, in societies of a backward or archaic type compels the gift that has been received to be obligatorily reciprocated? What power resides in the object given that causes its recipient to pay it back?’ (Mauss 2002 [1925], 4).

As many writers have previously pointed out (e.g. Godelier 1996, 6), the second part of this question largely answers the first, leaving only the second part to answer. In his quest to do so, Mauss embarked, through the pages of ‘The Gift’, on a whirlwind tour of ethnographic accounts and ancient law texts, interspersed with insights and comparisons of how exchange operated within each respective society; however, his central thesis is arguably presented within the first few pages. It rests on an explanation of the concept of hau by a Maori sage or lawyer, Tamati Ranapiri. From this Mauss deduced what he considered ‘the key to the whole problem’ (Mauss 1970 [1925], 8).

‘I shall tell you about hau. Hau is not the wind. Not at all. Suppose you have some particular object, taonga, and you give it to me; you give it to me without a price. We do not bargain over it. Now I give this thing to a third person who after a time decides to give me something in repayment for it (utu), and he makes me a present of something (taonga). Now this taonga I received from him is the spirit (hau) of the taonga I received from you and which I passed on to him. The taonga

15 As recorded and translated by Elsdon Best
16 Taonga are a type of exchange valuable ‘closely attached to the individual, the clan and land; they are the vehicle of their mana - magical, religious and spiritual power’ (Mauss 1970 [1925], 8).
that came from you, I must return to you. It would not be right on my part to keep these taonga whether they were desirable or not. I must give them to you since they are the hau of the taonga which you gave me. If I were to keep this second taonga for myself I might become ill or even die. Such is hau, the hau of personal property, the hau of the taonga, the hau of the forest. Enough on that subject’ (Mauss 1970 [1925], 8-9)

Mauss interpreted Maori hau as part of the gift giver’s spiritual essence that stayed within any object gifted, itself a kind of individual ‘alive and personified… [that] strives to bring to its original clan and homeland some equivalent to take its place’ (Mauss 1970 [1925], 10). ‘His solution therefore lies “in spiritual mechanisms”, in moral and religious reasons, in beliefs that would endow objects with a soul, a spirit that makes them want to return to their place of birth’ (Godelier 1996, 15). The only enigma he felt that existed in Ranapiri’s explanation was the inclusion of a third person. He then took his interpretation of hau as a general explanation behind reciprocity and applied it to Malinowski’s study of the Kula, the Potlatches of the American northwest coast, and illustrated how he believed it was echoed in the law texts of archaic Indo-European cultures.

There have been various criticisms of Mauss’ approach, some hinging on the manner in which it relied on an indigenous account and others on his interpretation of the concepts within it. Lévi-Strauss believed Mauss made his first error by splitting exchange, the ‘fundamental phenomenon’, into parts and analysing the obligation to reciprocate on its own, as if it were a ‘basic phenomenon’ rather than just a discrete operation (Lévi-Strauss 1987 [1950], 47). This error, according to Lévi-Strauss, led Mauss to search for ‘an additional quantity which gives him the illusion of squaring his account’ (ibid.). For Lévi-Strauss, Mauss’ interpretation of hau was ‘a mystification, an effect quite often produced in the minds of ethnographers by indigenous people’ (Lévi-Strauss 1987 [1950], 47); hau was only an indigenous explanation for exchange, not a ‘reality’, only marginally better than a Western theory of indigenous reality. Lévi-Strauss argued we must search for the underlying ‘reality’ or ‘deep structure’ behind social systems (see section 2.2.3 below).
Raymond Firth’s (1959) critique focused on Mauss’ interpretation of the Maori text, particularly on his quoting of it out of context. Firth believed Mauss had misunderstood the concept of hau and had confused various types of the same, which he believed in Maori conceptions to be quite distinct. In his opinion, the obligation to reciprocate was driven more by a fear of social sanction and resulting political and economic repercussions, than any detached fragment of the donor’s personality (Firth 1959, 421).

Sahlins (1972, 157) extended this process of contextualisation and illustrated how the Maori sage was actually offering what he thought to be a simple analogy, to explain the more difficult concept of why an offering was being returned to the hau of the forest; according to Sahlins it was actually an explanation of a sacrificial rite. By placing it in its full context, Sahlins showed that the various forms of hau were in fact, counter to Firth, related; ‘the hau of the forest is its fecundity, as the hau of a gift is its material yield’ (Sahlins 1972, 168). Mauss may have been mistaken about the ‘spiritual specifics of the hau.... But in another sense, more profound, he was right. ‘Everything happens as if hau were a total concept’ (ibid.): encapsulating the economic, social, political and religious. As Gregory (1982, 19) has pointed out, Mauss was arguing that ‘gift exchange is an exchange of inalienable things between persons who are in a state of reciprocal dependence’.

Sahlins (1972) went on to show how Mauss’ gift had much in common with certain of Hobbes’ (1950[1651]) ‘Fundementall Laws of Nature’, particularly in how they appreciated that reciprocity was the ‘primitive mode of peace’. Gift giving was how persons could ‘come to terms’ and avoid Hobbes’ famed ‘Warre of all men against all men’, the original social contract. Where they differed was that where Hobbes believed men would not capitulate without coercion by a political authority and that social evolution had simply progressed from savagery to civilisation, in the ‘The Gift’, Mauss presented ‘a whole array of intermediate forms, not only of a certain stability, but that did not make coercion the price of order’ (Sahlins 1972, 179-181).

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17 The first sentence in the original contained a reference to the ceremony whangai hau, or the hau of the forest.
18 Sahlins had the original Maori text re-translated and sought out its full context.
‘By the end of the essay, Mauss had left behind the mystic forests of Polynesia. The obscure forces of hau were forgotten for a different explanation of reciprocity, consequent on the more general theory, and the opposite of all mystery and particularity: Reason. The gift is Reason. It is the triumph of human rationality over the folly of war’ (Sahlins 1972, 175).

2.2.3. Claude Levi Strauss, Les structures élémentaires and Structuralism

Lévi-Strauss also regarded exchange as the basis of social life. In his words ‘Men exchange words in their speech; they exchange wealth, goods, in their transactions; but they also exchange women’ (Lévi-Strauss 1963 [1958], 83). However, he took a very novel approach to its analyses. In a combination of ideas drawn from Saussure’s work on linguistics, Mauss’ analysis of exchange (see section 2.2.2 above) and Rousseau’s (1791) theories of the ‘savage man’, he attempted to create a truly scientific anthropology; the result was ‘Structural anthropology’, more commonly referred to as ‘Structuralism’ (Deliège 2004, 19-23).

Structural Anthropology can broadly be defined as a search for the underlying ‘deep structure’ behind social systems, through reading them synchronically rather than diachronically (Lévi-Strauss 1963 [1958]; 1976 [1983]). Here it clearly distinguishes itself from functionalism, especially Malinowski’s brand of participant observation, which derives its knowledge from empirical observation. For Lévi-Strauss ‘the manifest world is only a veneer, the key to understanding it is always in the latent material... beneath the apparent disorder; however, there are unchanging laws and rules’ (Deliège 2004, 26-27).

Lévi-Strauss’ (1969 [1947]) first great work, Les Structures élémentaires de la Parente or The Elementary Structures of Kinship (ESK), centred on aspects of kinship, particularly practices relating to matrimony. Here, instead of concentrating on the exchange of things, he concentrated on the exchange of women by men. Within

19 Saussure divided linguistics into language (la langue): the social, and speech (la parole) the individual. He believed for linguistics to become truly scientific it needed to concentrate on the social (Deliège 2004, 20-21). Lévi-Strauss (1969 [1947], xxvi) was introduced to these concepts by Roman Jakobson whom he had contact with while in New York during WWII.

20 Rousseau saw the savage man ‘as someone pure, uncorrupted by our laws and capable of teaching us many things about ourselves’ (Deliège 2004, 19).

21 Lévi-Strauss used the analogy of a deck of cards to explain this (Lévi-Strauss 1976 [1983])
the rules of exogamy and specifically the incest taboo, he found what he believed the original social contract, the link ‘between man’s biological existence and his social existence’ (ibid., 24) and ‘the emergence of symbolic thought [that] must have required that women, like words, should be things that were exchanged’ (ibid., 496). ESK was limited to what he termed ‘elementary structures’.22 At the heart of ESK was the more common of ‘elementary structures’, cross-cousin marriage,23 and the question of why the practice is so widespread. In answer to his own question, Lévi-Strauss suggested it was a way of creating repetitious reciprocal relationship at kinship level, which ensured continuing alliances. For this reason it has also become known as ‘alliance theory’ (Deliége 2004, 63-64).

Within elementary structures, Lévi-Strauss distinguished two types of exchange, restricted and generalised. Restricted exchange

‘includes any system which effectively or functionally divides the group into certain number of pairs of exchange-units so that, for any one pair X-Y there is a reciprocal exchange relationship’ (Lévi-Strauss 1969 [1947], 146).

Generalised exchange, on the other hand,

‘establishes a system of operations conducted “on credit”. A surrenders a daughter or sister to B, who surrenders one to C, who in turn will surrender one to A... Consequently, generalised exchange always contains an element of trust, [but also as a corollary ‘speculation’ is enabled, which may bring in a profit, and the] group can live as richly and as complexly as its size, structure and density allow’ (Lévi-Strauss 1969 [1947], 265).

22 Elementary structures are social systems where ‘the nomenclature permits the immediate determination of the circle of kin and that of affines’ (Lévi-Strauss 1969 [1947], Preface to the First Edition). Complex structures are social systems which ‘limit themselves to defining the circle of relatives and leave the determination of the spouse to other mechanisms, economic or psychological’ (ibid., 1). He planned to leave complex structures’ to a later volume that never materialised.

23 Cross cousins are the children of siblings of opposite sex. This and parallel cousin marriage are often referred to as ‘preferential marriage’ by sociologists, but this term was deliberately dropped by Lévi-Strauss as he for him this was only an aspect of ‘the structure of the system under consideration’ (Lévi-Strauss 1969 [1947], 1)
Lévi-Strauss was enormously influential and the almost religious devotion of some of his followers may have contributed to the backlash against structuralism\textsuperscript{24}. ESK rightfully received feminist criticism for portraying women as objects that simply circulated (Weiner 1992); however, its most sustained criticism probably came from Bourdieu (1976) who argued that marriage patterns were not the product of structures but rather the product of complex negotiations. Here he was emphasising the difference between what people say (culture) and what people do (practice), and allowing for agency. He was not arguing that structures did not exist, however, and I would argue that structuralism still has a role to play in our attempts to understand past societies; it teaches us that behind the most seemingly incomprehensible actions lies rationality. Bourdieu himself remained very much a structuralist at heart (cf. Leander 2001)\textsuperscript{25} and it is not possible to consider agency unless one considers the structures among which it is enacted.

2.2.4. Karl Polanyi, The Great Transformation, substantivism and formalism

Earlier, when discussing Marx, I mentioned his theory of a shift from c-m-c to m-c-m. Various other authors have stressed other shifts in perspective between ‘primitive’ embedded economies and capitalism. Of these Karl Polanyi’s (1944) ‘Great Transformation’ was the most influential, at least in anthropology. Polanyi saw the industrial revolution of 19\textsuperscript{th} century England as the major turning point, after which economies became uniquely socially disembedded. While previous economies may have had money or ‘moneystuff’, he argued it was restricted to certain spheres of exchange and that access to land and labour was generally dependant on kinship and community (Isaac 2005). From this perspective social institutions insulated groups and individuals. Polanyi (1957) defined two types of meaning behind the word economic, substantive and formal. The substantive meaning refers to the interdependence between people and with their environment, and was empirically derived. The formal meaning refers to how people choose to spend their limited resources and was logically derived. For Polanyi, only the former (substantivism) could be used comparatively, as the latter

\textsuperscript{24} In other cases it may have had more to do with perceived personal slights: see Deliège (2004, 127-128) on Needham

\textsuperscript{25} This is a review of Les structures sociales de l’economie (Bourdieu 2000) which unfortunately has not yet been translated into English.
(formalism) was only applicable to capitalist economies. Polanyi also defined three forms of distribution: reciprocal, redistributive and market exchange. He suggested that acephalous societies only engaged in reciprocal exchange, chiefdoms in reciprocal and redistributive exchange and that market (capitalist) economies engaged in all three. This schema was very attractive to those working from a social evolutionary perspective and, particularly as applied through Service (1962) and Sahlins (1972), went on to influence a generation of anthropologists and archaeologists.

Formalists (Cook 1966; LeClair and Schneider 1968), perhaps in part given substance in anthropology because of their definition by Polanyi, fought back. In their view, formal-mathematic analysis focused on the individual (drawn from economics), was capable of cross-cultural analysis (Cook 1966), and thus began the formalist-substantivist debate. At one level, the debate was cast as mathematically minded scientists (formalists) vs. romantic humanists (substantivists) and was largely irresolvable (Isaac 2005, 20). However, as anthropology widened its remit to include western societies, formalists argued only their methodology was suited for the future; Dalton (1981b), a leading substantivist, capitulated by allowing that substantivism was only suited to analysing early societies (Dalton 1975, 66), so for many, formalism won out. However, Polanyi’s influence is still evident in anthropological archaeology (cf. Johnson and Earle 1987; Earle 2002) and elsewhere in the social sciences (Somers 1990; Isaac 2005).

2.2.5. Feminist critique

Despite some early pioneers (cf. Mead and Boas 1961 [1928]), it is only since the 1970s that the importance of gender in anthropology (Mohanty 1988) and archaeology (Conkey and Spector 1984; Sørensen 2000; Zihlman 1989) has really been stressed. This has included the re-writing of narratives to include women and more consideration given to how they were presented. In more recent years, feminist perspectives have expanded to give voice to other subaltern groups (Ludden 2002), including children and transgender persons, and even to critique how ‘gender-blind’ studies ignore men as actors (Cleaver 2002).
Of particular relevance to this study, was the return to Malinowski’s (1922; 1935; 1927) subject of the Kula by Marlyn Strathern (esp. 1988) and Annette Weiner (esp. 1992). These were important for illustrating that women had agency of their own within the economic sphere and that goods they produced (such as banana leaf wealth) had cultural as well as practical value. Weiner’s (1992, 10) book is also very important for establishing the importance of ‘inalienable goods’, both in cultural dynamics and through how they can affect a person’s (or group’s) standing in exchanges. Thus, she argued, while it may seem like a contradiction at first, any worthy study of exchange should also take into account that which is not exchanged (ibid., 46).

2.3. Archaeological theories on exchange

2.3.1. Culture History

The dominant theoretical perspective of early twentieth century archaeologists was ‘culture history’ (Johnson 2010, 15-21). The culture historical perspective assumed a direct correlation between similar artefact styles and cultures, distributionally defined cultures by overlapping traits (polythetic) and saw cultural change as resulting from external influence, either through migration or diffusion. Exchange as a possible mechanism for diffusion played an important role in many culture history narratives.

Gordon Childe was the most famous proponent of this approach and was (and is) commonly used as a ‘straw man’ by studies that quoted his early views. However, as others have pointed out (Hodder 1982c, 3; Johnson 2010, 22), Childe (1942, 26-27; 1956, 19) had on a number of occasions expressed doubts about exactly what an archaeologist’s ‘culture’ might represent in social or linguistic terms.

2.3.2. New Archaeology (Processualism) and exchange

With the rise of ‘New archaeology’, during the 1960s, there was increasing emphasis on scientific method and anthropological insight (cf. Binford 1962; Clarke 1973) and the focus moved from identifying cultures to understanding the processes behind cultural change (processualism). In reaction to the diffusionist ideas of ‘culture history’ processualism initially tended to search for the reasons
for social change within societies, or between societies and their environments (cf. Renfrew 1973a). Nonetheless, exchange continued to play an important role, especially in how societies were seen to be organised and as characterisation methods improved it began to take centre stage in understandings of social organisation and models of change.

Polanyi’s (1957) modes: reciprocity, redistribution and market exchange, were very influential. In addition to these, Sahlins (1972, 83) posited a ‘domestic mode of production’ for peasant societies, Friedman and Rowlands (1977) stressed the role of ‘prestige goods exchange’ for emerging elites, Renfrew and Cherry (1986a) described networks of chiefly elites as ‘peer polity interaction’ and O’Shea and Halstead (O’Shea 1981; Halstead and O’Shea 1982) introduced the idea of ‘social storage’. These were generally tied into a social evolutionary scheme (Johnson and Earle 1987), following Service (1962).

Applying such theories to the archaeological record generally proceeded on the basis that artefact distributions directly reflected particular modes of exchange (Earle and Ericson 1977). One of the seminal papers of this approach was by Colin Renfrew (1975), in which he correlated different modes of exchange with artefact distribution fall-off curves (Fig 2.1). For a time this was accepted as offering a truly empirical way to establish the mode of exchange and, through correlation, even infer the stage of social evolution. Despite the substantivist origin of these concepts this type of analysis tended to be abstract, formalist and left little room for the social meaning behind the exchanges.

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26 Based on Polanyi’s modes but with various additions
2.3.3. Post-processual critique

Post-processual critique was famously led by Ian Hodder (cf. 1982c; 1982b; 1985; 2005). Hodder’s own work on spatial analysis (Hodder and Orton 1976; Hodder 1978) led him to be dissatisfied with processual approaches (Hodder 1982c, 203), in part, because of the problems of equifinality, but more generally because of processualism’s ‘materialist bias’, its tendency to privilege the ‘functions of social institutions... without reference to meaning and cultural context’, and its view of people as ‘determined by and within a larger system’ (Hodder 1985). Renfrew (1977, 82-83) had begun to consider the problems of equifinality; he had, for example, shown how redistribution and market exchange, or different types of...
reciprocity (home base and boundary), could produce similar spatial patterns and be difficult to differentiate archaeologically (1975, 10-11 & 49-50). However, Hodder’s other more general criticisms, could only be addressed by a more radical reorienting of the questions that were being asked.

In 1982, Hodder published ‘Symbols in Action’, a culmination of ethnoarchaeological fieldwork carried out in the Kenya, Sudan and Zambia directly targeted at addressing his reservations concerning the processual approach. Two critical points arose from this work. Firstly, how ‘intentions, strategies, attitudes and ideologies’ intervened in the relationship between ‘degrees of interaction’ and ‘material culture patterning’ and secondly, that culture is ‘meaningfully constituted’ within ‘symbolic schemes’ as part of ‘social strategies’ (1982c, 185-186). In relation to processual studies of exchange, he particularly criticised the way they treated geographically extensive networks, crossing numerous ‘cultural’ boundaries ‘as having one, or a few, associated exchange mechanisms’ despite the fact that they clearly had different meanings in different contexts (ibid., 202). He further argued that there was a need to move away from broad abstracted patterns ‘of total exchange distributions to more sensitive studies of the meaning of exchange in local contexts’ (ibid., 203).

Hodder and his students (1982b) went on to draw widely on anthropological, sociological and philosophical theory, particularly structuralism and its critique, post-structuralism and structural-Marxism. However, in reaction to the positivist leanings of processualism there was relatively little post-processual focus on exchange (Bauer and Agbe-Davies 2010a, 14-15). The majority of publications concerning exchange, or trade, continued to come from those working in a processual mould (cf. Scarre and Healy 1993; Baugh and Ericson 1994), although a number of these took on aspects of post processual critique. Renfrew (1993, 8), for example, agreed with Hodder that it was necessary to stress ‘the active role played by material culture in the social world’.

2.3.4. Dialectical perspectives

The polemics between processualism and post-processualism have at times degenerated into extreme positivist and cultural relativist positions. There have
been several attempts to bridge these; a recent edited collection of papers on exchange (Bauer and Agbe-Davies 2010b) set out to do precisely that and this thesis hopes to continue in that vein. In that volume, the editors espoused an approach that focused on three components (Bauer and Agbe-Davies 2010a); context, communication and consumption. Through ‘context’, they stressed the need to be sensitive to the particular social, ideological, historical and landscape context of exchanges (after Hodder 1982e). Through ‘communication’, they referred to the need to look ‘beyond the material’ and consider exchange as a communicative social act (after Renfrew 1993). Through consumption, they referred to the need to focus on the material evidence, and the fact that consumption (and production) is also social activity.

2.3.5. The concept of value

Another concept which has emerged as an important focus is ‘value’ (cf. Papadopoulos and Upton 2012). Value is not an easy concept to grapple with; it is polyvalent and can refer to ‘range of practices and domains of human life’ (Papadopoulos and Urton 2012, 4). Smith (1995) suggests its meanings can be broadly divided between those that refer to ‘amount’ and those that refer to ‘comparison’. For Smith, amount meanings of value are generally economic, how much of something is something worth, while comparative meanings of value are less economic and more related to evaluations of ability or worthiness. The relationship between the various meanings of value is something that David Graeber (2001) has explored in some depth. He points to three semantic meanings: value as in valuables, values as in ethics and value as in the structural linguistic sense (meaningful difference). Renfrew (2012, 250 & 255-257) has dismissed such definitions as too vague and argues that by subsuming everything under different manipulations of the word ‘value’ we are in danger of forgetting about the likely lack of fungibility between different spheres of exchange in traditional societies. It is likely that different objects (and ideas and people) circulated in separate ‘spheres of exchange’ and accordingly, I try to be as specific possible with my uses

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27 The authors use the word trade, however, their definitions of trade and exchange would seem to accord with my own (cf. Bauer and Agbe-Davies 2010a, 15-16)
28 Fungibility is the ease with which something is exchanged for other substances; money is the ultimate fungible substance.
of value; however, like Mauss’ ‘total exchange’, the value placed on goods and actions is rarely simply defined. Many objects, people, places and ideas have overlapping economic, social and religious value, and it is important to remember that value is not static but rather context specific, dependent on perception and often actively contested.

2.3.6. Macro-scale approaches

One side-effect of the paradigmatic shifts in archaeology was that it became less acceptable to explain social change as a result of external factors and less usual to view changes over a large scale (see Kristiansen and Larsson 2005, chapter 1 for a discussion). Nonetheless some macro-scale approaches have remained relatively popular.

World Systems Analysis (WSA) is a macro-scale approach that continues to be influential. The approach was originally developed by Immanuel Wallerstein (1974), a Marxist American sociologist and historical social scientist, in an attempt to explain the rise of capitalism. According to Wallerstein (2004), it was an attempt to transcend the nineteenth century idea of the state as the appropriate unit of social analysis, to transcend nomothetic and idiographic perspectives, neither of which he believed permitted a useful analyses of social reality, and to bridge the disciplinary boundaries within social sciences. Key concepts include cores, peripheries and dependencies. Wallerstein (2004) himself only considered WSA applicable to the ancient world in the case of imperial polities and its application in archaeology has been the subject of sustained criticism (cf. Dietler 1995; 2004; Edens and Kohl 1993; Stein 2002). Despite this, WSA continues to have many proponents in archaeology (cf. Hall et al. 2010) and it has even been applied to the European Bronze Age (Frank et al. 1993; Kristiansen 1998). WSA has gone through many convoluted attempts to address its detractors, including adjusting its terminology (Kardulias and Hall 2008), recasting it as an approach rather than a model (Hall et al. 2010) and even hyphenating its title (Wallerstein 2004).30

29 An acknowledged revival of Braudel’s ‘économie-monde as it evolved over what he called the longue durée’ (Wallerstein 2004, 4)

30 In 2004, Wallerstein added a hyphen to world-system to distinguish it as a ‘system that is as a world...which can be, most often has been, located in an area less than the entire globe’ as opposed the ‘the system of the world’ (Wallerstein 2004, 17)
However, as postcolonial theorists have pointed out (e.g. Chakrabarty 2000), despite its Marxist roots, it may serve to perpetuate a Eurocentric view of history. In the case of European prehistory, where there is likely to have been a high degree of domestic autarky in subsistence terms and where exchange was more likely focused on social relationships, its focus on dependencies would seem inappropriate.

One alternative theoretical perspective, championed by Colin Renfrew and John Cherry (1986a), is ‘peer-polity interaction’ (PPI). From the outset they suggested it as an ‘approach rather than a solution’ through which they hoped to focus attention on ‘style and communication in a systematic way’, without abandoning an interest in ‘the material and technological’ (Renfrew and Cherry 1986b). They argued that previous approaches to social change had concentrated too exclusively on exogenous or endogenous factors and missed some of most important processes which occurred in the interaction between neighbouring societies. PPI was particularly interested in ‘structural homologies’, which it saw as resulting from the interactions between neighbouring groups over time (Renfrew 1986). Spatially, it was primarily targeted at examining societies at an intermediate/regional level and thematically it was interested in all types of interaction: warfare, exchange, ‘symbolic entrainment’ and/or competitive emulation. PPI was conceived in a firmly processual/functionalist mould and the institutions of each polity were viewed as articulating together in a system. Cherry (2005) has outlined the difficulties of applying PPI in fully prehistoric circumstances; such as spatially identifying polities, chronological imprecision, etc. Post processualists have also argued that, in common with other processual/functionalist models, it is descriptive, rather than explanatory, relegates the individual to ‘a support for the patterns of behaviour’ and under-theorises ‘the structuring of the totality’ (Shanks and Tilley 1987, 41-42 & 53). I would argue, rather, that it asks different questions of the material evidence and that, in concert with a more particularistic approach to the contested meaning of objects in exchanges, it may yet hold explanatory value for the intermediate scale in prehistory.

In a novel approach to interaction, Kristiansen and Larsson (2005) recently dropped much of the WSA language [which they had previously used (cf.
Kristiansen 1998) and develop what they term ‘intercontextual archaeology’. In their theoretical exposition, arguably the best chapter in the book, they argue for a ‘mature archaeology... able to encompass all phenomena of historical change, including travel and population movements’ (Kristiansen and Larsson 2005, 30). The focus is on the transmission of institutions which they see as occurring primarily in the context of heroic journeys (cf. Helms 1988). They neatly meld post processual concerns with a ‘macro-historical framework’ and, in their avowed move from social typology to social complexity, include concepts such as ‘factionalism’ (Brumfiel and Fox 2003) and ‘heterarchy’ (Crumley 1995). However, what follows arguably seems an overly Mediterranean-centric version of social change in the Scandinavian Bronze Age (see Nordquist and Whittaker (2007) for a scathing review, and Kristiansen and Larsson (2007) for a reply). Regardless, I believe there are a number of important elements in Kristiansen and Larsson’s approach which should prove useful to this and future studies of interaction and exchange. Most especially, the structural element of their intercontextual archaeology, which is similar to a historical version of structuralism and reminiscent of Lévi-Strauss’ transmission and transformation of the origin myth of Swaihwé masks (1982 [1975], 32), marks an interesting departure from simply tracing individual elements. Secondly, their use of myth and ancient oral tradition represents an important source largely untapped by the recent generation of scholars, but one that would seem to be once again on the rise (Kristiansen 2010). Myth must be approached with caution, but it is a resource that we certainly should not ignore, especially in Irish archaeology (cf. Waddell 2014). Thirdly, Kristiansen and Larsson’s focus on travel is welcome, and I would agree with their proposition of ‘an unconscious or implicit bias that projects on the Bronze Age a Medieval/Iron Age feudal model of stable immovable peasant societies’ (Kristiansen and Larsson 2005, 368).

2.3.7. The use of ethnographic analogy in archaeology

The use of ethnographic analogy in archaeology has been the subject of some debate (cf. Wylie 1985). Various researchers have dismissed its usefulness (Freeman 1968; Gould 1980; Gould and Watson 1982), suggested that it limits our

31 Anthony Harding (2006) even agrees with this in his rather critical review.
interpretation (Dalton 1981a), or argued that it should be restricted to creating models for formal scientific tests (Binford 1967). However, analogy, it can be argued, lies at the basis of all human cognition (Hofstadter 2001). This is particularly true of the process of extrapolating wider social meanings from the material culture of prehistory, for we are, after all, only dealing with scattered material fragments from the past as they exist in the present. As Hodder (1982a, 9) has argued, ‘all archaeology is based on analogy’; one cannot simply choose to interpret without any form of analogy. I would argue that the real choices lie in whether one is implicit, or explicit, about the interpretive process and in whether one draws from analogy with one’s own society’s necessarily limited experience of the world, or from the experience of a wider range of human societies (Ó Maoldúin forthcoming-a). The former choice is a question of openness; the more explicit one is about one’s interpretative leaps the easier it is to assess or re-evaluate one’s argument, or allow others to do the same. The latter largely concerns the appropriateness of the analogy; how one conceives of the world today is likely to be quite different to how people did so in the past and it is often possible to find societies with more in common with those in the past than ours, but it may also have a bearing on the level of explicitness. For example, when drawing on information from societies within which one has not grown up, like when using a language in which one is not native, one is forced to be more explicit about meaning. Hofstadter (2001, 125-126) gives the example of how in Italian soccer parlance the word *suggerimento* (literally “suggestion”) is used in an analogous way to describe a particular type of pass that contains a message. Since he is not a native speaker he is forced to grapple with and explicitly outline the nuances of the term. Using ethnographic examples to explore possible archaeological interpretations can similarly encourage us to explicitly explore meaning. On the other hand analogies drawn from our own experiences, so called ‘common sense approaches’, are more likely to have implicit meaning, or in other words, are more likely to be riddled with ethnocentric bias.

Hodder (1982a, 16) and Wylie (1985) stress the distinction between ‘formal’ and ‘relational’ analogies, as derived from philosophers of science (e.g. Hesse 1966). A formal analogy ‘involves direct comparison between present-day societies and the remains of the past along the lines that if two objects or situations have common
properties then they probably have other similarities’ (Darvill 2008). Taken to the extreme, such analogies tend toward deterministic ‘uniformitarianism’, supposing ‘that societies and cultures similar in some aspects are uniformly similar’ (Hodder 1982a, 13) and the most obvious weakness here is that the common properties may simply be accidental. Such analogies can sometimes be strengthened through illustrating an increased number of similarities between the situations compared (enumeration) or through demonstrating continuity (the direct historical method) but can never be proven. Conversely, a relational analogy is ‘grounded in demonstrating either the causal relationships between the variables that can be observed or the relevance of comparisons between one situation and another by emphasizing common structuring, organizational, or economic systems within the societies concerned’ (Darvill 2008). Both of these methods are ‘ampliative’ (Wylie 1985, 80), in that they extrapolate from observed similarities to more extensive ones. Neither can be proven true but they can be evaluated against alternative explanations. As David and Kramer (2001, 44) point out ‘however potentially misleading, analogy is indeed indispensable’.

2.4. Conclusion

When trying to understand prehistoric societies and exchange, it is important to deconstruct and consider the origin of our own perspectives. Perspectives on exchange drawn from the modern capitalist world, where the accumulation of money is considered the goal, are unlikely to be helpful in understanding Chalcolithic and Bronze Age exchange. The use of ethnographic and ethnoarchaeological insight, which offer a broader perspectives, and analogies, which force us to be explicit, provide a better foundation for interpretation.

Malinowski’s study of the Kula Ring demonstrates how different exchange within ‘traditional’ societies could be; how exchange was not necessarily profit driven but rather created social ties and how different spheres of exchange in which only certain classes of objects circulated could exist. Mauss further developed Malinowski’s analysis in a cross cultural consideration of gift exchange and showed

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32 Uniformitarianism is ultimately drawn from geology (esp. the Principles of Geology 1830-3 by Charles Lyell) and is based on the assumption that natural laws are constant. While in some senses it remains fundamental to archaeology (Bahn 2005, 277), it would be a mistake to extend it deterministically to human society and culture (Hodder, 1982, 13).
how gifts were ‘total social phenomenon’, whose inalienable aspects (later elaborated on by Weiner) created reciprocal interdependencies which could be understood as a form of the original social contract. Lévi-Strauss showed how the exchange of marriage partners was also an important factor in the origin of the social contract and revealed how differently those exchanges could be structured; something which Bourdieu showed was in practice the result of complex negotiations. Polanyi’s ‘great transformation’ further articulated the difference between modern and traditional perspectives and gave social evolutionists a scheme with which to match different modes of exchange – reciprocal, redistributive and market exchange.

The rise of New Archaeology saw an increased use of anthropological insight in archaeology and through Service and Sahlins, Polanyi’s modes of exchange were particularly influential. Renfrew, for example, devised a potential way of recognising modes of exchange within the fall off curves. However, a key component of post-processual critique was that conceiving of networks in such an abstracted way, led to the ignoring of the potential different meanings of objects in different contexts. At times, the processual and post-processual debate led to unhelpful polemics, however, later dialectic approaches have emerged. Four key concerns drawn from such studies of relevance to this study are context, communication, consumption, production and value.
Chapter 3 Constraints and Opportunities: Environmental, technological and social

3.1. Introduction

Ultimately, individuals and groups have to choose whether or not to enter exchange relationships with one another; however, the availability of those choices is determined by the constraints and opportunities offered by their environment, available technology and pre-existing social relations. These factors directly affect the ease of physical movement, natural resources available, the ability to exploit resources, and the ease of physical and social interaction with other groups. This is not a form of determinism; it simply sets the boundaries and paths of the stage on which people and groups can act with an agency of their own.

In many ways this chapter is more about pondering the types of constraints and opportunities that might have affected exchange, than an outline of specific sets of data. With a broad brush, it seeks to draw the major features of Ireland’s land and seascapes that might have repeatedly affected exchange, but does not necessarily suppose that challenges were avoided, or that the most immediate opportunities were always those exploited; indeed, challenge can drive human endeavour, difficulties of procurement may have been essential elements in creating the value of objects or knowledge (Helms 1988; Needham 2008a, 319; Edmonds 1995, 79) and many practices are culturally constrained or subject to taboo (Douglas 2002 [1966]; Fowles 2008).

This chapter aims to set the scene for the investigation of distributions discussed in later chapters and to contextualise repeated or shifting trends against their respective, environmental, technological and social, opportunities and constraints.

3.2. Environmental constraints and opportunities

3.2.1. Geological landscape

The underlying and primary physical determinant of landscape is geological; the geology of a region determines its morphology, the grain along which the path of least resistance is found and the parent material of the overlying soil, which in
turn determine the character of life that the resulting landscape can support. The underlying geology is also the source of lithic and metal resources which provided prehistoric groups with materials that, because of their restricted distribution, were easily conferred with value and employed as objects of exchange.

Geologically, Ireland is comprised of two parts (Fig 3.1-2); the division runs southwest to northeast, approximately from the Shannon Estuary to Dundalk. Each part originally derives from different continents that collided c. 440-400 million years ago, during the Caledonian orogeny (Holland 2001). The join is occasionally visible, and the different origins of the two parts means that certain rock types are restricted; however, the modern surface geology is more due to relatively recent patterns of uplift, subsidence, volcanic activity, and glacial erosion and deposition (Woodcock 1994, 8). One result of the Caledonian collision, of importance to movement, is a general northeast-southwest grain in the topography of the country, especially in the North where massive folding and subsequent erosion created the mountain ranges known as Caledonides (Mitchell and Ryan 1997, 10). This determined many paths of least resistance for rivers, plants, animals and eventually humans. Molten plate materials were also thrust upward into older rock during the Caledonian orogeny, forming granite. Fluids associated with some of these intrusions brought minerals, some of which may have been important Bronze Age resources, to the earth’s surface. Later erosion of the up-thrust of this orogeny resulted in the present construct of the Wicklow, Connemara and some Donegal mountains. Much of the material from that erosion travelled south and became cemented into sandstone, known as ‘Old Red Sandstone’, and fine grained sediment that collected on tidal flats became slate (Holland 2001).

Subsequently, during the Carboniferous period, when the land that was to become Ireland was under a shallow clear-water sea, billions of plant and animal skeletons of calcium carbonate accumulated on the sea floor creating a limestone capping (Mitchell and Ryan 1997, 12); this limestone still forms the underlying geology of approximately two thirds of Ireland. Silicate also derived from skeletal debris,

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33 Caledonides is the old name for Scotland, where along with Newfoundland and Scandinavia they also occur.
34 such as gold-bearing quartz carbonate veins on the Murrisk Peninsula, in south County Mayo (Moore 2006)
formed globules of chert in the limestone and where this was exposed it provided a good source of knappable lithic for prehistoric communities. The overlying sea gradually became a ‘muddy sea’, in which shale, which provided material for easily hewn axes (especially prolific in south Galway and Clare), and sandstone formed, and eventually a ‘swamp forest’ from which successive dead trees formed a layer of coal.

Then, during the Variscan orogeny c. 300 million years ago, there was a great lateral thrust from the south, forming east-west folds and faults in the Old Red Sandstone and overlying carboniferous deposits (Mitchell and Ryan 1997, 12-13). Consequently, in the southwest, east-west movement meets least resistance, a pattern reflected in and facilitated by the major rivers of the area. Geological features from this period are known as Hercynide and fractures that formed between different rock types allowed ore deposits containing copper, lead and zinc to the surface.

Around 150 million years ago, Ireland’s surface was once again undersea and chalk formed, in a similar way to the earlier limestone, across much of its surface (Mitchell and Ryan 1997, 23). Silicate that coagulated in the chalk formed flint. Subsequently after the chalk eroded, the flint was left capping clay residue formed from the chalk. The majority of chalk and clay is now eroded from Ireland’s surface, but concentrations of flint nodules in modern soil south of Cork city, may be remnants of such ‘clay with flints’. Partially eroded chalk, containing and capped by flints, was preserved beneath lava flows (basalt) in Antrim. Where accessible, such flint, formed a valuable lithic resource, and a concern with controlling the exchange of such resources may even have led to some of the earliest fortified settlements in Ireland, during the Neolithic (Logue 2003).

The lava flows that preserved the chalk and flints in Antrim were part of a process linked to massive volcanic eruptions in the North Channel around 65 million years ago, that also produced the northwest southeast dykes across much of northwest Ireland, large-scale intrusions which produced the Mourne and Carlingford Mountains, and similar but smaller scale events which produced Doon Hill in Connemara (Mitchell and Ryan 1997, 20). Other lava flows of this period produced the hexagonal forms of the Giant’s Causeway and in rare occasions where
weathered basalt was baked at high temperatures in contact with an intrusive dolerite plug, porcellanite was formed (Jope 1952, 31). Porcellanite axes, originating from Rathlin and Tievebulliagh, account for over half of all Irish prehistoric axes and the material was used to make a variety of other artefacts during the Chalcolithic and EBA (Sheridan 1986).

Figure 3.1 Geological map of Ireland (reproduced with the kind permission of GSI)
Fluctuating temperatures have also had a very significant effect on our landscape. Over the past 1.7 million years Ireland was, at times, under periglacial conditions and, at others, under glacial ice sheets (Mitchell and Ryan 1997, 38-42). While both have left a mark on our landscape, it is the erosion and deposition caused by glaciers that was most significant. The formation and exit of glaciers high on
Ireland’s uplands created corries (glacial lakes) and as they exited along river valleys they creating flat based ‘U-shaped’ valleys (Mitchell and Ryan 1997, 44), providing areas of good farming and easy passage. Occasionally, the ice broke through against the grain of pre-existing valleys creating new route-ways. Such valleys, which run against the predominant grain, were and are all the more significant in terms of movement, because of their rarity. The mounds formed from materials deposited by glaciers are known as end moraines, drumlins and eskers. These mixed deposits provided a source of pebble flint and other workable lithic material in regions where it did not occur in the native geology. Drumlins numbering in the thousands stretch in a band across north central Ireland, where they block surface drainage and in the past would have been surrounded by standing water in dense forest (Mitchell and Ryan 1997, 74). This provided a barrier to human movement and interaction, a feature that contributed to the manifestation of borders in later prehistory that exist to this day (Ó Maoldúin 2008). Eskers, on the other hand, provided well drained and raised route-ways across Ireland; the most famous of these is the Eiscir Riada; translated as the ‘sand-ridge of chariot driving’ (Joyce 1976 (1913), 348), it was one of the most important east-west route-ways across Ireland in the later prehistoric and early medieval periods, and may also have played a significant role in earlier periods (Jones 2009).

Since the last ice age, there has been isostatic rising of the land and eustatic rising of the sea. Erosion, predominantly on the west coast, and deposition, predominantly on the east coast, are also on-going processes. Cobbles washed up on shore lines would have provided a ready resource of varied lithologies; for example, jasper cobbles from the beaches beneath the porphyry mines on Lambay were exploited (Cooney 2002) and flint nodules would have been collected wherever found.

3.2.2. Ireland’s Inland waterways

Dense heavy forests and the raised bogs in the centre of Ireland would have impeded movement across the landscape in prehistoric Ireland and the

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35 Such as the Gap of Dunloe in County Kerry
36 The latter two are terms of Irish origin that have entered the wider geological lexicon
importance of rivers and lakes as conduits of exchange would have been paramount. As Sherratt (1996) cogently argued for Britain, rivers would have taken precedence over overland routes until the widespread adoption of the wheel and horses in later prehistory.

Rivers flow along the path of least resistance and in Ireland the majority flow with the geological grain (Fig 3.3); however, a number also cut through geological structures.

The Shannon, by far Ireland’s largest river, is one of those which cut through a number of geological structures. It would have provided a major conduit during prehistory and the many finds recovered from dredging support this assumption. Although it has been pointed out that the callows and bogs on either side may have made movement between dry land and the river difficult (Jones 2009), it would have provided a relatively easy route from south Ulster to the southwest of the country and access along its major tributaries (Inny, Suck and Brosna) across the
raised bogs to either side. The distribution of Neolithic monuments does largely avoid the central part of Ireland. We know, from trackway and platform excavations, that the bogs were traversed and exploited during the Neolithic, Chalcolithic and Bronze Age (Raftery 1996; Whitaker 2009; Whitaker & O’Carroll 2009); however, very large trackways designed to support sustained traffic were not constructed until the Late Bronze Age LBA.

Ireland consists of central lowlands ringed by mountainous uplands. The one major exception to this is on the east coast between the South Dublin Mountains, County Dublin and the Cooley Mountains, County Louth. This allows the exit of the Rivers Liffey and Boyne, the major riverine conduits from the east coast to the centre of Ireland. The River Foyle and Bann offer significant north-south routes through Ulster and the Lagan is likely to have served more local traffic. The Rivers Moy, Robe and Corrib combined with the lakes of Connaught offer a north-south route from Galway Bay to the north-Mayo coast, with only a relatively short portage. In the southwest, the Bandon, Lee and Blackwater run from east to west, while the Feale and Deel run north into the Shannon Estuary. In the south-east the Suir, Barrow, Nore and Slaney cut through geological structures and offer conduits from the centre to the south east corner the country.

Paddling upstream is of course more difficult than moving with the flow of a river; however, there is a significant tidal range in many Irish rivers making them easily navigable in both directions. Trackways and paths are likely to have developed along the upper reaches of rivers and at portage points.

3.2.3. Ireland’s coasts and seascapes

As an island, Ireland’s surrounding ocean and sea constrained movement on the one hand and on the other hand, offered opportunities for off-shore movement to those with the ability and technology to use its tides, currents and crosswinds. As an opportunity for travel and also as a source of food the sea is likely to have been valued, but, on the other hand, it is also likely to have been feared for its dangers. Mountains would have provided one of the most common navigational aids when out at sea, and coastal features such as promontories and islands would have aided inshore navigation. Small craft such as currachs can land at a multitude of places,
practically on any beach, so landing places would not have been as constrained as they are for more modern merchant or fishing fleets.

The more sheltered eastern coastline offered calmer seas with potential for relatively easy cabotage along the coast and across the sea to Britain. Travel up and down the Irish Sea is facilitated by the tidal currents (Fig 3.4). While any open sea crossing would have represented a significant risk, cross traffic in oar propelled craft from various points of departure and arrival is very feasible.\(^{37}\) Shared monuments and evidence of exchange attest to the frequency of travel across the Irish Sea from the Neolithic and throughout the period under consideration. The proximity of south-western Scotland (Argyll) and north-western Ireland (Antrim) doubtlessly encouraged some of the most frequent inter-island traffic.\(^{38}\) The rich Bronze Age archaeology of Kilmartin Glen (Ritchie 1997), Argyll, would make it seem an obvious point through which traffic passed and this route was likely a formative factor in the first recorded inter-island Kingdom, the early medieval kingdom of the Dal Riada. It is no coincidence that this was a seafaring community with significant naval prowess.\(^{39}\) While the formation of this kingdom is traditionally related to early medieval dynastic expansions it seems likely that the shared community roots on either side of the straits which stretch back into prehistory also played a formative role (Campbell 2001). Other significant points of contact are likely to have been the Galloway peninsula, north western England (via the Isle of Man), Anglesey, Pembrokeshire and Cornwall.

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\(^{37}\) The Celtic challenge, a race from Aberystwyth to Arklow in vessels based on a Currach design, generally takes 15 to 24 hours; it is 90 nautical miles <www.celtic-challenge.org.uk> (20 Jun 2013).  
\(^{38}\) 20 kilometres from Torr head to Scotland. In a modern kayak, with the tide, it can be undertaken in c. 6 hours (pers. comm. Eileen Murphy – Sheerwater Sea Kayaking). It has been undertaken in reconstructed historic currach-like craft by the 'Causeway Coast Maritime Heritage group' <www.ccmhg.org> (20 June 2013).  
\(^{39}\) A persistent axis of interaction from Ireland, to south western Scotland, to eastern Scotland and on to various places on the Continent (Netherlands/Denmark) appears to have existed from the Chalcolithic/EBA and into later prehistory (Eogan 1999, Sheridan 2008, Ó Maoldúin 2014).
The more exposed western seaboard with its indented coastline would have encouraged trans-peninsular traffic and inspired nautical innovation to deal with its rougher seas. In areas where the land was not so fertile, the resources of the sea would have been particularly important and it is perhaps no coincidence that the name given to the poorly drained granite area of south Connaught, Connemara, associates the people of that region with the sea (Joyce 1912a, 127-128).40 There was movement up and down the Atlantic façade from an early date (Cunliffe 2001). In the peninsular southwest, where the first metal was mined (O’Brien 2004b), it is likely that metalworking technology was introduced from along the Atlantic façade via Brittany (O’Brien 2012a; also see section 4.3). This is a relatively long distance route which is likely to have had even earlier traffic (Sheridan 2003a). It is possible to model the currents and winds for ease of sea travel for various vessel types; Callaghan and Scarre (2009) have done this for sailing and rowing craft

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40 Mara is the genitive form of Muir, old Irish for the sea. It is also found in other the placenames of other coastal locations such as Kenmare (Joyce 1912b, 255)
between southwest Ireland and Brittany. Their model suggests that sailing from Brittany (Pointe du Raz) to southwest Ireland could be accomplished in seven days during summer. Return journeys were easiest in spring or autumn and could be completed in four days. Paddling from Brittany to Ireland was possible in all seasons and could be accomplished in seven days during spring and summer and the reverse could be completed in five days during summer.

Seas should not be viewed in purely functionalist terms but also as socialised places, as ‘seascapes’ (Cooney 2003). As such it is important to remember that interaction with the sea may have been subject to taboos and patterns of movement will not always have followed the easiest or what seem the most strategically advantageous routes, rather people will have made choices based on ritual, social and practical concerns.

3.2.4. Natural resources

As mentioned above, the availability of resources with which many objects of exchange were fashioned was largely determined by geological or environmental factors. Throughout the world there is a surprising consistency in the object materials and types which were chosen to serve as the main items of exchange. The reason for this consistency may in part be due to qualities inherent in those materials and forms. Materials most suitable for high-status exchange are commonly either of restricted distribution, difficult to obtain or difficult to fashion; however, perhaps the most important qualities were, or at least became, symbolic.

**Stone**

Stone axes were extensively exchanged during European prehistory (Bradley and Edmonds 1993; Patton 1993; Cooney and Mandal 1998). Many were laboriously ground and polished and some were clearly never intended for a functional use; their value was likely part symbolic and part in the exchange relationships they facilitated. In many cases that value was bolstered through the restricted availability of the materials from which they were made or linked to notions about

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41 Many porcellanite examples are up to 33cm in length! A particularly fine hoard of 18 was found at Danesfort, Belfast (Waddell 2010, 55-56); another hoard of three was found in Canrawer bog, near Oughterard (ibid.)
the place from where they were sourced. Porcellanite axes are a prime example; they originated from a very restricted area in Northern Ireland and while they were most densely deposited within Northern Ireland,\(^{42}\) they have been widely found elsewhere within Ireland and throughout Britain (Sheridan 1986; Mandal et al. 1997; Waddell 2010, 56-57; Mallory 1990), and as far away as Shetland (Fig 3.5). Porcellanite axes are generally considered a Neolithic phenomenon; however, they have also been found in closed contexts associated with Beaker and Cordoned Urn Tradition pottery. Porcellanite was also used to make Bronze Age whetstones (Sheridan 1986), maceheads (Simpson 1988), battleaxes (Simpson 1990) and archer’s bracers (Roe and Woodward 2009). Axes of other stone have also been found deposited in a copper mine in County Cork (O’Brien 2003) in closed contexts with Bowl Tradition pottery (Ó Ríordáin and Waddell 1993, 93 & 133) and in wedge tombs (O’Brien 1999, 211) and it seems clear that they continued to be made and used alongside copper and bronze axes throughout the period under consideration. The importance of these resources would nevertheless have waned with the proliferation of copper, and later bronze, exploitation. In Brittany, Patton (1993) has demonstrated that, while stone continued to be exploited to make axes into the second millennium, they were only produced for local distribution and the major production centres lost significance. It is likely that the Antrim porcellanite, Lambay porphyry and Clare shale production centres had similar fortunes.

Ground and polished objects of Chalcolithic and Bronze Age form, include archers’ bracers (Harbison 1977), maceheads (Simpson 1988) battleaxes (Simpson 1990), V-perforated buttons (Harbison 1977) and whetstones (Kavanagh 1976, 322).

\(^{42}\) Tievebulliagh near Cushendall and Brockley on Rathlin Island (Curran et al. 2001, Mandal et al. 1997)
Simpson (1990) recorded 112 battleaxes from Ireland; of these only 24 have been petrologically identified. These were all identified macroscopically and the identifications must therefore be treated with some caution. They are predominantly a mixture of igneous and metamorphic stone types but include one of sandstone. No one stone type is particularly common. This suggests that cobble sources, which would have been geographically widely available, were opportunistically exploited (Fenton 1984; Simpson 1990).

Neolithic maceheads indicate a preference for gneiss and amphibolite (Simpson 1988), particularly difficult stone to work, presumably selected because of their

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43 9 early series, 2 intermediate series and 13 late (Bann) series
speckled and veined appearance, and procured from regionally restricted sources. Nineteen maceheads from Ireland can be considered Chalcolithic or EBA (Simpson 1988); those which have been identified are of a variety of igneous rocks and show a preference for dolerite and basalts. Like the material employed to make battleaxes, and unlike the earlier maceheads, it is probable that these were opportunistically collected from cobble sources.

The stone for bracers was more selectively sourced and it seems that the colour may have had a strong influence in determining choice (Harbison 1977; Roe and Woodward 2009); red and black or greyish brown seem to have been the preferred colours. This and their form mark them as significantly different to most British examples (Woodward and Hunter 2011) and they have more in common with continental examples (Sangmeister 1974; Briard and Mohen 1974). The red Irish examples were mostly made of jasper, a material relatively widely available in Ireland; however, it has been noted that the jasper bracers exhibit particularly standardised methods of manufacture and that this might indicate a specialised manufacture at one or more workshops (Roe and Woodward 2009). Other than the red jasper, greyish brown fine grained sedimentary stones (siltstone, mudstone and shale), blue-black porcellanite and green volcaniclastic tuff were the main types exploited (Roe and Woodward 2009; Woodward and Hunter 2011, 34-35). The porcellanite must have been sourced in Antrim (Fig 3.5) and the tuff may be from County Limerick and/or Avoca, County Wicklow (Woodward and Hunter 2011, 33). The sedimentary stones could have been widely sourced but the dominance of shale in axes in County Clare and south County Galway may be significant (Cooney and Mandal 1998).

Stone V-perforated buttons from Ireland include examples of shale, jet, jasper and steatite. Shale and jasper sources have already been discussed. Steatite is relatively widely available in Ireland and sources in Donegal were worked in modern times (Seymour 1917). The jet examples, if true jet, must have originated in Whitby, North Yorkshire, England (see section 6.3.1).

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44 Jasper occurs in counties Mayo, Galway, Cavan, Dublin and Tyrone but also in drift deposits in County Antrim (near Cushendell) closer to where most examples have been found (Roe and Woodward 2009; Woodward and Hunter 2011, 34-35).
Flint and chert continued to be important resources during the Chalcolithic and Bronze Age. The flint bearing chalk in Antrim was one of the most significant Irish resources of high-quality flint. Open cast mining of these deposits has been identified at Ballygalley Hill (Bell and Bennett 1923), Black Mountain (Collins 1978) and Tievebulliagh (Fig 3.6), County Antrim. There is disagreement about the extent to which this material was exchanged throughout Ireland (Briggs 1986); in-situ chalk has been recorded in County Kerry (ibid.) and elsewhere nodules from glacial drift and coastal deposits were a significant source of raw material (Waddell 2010, 58); however, because of its quality, the Antrim flint is likely to have been a sought-after resource.

**Figure 3.6 Location of the Tievebulliagh porcellanite outcrops and possible flint mines**

**Copper**

The importance of the axe form continued after the discovery of metal and many copper axes were, like stone versions, made with exchange or ritual in mind and clearly never intended for practical use. However, the introduction of metal also opened up a myriad of new fabrication possibilities, and many new object forms appear. Copper and gold were the first metals worked, probably because of the ease of their extraction and working.

Copper deposits are relatively widespread in Ireland. The major deposits exploited in historic times are on the south and southeast coasts in counties Wicklow, Waterford, Cork and Kerry; however, there were also small-scale mines in counties Clare, Limerick, Galway, Mayo, Tipperary and Leitrim (Coffey 1901; Jackson 1978; also see section 4.4.2).

45 The dolerite exploitation at Tievebulliagh is widely recognised and has been investigated (Mallory 1990); however circular depressions on the north slopes, noted during a site-visit by the author, are more likely to be opencast flint mining, and are reminiscent of those at Grimes Graves, Norfolk, England, prior to excavation.
It appears that the southwest was Ireland’s most important copper mining region in prehistory and to date the only prehistoric copper mines that have been confirmed through excavation are in counties Cork and Kerry (O'Brien 1996). It seems unlikely, however, that prehistoric copper mining was restricted to these areas and there are reports of ‘old men’s workings’ in early mining reports from Lackmore, County Tipperary, Avoca, County Wicklow and Dane’s island, County Waterford (Jackson 1978; O'Brien 1996). In addition, coastal deposits, such as those at the Copper Coast, County Waterford and near Belderrig in County Mayo, may have been visible to passing seafarers as green oxidized copper-malachite staining on cliffs. One of the main barriers to finding prehistoric copper mines today is that subsequent mining is likely to have destroyed traces of earlier activity. Part of the reason why some of the mines, such as the Mount Gabriel type in southwest Ireland, survive is that they would not have been economically viable to mine in recent centuries (O'Brien 1996, 6) and the survival of the prehistoric mines at Ross Island is due to its flooding (O'Brien 2004b); however, it is becoming increasingly clear that even intensively reworked deposits are likely to retain some record of prehistoric mining (O'Brien 1996, 13).

**Tin**

With the development of alloying techniques and the discovery of the qualities of tin-bronze, tin became important (Penhallurick 1986). This switch seems to have become established more quickly in Britain and Ireland (c. 2200 cal BC) than on the Continent (Sheridan 2008a, 67).

Tin is not commonly thought to have been naturally available in sufficient quantities of easily extractable amounts in Ireland and it is generally accepted that it was imported from Cornwall or Brittany during the Bronze Age; however, it has been found in considerable amounts in the Goldmines River, County Wicklow, Dalkey, County Dublin and there are even reports of its occurrence at Killarney, County Kerry (Coffey 1901, 272-273). Recent research in the Mourne Mountains of County Down has also revealed tin cassiterite deposits in river sediments suggesting there may be considerable deposits in those mountains (Warner *et al.* 2010). Warner (pers. comm.) has postulated that there may be substantial tin mines of prehistoric date waiting to be found in this region and that the Bronze Age gold
which he also believes originates from the Mourne Mountains, was a by-product of that mining. However, it is still likely that considerable amounts of tin were imported from Cornwall. The occurrence of Cornish gabbro axes in Irish Neolithic contexts suggests early contacts and the occurrence of Irish style lunulae in Cornwall and in Brittany indicate networks of exchange were established by the EBA.

**Gold**

Unlike the mining of copper, gold in Ireland during the Chalcolithic and EBA was probably obtained from placer deposits (Mitchell and Ryan 1997, 213).\(^\text{46}\) Numerous potential sources have been identified (Fig 3.7) and it is still panned as a hobby (Cox 2005). According to the annals, it was first smelted in Ireland by King Tighernmas and his artificer Uchadan around 1000 cal BC in Wicklow (Joyce 1912b, 360). While we now know that gold was worked as early as the Chalcolithic there may be the kernel of a truth in this legend; gold does occur quite abundantly in County Wicklow (Alborn 2011). Place name evidence may also indicate where gold was naturally available, deposited, or found; the Irish for gold, ór, and its anglicised version, ore, occur in many Irish place-names (Joyce 1912b, 360-365).

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\(^{46}\) It may have been extracted from primary deposits in the Later Bronze Age (Warner et al. 2009, 23-24), but there is no direct evidence for this.
Through analysing the proportion of naturally occurring silver, copper and tin in such objects and comparing it to gold collected from Irish rivers, Warner et al. (2009) discounted all Irish sources other than the Mourne Mountains of County Down. Recent lead isotope analysis of two lunulae suggests this could not have been their source (Standish et al. 2013) and raises the possibility that some gold may have been imported from western Britain; however, the distribution of lunulae (Taylor 1980), which predominantly occur in Ireland, and the different character of lunulae in Britain and Brittany (provincial), suggests that classical and provincial lunulae were made in Ireland and that the gold was most likely sourced here too.

**Shell**

The use of shells in exchange was widespread, geographically and temporally (cf. Quiggin 1949; Hodgendorf and Johnson 2003; Martien 1996). In some cases, their
value may have been accentuated through distance from their sources. For example, spondylus shells were exchanged across vast areas of Neolithic Europe to areas far from the sea (Shackleton and Elderfield 1990); however, this was not always the case and many coastal communities evidently valued other shells regardless of their ubiquity and therefore presumably for more singularly symbolic reasons. For example, ethnographic research illustrates that cowrie shells are often associated with fertility, ‘due to the perceived resemblance between the slit in the cowrie and the female vulva’ (Dowd 2009, after Classen 1998, 204). In an Irish context perforated cowrie shells are most common in Neolithic burials, but have also been found in various Bronze Age instances (Dowd 2009). Scallop shells have also been found with a number of Bronze Age burials, and while the likely symbolism of the scallops is not clear, their reference to maritime environments may relate to a journey undertaken to the coast or be symbolic of sea trade or travel (Dowd 2009, 95). They may also have been perceived as liminal agents (Westerdahl 2005) and their inclusion in burials may indicate a belief that they held the power to assist in the transition between worlds.

3.2.5. Soil and vegetative cover

The importance of soil to all terrestrial life need hardly be stated. To agricultural communities its quality, combined with their technical ability, is one of the most important constraining factors to intensification and growth. The quality and suitability of soil is likely to have been one of the reasons certain communities were attracted to settle in particular regions. Prehistoric communities are, however, unlikely to have perceived their landscape in terms of soil cover; rather, they will have seen it in terms of vegetative cover. Initially, during the Neolithic, dense heavy forests on the deepest and richest soils would have made some lowland areas less accessible to farmers and thinner soils on high ground may have been more accessible. As more effective bronze tools and deeper ploughs became available during the Bronze Age it would have become possible to move to the

47 the cremated remains of an adolescent in a Bronze Age cist at Carriggeens, County Sligo (Cahill 1992-Excavations 1992:162 with Cordoned Urn) and in Glencurran cave, County Clare (Dowd 2009)
48 Glencurran cave, County Clare, Moylehid, County Fermanagh and Kealkil, County Cork (Dowd 2009)
49 The placement of sea shells and sand in Norwegian barrows has been linked to dangerous sea voyages to obtain bronzes and thereby power and prestige (Westerdahl 2005 after Kvalø 2000)
heavier soils of lowland areas and the concomitant clearing of forests would have greatly facilitated the opening up of the landscape to movement by land.

3.2.6. Climatic and environmental change

Climatic change during the period under review may appear minor when compared with that which occurred over geological timeframes; nonetheless, there are long term processes and short term events discernible which are likely to have placed, or lifted, significant constraints on production, movement and exchange, and even where groups were not directly affected, networks of exchange may have been stimulated or collapsed.

Fluctuations in temperature may not have directly impacted on travel and exchange; however, they may have had a significant knock-on effect on weather patterns, causing travel difficulties and affecting agricultural outputs. In Northern Europe mean annual temperatures reached a high in the Neolithic (mid Holocene c. 6000 BP) and then decreased over the ensuing millennia; however, this was neither geographically or seasonally homogenous (Davis et al. 2003, 1706-1710). Here in north-western Europe the winters became steadily warmer and the summers became steadily colder (Fig 3.8).

![Temperature Graph](image)

Figure 3.8 Mean summer and winter temperatures (from Davis et al. 2003)

This has meant that overall annual mean temperature change in north-western Europe has not been great. Conversely, in north-eastern Europe winter temperatures and summer temperatures reached their all-time highs during the Mesolithic and Neolithic (mid-Holocene c. 8000-4100 BP) leading to a relatively
significant overall drop in annual mean temperature over the Bronze Age and down to the present. At an even more local level there would also have been considerable variation and the timing of shifts in weather patterns vary considerably even across Britain and Ireland; however, some degree of synchronicity can also be demonstrated (Barber et al. 2003).

Overall, there appears to have been a deterioration in climatic conditions during the Chalcolithic and into the Bronze Age, with the weather becoming increasingly wetter and perhaps colder (Hall 2011; Mitchell and Ryan 1997; Barber et al. 2003). Recent pollen profiles from Britain and Ireland show a significant shift to wetter conditions at c. 4400-4000 cal. BP (2450–2050 cal BC) (Barber et al. 2003). Lough Neagh, which has been noted as a particularly good rain gauge, has diatomite deposits interspersed in the peat around its shores suggesting that sometime around 4000 years ago, perhaps coincident with the first of the aforementioned climatic shifts, the lake expanded significantly (Hall 2011, 98-99). However, periods of warmer and/or drier weather are also suggested by the occasional growth of trees on bog surfaces, such as those on Spiddal beach (Fig 3.9), and recorded in studies of blanket peat from Wicklow (Hall 2011, 99).

![Figure 3.9 Pine stumps on Spiddal beach, County Galway](image)

One major environmental effect of the climatic deterioration was a considerable growth of blanket bogs on uplands and raised bogs on the central lowlands. The
processes of bog growth are likely to have been gradual and in some locations began as early as 9000 years ago (Mitchell and Ryan 1997, 144-148). The extent to which this was climatically driven or exacerbated by anthropogenic factors has long been a subject of debate (Hall 2011, 91-96; Mitchell and Ryan 1997, 203-204) and in the case of the uplands is intimately tied with the debate on the decline of pine (Mighall et al. 2004). Up until the late Chalcolithic much of the uplands were forested with pine, and clearance, even temporary,50 may have had dramatic effects. Combined with the loss of drainage, effected directly by clearing forests, the presence of microscopic particles of anthropogenically created charcoal which would have impeded soil drainage (Hall 2011, 88), make it seem likely that agricultural expansion could at least have hastened the growth of the upland blanket bog (Hall 2011, 88). However, increases in bog growth are also likely to have occurred in response to climatic change (Mitchell and Ryan 1997, 203).

The growth of raised bogs and inundation of areas of low lying forest, which had begun in the Neolithic, continued to invade and engulf areas of low-lying forest during the Chalcolithic and Bronze Age (Mitchell and Ryan 1997, 202-203) and many of the trackways that have been found in the Bord na Móna Bogs are dated to that period (Whitaker 2009, 20-38; Raftery 1996, 423). Either way, bog growth will have severely constrained the land available to farming and had numerous knock-on effects on existing social structures. The growth of bogs would also have impeded and constrained movement (Jones 2009), especially across the midlands where deep raised bogs developed.

Along with more long term climatic change and anthropogenic factors, some short term natural catastrophic events may also have had a significant effect. Bailie has identified two particularly narrow ring events in the Irish bog oak record from the period under consideration. The first began during the Chalcolithic, in 2354 cal BC, and reached its lowest growth in 2345 cal BC (Baillie 1999, 146). Residue from the eruption of the Icelandic volcano Hekla 4 has been found in numerous Irish bogs (2310 ± 20 cal BC) and appears a good candidate for the cause of this event (Baillie 1999, 146). Tree samples from around Lough Neagh dated to the period of this event show evidence consistent with a decade long flooding event (Baillie 1995, 50 Unlike oak pine cannot re-sprout from dormant buds (Hall 2011, 92)
The second event began in 1628 cal BC and coincides with other event horizons noted in chronologies from across the northern hemisphere (Baillie 1995, 32 & 34). This was once linked to the eruption of Thera on Santorini, but Baillie now believes it is more likely to be the result of a major cosmic impact, either in the form of a ‘single massive impact’ or alternatively as a ‘cosmic swarm’ (Baillie 1999; 2007).

The actual effect that such events would have had on the contemporary environment is not entirely clear. The weather was certainly wetter and colder for a number of years and this is what Baillie has clearly shown in the slow growth of the bog oaks (Baillie 1999; 1995; 2007). In an attempt to provide a balanced view Mitchell and Ryan have suggested ‘that deterioration in climate may have been a matter of a drop of a degree or two in mean temperature and increased rainfall, [and] while unwelcome,... would still have been within the normal ranges for Ireland’ (1997, 156). While we should be careful to avoid outright environmental determinism, Mitchell and Ryan’s description may be understating the experience of what living through such events was likely to have been. Baillie has correlated these scientifically dated environmental events with occurrences of catastrophic events in human myths and histories from around the world (Baillie 1999). While some of his mythic links may stretch credulity, graphic descriptions of events from historical times suggest the trauma caused by such events would have been far more dramatic than Mitchell and Ryan’s mere temperature fluctuation. Even at a geographic remove sufficiently distant from the eruption of a super volcano or cosmic impact to ensure safety from direct effects, we are speaking about events that may have commenced with dramatic visual events followed by 10-20 years (a generation) of crop failure and loss of livestock leading to widespread famine. However, as Mitchell and Ryan (1997, 156) point out, such a deterioration in climatic conditions could actually have worked to the benefit of the strong in some societies and have had the opposite effect in the material record than one would expect.

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51 Narrow ring events in oak chronologies from England and Germany, frost ring events in foxtail-pine chronologies from the Sierra Nevada and bristlecone pines from North America, and a surge in drought regime trees in Anatolia (Baillie 1995, 34)
3.2.7. Plant and animal

The plants and animals available also represented a set of opportunities and constraints, both as physical barriers to movement (e.g. dense forest and bogs) and materials for employed for food, shelter, tools and transport.

Due to the denudation caused by the Ice Age, the natural range of both plants and animals was more restricted than on neighbouring Britain or on the Continent. It is possible that some plants and animals survived the ice ages in refuges, either on nunataks or along the extreme southwest coast of Ireland; however, most species either had to recolonise or be brought here through human agency.52 There has been substantial argument over that process. Some argue the southeast of Ireland may have been connected to Britain for some time after the last Ice Age, and this allowed for recolonisation by some plants and animals (Mitchell and Ryan 1997, 98-99); however, models of glacial action contradict this (Hall 2011, 23). In any event, by 10-9,500 BP any link would appear to have been severed, leaving Ireland without many species that continued to colonise Britain from the Continent (Mitchell and Ryan 1997, 53 & 99). An interesting group of plants and animals are found in western Ireland but not in Britain. These are known as the Lusitanian or Hiberno-Cantabrian group and are found also found in Atlantic France and Iberia (Hall 2011, 24). It has been suggested that some of these plants may have arrived either with early prehistoric settlers from the Atlantic region, or later with pilgrims returning from Santiago de Compostela (Hall 2011, 44). Of course contact along the Atlantic façade is well attested in many periods (Cunliffe 2001), not least of all that under discussion in this project.

By the beginning of the period under review farming had been practiced in Ireland for at least 1500 years; both animal husbandry and cereal cultivation would have been well established. In addition to native species, many plants (Monk 1985) and animals (McCormick 2007b) had been introduced. However, this does not necessarily mean that both these practices had been taken up ubiquitously and there are hints that in some places a mobile way of life that would not have suited cereal cultivation persisted (Bradley 1993).

52 Certain species of plant could recolonise through their seeds being carried by the wind or birds.
3.3. Technological constraints and opportunities

During the 1980s Sherratt (1981; 1983) proposed his ‘secondary products revolution’ model, in which technological innovations, largely occurring during the Chalcolithic and EBA, allowed the exploitation of secondary products (milk, wool, traction etc.). In this model farming improvements allowed large Neolithic communities to fission into smaller homesteads, expand into different environments and develop interrelated subsistence systems (pastoral and agricultural); in turn, this, and more efficient means of transport that allowed the movement of bulk goods, combined to lead to craft specialisation and increased social complexity. Various criticisms have been levelled at this model, the most sustained of which point out that many of these innovations can be traced to an earlier period. However, as Greenfield (2010) has pointed out, Sherratt meant to highlight intensification, not first use, and his model was concerned with the synergistic effect of a number of innovations. The basic premise of the model is relevant to our study.

3.3.1. Metal mining and working technologies

The only metal known to have been mined during the Chalcolithic or EBA in Ireland is copper. Gold was collected from placer deposits and tin was likely gained through exchange with communities in Cornwall.

Copper was first mined in Ireland at Ross Island and it is likely that the technology arrived from Atlantic France as a developed package (O’Brien 2012a; 1995; 2004b). The copper was naturally high in arsenic and therefore relatively hard without alloying. The metal was extracted through a combination of fire-setting, pounding with hafted stone hammers and probably prising with fingers and pointed wood and bone implements (O’Brien 2004b, 451-458; see section 4.4.2). The ore then went through a ‘beneficiation’ stage of progressively finer crushing and sorting, and possibly grinding and washing. To avoid noxious gasses, the ore is likely to have been roasted prior to smelting. The smelting took place in pit furnaces, under poorly reducing conditions, some of which may have incorporated bellows or blow pipes to maintain high temperatures, which produced little slag.
Alloying began about 200 years before Ross Island was abandoned. This made the exploitation of a wider range of copper sources (without significant arsenic content) viable. There are several such mines in peninsular West Cork (O’Brien 2012b, 102-111), one of which at Mount Gabriel has been excavated (O’Brien 1994). There were no apparent significant changes in the technology of how copper was mined; however, the manner in which it was socially organised may have changed.

There is relatively little evidence for casting and alloying processes beyond the objects themselves and a small number of stone moulds. The earliest objects were either cast in simple one sided stone moulds or sandboxes (see section 4.4.5). This limited casted objects to relatively simple forms; only in the later Bronze Age with innovation of the lost wax technique did more intricate casting become possible.

The earliest gold objects (discs, lunulae, plaques & ear ornaments) were made of sheet metal (Taylor 1980; Eogan 1994), which was beaten into shape, or subsequently cut, and then incised and indented, sometimes in repoussé, to produce intricately decorated objects. Gold from more than one source is likely to have been beaten together, especially in the production of larger objects; this likelihood is borne out by varied results of multiple isotopic tests carried out on the one lunula (Standish et al. 2013).

3.3.2. Farming technologies

There is likely to have been increased specialisation of farming and exploitation of secondary products during the Chalcolithic and EBA. The distribution of wedge tombs, in areas with few Neolithic remains, suggests Chalcolithic and EBA communities expanded into areas previously not intensively inhabited and the often densely spaced upland distribution may suggest they were pastoral specialists organized on a small scale (O’Brien 1999; Jones et al. forthcoming; Jones draft). These societies may have existed alongside, and formed exchange relations with, more centrally organised agrarian communities, some of which were centred on the older passage tomb regions. This general picture fits with Sherratt’s secondary products model of fissioning and agricultural specialisation; however, the specifics are more elusive.
There are very few well-dated faunal assemblages from Chalcolithic or EBA Ireland. The assemblage from Newgrange is the main assemblage archaeologists have referred to; however, the status of that site means it is unlikely to be typical and the recent revelation that the horse bones are actually Iron Age (Bendrey et al. 2013) suggests the entire collection needs reassessing. Analyses of lipids on pottery from the early Neolithic site at Magheraboy (Smyth and Evershed 2014) have, as in the Near East (Evershed et al. 2008), placed the initial exploitation of milk in Ireland much earlier; however, the extent to which it was exploited remains to be established.

Textiles are likely to have been important items of exchange; however, it is unclear when various associated technologies were first introduced to Ireland. Spindle whorls are relatively common finds on Bronze Age sites in Ireland and across Europe (Harding 2000, 256), but no systematic survey of the Irish examples has been undertaken to date and they are rarely from sealed contexts. It is also unclear when wool was first exploited. Zooarchaeological information from across Europe suggests that intensive production of wool became widespread in the Chalcolithic (Greenfield 2010). Palaeobotanical evidence suggests that flax was being exploited for linen in Ireland from shortly before 2000 cal BC (Weir 1995).

Emmer wheat was widely cultivated in Ireland from the early Neolithic (Monk 2000). More easily processed free threshing wheat may have been introduced in the Chalcolithic or EBA (Ó Maoldúin forthcoming-b). There may also have been a move from a preference for wheat in the preceding Neolithic to barley in the Bronze Age (Monk 1985).

There is evidence that ards existed from the Neolithic; however, there is no evidence that the ard plough was used in Ireland before the LBA (Mitchell and Ryan 1997, 200).

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53 In chronological terms this would equate with the LN in Ireland.
54 Recent archaeological finds from Irish infrastructure projects support this (e.g. Danaher 2013, 79-80)
3.3.3. Travel and transport

Boats

Boats are likely to have served as the main form of travel and transport for most communities during Irish prehistory. Much of the evidence for boats, especially for maritime boats, is circumstantial; however, there is a growing body of evidence for the craft used.

It seems probable that the first people to colonise Ireland in the early Mesolithic arrived by boat, probably some form of log-boat, or bark, or skin, covered craft (O'Sullivan and Breen 2007, 29), and in the heavily forested landscape of the early prehistoric Ireland boats would likely have been essential to movement over any distance.

By the Neolithic, the exchange of porcellanite from the Antrim coast can be traced to Britain (Sheridan 1986), and this, along with the exchange of Lambay porphyry, Arran pitchstone, Welsh dolerite, Cumbria tuff and Cornish gabbro (Cooney and Mandal 1998), indicates regular boat travel across the Irish Sea. By the period under consideration this route was well established and we can speak of an ‘Irish Sea province’ (Waddell 1991/1992). Contacts, even further afield along the Atlantic façade, are evidenced as early as the Neolithic (Eogan 1990; Cunliffe 2001); however, it is likely that these took place in the form of short-hop journeys, with items of exchange predominantly taking the form of ‘down the line exchange’.

During the Late Neolithic, Irish contacts with communities along the continental Atlantic façade appear to have waned and contacts with Britain appear to have predominated. Continental contacts were renewed and intensified during the Chalcolithic and EBA and it is likely that long-distance directional travel took place along the Atlantic façade (Cunliffe 2010). In Ireland, during this period, closely related ritual monuments (wedge tombs) suggest more intensive communication along the western seaboard than seen before, perhaps indicating improvements in maritime technology (Jones 2009, 127).

The type of boats that would have been capable of the travel required to maintain such long distant contacts has long been a subject of fascination to professional
archaeologists, maritime enthusiasts and serial adventurers alike.\(^{55}\) There are three classes of boat likely to have been available to Chalcolithic and Bronze Age communities: skin covered craft, log-boats and sewn-plank boats. In Ireland, there is only direct evidence for one of these classes, log-boats; however, there is reason to believe all three may have existed.

Log-boats
There are over 350 log-boats or dug-outs known from Ireland (Lanting and Brindley 1996). The earliest evidence comprises probable fragments of later Mesolithic log-boats (O'Sullivan and Breen 2007, 54; Lanting and Brindley 1996, 91) and there are a number of more complete vessels known from the Neolithic (Lanting and Brindley 1996).

Of those which have been dated, six are from the Chalcolithic or EBA (Tab 3.1). These constitute the only recorded boats from Ireland during that period. They were all found preserved in inland peat deposits and were presumably employed on inland waterways. There are, however, indications some also operated in maritime contexts.

<table>
<thead>
<tr>
<th>Townland</th>
<th>County</th>
<th>Lab ref</th>
<th>Radiocarbon years BP</th>
<th>Calibrated date range @ 95.4% probability</th>
<th>Period</th>
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<tbody>
<tr>
<td>Lurgan</td>
<td>Galway</td>
<td>GrN-1865</td>
<td>3940±25</td>
<td>2562-2344 cal BC</td>
<td>LN-Chal</td>
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<tr>
<td>Carrowneden</td>
<td>Mayo</td>
<td>Beta-85979</td>
<td>3890±90</td>
<td>2620-2048 cal BC</td>
<td>LN-Chal</td>
</tr>
<tr>
<td>Cuilmore</td>
<td>Mayo</td>
<td>Beta-83891</td>
<td>3410±80</td>
<td>1914-1518 cal BC</td>
<td>EBA</td>
</tr>
<tr>
<td>Teeronea</td>
<td>Clare</td>
<td>GrN-15968</td>
<td>3310±35</td>
<td>1683-1508 cal BC</td>
<td>EBA</td>
</tr>
<tr>
<td>Ballyvoghan</td>
<td>Limerick</td>
<td>GrN-18361</td>
<td>3300±30</td>
<td>1664-1501 cal BC</td>
<td>EBA</td>
</tr>
<tr>
<td>Cloongalloon</td>
<td>Mayo</td>
<td>GrN-18751</td>
<td>3265±30</td>
<td>1619-1456 cal BC</td>
<td>EBA-MBA</td>
</tr>
</tbody>
</table>

\(^{55}\) Various voyages have been undertaken in reconstructed boats to prove the capability of such vessels; the most famous of which world-wide was the Kon-Tiki expedition by Thor Heyerdahl (1950). In an Irish context Tim Severin’s (1978) ‘The Brendan voyage’ is probably the most famous.
Log-boats range greatly in size and likely also varied greatly in function. Some are likely to have been used for everyday travel, trafficking or fishing, while others may have been used for more specialized functions. The largest, at just over 15m in length, is the Lurgan log-boat from County Galway.\footnote{Now on display at the National Museum of Ireland (NMI), Kildare Street, Dublin} It exhibits a number of interesting features that have led to speculation on its form and significance (Gregory 1998; Robinson et al. 1999).\footnote{which have a close parallel in one other similarly dated partial vessel from Carrowneden, County Mayo (Robinson et al. 1999, 906)} An internal spine and a series of right angled ridges form ten or twelve compartments in the first c. 10m of the stern end have been variously interpreted as vestigial marks from the construction process,\footnote{Gregory argues the Lurgan log-boat was unfinished but this is strongly refuted by Robinson et al. (1999)} skeuomorphic details of more complex constructions and areas demarcated for single crewmen; the last of these suggestions seems most likely.\footnote{Evidence of use includes abrasive polishing on the underside of the second set of pared holes located just below the apparent sheerline (Robinson et al. 1999, 906); the occurrence of the second similar vessel at Carrowneden also offers further support (ibid.)} As Robinson et al. (1999, 906) have pointed out, this would have left the final five meters free for the transport of goods or persons. The boat also has a wide, rounded stern which narrows considerably toward the bow and ends in a rounded point. Combined with the added weight from the internal spine and ridges, this would have had the effect of lifting the prow of the vessel and may be a feature designed for rough lake or inshore sea-waters (Robinson et al. 1999, after Hale 1980, 126). Perhaps most significantly there are also three separate groupings of holes in the boat. While some of these were likely to be gauges employed in the construction of the boat, others may be evidence of attachments for a second log-boat, or an outrigger attachment, suggesting that the boat may have been specifically designed for use in even more rough maritime conditions.

It is often argued that log-boats were not capable of coping with maritime conditions. However, others have pointed out that if they were capable of navigating large inland lakes, such as Lough Neagh, where we know that they were used, they could equally have been put to sea in fine weather (Breen and Forsythe 2004, 31). Furthermore, from as early as the Neolithic, log-boats are known from ‘overtly marine locations’ (Breen and Forsythe 2004, 33). Even more convincingly, from a maritime perspective, a later Bronze Age log-boat has recently been found.
CONSTRAINTS AND OPPORTUNITIES

c. 1km offshore at Gormanstown, County Meath (Kelleher 2002). It has holes in its gunwales potentially implying outrigger attachments and its maritime context surely indicates its use in those waters.

Skin-covered crafts

Log-boats may have taken to the seas in calm weather; however, skin-covered craft such as the currachs, still used by many Irish coastal communities today, would have been far more suitable to maritime conditions. Tim Severin (1978) has even shown how it was possible to cross the Atlantic in a sailing vessel loosely based on this design.

Although some have argued for their presence since the Mesolithic (Johnstone 1980), the evidence for skin-covered craft in prehistoric Ireland remains scarce. The closest remains of prehistoric date are from Fife, on the east coast of Scotland, where the possible remains of a coracle were found deposited with a burial in an EBA cemetery (Breen and Forsythe 2004, 35). The only physical evidence we have in Ireland is the highly developed regional variations in surviving traditions; however, this is pushed considerably back in time by early historical and proto-historical records describing their use. The earliest of these records stems from a fifth century BC text, the Ora Maritima, and refers to Irish ‘vessels with united skins... [that] often traverse the deep in a hide’ (after Breen and Forsythe 2004, 39). This description is supported by a number of later references, including a third century one by Solonius; ‘they voyage in small boats of pliant twigs, covered with skins of oxen’ (ibid.).

Support for early skin-covered craft may also exist in the form of models or depictions. A Bronze Age shale bowl from Caergwrle in Flintshire is generally agreed to be a model of a boat, and its shape and details suggest it may be representative of a skin-covered craft (Bowen 1972, 38). The somewhat later Iron Age Broighter boat is thought to be the earliest depiction of a skin-covered boat from Ireland (Breen and Forsythe 2004).

Skin-covered craft are therefore likely to have existed during the period under consideration, and it is likely that vessels of this type, and of varying design, were

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60 Unpublished radiocarbon date (Carl Brady pers. comm. Department of Arts Heritage and the Gaeltacht underwater unit)
employed for a wide range of activities. Vessels like recent coracles, or the Boyne currach, were likely used on inland waterways; vessels of similar design to currachs on the west coast today are likely to have been used in maritime environments, and would have been well capable of making the crossing to Britain or Brittany. Indeed it has been noted that the boat carvings on the Mané Lud megaliths of the Morbihan in Brittany may indicate currach-like boats (Bowen 1972, 39).

Sewn-plank boats
The earliest plank-built boats in Northern Europe are Bronze Age in date. There are nine known examples and so far these have been exclusively found around Britain (Van de Noort 2009). These sewn-plank boats are generally interpreted as maritime vessels, a view supported by their generally coastal context, and their complexity suggests an established tradition. The most famous of these is the Dover boat (Clark 2004), an eleven metre long flat bottomed vessel composed of six massive oak planks held together by yew withies. It was caulked with moss, held in with wooden lats and further waterproofed with beeswax and animal fat, and was almost certainly used for Channel crossings. It has been estimated that it would have been propelled by at least eighteen paddlers; a boat of this size could have carried a substantial cargo of supplies, livestock and passengers.

No sewn-plank boats have been found in Ireland but three of the British examples do come from the Severn estuary and could have been used to cross the Irish Sea. Interestingly, the other most significant find location, the Humber estuary, could have served as a springboard for movement across the North Sea to Denmark.

The earliest plank-built boat found in Ireland was a later Iron Age Mediterranean style craft found in County Westmeath (Breen and Forsythe 2004, 41-43). Some scholars have argued this is indicative of a local tradition; however, existing as it does on its own, it is much more likely to be a result of contact with Roman Britain.

**Overland transport**
For much of prehistory rivers are likely to have provided the most substantial inland route-ways; however, with the gradual opening up of the landscape and the

61 Caldicot 1, 2 & Goldcliff (Van de Noort 2009)
development of the wheel and animal-drawn traction, roads would have become more of an option.

Physical evidence for inland routeways from the period under consideration includes wooden trackways crossing bogs (Raftery 1996; Brindley and Lanting 1998; Whitaker and O'Carroll 2009; Whitaker 2009). Axe marks on Corlea 6 suggest the rapid widespread functional use of metal axes, a technological advancement that would have significantly eased the construction of more substantial inland routeways.

Traction and mounted transport were important innovations for both transport and agricultural production. The earliest 'beasts of burden' were probably oxen and they are likely to have been used as pack animals, for simple traction and possibly to pull ards during the Neolithic (Waddell 2010, 31).

Until recently, horse bones from the excavations at Newgrange (Wijngaarden-Bakker 1974; 1986) were interpreted as evidence for the introduction of the horse to Ireland through Beaker networks during the Chalcolithic (McCormick 2007a). However, recent radiocarbon dating of those remains has revealed them to be of Iron Age date (Bendrey et al. 2013). The date of the first introduction of horses to Ireland is now uncertain and may be as late as the LBA. There is also no evidence for wheeled vehicles in Ireland before the LBA (Mitchell and Ryan 1997, 235).

The early medieval literature of Ireland attests to a network of established routeways clearly ranked and differentiated (Fig 3.10). It is difficult to establish their antiquity but some of them are likely to have been used from prehistoric times (Jones 2009). The five great ancient roadways, or Slighe, are traditionally believed to have radiated out from Tara. The Airne Fingein places their establishment at c. 100 AD, when various heroes travelled to Tara to celebrate the birth of Conn; however, even if that date were to be believed for the birth of Conn, it is likely that Tara was simply ‘linked up by new junction roads to the main highways already for centuries in use’ (Ó Lochlainn 1940, 470). A reconstructed map of major early medieval roads (Warner 1976, 277) reveals those routeways to be aligned more closely with coastal harbours, natural topography and river routes than with

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62 Ó Lochlainn (1940, 470) points out that Tara only became the seat of high-kingship c. 150 AD and Conn’s birthplace is unknown but was probably Cruachan in County Roscommon.
connecting royal centres of the Iron Age and they are therefore likely to predate their establishment, but it is difficult to know how far back their antiquity can be stretched.

The east-west Esker Riada (*Eiscir Riada/Slighe Mhor*) across the centre of the country is likely to have been a regular route from early prehistory and as Jones (Jones 2009) has noted the *Slighe Mhidhluachra* and *Slighe Chualann* align with the routes of the rivers Bann and Barrow; it seems likely that they reflect formalised manifestations of earlier routes.

![Figure 3.10 Ancient roadways of Ireland (from Jones 2009)](image)

**3.4. Social constraints and opportunities**

The first opportunities for exchange open to Irish communities in the Chalcolithic and Bronze Age would have been through established contacts. This section aims to briefly outline the extent and intensity of preceding contacts within Ireland, with Britain and with other neighbouring areas on the Continent.
3.4.1. Regionalism within Ireland

Within Ireland, there is evidence for regionality during the earlier to mid Neolithic; this is most distinctly expressed in the distribution of Neolithic tombs and the exchange of stone axes, and the most intense and enduring routes of communication appear to have followed landscape constraints. Jones (2009) has suggested that there was a broad north-south divide with most interaction moving from east to west (and vice versa), and that most north-south movement was constrained to the east coast, where it was facilitated by the Bann and Barrow corridors.

Court tombs are almost exclusively confined to north of a line stretching from the Murrisk peninsula, County Galway to the Cooley peninsula, County Louth, with the densest band running from north Connacht across mid Ulster (Waddell 2010, 88). Outliers, like the Teergonean court tomb in County Clare (Waddell 1991b), are notable for their rareness and probably indicate movement by, or interaction with, northern groups via the western seaboard and Shannon River. Other related tombs in north Munster (Jones and Walsh 1996) are part of the wider European idea of gallery tomb building from which such close relations cannot be inferred. Portal tombs have a similar but wider distribution than court tombs; they are also most numerous in the north, largely absent from the midlands and much of Munster (Kytmannow 2008); where they do occur in the south indicates interaction along the Barrow corridor. The distribution of passage tombs also illustrates a north south divide; the majority, including most major concentrations, are distributed in a band across the northern half of the country, from north Connaught to north Leinster (Waddell 2010, 64). These main concentrations (Boyne valley, Loughcrew, Carrowkeel and Carrowmore) are notably all either coastal or focused on river corridors. In the south, several overlooking the Liffey/Barrow corridor support Jones’ (2009) suggestion that the most intense north south interaction occurred along the east side of the country and those elsewhere in Leinster and Munster are located by the rivers Nore and Suir, which intersect at Waterford near a third concentration.

In contrast to the other types of Neolithic tombs, Linkardstown tombs are restricted to the south of Ireland (Waddell 2010, 111-114). There are relatively few
of these monuments but, given that prior to excavation they are indistinguishable from large cairns, more examples are likely to exist.

There is a notable paucity of Neolithic tombs in south Munster and the few that do exist have a coastal distribution suggestive of a short-lived enclave indicative of external contacts (O'Brien 2012b, 42-49). There have been finds of Neolithic houses in recent development works in this region; however, the impression of a sparsely inhabited area with a distinctively regional character during the Neolithic remains.

Fourth millennium BC pottery types do not (Sheridan 1995) support a north-south division; they cross-cut tomb types and suggest other networks of interaction perhaps operating in a different sphere.

Large henge monuments of the early third millennium BC (Waddell 2010, 115-121; O'Sullivan and Downey 2012a), and the associated Grooved Ware pottery tradition (Brindley 1999; Sheridan 2004a; Gibson 2002, 84-87), appear to have been concentrated in the zones of the earlier passage tomb builders. There is a particularly dense concentration of both in the Boyne valley, County Meath (Stout 1991). There is a particularly large earthen henge at Ballynahatty, County Antrim, adjacent a complex of other similarly dated timber monuments, surrounding a small passage tomb (Hartwell 1998; 2002). There is another very large earthen henge at Lisnalurg, County Sligo (Condit and Gibbons 1991) in an area with many passage tombs. There are also a number of similar monuments in north Munster; however, apart from that at Grange, Lough Gur, County Limerick, these have not been investigated and no Grooved Ware was found at Lough Gur. Like the henge at Toneforts, County Sligo (Danaher 2005), henges in Munster could all date to the latter half of the third millennium BC and the overall impression created by the distribution of earlier third millennium BC henge monuments may support the notion of a general north-south regional division continuing into the first half of the third millennium BC.

Rock art, as distinguished from megalithic art, may also indicate established connections between communities in Ireland. In Ireland, it is predominantly found in coastal areas. The most significant concentrations occur in the peninsular southwest, on Donegal’s Inishowen peninsula and in the Louth/Monaghan region.
A lesser concentration is found in County Carlow and scattered panels are also known from across the country. Its dating is controversial with authors opting for an origin in the fourth millennium BC (O'Connor 2006; O'Sullivan and Downey 2011), the early third millennium BC (Bradley 1997, 208) and others not until the mid-third millennium (O'Brien 1999, 31), at least for that in the peninsular southwest. Its occurrence in the southwest of Ireland may be particularly significant, especially when trying to consider the cultural milieu into which metal mining and working was first introduced.

The distribution of stone axe lithologies (Cooney and Mandal 1998) also suggest a broad north-south divide. The most common axe type in the North is porcellanite; in the south shale and mudstone predominate, and there is a more localised distribution of porphyry in the Dublin region. The distribution of porcellanite extends south, most densely along the east coast but only as far as Dublin, and in a looser spread into the south west extending initially along the Shannon corridor.

3.4.2. Contacts with communities outside of Ireland

In the past, authors have alternatively emphasised prehistoric contacts between Irish communities and those along the Atlantic façade (Bowen 1972) or in Britain (Waddell 1991/1992); both are likely to have been important and neither has to be considered to the exclusion of the other (cf. Cunliffe 2001). It must also be emphasised that communities in Ireland were not homogenous and they tended to interact most consistently with groups within easy reach. For this reason the most consistently traversed route was likely between Antrim and Argyll (mentioned above) and this area is, during various periods, probably best viewed as a ‘maritory’ (after Needham 2009), with communities on either side of the North Channel having more in common with each other than elsewhere in Britain or Ireland. In a similar vein, contacts with Brittany although less frequent were most likely to have been from the southwest coast (see section 3.3.3). For various reasons interaction waxed and waned during different periods and to set the scene for the Chalcolithic and EBA we must briefly consider the evidence for contacts during the preceding Neolithic.

Court tombs are connected with a wider tradition of long barrows and in Britain their closest parallels are found in Scotland and the Isle of Man (Darvill 2010, 109-
113). Broadly similar monuments are known from continental Europe and along the Atlantic façade and arguments over their origins have vacillated between Western France and Southern Poland; however, it is generally accepted that the regional variations are likely to owe something to the domestic architecture of indigenous groups (Darvill 2010, 111). Either way, the similarities in form show an interconnected ritual sphere which must have been maintained through movement or exchange, especially given the short and coincident time frame within which many are now proving to have been built (Schulting et al. 2012).

Portal tombs are also part of the wider long barrow tradition; in Britain (Darvill 2010, Fig 37; Cummings 2009) they are found in greatest concentrations along the western coast (Cornwall, southwest Wales and northeast Wales), with only one significant inland group (north Cotswolds), reinforcing the impression of frequent interaction across the Irish Sea, but one firmly connected to a tradition of the Atlantic façade.

Passage tombs in Britain also have a distinctly Irish Sea distribution, reinforcing that zone of interaction, but extending it to areas of Scotland and the northern Isles. Similarities in form and artefacts also suggest more distant contacts along the Atlantic façade and it has been suggested that the early simpler form of passage tomb in Ireland may suggest direct maritime contact with Brittany (Sheridan 2003a). In the developed tradition, striking similarities can also be seen between the megalithic art in Irish passage tombs and Brittany, especially those in the Boyne valley (O’Sullivan 2002; O’Sullivan and Downey 2012b) and Knockroe (O’Sullivan 1987; 2011) and in Brittany at Gavrinis (Le Roux 1992); however, in each of these areas the earliest art also contains significant local elements (Shee Twohig 1981; Bradley 1997, 23). Passage tombs also occur in southern Iberia and Eogan (1990, 132) has suggested that parallels between these and Irish tombs and in the artefacts found at them indicate direct connections.63

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63 The connections with Iberia go beyond monument morphology and Eogan (1990) shows how the angular art on Irish passage tombs is paralleled on Iberian mobile objects (bone idols and stone plaques). The decorated sandstone object from Knowth has strikingly close parallels with the so called 'baetyl idols' from the Lisbon area and the related Knowth pin has parallels near Álava in Basque country.
Linkardstown tombs are rarely discussed in terms of a wider tradition, but a similar tradition of individual burial did exist in Britain (Kinnes 1979). Those in Britain were often buried with jet sliders/toggles (Shepherd 1985) which while not of identical form provide an interesting parallel for the lignite toggle from Baunogenasraid (Raftery 1974). Single burials were also deposited under large mounds on the Continent during the Neolithic; however, in the absence of further parallels these are likely to be a result of similar responses rather than shared traditions.

The distribution of stone axes also attests to external contacts (Cooney and Mandal 1998; Sheridan 1986; Bradley and Edmonds 1993). These predominantly point toward interaction with Britain. Porcellanite axes from Antrim are more widely distributed throughout Britain than much of Ireland (Fig 3.5). Tuff axes from Great Langdale, Cumbria and gabbro axes from Cornwall have been found across Ireland, most numerously in Northern Ireland. Dolerite axes from Brittany have been found in southern Britain (Patton 1993) but to date have not been identified in Irish assemblages. The only definitively continental axes found in Ireland are jadeite axes from the Alps; these have been found widely distributed throughout central and western Europe and significant concentrations found in Brittany are likely to indicate the route through which they reached Britain and Ireland (Ricq-De Bouard 1993).

In the first half of the third millennium contacts with the Atlantic façade are less obvious and contact outside of Ireland appears to have been more solely focused upon Britain. This is manifested in shared pottery traditions, such as Grooved Ware (Cleal and MacSween 1999) and henges (Waddell 2010, 115-121), as discussed above.

Rock art may also indicate connections along the Atlantic façade (Bradley 1997; Shee Twohig 2004; Waddell 2010, 174-175). In addition to Ireland, it occurs in Scotland, northern England, north-western France and north-western Spain (Galicia) (Fig 3.11) and for this reason is sometimes referred to as the ‘Gallego-Atlantic’ style. Its southern boundary is rather abrupt and abuts with another distinctly different tradition, the schematic art of Iberia; its northern boundary appears less sudden and the Atlantic tradition shares many characteristics with North Sea, or Scandinavian rock art. It is difficult to date because of its occurrence...
on natural boulders and generally non-figurative character. Representations of artefacts on Galician panels have led to suggestions of Chalcolithic/EBA date (O'Brien 1999, 31) but arguable relations with megalithic art (Johnston 1993) and limited excavation adjacent to panels (O'Connor 2003; 2006; O'Connor 2007) have led to suggestions of earlier Neolithic origins. If an earlier third millennium date is accepted its distribution may indicate continued interaction along the Atlantic façade that crucially included the south-west of Ireland.

3.5. Conclusions

Patterns of movement, before the mid-third millennium, largely followed the constraints and opportunities provided by Ireland’s sea and landscape. The distribution of Neolithic material culture, especially passage tombs, suggests that the most intense inland movement focused on riverine corridors. Movement by sea was more consistent along the east than west coast but there was limited movement along the west coast and this is likely to have stimulated innovation in maritime technology.
The porcellanite and flint from Antrim were particularly important in Neolithic exchange networks; this and the location of a natural crossing point to Britain afforded communities in that region particularly favourable opportunities and despite not having significant copper resources that area continued to be an important area of innovation into the Chalcolithic and EBA. This did not necessarily restrict communities with less attractive resources from entering exchange networks; while they were not exchanged over as wide a geographic area as porcellanite axes, the shale axes from Clare were prolific in their regional exchange network. In other areas major established ritual centres, such as the Boyne valley, continued to be a focus of attraction into the late third millennium BC.

South-western Munster would appear to have been relatively peripheral during the fourth millennium BC and this may have continued into the early third millennium BC (although either henge monuments or rock art could potentially indicate the region engaging with external networks during that period). The occurrence of copper at Ross Island, and elsewhere within the peninsular southwest, combined with the technological ability to extract it in the mid-third millennium BC, catapulted that region into a prominent position among extensive exchange networks, and despite its late beginnings, feedback along those networks led to southwest of Ireland becoming one of the great megalithic centres in Western Europe (see chapter 7 & 8).

It is difficult to pinpoint when certain innovations became widespread; however, during the Chalcolithic, some communities may have become increasingly specialised in certain modes of agriculture, whilst other technological innovations, such as in the production of linen and woollen textiles, may have further encouraged specialisation for exchange. The native resources of copper in south-west Ireland, and the ability to mine it, were particularly important in bringing Ireland into contact with wider European networks.
Chapter 4 The Flow of Metal

4.1. Introduction

Scientific characterisation studies continue to prove useful in identifying the sources of metal in artefacts; however, these are often applied with little concern for the social processes over which they gloss. As Renfrew (1993, 15) has argued:

We need to develop analyses of travel and models for the displacement of goods which succeed in integrating the symbolic and the utilitarian aspects of transported goods... in relation to the specific exchange systems within which they are travelling. Characterization alone is not enough.

During the Chalcolithic and EBA metal was mined, refined, cast into objects, exchanged, used, recycled and deposited. This chapter aims not just to trace but also to understand, as much as possible, the social context of that flow of metal and metal objects. To do this, it is first necessary to acknowledge that all stages of that process, from production to deposition (consumption) and not just exchange were socially embedded phenomena; only then can the context in which those goods were exchanged be properly understood. This chapter will attempt to this by combining a metallurgical *‘chaîne opératoire’* and ‘object biography’ approach to Chalcolithic and EBA metal.
4.2. Method and theory

The problems that arise from separating archaeological method from theory are manifold (Johnson 2010; Trigger 1989). In the archaeological sciences such as archaeometallurgy, where researchers spend large parts of their careers obtaining specific skill sets, this can be a particularly common problem (Jones 2004a; Thornton 2012). In prehistoric archaeometallurgy it has, at times, led to the uncritical application of understandings drawn from post-industrial revolution operations; such as over stressing cost efficiency and task specialization (cf. Pittioni 1951), or reinforcing a conceptual gulf between magic and science (Budd and Taylor 1995). Ethnographic records of metalworking in ‘traditional societies’ suggest that it was likely to have been a socially and ritually embedded phenomena, possibly understood as a form of magic, that in some cases was considered a high-status activity, but in others may have been seen as impure and dangerous (cf. van der Merwe and Avery 1987; Childs and Killick 1993; Hodder 1982c, 60-61).

4.2.1. A chaîne opératoire approach

A chaîne opératoire can be defined as ‘a series of operations which brings primary material from its natural state to a fabricated state’ (Lemonnier 1986 after Cresswell 1976); however, in its original conception it is more than just a useful way of organising the chain of events involved in the manufacture of artefacts.

**Leroi-Gourhan and Mauss**

For Leroi-Gourhan, to whom the concept is accredited, each technical act was also a social act that combined to form a system which reflects a cultural representation of ‘reality’ (after Lemonnier 1986, 154). Here he was drawing on Mauss’ (1992 [1934]) ‘Les techniques du corps’, who had demonstrated that bodily techniques, which ethnologists had discarded under the rubric ‘miscellaneous’, are total physio-psycho-sociological phenomena often specific to certain groups. Thus, the way in which each stage of a chaîne opératoire is carried out becomes a socially meaningful act reflected in the bodily technique and the other tools used to complete the task, and behind each technique is a series of significant choices that

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64 The body being man’s first tool
each society has had to make. For Leroi-Gourhan those choices occur at different levels, or *degré du fait*, the first of which are so general that they are entirely functional and the last of which ‘lose any functional character and take on an essentially symbolic dimension’ (Lemonnier 1986, 160). As Gosselain (2000) has shown, it is the ‘functionally equivalent’ technical options, such as decoration, at the latter end of that scale, that offer most room for choice, and while communities may sometimes employ these as ethnic banners, they are also most receptive to borrowing. Slightly further back along that scale are the less visible techniques of manufacture, such as ‘fashioning’ or forming, that cannot be copied as easily. This knowledge is often less discursive and its transmission may represent deeper connections, ‘learning networks’ or ‘communities of practice’ (Wenger 1998). Accordingly, through identifying the level at which choices were made in a *chaîne opératoire* one is able to distinguish ‘between surface cultural expressions and deep structural dispositions’ (Jones 1997b, 92) and socially situate technological processes.

**Lemonnier’s study of the Anga**

The study of individual components in a *chaîne opératoire* may also indicate ‘strategic moments’ in which discernible social control of choice may help ‘bridge the gap between technical... and other social phenomena’ (Lemonnier 1986, 155). Lemonnier’s study of the Anga, in Papua New Guinea, makes clear the level of choice (agency) that may be involved in techniques employed by a group. In many cases where the adoption of a particular known house, or arrowhead type would seem to make logical sense, it is rejected in favour of those preferred by the group, thus not conforming to any models of environmental determinism (Lemonnier 1986, 168). Even in the *chaîne opératoire* of specialised tasks, such as garden cultivation, variation in the organisation of those tasks can be surprisingly socially circumscribed (Lemonnier 1986, 169-170). So the examination of techniques has the potential to lend insight into society because the two are in constant symbiosis; however, Lemonnier’s (1986, 177-180) research also demonstrates the ‘complexity of the social content in material culture’ and is perhaps a warning against any too definitive readings of archaeological material.
**Metallurgical chaîne opératoire**

Despite a relatively early application to Andean metalworking (Lechtman 1985; 1996; 1979), the application of chaîne opératoire to studies of prehistoric metal is less common than to those of lithics or ceramics. Ottaway (2001) has incorporated a chaîne opératoire approach to the study of metallurgy in the European Chalcolithic. She combines it with a biological-style life cycle of copper in an attempt to identify, and investigate, innovation and specialization (Fig 4.2). Ottaway follows Renfrew (1984, 391) in distinguishing her use of the term innovation from technical invention and defining it as the adoption and acceptance of a new technique or product. She explicitly differentiates her use of specialization from what she considers 'untested evolutionary and economic assumptions' and follows Edmonds (1995) in employing a broad definition: ‘consistent production of things by some people for others’ (Ottaway 2001, 89). Her key insights, such as the innovation involved in the process of beneficiation, are useful and individually discussed under the relevant sections of the chaîne opératoire later in this chapter.

![Figure 4.2 A cycle of copper production and working (from Ottaway 2001)](image)

Perhaps one of the best visualisations of a chaîne opératoire, that explicitly includes social aspects, is provided by Martinón-Torres (2002) (Fig 4.3). Here he considers it in a more traditional chaîne opératoire but includes arrows to illustrate where material may deviate from a simplistic linear trend. While the length of his chart neatly illustrates the organisation of the chaîne opératoire, the width axis allows for the inclusion of the wider social and environmental factors. While not specifically
designed for examining metalwork it is easily adaptable for the consideration of any technology.

4.2.2. Writing the biography of objects

Objects can, during their ‘lives’, assume numerous identities: tool, ornament, gift, commodity, heirloom, talisman, idol, ritual sacra, memento and object of sacrifice; and can therefore be said to have a biography (Appadurai 1986; Kopytoff 1986). Such a concept is distinguished from approaches that treat objects as inert and passive, such as ‘use-life’ approaches (Tringham 1994, 175), by integrating an understanding of how it is in the social interactions that involve people and objects that meaning is constituted (Gosden and Marshall 1999).

Archaeological artefacts are inevitably only found in their final resting place, but aspects of their biographies are often accessible as traces of wear, treatment or adjustments, and occasionally signs of their use can also be found elsewhere. Furthermore, considering them in the context of our wider knowledge of the societies with which they were associated provides us the opportunity to extrapolate further on their biographies.

4.3. The origins of Irish and British metallurgy

The origins of both Irish and British metallurgy have long been a subject of debate. As early as 1912, the occurrence of early copper objects in burials with Beaker pottery in Britain led Crawford (1912), in a migrationist model typical of the time,
to suggest that metalworking was introduced by a ‘Beaker People’ originating from central Europe. Others (e.g. Bremer 1928) citing the density of early axes and the scarcity of Beaker pottery in Ireland, argued that there was an independent native development, un-associated with Beaker pottery. Childe (1937), on the basis of the same evidence, argued that metalworking technology arrived in Ireland along Atlantic networks from Iberia, separate from Beakers. Raftery (1951) on the other hand, saw influence arriving in the south and west Ireland from Iberia and in the north of Ireland from central Europe via Britain.

The fact that the earliest copper objects produced in Ireland were of a distinctive metal, with high arsenic-antimony-silver content but no nickel, was recognised in the 1950s (Coughlan and Case 1957). Initially labelled ‘Group 1 metal’ this group is now known as ‘A metal’ (Northover et al. 2001; Northover 1980). A geological signature of this type could originate from several places in the British Isles (Budd et al. 1992); however, its consistency suggests a single source, or source region, and isotopic research supports this (Northover et al. 2001, 36; Rohl and Needham 1998). Over 95% of all Chalcolithic copper objects in Ireland and 80% of those from Britain, where they are concentrated in the west, are of this composition (Northover et al. 2001, 28).

Absolute dating methods have refined the overall chronology of prehistory; however, since the earliest copper objects in Ireland do not occur in easily dateable contexts this has been of limited help with dating metal typologies. It has helped to date dagger typologies associated with burials in Britain (Gerloff 1975; Needham 2011a) and the few hoard associations in Ireland have been drawn upon to construct chronological typologies of the wider assemblages (Schmidt and Burgess 1981, 21-27; Burgess 1980, Fig 2.13).

Sheridan (1983) attempted to move beyond traditional cultural historical models, through models of exchange that place more emphasis on the internal dynamics of the indigenous communities, and attempted to understand the ‘why’, as well as the ‘who and when’ metallurgy was first introduced. However, while Sheridan’s (1983, 18) concluding suggestion that ‘the native Irish may have been the first metallurgists’ was laudable for challenging what was a standard orthodoxy, increasingly the evidence does point toward some movement of people.
In recent years excavations of ancient mine workings on Ross Island, near Killarney in County Kerry, have provided a probable source for the eponymous ‘A metal’ (O’Brien 2004b). The preserved prehistoric workings at the mines are concentrated at two locations, the Western Mine and in the Blue Hole (O’Brien 2004b, 127-154). A small, probably intermittent, settlement or work camp with evidence of ore processing was found adjacent to the mine (O’Brien 2004b, 155-303). A range of radiocarbon dates (Brindley in O’Brien 2004b, 305-314) from the settlement and mine suggest the earliest activity dates from c. 2500 to 2400 cal BC and Beaker pottery from the settlement (Brindley in O’Brien 2004b, 316-338) moves the argument on a stage, providing firm evidence linking what appears to be Ireland’s earliest metalworking technology with a Beaker-using group.

In contrast to earlier diffusionist models, Craddock (1995, 144) argues that extractive metallurgy was developed independently in a number of places, and that, although it developed later in Europe than it did in the Middle East, it went through a similar set of stages of development, from primitive to more developed techniques of extraction. He envisages copper objects circulating among Neolithic groups, who then worked backwards from those ‘mute ambassadors’ to recognise ores (Craddock 1995, 146). Of course such a scenario would not constitute completely independent invention; rather it would be an incomplete, perhaps unintentional, transmission of knowledge through networks of exchange. Where copper deposits occur in oxidised form, such as malachite and azurite, they are often green and could arguably be recognised as similar to copper objects. Craddock’s hypothesis may be correct for south-eastern Europe, especially in cases where sufficient pyro-technological knowledge existed within other related crafts. Renfrew (1973a, 174-175) recognised that the manufacture of high-temperature glazed ceramics at Varna would have made this cognitive leap considerably less difficult. However, the relatively uncontrolled open bonfire firing of ceramics that predominated in northwestern Europe prior to early metallurgy is unlikely to have been a significant contributing technology (Roberts 2008, 359).

In relation to Ross Island, Craddock argues that the presence of ore smelting and an absence of regular slag evidences a primitive non-slagging extraction process.

65 Large areas were affected by subsequent mining and karst development (O’Brien 2004, 303)
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(Craddock 1995, 141) and is therefore likely to be an independent invention. In comparison to contemporary extraction processes in the Middle East this is true; however, as Craddock (1995, 142) points out, extraction across much of Western Europe at this time was also non-slagging, and consequently I would argue that even if he is correct about the existence of non-slagging technology, his original point does not exclude the Ross Island technology from being introduced from the nearby continent. Copper axes almost certainly arrived in Ireland through networks of exchange prior to the arrival of metal working technologies. Copper was being smelted in central Europe from at least the fifth millennium BC (Höppner et al. 2005) and axes reached areas with no natural metal resources, such as Scandinavia,66 by the fourth millennium BC (Randsborg 1979; Vandkilde 1996). The typical form of these early axes was a simple trapeze or straight-sided form (Schmidt and Burgess 1981, 22-23) and they occur widely, both in central Europe and on the Iberian peninsula (Monteagudo 1977), and a small amount can be recognised among Irish assemblages (Harbison 1969a; Waddell 2010).

Roberts (2009, 472) has argued that there is no evidence for independent invention in Western Europe and the technological requirements of metallurgy suggests it was introduced by ‘skilled metalsmiths’. For Ross Island, O’Brien (2004b, 560; 2012a) has consistently argued that, since the ores smelted were sulpharsenide, they would have required considerable expertise to extract and this is further evidence of a technological package introduced from elsewhere. Since there is no evidence for earlier metal working in Britain it must have been from the continent and the most likely area is Brittany (O’Brien 2012a). There is of yet no evidence for early copper mining in Brittany but there was plenty of metalwork present in the centuries prior to Ross Island’s exploitation. These include daggers, flat axes and Palmela points (Vander Linden 2012, 77), the latter of which firmly link the region with the Iberian peninsula and suggest that Irish metalworking expertise is likely to have originated there, with northern France acting as a ‘springboard’ (O’Brien 2012a). The extraction of metal ores in north-western Spain is securely attested from the early third millennium BC (Hunt-Ortiz 2003; Gibson 2013b) and may have been present much earlier (Montero Ruiz 2005; but see Roberts 2009). Other early

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66 Southern Sweden does actually have naturally occurring copper but to date there is no evidence of this being exploited in Prehistory
mining centres that could potentially have contributed include the south of France where mining is known from the end of the fourth millennium BC (Ambert et al. 1983; Mille and Carozza 2009) and Austria where smelting is attested from the fifth millennium BC (Höppner et al. 2005).

4.4 Chaîne opératoire

4.4.1. Prospecting

Presuming the unlikelihood of Craddock’s (1995) ‘mute ambassadors’ being applicable to Ross Island means that copper in Ireland must have been discovered by prehistoric prospectors who arrived either through existing networks or independently. Many writers have speculated that in the mid-third millennium there may have been an ideology which prompted many heroic journeys (Kristiansen 1998; Kristiansen and Larsson 2005; Shennan 1993), epitomised by the Amesbury Archer (Fitzpatrick 2011).

Many copper sources would have been visible as green oxidised surface deposits and where lodes were exposed on coasts, such as along the south Cork coast (O’Brien 1994, 230), Waterford’s ‘copper coast’ or Bradda Head on the Isle of Man (Timberlake 2002, 331). They may even have been visible from the sea as beacon-like stains running down cliff faces; however, it is also possible that early prospectors did not understand the range of minerals that could produce copper. The ore at Ross Island is naturally high in arsenic; this means that it is both relatively strong in an unalloyed state and that it looks and smells distinctive. It may be that prospectors were looking for the ‘right’ sort of rocks, with the ‘right grey lustre’ or that when crushed smelled of garlic (Bray 2012). The landscape at Ross Island would have been heavily forested but discovery would have been possible because of exposure along the lakeshore visible as greenish staining, especially at the Blue Hole, on the local blue/grey limestone (O’Brien 2004b. 453).

Compositional and isotopic evidence suggests Ross Island was the dominant source of supply for four or five centuries (Northover 2004). This may have resulted from a close control of mining technology or from the particular qualities of the high arsenic metal that could only be satisfactorily matched with alloying which only became widespread after 2200/2000 cal BC. Copper deposits are relatively
widespread in Ireland but, to date, EBA mines have only been found in southwest Ireland. It is possible that these were exploited by prospectors from Ross Island searching for alternative sources when they ran into trouble with flooding; however, O’Brien (1994) has argued that the societies which undertook this second phase of mining were organised very differently.

The copper mined at Mount Gabriel is of a lower grade and located in sedimentary beds (O’Brien 1994). There are richer quartz vein deposits nearby on the coast and it seems likely that these would have been exploited first and the Mount Gabriel-type ores only sought once they were depleted. On the mountain side there would have been surface occurrences of malachite and less peat cover than today, making discovery possible.

Timberlake (2002) has interpreted isolated finds of prehistoric cobble hammers in Wales as signs of abortive prospecting and suggests that the coastal distribution of the mines such as those which cluster around the Dovey estuary may reflect an intrusive population moving along the coast, possibly from Ireland.

4.4.2. Mining

Ross Island

The earliest known copper mine in Ireland or Britain was on the rich quartz vein deposits at Ross Island. It appears to have been the dominant, and perhaps only, source of copper for a number of centuries.67 Excavations there have provided substantial evidence as to how the mining was organised and O’Brien (2004b, table 65) has usefully broken down the process into a series of tasks/stages and considers the archaeological evidence available for each one; however, while he does infer the probable presence of mining rituals and superstitions from anthropological data he finds no archaeological evidence for them. I would suggest that such phenomena are likely to have been intrinsically linked and reflected in the way work activities were organised and conducted. It is not only acts such as votive offerings conducted before or after a task that constitute ritualised activity but also the adherence to taboos and cultural preferences that informed and constrained technological choices along every stage of a process.

67 Arguments about the possible early sourcing of copper in Cornwall continue (Bray 2012) but there is no unequivocal evidence.
The rock extraction at Ross Island was carried out by a combination of fire-setting and hammering. The effectiveness of this method has been proven through experimental work at Mount Gabriel (O'Brien 1994, 167-172) and in Wales (Lewis 1990; Timberlake 1990b; Crew 1990). The majority of materials needed at Ross Island were available close at hand; material which needed to be obtained from a significant distance include flint pebbles which were likely brought from shingle beaches c. 15km to the northwest and possibly, given the amount required (at least some were available at the nearby Flesk and Laune rivers), the cobbles for the hammers may have been obtained from 20km to the west (O'Brien 2004b). The analyst that examined the charcoal suggested that the selection of fuel wood might have been ‘culturally defined’ (van Rijn 2004). Oak was the most commonly used species, and pine and birch may have been specifically selected for initially ignitable fuel and illumination. Practical qualities will have influenced these selections but will also have been intertwined with cultural attitudes toward the species; an apparent avoidance of blackthorn may have been to preserve its fruit, but may also have been a culturally defined taboo. Tools found at Ross Island include rilled-and-facetted mauls and cattle shoulder-blade shovels. The mauls are of similar form to those from Alderly Edge in Cheshire (Gale 1990; 1995; Timberlake and Prag 2005, 58-78) and the cattle shoulder-blade shovels are similar to tools found at Neolithic mines (Russell 2000).

Following Ottaway’s (2001, 89) definition of craft specialization, the miners at Ross island, whether full or part time, were specialists. A division of labour would have been necessary to support the miners. We do not know if it was considered a highly regarded pursuit, but those who carried out the mining may have been marked out as special. The work would certainly have involved specialist knowledge and may even have left visible markings on those who carried it out. The Cornish copper miners drafted in to work at Ross Island in the post-medieval period were purported to have had blue hair and nails (O'Brien 2004b, 576).

The fact that the copper worked at Ross Island was high in arsenic would have added arsenic poisoning to the risks associated with mining. Consistent exposure to high levels of arsenic can lead to ‘gastrointestinal symptoms, disturbances of cardiovascular and nervous system functions, and eventually death’ (Bolt 2012,
High levels of arsenic found in the hair of the Chalcolithic Alpine ice-mummy Ötzí, suggesting he was involved in copper mining, and comparisons of the levels present with modern populations suggest they were high enough to have had significant health implications (Bolt 2012). The ancient workings at Ross Island probably poisoned the water of the lake; it is easy to imagine that this would have been seen as the work of malevolent spirits or witches and would have elicited some form of response. Residues of herb wine found on ceramics at ancient Cretan smelting sites have been interpreted as medicines designed to treat arsenic poisoning and the use of such mixtures to treat metalworking features are also known ethnographically (Thornton 2012, 179).

It is estimated that somewhere between 25,000 and 30,000 tonnes of ore were extracted from the Ross Island mines over their entire lifetime (O’Brien 2004b, 152-153); however, that includes a span of 4,500 years and it is not possible to accurately estimate the proportion of that which was extracted during the Chalcolithic and Bronze Age. Judging from the ‘tens of thousands’ of stone hammers the scale of early extraction must have been substantial. Northover (2004, 535-538) has estimated that with an annual production of only about one tonne the cumulative amount of copper in circulation after 500 years, allowing for some deposition and loss, would have made copper very widely available and that two or three such mines might have produced sufficient copper for Ireland and exchange into western Britain. Such a scale of operation could have been conducted by a relatively small group of people; however, even given 500 years of production the number of hammerstones present might indicate a much larger operation. If we imagine a large-scale operation with a high output we would have to re-evaluate how relatively scarce we normally envisage copper objects in the Chalcolithic and Bronze Age. Roberts (2009, 470) has suggested that the widespread occurrence of copper ore where primary metal production occurred would have militated against centralised elite control; however, I would suggest that such generalisations homogenise what was likely a diverse range of social organisations and for Ross Island, O’Brien’s (2004b, 557-573) suggestion of a more centrally organised hierarchical society remains a possibility.
Mount Gabriel

Several centuries after the abandonment of Ross Island, mining at Mount Gabriel commenced. Mount Gabriel is one of over thirty mines in the West Cork area, of which nine have been dated and all seem concentrated between 1700 and 1500 cal BC (O’Brien 1990; 1994, 178-180). The Mount Gabriel ores occur in sedimentary beds rather than in rich quartz vein deposits such as at Ross Island but such a widespread distribution of smaller amounts may have suited prehistoric miners. However, if, as seems likely, the rich quartz vein deposits on the coast were exploited earlier, such traces would have been destroyed by coastal erosion.

An interesting feature of the Mount Gabriel mines is why some were abandoned before others. Some were abandoned at less than 1m while others were dug up to 11m and perhaps even 20m in depth. O’Brien (1994) has postulated that the ore must have been more concentrated or the geological conditions favourable to its extraction; while these must have been influencing factors we can imagine that other factors, that to modern eyes appear less practical, may have played a role. During the excavations at mine 3, O’Brien noted the apparently deliberate sealing of one of several negative features that may have supported a structure over an ore processing area (O’Brien 1994, 110-112). That feature is variously referred to as a pit or posthole in his report, perhaps reflecting a difficulty in a definitive interpretation; regardless, its apparently intentional sealing could, as O’Brien (1994, 112) suggests, be ‘connected with the organised abandonment of this area following a particular phase of mining’.

At Mount Gabriel oak and hazel were also the dominant species in both preserved roundwoods and charcoal (by weight). Other wooden remains included the remains of pine chips that were used either to ignite fuel or for lighting the interior of the mine, a hazel pick, a possible dowel of whittled alder, oak prise sticks, oak planks and one, possibly three, alder shovels (O’Brien 1994, 135-162). During the 19th century several other wooden shovels were found in early Irish mines but the species from which they were made was not recorded (O’Brien 1994). An oak example is known from Alderly Edge, Cheshire (Roeder 1901).

The mauls at Mount Gabriel exhibit minimal haft modification, with shallow lateral and bilateral abrasions, and are closely related to a Welsh group such as those.
found at Coppa Hill (Pickin 1990; O’Brien 1994, 117; Timberlake 1990a). They were likely collected at a coastal storm beach 4km away and there is evidence to suggest certain coloured (grey) and shaped (well-rounded elliptical) cobbles were deliberately selected; O’Brien (1994, 123-124) estimates 1500-2000 may have been used at mines 3 and 4 alone.

O’Brien’s (1999) contention that the mining at Mount Gabriel was carried out by small scale societies organized on a segmentary basis is supported by the small scale of the mines, their widespread distribution and their association with wedge tombs (see chapter 7). However, the scale of social organization should not colour our opinion of its wider significance in the supply of metal. Estimates vary widely (Jackson 1978; O’Brien 1994, 195-198; Eogan 1993, 93) with the by-far most conservative at 1.5-26.5 tonnes, depending on smelter efficiency. The surviving corpus of EBA axes from Ireland (Harbison 1969a) represents somewhere between 0.75 (Flanagan 1979) and 1.2 tonnes of copper (Eogan 1993). Extrapolating the amount in circulation from what has been recovered is clearly speculative (Jackson 1978; Flanagan 1979) but it does seem that, with what was already in circulation, Mount Gabriel alone could have produced enough copper for what was consumed in Ireland during its lifetime and have contributed to export (O’Brien 1994, 197). In axe terms, according to O’Brien’s estimation, this might have resulted in somewhere between 46 and 409 bronze axes a year.

The use of predominantly wooden objects from Mount Gabriel marks a shift from the use of bone objects like the shovels at Ross Island. There was also a marked difference in the type of mauls. Because of the chronological difference, the different tool types do not necessarily reflect a different socio-technological background for the miners; rather the decreased rilling on the Mount Gabriel mauls is a reflection of the shorter life of those mauls in that geological setting and the move from bone to wood reflects improved woodworking techniques which developed with the increased use of metal. To infer different cultural approaches to the mining we would need to have evidence from similarly dated mines on similar geologies. As more mines are excavated, bearing the geological necessities in mind, the mauls may offer a profitable avenue of research.
**Other copper mines**

While definitive evidence for copper mining during the Chalcolithic or EBA has not yet been identified outside counties Cork and Kerry there are indications of activity elsewhere; possible candidates include mines near Kilcommon, County Tipperary, Danes Head, near Bunmahon, County Waterford and near the Avoca River, County Wicklow (Jackson 1978; O’Brien 1995). The dominance of the southwest may have something to do with the extensive fieldwork by Professor O’Brien, now of UCC.

Mining in western and northern Britain appears to have been underway by 2000 cal BC and evidence has been found in Wales, Scotland and the Isle of Man (Timberlake 2002; 2009). There is particularly extensive evidence in Wales; at Coppa Hill a range of tools including withy hafts, baskets, ropes, thousands of cobbles brought some 25km from the coast and a drainage launder used to direct water were found (Timberlake 2009, 343) and the deep complex mines at Great Orme are believed to eventually have dominated the British supply.

**Gold**

The number of Chalcolithic and EBA golden artefacts from prehistoric Ireland (Taylor 1980; Eogan 1994), and their relative rarity in Britain (Needham 2000; Timberlake et al. 2004; Mattingly et al. 2009), strongly suggests that native Irish sources were exploited. Possible pre-Roman mining of gold has been identified at Dolauchothi in South Wales (Timberlake 2002, 330), but this has not been definitively confirmed and it is likely that the majority of native gold exploited in Ireland and Britain during prehistory was collected from placer deposits in streams, possibly with tightly woven baskets or fleeces. 68 Possible Irish sources include the Goldmines River in Wicklow, the Mourne Mountains in County Down, Moyola River, County Derry and north Mayo (Eogan 1993, 88; Warner et al. 2009; Warner et al. 2010; Cox 2005; Moore 2006).

Compositional and trace element analyses would appear to offer the best avenue for establishing the various sources; however, a healthy scepticism must be

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68 Strabo theorized that the golden fleece of the Argonauts had a functional basis; ‘it is said that... gold is carried down by the mountain-torrents, and that the barbarians obtain it by means of perforated troughs and fleecy skins’ (Strabo XI, 2, 19 = Jones 1969, V, 215), a technique that was more recently ethnographically recorded (after Lordkipanidze 2001)
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maintained. Problems include mixing, remelting, sources with similar compositions and glacially displaced material. Indeed it has been suggested that gold could have been predominantly collected from ‘glacially transported fragments of auriferous quartz’ (Meighan 2011).

Tin

The natural distribution of tin is far more restricted than that of copper and it is likely that the majority of that used in antiquity came from a restricted number of sources. There is no definitive evidence for the prehistoric exploitation of native tin in Ireland; however, Jackson (1978) suggested that Wicklow sources are likely to have been exploited and Warner et al. (2009; 2010) have recently argued that the rivers flowing from the Mourne Mountains in County Down were a significant source of both gold and tin. Warner (ibid.) has identified linear trenches near the Ballincurry River which he believes might be the remains of ‘deep digging of the fluvioglacial sediments’; however, these have yet to be archaeologically tested. Writing over twenty years before this, Penhallurick (1986, 111-114) reviewed and dismissed the likelihood that either native Irish gold or tin was exploited in prehistory; however, along with the Mourne Mountains, he did list a number of other possible sources of tin in Ireland: Ahllihes, County Cork,69 Dalkey, County Dublin, the north Burren coast, County Clare, Goldmines River, County Wicklow and the Mourne Mountains, County Down.

Despite all the literature on the subject there is no unequivocal evidence of Bronze Age exploitation of metal in Cornwall.70 It may be that tin was mainly mined from coastal lodes which suffered later erosion and sites which were destroyed by later mining; however, as Timberlake (2002) has noted, one would nonetheless expect exceptions. This has even led some researchers to suggest there was relative lack of interest in extractive metallurgy in Cornwall and that the focus was rather on cultivation (Herring 1997 after Timberlake 2002, 334). There is plenty of circumstantial evidence, however: a small number of unprovenanced hammerstones in Cornish museum collections, Bronze Age artefacts found in or near post-medieval tin streaming works and small amounts of smelted tin from Bronze Age settlements at Caerloggas Down and Goldherring (Penhallurick 1986;

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69 Also Kilcoe mine Ballydehob and at Ballycummisk
70 Actual mining sites or the typical tools, such as stone mauls
Budd and Gale 1997). It may be that only alluvial tin that was collected and copper was not mined in early prehistoric Cornwall. This could explain the lack of hammerstones.

Lunulae (see section 4.4.6) and a number of Irish type axes have been found in Cornwall. The axes include a bronze flat axe from the Harlyn Bay hoard (Mattingly et al. 2009)\(^{71}\) and two further examples near possible tin mining streams (Shell 1979). The Harlyn Bay axe is listed as Burgess (1979) stage 4, so type Killaha. The other two are listed as his stage 5-7, so Ballyvalley to Derryniggin. The Killaha axe is contemporary with the early adoption of tin, towards the end of the time when Ross Island metal copper was dominant; the other two relate to the time when Mount Gabriel was in production.

Other significant sources of tin on the Atlantic façade include Brittany, northwest France and Galicia in northwest Spain (Penhallurick 1986). Artefacts of copper with a tin content are known from the Tagus region in the pre-Beaker first half of the third millennium; regular tin-bronze, however, with a 10-11% tin content, is not common until the first half of the second millennium (Cunliffe 2001, 223).

**Lead**

The use of lead in prehistoric metallurgy has not been comprehensively studied. Its use in Britain by the EBA is attested in the form of a necklace from Peebleshire, Scotland (Fraser and Davis 1994), and in Ireland by the later BA by lead cores in LBA gold bullae. It may also have been used as an alloy to increase the fluidity of metal (Cahill 2006, 276). In Britain, lead mining at Mendip, Somerset, England and Alderley Edge, Central Wales may date to the Bronze Age (Timberlake 2002, 330) and in Ireland recent pits uncovered in Treanbaun, County Galway, may also be evidence of prehistoric lead mining (Muñiz Pérez 2009).

### 4.4.3. Refining

There are two main stages to refining copper ore: benefication and smelting. Ottaway has argued that neither prospection nor mining were true innovations for Chalcolithic groups, but were rather applications of existing techniques or

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\(^{71}\)Jones (Mattingly et al. 2009) and Taylor (1970) both refer to it as of Migdale type. In which case, if Irish, it would be most likely of Killaha type and equate to Burgess (1979) stage 4
knowledge (Ottaway 2001); i.e. the process of mining for flint etc. For her, the first true innovation in the chaine opératoire was benefication, or ore concentration (Ottaway 2001, 92-93). On the basis of experimental work she suggested that the processes of selecting and crushing ore require more extensive specialist knowledge than at first might be assumed (ibid.). Contra this, Roberts (2009, 468) argued it was a process not dissimilar to ‘preparing and grinding wheat and barley’ and that the smelting process was more of an innovation. The smelting process did require charcoal, not only to produce high temperatures but also the correct reducing conditions (Roberts 2008, 159), something not required in previous technological traditions. Regardless of where one places the innovative emphasis, the implication that a considerable amount of expertise was required remains and supports O’Brien’s (2012a) assumption that the metal mining was introduced as a package of knowledge.

At Ross Island both the initial beneficitation process and smelting were carried out on-site (O’Brien 2004b, 466-472). The beneficitation process at Mount Gabriel comprised a two-stage process (O’Brien 1994, 175-177). 1) Coarse crushing and hand sorting that resulted in a low mound of debris outside the mine entrance. 2) Fine crushing and further hand sorting on large stone slabs 15-30m south of the mine. While further separation may have been achieved with water, no evidence was found. There was also no evidence for smelting found.

Direct evidence of copper smelting in the EBA is very rare. To date, the only Irish site identified, other than Ross Island, is located in Ballydowny, just north of the lake (Lough Leane) that Ross Island is on (Fairburn 2003). Finds included 2.5 kg of shaft furnace lining, 0.5kg of copper smelting slag. Associated charcoal returned a radiocarbon date of 2030-1870 cal BC. Given the potential for old wood effect, it is likely that the site is contemporary with the main period during which mining at Ross Island was underway. The only other direct evidence of Bronze Age copper smelting from the British Isles is on Pentrewyn headland, close to the Great Orme copper mine, where charcoal associated with fragments of copper slag (0.5kg) returned a date of 1675-1500 cal BC (Chapman 1997).

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72 Beta 168810
4.4.4. The circulation of raw materials

Copper

Ross Island copper is of a distinctive composition and relatively easily traceable (Northover 1980; Northover et al. 2001; Northover 2004). 95% of Irish and over 80% of British Chalcolithic axes are of this metal (Northover et al. 2001, 28). According to Northover (1980) the dominance of Irish metal ends not with the end of the copper-using period, but at the end of the Killaha/Migdale stage when novel forms of axe are introduced. At this stage Northover’s F and C metals predominate, with occasional occurrences of his B metal. As mixing and recycling, and the number of ore sources increase in the later EBA, characterisation becomes more difficult and contentious. Mining was definitely underway in a variety of places in Britain by this period and although Irish mines have only been confirmed in the southwest of Ireland, it is likely that there were several other sources. Mount Gabriel is a possible source of C metal; however, only one axe in the Cork area has been identified as having this composition (O'Brien 1994, 201). The likely products of the copper from Mount Gabriel, Ballyvalley and Derryniggin type axes are concentrated in the northeast of Ireland. While this may in part be due to depositional patterns (see section 4.8.3), it does indicate a substantial network of exchange between the southwest and northeast during the later EBA (O'Brien 1994, 202). Further afield in continental Europe, EOO metal normally considered of central European origin, could also be a contribution from Mount Gabriel type mines in the southwest of Ireland and such distant exchange is supported by the occurrence of Irish-British type axes in the north European area during the EBA (O'Brien 1994, 204). Recent isotope analyses of north European metal would seem to also support a considerable Irish contribution (Ling et al. 2013; Vandkilde pers. comm.), in both recognisable Irish/British forms and recycled into other forms.

In tandem, characterisation studies, the apparently restricted distribution of mining and more widespread distribution of moulds suggest a widespread circulation and exchange of raw materials (Eogan 1993). For practical reasons material is unlikely to have been exchanged in a completely raw state and the refining discovered at Ross Island and Mount Gabriel supports this supposition. Uncast but refined copper cakes would appear to have been the first form in which
copper was exchanged. All recorded examples are from hoards with other objects (Tab 4.1); however, the fact they might not appear valuable to modern eyes may have affected the recovery of single examples. All Irish examples are southern, from relatively near potential copper sources and those that were relatively intact were of similar circular ‘cake’ form. The impression of widespread circulation is reinforced by the fact that the copper cake found at Toormore near Mount Gabriel mine does not appear to be from it or other nearby mines (O’Brien 1994, 187).

<table>
<thead>
<tr>
<th>Find location</th>
<th>Context</th>
<th>Associated objects</th>
<th>Refs</th>
</tr>
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<tr>
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<td>Wedge tomb</td>
<td>Axe of Ballyvalley type</td>
<td>(O’Brien 1999)</td>
</tr>
<tr>
<td>Knocksarnet, Co. Kerry</td>
<td>Sandy spot</td>
<td>Axe of Killaha type</td>
<td>(Harbison 1969a, #586)</td>
</tr>
<tr>
<td>Carrickshedoge, Co. Wexford</td>
<td>Cave</td>
<td>4 axes (1 Lough Ravel, 2 Ballybeg &amp; 1 ingot)</td>
<td>(Harbison 1969a, #39, 359-360 &amp; 450)</td>
</tr>
<tr>
<td>Monastery, Co. Wicklow</td>
<td>Sand and gravel pit</td>
<td>3 axes of Lough Ravel type</td>
<td>(Harbison 1969a, #130-132)</td>
</tr>
</tbody>
</table>

Table 4.1 Uncast EBA copper cakes

It also appears that copper was cast into secondary axe-shaped ingots (Harbison 1969a, 22-24; but see Schmidt and Burgess 1981, 30). Harbison includes these with early copper axes, but O’Brien (1994, 185) has made the point that at least some may be later in date. They are concentrated in the north of Ireland, especially along the Antrim coast, near where the only known mould for such objects was also found (Collins 1970, No. 2). The distribution could be used to support an argument for a secondary refinement carried out in northeast Ireland for exchange further afield. It may also be appropriate to consider unfinished axes (Harbison 1969a, 52-55 & 63) in this group too. Their distribution is more widespread, but there are notable concentrations, especially of unfinished Ballyvalley axes, in counties Antrim and Dublin, perhaps also suggesting that this was a type predominantly produced for exchange with groups outside of Ireland.

On the basis of the current distributions, it appears that, in addition to the exchange of finished axes, there was significant exchange of circular copper cakes
from the south of Ireland to the northeast, where it was subsequently cast into ingot shapes and then exchanged further afield. Ingots often take on a shape of symbolic value, for example oxhide ingots in prehistoric Europe (Harding 2000, 218), and while axes were also utilitarian objects, the axe shape may have been a supraregional form accepted as some form of standardised value, what has been previously referred to as a ‘identifikationsformen’ (Sommerfeld 1994; Becker 2006, 235).

**Gold**

There is no evidence of EBA gold ingots in Ireland, but the unfinished lunula from Kerivoa, Brittany does seem to be formed from a bar ingot and blanks may have been exchanged in this way. A mould matrice for rectangular bar shaped ingots was found near Schull, County Cork (Cahill 2006, 275) and similar examples were found in Scotland (Britton 1963).

Hartmann (1970) identified a particularly common metal composition, with high silver, medium copper, low tin, and little or no nickel, in the majority of Chalcolithic/EBA gold items, which he named ‘L metal’. Of those tested, five early gold items, the Ballydehob disc, Ballyvourney pin, Knockane (Castlemartyr) plaque, the Benraw (Dacomet/Deehommed) ‘ear-ornament’ and a lunula from Mullingar do not belong to this group (Case 1977b, 27). Some of these are likely to be imports and others to reflect experimentation in alloying. Hartman (1970) supported a Wicklow origin for his ‘L metal’ but recent work has suggested a source is in the Mourne Mountains, County Antrim (Warner et al. 2009; Warner et al. 2010). The source remains contentious, however, and although only based on two unaccomplished lunulae, recent isotope analysis suggests it was not in Northern Ireland (Standish et al. 2013). The high tin content of some of the Cornish lunulae has been used to suggest exploitation of gold in that region (Penhallurick 1986), but considerable quantities of cassiterite are also recorded from Wicklow gold sources and on balance it seems probable that a number of sources were exploited. Indeed given the likelihood of mixing, and surface depletion, care should be taken in future characterisation of gold objects to do multiple tests on each object and not only from the surface. Analysis of the gold in the Topped Mountain dagger-hilt-band, suggests that it originated from the same source as a small Scottish
group of three more dagger-hilt-bands and the Knowes of Trotty, Orkney discs, and may indicate exploitation of local gold resources in Scotland in the late EBA (Taylor 1980, 23).

**Tin**

Ireland was likely self-sufficient in copper and gold, but, on the basis of present evidence, tin needed to be imported. It seems probable that most tin came from Cornwall or Brittany (Penhallurick 1986). Ingots of EBA date have not yet been found but they must have seemed to have had magical qualities. When one bends high purity tin it emits a creaking sound, known as the ‘cry of tin’ in Cornwall (Penhallurick 1986, 3).

**4.4.5. Object production**

Childe (1930) imagined BA smiths wandering Europe and plying their trade. Others, drawing insight from lame smiths of myth, such as the Greek Hephaestus and the British Wayland (cf. Christie 1969), have argued for the possibility of attached specialists who may have been treated more like possessions. The considerable uniformity in object forms during certain periods led Rowlands (1976) to argue for locally working smiths in frequent contact (for the British MBA). What Hodder’s (1982c) ethnographic work illustrated is that such direct correlations cannot be sustained; stylistic differences are dependent on a multitude of inter and intra-group social strategies and increased interaction, depending on its type, can in fact lead to increased stylistic differentiation. Uniformity in style could as easily reflect a lack of competition between producers.

Early researchers often assumed that Bronze Age metalworkers were men and pottery producers female. While one might point to the ethnographic record for analogy, there is arguably no unambiguous evidence for either supposition (Budd and Taylor 1995). The common technical problems shared between these crafts has long been acknowledged and Renfrew (1973a, 174-175) pointed out that ‘the development of copper metallurgy in the Balkans was already made possible by the skills of the potter’ producing graphite-decorated pottery of the Gumelnitsa culture (see also Soafer 2006 on Száshalombatta); however, this is unlikely to have been as significant in a northwest European context where pottery was still fired
in open bonfires. There is much sharing of motifs, plus the occasional transference of skeuomorphic details from one medium to another during the Chalcolithic and EBA (Frieman 2012b), but these are discursive surface details and not the sharing of technical knowledge.

The best evidence currently available for EBA axe production, apart from the products themselves, is stone moulds. It should be noted that there may also have been sand moulds which would not have survived (Roberts 2009, 469).

Moulds
The production of a mould would have involved its own chaîne opératoire. Each one would also have had its own life history and may have been the subject of its own exchanges. There are many factors that might have influenced the choice of stone type, or the selection of a specific stone, to use for a mould. Functional considerations would have included qualities such as heat resistance, ease of working, lack of flaws and relative coarseness of the stone, while less practical considerations, such as colour or the location of its origin, may also have played a role. According to Coughlan and Raftery (1961, 225), the stone used in Irish moulds was predominantly local and there is no evidence to suggest that more suitable stone was exchanged from distant places. However, while this seems to be true for the earliest moulds, with old red sandstone predominating in the SW and other sandstones elsewhere (Tab 4.2), there is evidence of more selectiveness later in the EBA progressed (see below). Of course it was not only the stone that might have been exchanged, as moulds became more complex, the exchange of a mould could also have represented the exchange of technical knowledge or even the right to cast a particular object.

The earliest stone moulds were simple one-sided moulds. To date, only moulds for flat axes, one with a dagger matrix, and what are believed to be ingots have been found; no moulds for halberds have yet been found. There are nine EBA moulds

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73 Unfinished blanks from Ballyliffin, County Donegal might give us some insight into that process (Eogan 1993, 95)
from Ireland (Tab 4.2). Sixteen are known from Scotland/Northern England (Hodges 1959)\textsuperscript{74} and only two from Southern Britain (Hodges 1960).\textsuperscript{75}

The level of post-casting work carried out on axes can make it difficult to determine the type that was being produced in an individual mould matrix, but it is occasionally discernible. The Ballynahinch (ApSimon 1969, 30) and Doonour (O'Kelly 1969) moulds are considered to have matrices for both Killaha and Ballyvalley type axes. The fact that two different types of axe were produced from the one mould suggests that either these axes were produced contemporaneously, or we have evidence of older curated moulds with newly added matrices. The latter was the case for the Loughscur mould which had a looped and flanged head superimposed upon a far earlier flat axe (Coughlan and Raftery 1961). This throws up very interesting questions about the life histories of such objects and how long they might have continued in service and how many hands they may have passed through.

Evidence for the grinding or honing of metal items has been noted on a number of stone moulds (Tab 4.2), something also noted on some Scottish moulds (Britton 1963). Detailed examination of the Doonour mould (O'Kelly 1969) illustrated that this was done after the mould matrices were carved, but also avoided disturbing them. This suggests objects were sometimes finished (or repaired) on moulds during a stage separated from the casting by other stages (hammering and annealing) and is therefore unlikely to simply reflect a convenient choice. Rather this may be evidence of an attempt to further establish a link between the mould and finished item.

<table>
<thead>
<tr>
<th>Townland</th>
<th>County</th>
<th>Material</th>
<th>Matrix</th>
<th>Notes</th>
<th>Refs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loughscur</td>
<td>Co. Leitrim</td>
<td>Course grained,</td>
<td>2 Flat axes -</td>
<td>Apparently reused</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>siliceous grit; slightly</td>
<td>looped and flanged</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ferruginous.</td>
<td>axeheads</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Carboniferous facie</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kilcronat</td>
<td>Co. Cork</td>
<td>Old red sandstone</td>
<td>OM Flat axe</td>
<td>Gentle bevel similar to</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ballygisheen</td>
<td></td>
</tr>
</tbody>
</table>

\textsuperscript{74} Almost all come from the east coast of Scotland, from the Moray firth to Aberdeen (Hodges 1959, 130)

\textsuperscript{75} One is from North Wales and the other is believed to be from Cornwall (Hodges 1960)
<table>
<thead>
<tr>
<th>Location</th>
<th>County</th>
<th>Material</th>
<th>Axes/Ingots</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ballygisheen</td>
<td>Co. Carlow</td>
<td>Millstone grit from Castlecomer plateau or local glacial drift</td>
<td>8 OM flat axes</td>
<td>Some v. deep matrices. Others with flattened or stepped edges may have supported covers</td>
</tr>
<tr>
<td>Ballynahinch</td>
<td>Co. Down</td>
<td>Medium-grained sandstone of massive type</td>
<td>3 flat axes &amp; 1 incomplete axe</td>
<td>Might be narrow and thick butted</td>
</tr>
<tr>
<td>Lough Gall</td>
<td>Co. Antrim</td>
<td>Sandstone</td>
<td>4 narrow butted axes &amp; 2 ingots</td>
<td>Also referred to as Lough Guille</td>
</tr>
<tr>
<td>Nr Ballymena</td>
<td>Co. Antrim</td>
<td>Micaceous sandstone</td>
<td>Flat axe possibly Killaha</td>
<td></td>
</tr>
<tr>
<td>Doonour</td>
<td>Co. Cork</td>
<td>Old red sandstone</td>
<td>Killaha flat axe &amp; Ballyvalley flat axe</td>
<td>Like Doonour there is no evidence of a cover</td>
</tr>
<tr>
<td>Lyre</td>
<td>Co. Cork</td>
<td>Sandstone</td>
<td>Killaha and a small axe</td>
<td></td>
</tr>
<tr>
<td>No provenance</td>
<td>Ireland</td>
<td>Mica Schist</td>
<td>Killaha axe, dagger or knife and small axe</td>
<td>Nat. Mus. of Scotland Cat No 124</td>
</tr>
<tr>
<td>Dunbeacon North, near Schull</td>
<td>Co. Cork</td>
<td></td>
<td>Possible bar ingot 10cm long and 1.3cm wide.</td>
<td>A circular surface depression may be for grinding.</td>
</tr>
</tbody>
</table>

Table 4.2 Chalcolithic and EBA moulds from Ireland

It is difficult to pinpoint a time when bivalve moulds became dominant, but the co-occurrence of an open mould matrix and a half of a bi-valve matrix on the one mould from Killymaddy, County Antrim might be taken to suggest that open moulds continued to be used after the invention of bi-valve technology; however, in light of the possible long-term curation of moulds mentioned above, we should

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76Not listed in the table as it is considered too late in date for consideration here. Add the traditionally MBA moulds these have the razors also early spears which are late EBA. These would include the important mould hoard from Omagh (Collins 1970).
be careful about making such conclusions. Waddell (2010, 148) has argued that the raised flanges and midribs on both faces of Derryniggin axes and halberds, respectively, illustrates the use of bivalve technology in Ireland at a relatively early date. Subsequently, early socketed spearheads are definite evidence of complex casting. That bivalve moulds were already in use during the period in which tanged spears were current is evidenced by a mould from the Omagh mould hoard (Collins 1970). Such technical requirements led to the selection of different stone types, such as steatite, for moulds and the sources of such stones would have become important. Such moulds are particularly scarce in southern Britain and only three groups are known (Hodges 1960); two rapier moulds from Devonshire, a mould for a socketed spearhead from Anglesey and a palstave-adze mould from Yorkshire. The Yorkshire mould is of green black steatite and may be of Irish origin. 77 The Devonshire mould on the other hand has an additional vent to allow gasses escape, a feature unknown elsewhere in the British Isles, that may point to contact with Northern Europe or elsewhere on the continent.

**Other metal working tools**

Apart from moulds, there is a rather puzzling lack of metalworking tools (Eogan 1993, 101), especially for the EBA. This may in part be due to a problem with recognition and those objects that have been identified have invariably been found with metalwork or in very auspicious locations; these include cushion stones, hone stones, burnishers and touch stones. Examples of hone stones include the ‘slab’ found at the Mount Gabriel (O’Brien 1994 & 144), and a ‘hone stone’ found with an axe fragment, and possibly associated woollen cloth, at Boghil, County Clare (Harbison 1968, 43). A possible cushion stone was recovered from a context at Newgrange beneath the cairn slip, in relatively close association with a flat axe (O’Kelly and Shell 1979); parallels for which have been found outside Ireland in Beaker burials, such as the trapezoidal example that accompanied the Amesbury Archer (Needham 2011b). Traces of gold have been observed on an English ‘slate burnisher’ from Upton Lovell (Needham 2011b, 115). Examination of supposed cushion stones in Britain has failed to find traces of metal; however, Needham

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77 The form of axe is unique to Ireland and the mould is very similar to one from Dundalk (Hodges 1960)
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(2011b) has speculated that this may simply be because they were commonly covered in leather.

Perforated whetstones have been found in burials with razors (Kavanagh 1991; chapter 8). Sandstone for honestones and slate or other finer grained stones for burnishers would have been widely available; however, cushion stones and/or touch stones may have been more specialist objects for which specific lithologies are likely to have been preferred and they may have been exchanged over considerable distances.

**Regional production**

During the Chalcolithic and earliest EBA there was, as would be expected from the location of mines, a clear southern bias to production. This is supported by the general distribution of Lough Ravel axes, the occurrence of the largest hoards (see below) and in the occasional occurrence of ‘sibling axes’ in those hoards (Flanagan 1979). This was apparently followed by a shift in production northward, as suggested by four ‘Siblings’ of axes from the one mould in the Ballyvally hoard (Flanagan 1979). Both Killaha and Ballyvally axes may have been predominantly produced in the north, although the Doonour mould reveals they were also produced in the south. This is despite the fact that metal was still, at least predominantly, coming from the southwest (O’Brien 2000).

It is only very occasionally, and tentatively, possible to assign axes to moulds: an example from Culfeightrin, Co, Antrim does appear to fit in the Ballynahinch, County Down, mould (Harbison 1969a, 26). In any case, there does not seem to be a very close spatial relationship between axe moulds and their products and it is often the ‘immediate environs of the mould that are most lacking in its products’ (Flanagan 1979, 158).

**Alloying**

The widespread adoption of alloying was a major innovation that on the basis of current information began sometime in the 22nd century cal BC and was widespread by c. 2000 cal BC. In terms of practical metal strength the addition of tin may have freed miners from a dependence of arsenic rich copper. While Ireland

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78 ‘Sibling axes’ are axes produced from the same mould
was self-sufficient in copper and gold, tin needed to be imported; it was probably
acquired from Cornwall and the occurrence of Irish type Classical lunula there
supports this assumption. The stimulus to produce superior metal may not have
been purely practical and Needham has argued that the transition to tin-bronze in
north-eastern Scotland during the 22nd century cal BC was tied to important social
change, allowing groups in the area west of Aberdeen to differentiate themselves
from their neighbours in terms of increased prestige (Needham 2004; 2012). It
would have necessitated extensive networks of exchange and a symbiotic
relationship between areas rich in different ores and it was during this period that
Irish metalwork of Killaha types shows many signs of influence from central
European metalwork mediated through the Scottish Migdale industry and further
dagger connections with late Beaker southern Britain (Burgess 1979).

The recognition of the benefits of alloying tin with copper is likely to have led to a
certain amount of experimentation, and the concomitant addition of copper to
gold in the later EBA (discussed further below) can be viewed in terms of a general
proliferation of such knowledge. The widespread adoption of such techniques
across large regions, at broadly the same time, suggests a certain exchange of
knowledge between specialists.

**Axe decoration**

The decoration of axes began during the EBA and steadily increased up until its
end (Fig 4.3); it occurs occasionally on type Killaha axes, on about half of type
Ballyvalley and about two thirds of type Derryniggin (Harbison 1969a, 67-69;
Megaw and Hardy 1938). Such decoration is rarely found outside Britain and
Ireland and can be used as a means of tracing Irish/British axes on the continent
(Butler 1963).

Decoration occurs on the broad and narrow sides of axes, and comprises a variety
of motifs that Harbison (1969a, 67-68) broke into 18 variants. Some are restricted to
the broad (the ‘raindrop’ effect, cross-hatching, zigzag, saltire, garlands and v or w
motifs) or narrow sides (sloping ladder band, basketwork, squares, cables and
notches) of axes and some to axe type. Others are regionally restricted; regular
strokes, cross-hatching, dots and saltires are more common in the northern half of
the country, while zigzags and triangles are more common in the south. Some of
Harbison’s list, such as grooves, cables and notches, are cast rather than applied after casting and while these mostly have a widespread distribution the occurrence of notches, which is mostly found around the central plain, could point to a particular workshop or regional practice.

It is difficult to know if the steady increase in decoration represents a true proportion of axes in circulation; it does seem there was some selective bias toward decorated axes in hoards as opposed single depositions (Becker 2006, 200). Some authors have suggested that decoration may indicate objects intended for display rather than functional use (cf. Needham 1998); however, many decorated axes bear traces of use, including evidence of hammering on their butt ends (cf. Harbison 1969a, #889, 897, 919, 931 & 1097). Becker (2006, 201) has suggested that the increased decoration on the axes deposited during this period, may relate to a more specialised role of axes pertaining to their symbolic value. While Becker’s suggestion is plausible, I would argue that in a period when regional workshops likely proliferated, another role of decoration may have been to differentiate between producers, thereby allowing part of the object biography to be read.

Decoration on other metal objects

Daggers were sometimes decorated but halberds were not (apart from some lines defining the edges and occasional multiplication of the midrib). The decoration on daggers is more restricted than on axes: a type of collar near the hilt with projecting triangles pointing down the blade is most common and occurs on a number of types; but rain patterns and other decoration seen on axes also occasionally occur. There is some sharing of motifs between goldwork and bronze. The decorated axes most likely to overlap in date with lunulae, Killaha axes, are occasionally decorated with dot and line motifs (e.g. Harbison 1969, #513), similar to that on some provincial lunulae and other beaker goldwork (cf. Orbliston earring Taylor 1980, plate 3f). However, such decoration occurs on only one unaccomplished lunula (Rathrooen Taylor 1980, plate 16b, e & f) and not on classical lunulae at all. One Killaha axe (Harbison 1969, #520) was decorated with a raindrop effect, a technique which later axes and some daggers were decorated, but that was never applied to gold. While there is not scope to comprehensively investigate this here, and a thorough exploration would also require consideration
of the arrangement of the motifs, what this demonstrates is that there is structure behind the motifs on different metal objects that may reflect a type of ‘grammar’ (cf. Lévi-Strauss 1982 [1975]; Hodder 1982c, 170-181).

4.4.6. Gold working traditions

Chalcolithic to very early EBA

Chalcolithic and very EBA gold objects include discs, ‘ear ornaments’, decorated bands and lunulae (Taylor 1980; Eogan 1994). Discs and ear ornaments are generally considered earlier and lunulae slightly later, although some overlap between discs and lunulae is now indicated by the recent Roscommon find (Kelly and Cahill 2010).

Ear Ornaments and gold bands

There are three gold ‘ear ornaments’ from Ireland, one from Benraw (Dacomet), County Down, and an unprovenanced pair (Taylor 1980, plate 3g). The Benraw ornament (Fig 4.4) is considered a Portuguese import (O'Connor 2004, 208) and belongs to Needham’s ‘Atlantic Group A’ (2011c, 135). A related ornament was found in Gilmorton, Leicestershire.

![Figure 4.4 The Benraw 'ear ornament' from County Down (copyright NMI) and Needham's (2011, Fig 44) Atlantic Group A](image)

The unprovenanced pair, together with the Bellville bands from Cavan (Fig 4.5), comprise the entirety of Needham’s ‘Atlantic Group C’, but are closely related to a pair of ‘ear ornaments’ found in a Beaker burial in Orbliston, Scotland and circular gold discs (Needham 2011, 134). They were made by hammering very fine gold sheet (c. 0.09 mm thick) and forming a thicker tang (c. 0.38-0.48mm), either by
folding a stem back on itself (to make it thicker) or by cold welding on an extra piece (Taylor 1980, 22). There was no decoration visible on the Irish earrings, but when it occurs, it normally consists of dots and lines formed through simple repoussé with a rounded point (ibid.).

Figure 4.5 The Bellville gold bands, County Cavan (copyright NMI) and Needham’s (2011 Fig 44) Atlantic Groups C & D

Discs
The discs were formed by hammering sheet to a similar thickness as the ‘earrings’ but the decoration was often applied from both sides creating a more elaborate repoussé effect (Taylor 1980, 23). Case (1977b) divided the discs into two groups, A and B (Fig 4.6). A is mainly found in the north and considered earlier. B has a more southerly distribution and considered later. One of each was thought to have been found together in Kilmuckridge, County Wexford; however, it appears there may have been an antiquarian mix-up (Cahill 1994, 65-66) and that both were of the southerly type, B. Rather than a chronological development the types may reflect regional workshops and their respective geographical spheres of exchange.

Lunulae
A regional division between producers of lunulae is clearer and the distinction between classical, unaccomplished and provincial styles is quite easily recognisable (Taylor 1980, 25-44).
Classical lunulae are predominantly found in Ireland and those found in Cornwall and Scotland likely represent exports from Ireland (Fig 4.7). They are the widest, thinnest and heaviest, were decorated with fine pointed tools and the technical excellence in their manufacture suggests they were made at one or more specialist workshops (Fig 4.7). The decoration and its arrangement are very restricted and can be divided in two groups by the closed ($C_1$) and open ($C_2$) diamonds in the centre of motifs (ibid.). Taylor related this to the development of Beakers in Britain (after Clarke 1970), suggesting it was a chronological rather than regional variation.
Unaccomplished lunulae are only found in Ireland and as their name suggests are not as finely made or decorated. Their decoration, divided into three groups (Un₁, ₂ & ₃) by Taylor (1980, 31-32), varies considerably more than that on classical lunula. The first two groups (Un₁ & Un₂) would seem to reflect the differences between the classical groups (C₁ and C₂) and I would argue that they are likely to be a broadly contemporary temporal development. The third group (Un₃) has distinctly different decoration arranged in vertical panels (Cahill 2013) and may indicate a regional workshop. In light of the number of unprovenanced examples, it would be unwise to make too definitive statements about their distribution but the provenanced classical lunulae do cluster in the south of the north and north midlands, and as Taylor (1980, 33) pointed out the unaccomplished ‘form a peripheral border’ around these. There are also a number of plain, probably unfinished and unaccomplished, lunulae; the provenanced examples are from north Mayo and Tyrone areas where unaccomplished lunulae predominate. The Ballinagroun unaccomplished (Un₃) lunula is a modified classical lunula.
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illustrating that at least some unaccomplished lunulae are later than the classical ones. However, given the parallel development between C₁ and C₂ and Un₁ & Un₂, it is suggested here that those classes are likely to have coexisted and that the peripheral distribution of the provincial lunula is likely to reflect attempts to emulate a centre or centres where master craftsmen were working. That classical lunulae are the only type made in Ireland which are found abroad, suggests that those centres maintained the type of contacts through which lunulae were dispersed, with those distant regions.

Provincial lunulae are, apart from one example from Cooltrain, County Fermanagh, only found outside of Ireland, predominantly in western Britain, eastern Scotland and Brittany. There is only a small amount of these and they could have been produced by a very small number of craftpersons; indeed one of the Harlyn bay (Cornwall) and one of the Kerivoa (Brittany) lunulae would seem to have been hammered into shape by the same person and decorated with the same tool (Taylor 1980). Also of interest to their production is the occurrence of an unfinished example in the Kerivoa hoard. It was still in a bar form from which a lunula would have been hammered. Two provincial lunulae, from near Coulter Scotland (Taylor 1980, 34), were also decorated with the one tool. Provincial lunulae are, like the unaccomplished lunulae, likely to be attempts to emulate the Classical lunulae, decorated with motifs appropriate to the social negotiations being played out in their local context.

Later EBA

There are fewer gold finds from the later EBA. The Sparrograda disc, Knockane plaque and Mushera plaques from County Cork (Cahill 2006, 268-272), the gold button cover from Tullamore, County Offaly (Moloney 2011), the Topped Mountain dagger hilt band, County Fermanagh (Harbison 1969b, #43), the Scarriff axe, County Clare (Harbison 1969a, #997) and the Whitfield armlet, County Waterford (Herity 1969) are all likely to date from this phase. Collectively they demonstrate several developments in gold-working techniques and unlike earlier goldwork they were mostly combined with other materials.

The Sparrograda disc and Knockane plaque have very high levels of copper, probably added to enhance their colour (Cahill 2006). Needham (2000, 29) would
place the Sparrograda disc early at c. 2050 cal BC, a date that would agree with the Migdale style armlet with which it was found, and in such a position it neatly fills the typological gap between beaker discs and Wessex gold foil covered objects. Cahill (2006), on the basis of its copper content, would place it toward the end of the EBA and sees it and the Knockane plaque as fitting with part of Grogan’s (2004) late EBA-MBA rich burials. While it may never be possible to precisely date these pieces, I see no problem in placing them toward Needham’s earlier date; at a time when the alloying of copper and tin was becoming widespread it would be no surprise that metalworkers might experiment in other alloying. The Ballyvourney pin which also had a very high copper content (Cahill 2006, 246) was found with a Beaker disc; it is either an import or another indication of local early experimentation in alloying. The style of workmanship on the Sparrograda disc and Knockane plaque are very close to the 1900-1700 cal BC Wessex linear style (Needham 2000, 31); if their early date is accepted, it offers a potential origin for the Wessex linear style. Alternatively the style may have disseminated even earlier from a common origin. The gold button cover from near Tullamore, County Offaly is directly comparable to examples from Wessex and is more likely to represent an import from that region at a later EBA date (confirmed by radiocarbon dating of the accompanying cremation to 1776-1601 cal BC (Moloney 2011).79

The rarely discussed gold-covered Ballyvally flat axe from the Scarriff River is a unique find and represents the first appearance of such technology in Ireland (Wilde 1861, 524) (Armstrong 1922; Harbison 1969a, #997). It is normally described as being covered with gold leaf (Harbison 1969a, 39), but this is likely a technological misnomer and it is more likely an example of ‘foil guilding’ which is first recorded in Syria and Ur in the early third millennium BC (Oddy 1991). In a search for parallels, Armstrong (1922) drew attention to a gold covered halberd and tweezers from Sweden, solid gold axes from Saxony and Hungary, and model gold axes from Iberia.

The Whitfield armlet (Herity 1969) finds its closest parallel in one of a pair of gold bracelets recently found at Lockington, Leicestershire, England, with an Armorican dagger and late Beaker pottery. It is part of the Needham’s (2000) early EBA

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79 2 sigma (lab ref not given)
embossed gold-working tradition, which also includes the Mold cape from Wales and bronze embossed armlets from Scotland. The gold sheet forming this bracelet was crimped to form five central ribs which were further elaborated by lentoid swellings and appear to have been further outlined with pointillé decoration.

4.4.7. Recycling

Needham (1998, 288) has pointed to the important conceptual distinction between simply reworking metal and its secondary use. He points out that while its reworking and modification could be carried out in the mode of lithics and other non-metals, recycling was to appreciate that it could be utterly transformed, thus ‘separating a Neolithic metalworking idiom from a Bronze Age one’.

There is evidence for recycling or remodelling from an early date and the changing impurity patterns in the ‘A metal’ that moved from Southern Ireland to Scotland can be explained in this way (Bray 2012, 66). Each time metal was heated and annealed, or recycled and remodelled, it would have lost arsenic, antimony and some copper, leading to lower arsenic and antimony content; however, silver, being less prone to oxidisation, would therefore remain in higher relative levels. Bray (ibid.) has shown that this became common in Ireland during MA 2 and more widespread across Britain by MA 3.80 He also argues that the fact that it was not until much later, during MA 6, that it became very common (c. 40% of items deposited), suggests both that there was not enough old metal in circulation and that there may have initially been taboos against melting and mixing (Bray 2012, 66); however, his parallel argument that recycling has obscured early alloying and his putative early Cornish copper would appear to contradict this (Bray 2012). It seems more likely that Cornish copper was not extensively mined in the EBA.

4.5. Object biographies

4.5.1. The circulation and exchange of finished objects

It is of obvious interest to this study that 80% of EBA axes in Scotland were made of Irish metal (Northover et al. 2001) and that Irish axes ended up in the Dieskau hoard in Saxony (Clarke et al. 1985) and the Pile hoard in Scandinavia (Vandkilde

pers. comm.), but it tells us little about the value of those objects, the modes of exchange and exchange relations along the way. Objects are likely to have moved through gift exchange, barter and commodity exchange, and perhaps sometimes through more than one of those modes in the same exchange (cf. Humphrey and Hugh-Jones 1992).

As prehistoric archaeologists we deal with deposition patterns; of which some can be related to production, some to intentional deposition and others to loss, and none of which are necessarily directly connected to exchange. As discussed in chapter 2, early processual archaeologists tried to identify particular patterning, such as fall off curves, to predict the types of exchange (i.e. reciprocal, redistributive etc.); however successful some of these have been, they tend to gloss over numerous different cultural zones and rarely address the structures that underlie the meaning behind those exchanges. Others have tried to relate patterning in deposition to different modes of exchange, such as gift and commodity (cf. Bradley 1985a; 1985b); however, those depositions more likely result from activities intended either to influence social or existential processes and, in any case, the dichotomy between gift and commodity has been shown to have been over emphasised (see chapter 3). Others have tried to read exchange relations from the inclusion of objects in burials (cf. Brück 2004); however, it can be argued that many of those items were likely personal and their inclusion or non-inclusion had as much to do with beliefs of the afterlife as with exchange relations or the redistribution of goods among the living (such an approach is considered further in chapter 6).

So how are we to approach the understanding of those exchanges? It is apparent from the patterns of sourcing and production, already reviewed in this chapter, and the patterns of use and deposition, yet to be reviewed, that there was exchange of metal between widely distributed groups. In part, the answer must lie in moving between different scales of analysis. At the wider scale we can map the movement of goods, but it is at a local scale along those flows we must try to read how objects were valued. To do this it is important to search for structural relationships in how materials and objects were used or not used, deposited or not deposited, and to understand that geographical and temporal changes in those
patterns are a reflection of differing active negotiations between and within different social groups.

Structural patterns in depositions may provide some insight into how objects of exchange were valued, not during an exchange between partners, but in the action of that deposition (see deposition below); but that is in turn likely to reflect something of their value in other spheres of activity.

One possible way to approach this is through identifying where exchange is likely to have taken place. A number of authors have suggested that one of the roles of henges (Bradley and Edmonds 1993; Harding 2012) and stone circles (Burl 2000) may have been to serve as spaces for exchange and the location of at least some would seem to correlate with routes through which the exchange of stone axes and later metal passed. If this supposition is correct the delineation of these areas may give us some insight into exchange; such a concern with a liminal separation might indicate a fear of pollution in dealing with outsiders or in the liminal act of exchange.

Alison Sheridan (2012) has suggested that a ‘high status man’ buried at Culduthel in Scotland may have been a prominent player in the metal trade between Ireland and Scotland. Among the objects buried with him were a Beaker, a Langdale tuff wristguard with copper rivets capped in gold, eight barbed and tanged arrowheads and a miniature cup. The body was dated to 2280-2030 cal BC and isotopic analyses of his teeth suggest that he probably grew up in north-east Ireland. The manner of his burial is not typical of where he appears to have grown up but rather where he was buried. The burial is particularly ‘rich’ and the individual certainly travelled. It does seem likely that some individuals and/or groups rose to prominence through manipulation of exchange networks but we should be careful not to place too modern a conception of players in a ‘metal trade’.

4.5.2. Use

Metal objects are likely to have fulfilled a variety of practical, social, symbolic and religious roles, and often these roles are likely to have overlapped. To an extent, aspects of their practical roles can be read from their form and their actual use can

\[ 3735 \pm 35 \text{ BP (SUERC-2462)} \]
be inferred from wear traces on the objects themselves, and can occasionally be
directly observed on other objects or human remains. Their social, symbolic and
religious roles, however, need to be extrapolated.

**Axes**

Axes appear to have played a particularly significant role in both ritual and
exchange, a role continued from the preceding Neolithic. Functionally they would
have been used, among other tasks, to claim land from forest, a role that makes it
easy to see why they might have become symbolically charged (see chapter 10).

Direct traces of their use are preserved on wooden remains, in Ireland most
commonly on trackways preserved in peat bogs, but also on logboats and wooden
remains found in other waterlogged conditions. These are particularly important
as they allow for direct absolute dating of different axe forms and have the
potential to illustrate when the use of metal axes became widespread and for how
long stone axes continued in practical use.

There are six logboats dated to the period under consideration. Unfortunately the
facets on the Lurgan logboat, the earliest with a relatively tight date range, are
undiagnosable because of conservation (Gregory 1998; also from personal
examination). It is interesting, however, that it is considerably larger than any
earlier Neolithic logboats, suggesting that it fulfilled a different social role, perhaps
connected with changes in society at least in part stimulated by the availability of
metal (see chapter 8). The other early relevant logboat, from Carrowneden, County
Mayo, has not yet been published, but in any event has a very wide dating range.
Trackways, because of their number, have a much greater potential to inform the question of how rapidly metal axes became available/widespread. A huge number have been sampled over recent years, especially on the Bord na Mona bogs; however, only a portion of these have been published to date (Raftery 1996; Whitaker and O’Carroll 2009; Whitaker 2009). On a Late Neolithic trackway at Moundillon, dated to between 2850 and 2480 cal BC, the ends of stakes were clearly sharpened with stone axes (O’Sullivan 1996). At Corlea 6, a trackway dated by dendrochronology to 2259±9 cal BC, they were cut with metal axes (ibid.). As dates and woodworking analyses become available for the remaining Bord na Mona sites that fall between these two dates will be of particular interest.

Woodworking marks on a timber circle at Holme-next-the-Sea in eastern England dated to 2049 cal BC could not be matched to any known axe types (Brennand and Taylor 2003), suggesting that those that have been retrieved were not the only ones in circulation (Roberts 2013, 536).

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82 Radiocarbon dates from Lanting and Brindley (1996) and calibrated using the IntCal 09 Curve on OxCal v4.1.7 Bronk Ramsey (2010); r:5 Atmospheric data from Reimer et al. (2009)
83 Bord na Mona are the Irish body responsible for the harvesting of peat bogs
84 Facets cut with stone axes ‘are typically short, concave in section and profile and have ragged facet junctions’ (O’Sullivan 1996, 300)
Daggers
Daggers are, because of their occasional deposition in burials (see below), generally considered personal objects (Harbison 1969b; Gerloff 1975; Needham 1988). Use wear analyses of earlier daggers suggest that they were intensively used, often as knives for cutting as opposed to for stabbing (Harbison 1969b, 9). In the latter part of the EBA they were gradually excluded from hoards and also the gradual lengthening of the blade suggests they became more explicitly weapons.

Halberds
Halberds have variously been considered as practical weapons (O'Flaherty 2007) or as objects with a more symbolic function (Waddell 1991a). Experimental archaeology conducted on sheep skulls has confirmed their capability in delivering ‘killer blows’ (O'Flaherty 2007) and analysis of wear patterns suggests that they were indeed used in combat (O'Flaherty 2002). O'Flaherty (2007) has surmised, from the expertise and room to manoeuvre, required to wield them effectively, that they were more likely a champion’s weapon suited to exhibitionist fighting, than a common weapon used in raiding. The appearance of the first object specifically designed to kill, even if its use was restricted to a largely ritualised context, suggests the emergence of new identity types (i.e. warrior identities), a heightening of intergroup tensions and a reorganisation of exchange relations. This interpretation of the halberd and its role is supported by the fact that it was deposited in similar contexts as later martial equipment (Becker 2006).

Use of gold objects
Gold in Chalcolithic and EBA Ireland was almost exclusively restricted to the production of bodily ornaments. Although these were likely to have been worn in ostentatious displays we should be careful not assume they represent ‘personal wealth’. It has for example on a number of occasions been pointed out that there is more gold in one lunula than all of the ‘rich’ Wessex burials (cf. Taylor 1980). Such comparisons mean little; firstly there is a chronological time gap, but more importantly the relative ‘value’ of gold may have been very different in each of those societies. If we are to understand how such objects articulated with exchange systems it is essential that we understand something of their use and value, symbolic and practical, in particular historical and spatial contexts.
Basket ornaments have been variously considered as earrings (Taylor 1980, 22-23), hair tresses (Sherratt 1986) and most recently as head-dress attachments (Needham 2011c, 137). The evidence remains equivocal and Needham’s term ‘basket ornaments’ seems to best fit our current knowledge of their function. The few found in Ireland, although related to objects elsewhere, were deposited in the local fashion, not accompanying burials.

Discs have occasionally been found in pairs and are therefore assumed to have belonged as such (Cahill 2006, 266). They generally have two perforations near the centre, occasionally accompanied by more around the edges, by which they are believed to have been stitched to clothing or other perishable backing (Taylor 1980, 187). Although a recent find from Wales (Timberlake et al. 2004), and an intriguing ancient tale about the discovery of one in ‘a giant’s grave’ (Case 1977b), suggest they could be deposited with burials, they are most often found in hoards or single depositions (Becker 2006). Taylor (1980, 23 & plate 4) pointed to similarities between the cruciform motif on what are considered the earlier discs and Únětice racquet-headed pins, and from this she concluded the cruciform motif originated in central Europe. The similarities are striking, but I would argue that while the resemblance may indicate some contact, they are as likely to be drawn from a common pool of motifs, an assumption I will return to after a brief consideration of lunulae.

Inherent in the name lunulae is an antiquarian belief that crescent-shaped necklaces were representations of the moon and symbolic perhaps of the lunar cycle and its congruence with the female menstrual cycle. Since Irish lunulae were not deposited with burials such gender associations are at first difficult to sustain; however, crescent-shaped jet and amber necklaces from Britain have almost exclusively been found with female burials and form a complementary distribution (Harding 1993). Given the similarities in form and decoration, and the mutually exclusive distributions, an assumption of some similarity in use, at least as far as a gender association, seems viable. Taylor (1980) illustrated that the range of motifs on lunulae were similar to those on the sides of mid-stage Beaker pottery. Eogan (1994) criticised this comparison on the basis that it was made with British pottery and argued parallels with Bowl Tradition pottery and Irish axes were as close;
however, Taylor’s original comparison is far more convincing and there are clear parallels between many of the motifs and their zonal arrangement on the sides of Beakers (Taylor 1980, figs 42-43). Many lunulae bear evidence of having been repeatedly rolled and unrolled (Cahill 2005). This led Becker (2008) to suggest that they played a periodic role in ceremonies and that repeated deposition and retrieval may have been an integral part of how they were used. Eogan (1994, 34) pointed out that some of the neck circumferences were particularly small; I would argue that this would not preclude their being worn by people, but rather might suggest that they were intended for particularly young people. Lunulae as objects for female initiation ceremonies would be one possible interpretation that would support the antiquarian assumptions inherent in the name.

In light of that possible interpretation, I would like to return to the motif on the discs. Antiquarians often called these ‘sun discs’, although, as with the lunar association of lunulae, there were no explicit explanations of how they came to this conclusion. I would argue that despite this, once again they may have been correct. Variations of a cruciform motif also appear on the bases of earlier Linkardstown pottery (cf. Brindley et al. 1983) and contemporary or slightly later Bowl Tradition pottery (Ó Riordáin and Waddell 1993). I would argue that both the disc and the pottery-base motifs are likely to be a skeuomorphic detail from a basket base-design. While at first glance the techniques used in making a basket might not seem culturally determined and some basket-makers may claim that their practices are practically determined, when one looks at regional styles the myriad of options at different stages of the chaîne opératoire are clear. A pattern very close to the cruciform on discs and pottery-bases is found on contemporary Irish traditional basket bases, particularly of the ‘Joyce country weave’ style from south County Mayo (Fig 4.8).
Of particular interest to our study of the Bronze Age motif is the ‘practice’ of basket weaving. Making a basket is an extremely prescribed activity, where particular attention must be paid to direction and how to hold various rods; it involves deeply embedded non-discursive and embodied knowledge; this is perhaps why many people who have only practiced one style think they are simply doing it the most practical way. Almost everything, at least for the right handed person, goes from left to right, a practice that might have been perceived as ‘sunwise movement’. If one were to accept the arguments about crescent-shaped necklaces representing a phase of the moon, the association between the disc/sun/pottery bases would present an interesting juxtaposition to lunulæ/moon/pottery sides. As mentioned before gold discs are not normally found with burials thus at first making any gender association difficult; however, almost exact copies of the cruciform motif on discs also occurs on V-perforated jet buttons, that are sometimes found with burials in Britain. They are most commonly found with males, but are also occasionally found with females (Shepherd 1985). This does not necessarily mean, however, that this symbol was not gendered; Wadley (1997, 129) has shown, the decision to include ‘grave goods’ may often have more to do with its symbolic significance than any perceived gender associations. She illustrated how, in a South African example, similar sets of grave goods were recorded with both sexes, and how typically male goods, such as arrows, may have been omitted because associations with evil, harmful or sexual symbolism; while typically female goods may have been included with both sexes.

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85 This could be supported by the example of the Bridget’s cross which has been shown to be a widespread Indo-European symbol from which the swastika is also drawn. This pattern of practice, turning right, is known as ‘deisheal’ in Irish.
86 From Harehope, Peebleshire (see Shepherd 1985, 209)
because they were symbolically associated with communication with the dead. In a
similar way our V-perforated buttons could have predominantly been associated
with males but been included with burials of both gender because of a desire to
include symbolic male power. In this way we can tentatively extend the structural
juxtaposition of lunulae/moon/female to discs/sun/male but also read both male
and female associated motifs combined on pottery placed in burials. This might be
seen as a diversion from our subject of exchange, but as Hodder (1982c, 202-201)
has pointed out, ‘the meaning in an exchange act involves the symbolism attached
to an object in a local context and the symbolic power held by an object in being
transferred from one context to another’. These potentially group owned objects
were probably used repeatedly in ceremonial contexts and may have been
deployed in active negotiations between competing social groups, such as age or
gender, reifying the power of certain interest groups among their respective
communities. Such tentative understandings of their symbolic roles may help us
understand their perceived ‘value’ and significance in various exchange contexts.

Far fewer gold objects are known from the later EBA, but the range of artefact
types increased and the use of gold was less restricted; it was now used to decorate
daggers and axes, combined with other materials in ornamentation and
occasionally deposited in burial contexts. This may suggest it was sometimes
personally associated, perhaps in a way that symbolically reinforced the rights of
emergent elites. This may signal a change in how things were owned, that would
have significantly affected how exchange was conceived and organised. It is likely
that in the wider networks, in which a symbiotic but perhaps also competitive
relationship between regions with different resources had developed,
opportunities for shaking up the established order occurred. In this milieu the
deviation from the strict division of metals and their use in the Chalcolithic and
earlier EBA occurred and new orders were established.

4.5.3. Deposition

During the Chalcolithic and the EBA, copper, bronze and gold objects were
deposited both singly and in hoards, in wet and dry locations, and in burials.
Although there are biases in the data, geographically and temporally structured
patterns are discernible. As Becker concluded, in a recent PhD on Irish Bronze Age deposition,

‘The dominance, or exclusivity of certain artefacts in certain contexts and the exclusion of other artefacts indicate that the record as we see it today was deliberately structured’ and as a ‘selective and structured phenomenon... deposition was not the result of random loss or safekeeping, but... [indicates that] different values were attached to different types of object, which made them suitable for deposition’ (Becker 2006, 242).

**Chalcolithic and the early EBA**

In continuity from the Neolithic, axes are the dominant object form from Chalcolithic and early EBA depositions (O'Flaherty 1995). Hoards are generally small, copper/bronze and gold objects are never mixed together and the majority of objects of all metal types were deposited as single finds (Becker 2006; 2008). Single finds are more commonly found in wet contexts, whereas hoards are more commonly found in dry contexts. Gold finds have been retrieved from bogs and dryland contexts but not from rivers or burials.

Further patterns are discernible among types of objects (Becker 2006, 61-72). Thirty-eight percent of copper/bronze hoards contain more than one object type. The majority of copper/bronze one-type hoards are of axes; only halberds also form other one-type hoards. A higher proportion of daggers and halberds, than axes, were placed in wet deposits, especially rivers; however, while axes and halberds were occasionally found in lakes, daggers never were. Halberd-only-hoards have only been found in wet contexts and the only halberd found in a dry context hoard was broken. All unfinished or miscast objects and copper cakes were found in dry contexts, and they occurred exclusively in the south of Ireland. While this does suggest some dryland hoards may have had a metal-working connection, several of those hoards were found in notably special locations with potential ritual associations (Becker 2006, 85) and the old wet/dry = ritual/non-ritual correlation cannot be sustained (Dickins 1996).

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87 Only two (Clashbredane, County Cork and Carhan, County Kerry) contained over 10 items.
Eighteen of the twenty known gold discs were found in hoards and only eighteen of the ninety lunulae (Becker 2006, 72-74); however, this is partially a reflection of the fact the discs were paired. A lunula and two discs were found together in the Roscommon hoard (Kelly and Cahill 2010). As already mentioned, a number of gold items, most especially lunulae, were folded in what appears a very similar way, and in several cases unfolded and folded again (Cahill 2005; Becker 2008).

The range of metal objects from burials is limited, with daggers and awls predominating (Waddell 1990). No gold objects were retrieved from Irish Chalcolithic burials. The distribution of objects from burials is largely eastern and northern, reflecting the distribution of the single burial tradition; however, it is clear from the amount of metal found elsewhere that the inclusion of metal objects in burials does not reflect the amount of metal in circulation.

Objects of all types were deposited in a range of conditions (Becker 2006, 86-91). Axes and halberds most commonly exhibited low to medium amounts of wear, but halberds were more likely to show less wear. Daggers exhibited relatively higher levels of wear. A number of objects exhibited levels of damage beyond use-wear and may have been deliberately destroyed. In some cases these appear to have been deposited shortly after destruction, while others, such an axe fragment from Boghill, County Clare, were evidently handled for some time before deposition. This fragment is also unusual, however, as it is the only fragment found in a wet context hoard and the hoard is further unusual for containing a non-metal object (a stone hone).

Although the distribution of copper/bronze artefacts is widespread throughout Ireland, the distribution of copper/bronze hoards is mainly a southern phenomenon and the biggest hoards are found in the southwest (O'Flaherty 1995). Daggers and halberds on the other hand were more commonly found in hoards in the north of the country (Harbison 1969b). There was a general absence of copper/bronze hoards from the midlands. Gold hoards were more common in the north and Connaught, and occurred in the midlands. Despite the few gold hoards on the south coast, the practice of depositing gold hoards is largely complementary to the practice of depositing copper/bronze hoards (Becker 2006,
226), reinforcing the impression that it was hoarding that is reflected, rather than the amount of metal in circulation.

**Later EBA**

During the later EBA the number of single and burial finds increased, relative to the number of hoards (Becker 2006, 93-99). Overall finds were more commonly deposited in rivers, less in bogs and less in dryland contexts. In contrast to the earlier period, fragments mainly occurred in wet context hoards, but they appear to have been broken in a structured manner (such as axes broken flat across the back and missing their butt ends). As during the previous period, unfinished objects were deposited in dryland hoards and exhibited more wear, suggesting a link with the production process.

Axes continued to be the most common object deposited and were the only metal objects found in hoards (O'Flaherty 1995). They were most commonly deposited in areas outside the area where they were most prolifically deposited in the previous period. There is little information on the actual findspots but it is evident that they were deposited in both wet and dry contexts. There was an increase in the overall number deposited that peaked in numbers in the middle of the EBA with type Ballyvalley but dropped off toward the end with type Derryniggin. The proportion of decorated axes increased right up till the end of the period under consideration, perhaps implying that those that were undecorated were more frequently recycled. The proportion of decorated axes in hoards was far higher than among single finds and axes from hoards during this period also showed less evidence of use than those from during the previous period. Decorated axes had traces of use; however undecorated axes were more commonly deposited broken.

Daggers continued to be deposited, halberds disappear from the record and new forms (razors, spearheads, rapiers and dirks) appeared. These types were all found as single finds or in burials. Spearheads were generally found as single finds. Daggers and dirks were predominantly most commonly deposited in wet contexts, but daggers of type Corkey were also deposited in graves and hoards (Harbison 1969a, 20). Daggers became much more elaborate and include examples that had an amber hilt (Power 1997) and gold elaboration (Harbison 1969b, #43). Razors have only been found in burials (Kavanagh 1991).
THE FLOW OF METAL

Metal objects were more commonly placed in burials and a number of regional phenomena are discernible. In County Sligo, two burials were accompanied by weapons, a spearhead from Ballysadare and a late deposition of a type Breaghwy halberd from the Moylough. In County Cork (Cahill 2006), the Sparrograda disc and Knockane plaque also suggest a regional burial practice. Very few gold items were deposited (ten objects); however, there was a wider range than before, many arguably show foreign influence and they are now found in burial contexts.

There is one later EBA mould hoard, from Omagh, County Down. Interestingly, two spear types represented on those moulds (tanged and feruled and loopless socketed spearheads of the Arreton Down type) have not been found in Ireland but have been found in Britain.

Discussion of deposition patterns

In a continuation from the Neolithic in both the Chalcolithic and throughout the EBA axes were the most common form deposited in hoards and as single finds. They were deposited in wet and dry contexts but were not deemed appropriate for deposition in burial. This non-practice was widespread across Europe and, as Vandkilde (1996, 273) pointed out in her review of the Scandinavian material, it suggests that they belonged to a different transactional sphere.

It seems, as has been suggested for various objects (Needham 1988; Taylor 1994), that throughout the Chalcolithic and EBA in Ireland many objects were not considered personal, but were communally owned. This is based on the fact that they were not usually placed in burials and on the large numbers in which they were sometimes placed in hoards (Becker 2006, 104). There was a shift over the period under consideration with more, and a wider range of objects, being deposited in burials by the later EBA. This is particularly marked in the deposition of gold objects, which were almost never placed in burials during the Chalcolithic and very EBA when the majority of gold was deposited. Certain bronze objects such as razors and awls were only found in burials and as such were likely personal objects (see chapter 8).

Chalcolithic and EBA hoards containing production related material never contain anything other than metal (Becker 2006, 202) and were only deposited in dryland
conditions. This potential retrievability does not however necessarily equate to utilitarian hoarding and while it does suggest they were connected to the production processes, I intentionally do not use terms such as founder’s or scrap hoards to avoid such connotations.

Martial artefacts were most commonly deposited in wet contexts, but whether this means they can be considered communal objects as has been done for battleaxes (a number of battleaxes have actually been found in burials) (Simpson 1996), is debatable. This was the beginning of a trend which saw weapons predominantly deposited in rivers throughout the BA (Bradley 1990; Bourke 2001) and is likely to reflect votive offerings of weapons belonging to vanquished warriors (Kristiansen 2002), or perhaps the social death of warriors (Fontijn 2002).

It is clear that the old wet/dry = retrievable/irretrievable = ritual/non-ritual correlation can no longer be upheld (Dickins 1996; Becker 2008). Items that were deposited in rivers were almost certainly irretrievable and are likely to have been votive or sacrificial. Bog finds could be retrieved and dryland finds could be deposited, retrieved and redeposited as part of ritual or ceremonial practice.

It does seem likely that axes, from the diversity of contexts they were deposited in, played several roles. Becker (2006) has suggested that one of those roles may have been, in the earlier EBA, as a weapon. While this is possible, I would suggest that its dominance as the paramount object of deposition is likely to stem from its importance in exchange and the relations it signified. Its role as an object of exchange likely stemmed not only from its utilitarian role but also from symbolically representing the land that it had cleared and is likely one reason why they were such potent symbols cross-culturally.

One suggestion for the deposition of fragments is that they were intentionally broken and kept as tokens of exchange relations and then deposited to facilitate the reconstitution of said relationship (Chapman 2000). This might apply to certain objects (e.g. beads in chapter 6) but for most metal objects destruction as a form of sacrifice seems to be more apt. I would agree with Becker’s (2006, 261) general interpretation of hoards as linked to transformative processes but would include actual acts of exchange among such transformations. Without resorting to
Chapman’s fragmentation, which is an interesting avenue but limited in relation to Irish Chalcolithic/EBA metal, even depositions of whole single objects and of hoards might sometimes be linked to successful exchange transactions, which are by themselves transformative.

Becker (2006, 236) has suggested that the reason axes were deposited in greater numbers in the ore source area in the Chalcolithic and EBA was because of their relatively higher social significance in that region. While elsewhere the first metal axes may have just replaced stone axes, to communities in the southwest their dominance of the supply would have given them new opportunities and had greater social consequences. One of the key changes over the EBA was a shift to greater numbers of metal axes being deposited in areas outside their source. This could be a reflection of further changes in how they were valued. In their source area they may have become more valued for their exchange value whereas in other areas their value as objects for conspicuous consumption may have become more important.

4.6. Discussion and conclusions

On the basis of current evidence, we can say that during the Chalcolithic, and for a short time into the EBA, copper was almost exclusively sourced in the south-west of Ireland. While the most consistent overseas interaction may have been with communities in Britain, the knowledge of how to extract and refine metal is likely to have come from the Atlantic façade, with Brittany acting as a ‘springboard’ (O’Brien 2012a). There are occasional items, such as early axes which may have been imported but more importantly also of personal dress (the Benraw earring), which reinforce the probability that there was some movement of people. During the Chalcolithic and EBA, the largest numbers of axes deposited were near the source of this metal in the Cork/Kerry region. This was a period during which it appears that only one mine, Ross Island, was in production. From around 2000/2200 cal BC, tin was sourced from Cornwall and mines in Britain began producing copper. Finds of lunulae in Cornwall (Mattingly et al. 2009) and Wales, and of an Irish-type gold disc in Wales (Timberlake et al. 2004), strongly suggest close interaction with communities in Ireland, in which some Irish prospectors are likely to have been involved.
Of gold objects, the distribution of lunulae and their different sub-types would seem to offer most insight. There would appear to have been a core area of classical lunulae production in the north midlands/central south Ulster. On the periphery of this area, other communities made less accomplished copies but that does not mean that they were any less valued and the over-scribing of a classical lunula with unaccomplished design (Taylor 1980, plate 13) would support this. Further still from the core of classical production provincial styles developed; these communities in Cornwall, Wales, Scotland and Brittany were in close contact with Ireland through the exchange of copper, and tin, and the occurrence of occasional classical lunulae in Cornwall/Scotland is likely to either represent the movement of Irish prospectors or very close exchange relations which included the exchange of people. The occurrence of classical lunula within Ireland outside the likely core production zone is concentrated in areas where copper was mined (Kerry and Waterford), however any models that assume straightforward copper for gold exchanges (cf. Cahill 2006) are likely to misleading. Copper and gold are likely to have circulated in different spheres, as suggested by their mutually exclusive use and deposition, and while in quantitative terms copper is likely to have been a substantially exchanged substance, the concentration of gold in large items such as lunula suggests it is more likely to have only been exchanged in exceptional circumstances.

A substantial number of axes were deposited in the northeast of Ireland. These depositions would seem to be related, albeit perhaps indirectly, to exchange networks with Scotland where during the EBA an innovative metalworking centre was emerging, especially on the east Scottish coast. That trade is likely to have continued into the EBA and in the later stages when the practice of hoarding axes near the sources in the southwest of Ireland waned, it continued and even increased in the northeast. It is interesting that despite rich copper deposits in Cornwall, no evidence of these being mined has been found. It may have been a symbiotic exchange strategy that led to this. We need to think less in terms of availability and profit and think of the social strategies between and within groups. By about 1700 cal BC, Mount Gabriel and mines in Wales, the Isle of Man and the north of England were in production.
While I agree with O’Brien’s (1994, 238) assertion that the marking of the landscape with wedge tombs, and perhaps stone circles, may in part have something to do with expressing ownership over resources, the idea that product uniformity directly correlates with carefully organised production and consumption cannot be sustained. It is essentially the old problem with equifinality; such a pattern could as easily result from a lack of competition and therefore a lack of need to express difference. The complementary and largely exclusive distribution of wedge tombs and stone circles will be returned to in chapter 7.

O’Brien (1994) suggested the application of Sherratt’s (1976) source-production zone-direct contact zone-indirect supply zone model to explain the distribution of metal from Mount Gabriel. Sherratt’s model seems more applicable to the movement of bulk goods; given that O’Brien has suggested less than 100 axes a year might have been produced from Mount Gabriel other models should be considered. For the movement of a small numbers of axes we need to consider the possibility of relatively long distance directional travel, especially during the EBA when travel may have become increasingly intertwined with religion (see chapter 8).

Roberts’ contention that early ‘metal probably did not quite carry the prestige for prehistoric communities that is frequently imagined’ (Roberts 2009, 472) does not seem warranted. He bases this assumption on the basis that smiths were likely part-time specialists producing regionally specific object forms and which were not much of a functional improvement on existing tools. The treatment of metal tools in deposition, however, suggests that their symbolic value was very real.

Given that axes were being produced in all four provinces of Ireland, it may seem unusual that the products of one mould should end up in all of those provinces (e.g. Ballyglisheen, Flanagan 1979). However, when we divorce such exchanges from our modern conceptions of trade and markets and consider what the wealth of anthropological literature suggests may have been the focus of those exchanges (Mauss 2002 [1925]; Malinowski 1922; chapter 2), namely the maintenance of social bonds, such circulation makes more sense.

The distribution of lunulae is a good representation of the dual direction in which Irish metal was flowing toward the continent in the Chalcolithic and early EBA.
One route was via Northern Ireland across Scotland, where from the east coast it was going further afield. The other was south to Brittany probably at least some of the time via Cornwall. Contacts with Wales were also strong and may even have involved Irish prospectors. A notable feature of this overall orientation is that it seems to have avoided southern England, throughout the Beaker phase and into the earliest EBA. That changed somewhat in the later EBA when changes there are increased signs of interaction with the Wessex zone, possibly filtered through Cornwall.

Combining the chaîne opératoire and object biography approach provided this chapter with a useful way to organise analysis and facilitated distinguishing deeply embedded practice and more intentional discursive negotiations; all of these contribute to an understanding of how ownership and exchange was viewed. As more mines are excavated there may be scope for distinguishing the different technological backgrounds of miners in the techniques they employed. The form of mauls, if not shown to be definitively related to geology, would appear to offer one potentially fruitful avenue of research.
Chapter 5 The people behind the pots

5.1. Introduction

There are several discernible Irish Chalcolithic and EBA pottery ‘traditions’. This chapter reviews these in the light of recent theoretical advancements and the comprehensive typological and chronological study carried out by Brindley (2007). It aims to investigate the possibility of distinguishing between the different mechanisms that may have led to the dissemination of those traditions; among which the exchange of objects, people and ideas are often considered a strong contender, but the movement of peoples through other means, such as invasion or migration, are also possibilities.

The chapter explores the data at three scales: 1) an overview of the temporal and geographical distribution of all relevant pottery traditions, 2) some of the variance within one pottery tradition (Bowl Tradition pottery) and 3) the boundary/relationship between one pottery tradition (Cordoned Urn Tradition) and others.
The investigation of Chalcolithic and EBA pottery offers a good contrast to the previous chapter on metals; the materials required for its production are, although perhaps locally restricted, almost ubiquitously available at a wider scale; in most cases the pottery appears to have been produced relatively locally to where it was deposited; and as will be shown, while the distribution of pottery traditions may have some concordance with the flow of metal, they also occasionally cut across or break within it.

5.2. Method and Theory

The study of ceramics has been one of the key subjects of archaeology since its inception as a discipline, both as a typological dating tool and as a cultural indicator. This is due to the durability of ceramics and their relative susceptibility to stylistic change over space and time; however, it is arguably only since archaeology became a more self-critical discipline (cf. Clarke 1973), that the extent to which ceramic traditions, or wider material culture, can be said to represent social groups has been really questioned.

Many of the theoretical advances have arguably stemmed from ethnoarchaeology which has offered both insight and warnings. Kramer (1985) provides a comprehensive, if mostly English language, overview of the ethnoarchaeological works on ceramics undertaken prior to the mid-80s. Among the accomplishments she attributed to ethnoarchaeology are the shattering of preconceived notions about how ceramic production is, and was likely, organised cross-culturally. It was shown to be incredibly diverse; there are societies in which production is strictly the domain of one gender and/or manufacturing techniques are closely guarded secrets, but there are also societies in which the opposites are true. In many societies, certain stages of the process are conducted in relative isolation but there are also those in which they are all carried out collectively. In Africa, America and the Pacific, manufacture was most commonly carried out by women, and in the Mediterranean, Middle East and South Asia it was more commonly carried out by men. However, there are no simple cross-cultural laws through which the gender or other organisational factors of production can be determined, and even where the actual building of the pot is carried out by a particular gender, those of the
other gender, or of different ages sets, are often involved in the procuring of materials, finishing the pots and other stages of the process.

In a similar vein to wider archaeological research, most ethnoarchaeological studies since the dawn of ‘new archaeology’ have been carried out in a processual or post-processual mould. Processual studies, in reaction against what was then seen to be ‘cultural determinism’, shifted focus onto a functional, ecological or behavioural emphasis that can be equated with a ‘naturalist perspective’. Arnold’s (1985; 2011) ecological perspective is a good example of a naturalist and processual ethnographic study. Through this approach he illustrated how climate, seasonality and other environmental factors often act as constraints on the temporal organisation of potting traditions; such factors may have been especially exacerbated in his main subject region, a rainforest environment in Peru, but many of his points remains valid, even if his emphasis is contested (cf. van der Leeuw 1993).

Other processualist ethnoarchaeological accounts have involved very detailed formal accounts that have tried to test particular assumptions. Krause (1985), for example, in an effort to test archaeological assumptions he had made of Iron Age Bantu practices, recorded individual potters working in three different traditions. While a useful study, as David and Kramer (2001, 147-148) have pointed out, the manner in which Krause arranged his arguments meant his results could not really have disproved his reconstructions. It is also doubtful that the three individual potters he recorded can be taken as ideal representatives of their respective ethnic groups.

In terms of the spread or exchange of pottery styles, processual archaeologists have generally relied upon what, in opposition, Hodder (1982c, 8-12) defined as the ‘interaction hypothesis’. In this vein, cultural similarity is seen as reflecting the intensity of interaction (exchange) in a direct manner. This was developed by Longacre (1970; 1981; Longacre and Stark 1992) and others (Deetz 1968; Hill 1970) into ‘matrilocal residence theory’ to explain the manner in which pottery styles were passed on. Challenging the wider validity of the ‘interaction hypothesis’ was an important part of Hodder’s Symbols in Action (1982c) and the ‘matrilocal residence theory’ was directly addressed in his study of Lozi potters in Zambia.
(ibid. chapter 7), where he showed the potential complexity of in-site patterning due to social relations. It seems unlikely that archaeology will ever be able to reach the nuanced understanding of relationships behind the individual choices taken by prehistoric potters, as Hodder did with his Lozi potters; however, it does alert us to the potential complexity. An important point for archaeology arising from his study is that stylistic boundaries can exist in areas of high social and economic interaction, yet other aspects of material culture can disrupt or cross social boundaries.

Post processualist ethnoarchaeologists and archaeologists, perhaps in reaction to the challenges described by Hodder, have been less interested in trying to explain broad patterns in stylistic changes over time and large geographical areas; however, there are those who have tried to address them (cf. David et al. 1988).

Working in the Francophone tradition, in which Leroi-Gourhan’s *chaîne opératoire* is relied upon (described more fully in the last chapter), ethnoarchaeologists, in particular Olivier Gosselain (1992; 2000), have arguably made more solid headway. In this work researchers have not concentrated so exclusively on stylistic variation and variations in other stages of the *chaîne opératoire* have been highlighted. Through his study of Bafia potters in Cameroon, and more broadly in the African subcontinent, Gosselain (1992, 582) makes a convincing argument that ‘fashioning’ or ‘forming’ techniques, which involve less discursive knowledge such as ‘gestures [that] gradually become incorporated as unconscious psycho-motor schemata’ are stylistic techniques that provide ‘a much more reliable index of cultural diversity’. In essence, he sees these more difficult-to-learn techniques as becoming embedded in how one understands a pot is, or should be, made. In contrast, he views surface decoration as something that is easily copied, ‘which the vagaries of fashion and diffusion suffice to explain their arbitrary spatial distribution’ (ibid.). David and Kramer (2001, 148-149) suggest that complete ignorance of other forming techniques, on the part of potters in a particular tradition, may not be as cross-cultural as Gosselain suggests, yet Gosselain’s broader point seems well made; different stages of the *chaîne opératoire* such as less discursive techniques, especially those that are practiced in relative privacy, are less susceptible to casual transference and are likely to represent deep structural connections. Indeed, later
in the same work, David and Kramer (2001, 371), during an analysis of Longacre and Stark’s (1992) work, agree with these basic assumptions. Of course, depending on the organisation of production these deeper connections need not necessarily be familial or ethnic. It is essentially the transfer of the type of knowledge that would only occur between accomplished potter and apprentice. In prehistoric societies we might suppose that this would most likely occur within families but factors such as temporary fostering or exogamous marriage could also result in the spread of such techniques. Gosselain, like others working in the Francophone tradition (Lemonnier 1986; 1993; van der Leeuw 1993), tend to see culture and not nature as the main constraint. The extreme extent cultural constraints can reach is amply illustrated by Mahias’ (1993) study of Indian potters. In India, traditional techniques are often conceived of as gifts from the gods and deviation capable of attracting divine wrath; innovations such as the wheel are rejected by groups who are perfectly aware of them because they are the preserve of another group and not their way of building a pot.

While I agree with Gosselain’s general conclusions, and make use of them in this chapter, his dismissal of decorative techniques as ‘arbitrarily distributed’ would seem premature when one considers the depth to which Hodder (1982c) and others (David et al. 1991) have shown symbols can be actively and consciously used in complex social negotiations. Also, it is important to reiterate that pottery would not have been an isolated craft, rather it would have been one of several crafts, with which some techniques and many motifs were shared. Material remains survive from some of those crafts (such as metalwork), but not or only very rarely from others (basketry, textiles, woodwork and leatherwork). McIntosh’s (1989, 77) concept of a ‘symbolic reservoir’ in which ‘art becomes a lens on the process by which different subgroups of a society dip into a long-held reservoir of symbols, myths, and beliefs in order to extract, craft and visually display a legitimating tradition to serve their own sectional interests’ is an apt and well framed insight/perspective.88

Like ‘cultures’ pottery traditions are not bounded homogenous units, they are classificatory labels imposed on often diverse forms that frequently share

88 The ‘reservoir’ metaphor has been criticised by MacEachern (1994), but those criticisms are amply addressed by David and Kramer (2001, 216-218)
techniques with neighbouring traditions. One suggestion is that we view these distributions as overlapping ‘communities of practice’ (Wenger 1998) within pottery traditions through employing a chaîne opératoire approach on a multiscalar basis (e.g. Kohring 2011). The simplest division that can be drawn is between the construction of a pot and its decoration. Learning the former is likely to have involved deeply embodied non-discursive knowledge, while the latter may have been easily copied, but also lent itself to a conscious deployment, and/or manipulation, of symbols. What is required is a dialectic approach which considers the distribution of deeper structural techniques, but also the possibility of the surface decorative techniques being consciously deployed in social negotiation.

5.3. Irish Chalcolithic and EBA pottery ‘traditions’

Early interpretations of Irish pottery distributions range from Abercromby’s (1912) successive invasions from central Europe mediated through southern England, to arrivals from Iberia (cf. Bremer 1928), both of which could be accused of stemming from particular political persuasions or worldviews, one Anglo-centric and the other not (but perhaps Atlantic-centric). An indigenous origin for Food Vessels in Neolithic pottery (Smith 1910), diffusion as a possible mechanism of dissemination (Childe 1949) and the importance of Scotland as a route through which Ireland received stimuli for change (Evans and Megaw 1937) were all also considered at an early stage. The distinction, between ‘Food Vessels’ and urns was commonly seen as representing two different cultural groups (Ó Riordáin 1946), and a further distinction within Food Vessels, between bowls and vases was recognised (Chitty 1939) and similarly interpreted as representing two separate cultural groups.

5.3.1. Radiocarbon dating

The impact of radiocarbon dating to the typo-chronology of Irish pottery was slow and, up until relatively recently, dating continued to depend on the similarity of accompanying finds (Daggers, razors and faience and amber beads) with finds from distant cultures (such as those from the Aegean, Middle East and Egypt) of known dates. Burgess’ (1974) synthesis was the first to substantially integrate an absolute chronology. Radiocarbon dating considerably lengthened the time depth of Irish prehistory and effectively nullified some of the arguments about stylistic
contributions from indigenous Neolithic pottery to bowls or other EBA pottery types; they are now separated by too great a temporal gap (however, see the discussion of ‘symbolic reservoirs’ below), filled by the presence of Grooved Ware in the Late Neolithic and then Beaker pottery in the Chalcolithic from c. 2500 cal BC. In Ireland, Beaker pottery is predominantly found in pits and spreads, not in single graves such as is common in Britain. An unfortunate consequence of this is that the fragmentary state, and unsecure contextual nature, of most Irish Beaker pottery has made it difficult to construct a comprehensive typology (Brindley 2004) and we must largely follow the British typology, with which there are a number of important differences. AOO (all over ornamented) and AOC (all over cord) are considered the earliest types of Beaker in Britain and Ireland. They are relatively rare in Ireland and have been found together in contexts with early dates and more typically Irish Beaker pottery (Carlin 2012, 223-224). Late Beaker pottery continued to be used until c. 1800-1750 cal BC in Britain (Needham 2005); however, finds of late types are rare here (Brindley 2007, 250-251) and Carlin’s (2012, 217-219) recent Bayesian analysis suggests deposition in Ireland may have ceased as early as the latter half of the 21st century cal BC. It seems that indigenous forms developed and saw their main period of use here (c. 2400-2200 cal BC) before southern Britain (c. 2200-2000 cal BC) and that when the majority of single Beaker burials were interred in Britain, Bowl Tradition pottery was already replacing Beaker pottery in parts of Ireland. Pottery traditions in Scotland and Wales may, however, have followed a trajectory closer to that in Ireland (Brindley 2007, 297-325).

Brindley’s (2007) programme and synthesis of associated dates have made a major contribution to our understanding of the chronology of Irish EBA pottery traditions. It concentrated on material from closed funerary contexts and benefited from the newly available ability to radiocarbon date cremated bone. Although some have criticised the ‘preternatural tidiness’ of Brindley’s model (Sheridan and Bayliss 2008), however, alternative ‘formal modelling’ (Bayesian)

89 These are most commonly interpreted as domestic contexts (cf. Case 1977, 77; Waddell 2010, 121-126) but Carlin (2012 283) suggests ‘their formation had a ceremonial or formal character’.
 does not suggest a very different sequence.\(^90\) Brindley’s typo-chronology and dating is used for the purposes of this chapter (Tab 5.1).

<table>
<thead>
<tr>
<th>Pottery type</th>
<th>PCDR</th>
<th>FCDR</th>
<th>Stage</th>
<th>Calibrated (^{13})C dates BC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowls</td>
<td>2200-1800 BC</td>
<td>2160-1930/20 BC</td>
<td>1</td>
<td>2160-2080</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>2080-1980</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>1980-1930/20</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>1920– c. 1830</td>
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<td></td>
<td></td>
<td></td>
<td>3</td>
<td>c. 1830 – c. 1740</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>1920/1900 – c. 1830</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>c. 1830 – c. 1740</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>1930/1920 – c. 1830</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>c. 1830 – c. 1740</td>
</tr>
<tr>
<td>Collared Urns</td>
<td>1900-1650 BC</td>
<td>1850/1830-1700 BC</td>
<td>1</td>
<td>1850/30 – 1800</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>1800 – 1700</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>after 1700</td>
</tr>
<tr>
<td>Cordoned Urns</td>
<td>1880-1500 BC</td>
<td>1730-1500 BC</td>
<td>1</td>
<td>c. 1730</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>c. 1700 – c. 1570</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>1570 – c. 1500</td>
</tr>
</tbody>
</table>

Table 5.1 Brindley’s (2007, 328) dating of Irish Early Bronze Age pottery (Reproduced with the kind permission of Dr Anna Brindley)

5.3.2. ‘Traditions’ and catalogues

In a seminal paper, published during the 1970s, Waddell (1976) defined four pottery ‘traditions’ in EBA Ireland, which are still generally accepted today (Brindley 2007; Waddell 2010):\(^91\) the Bowl Tradition, the Vase Tradition (includes vases, vase urns and encrusted urns), the Collared Urn Tradition and the Cordoned Urn Tradition. Miniature vessels (also referred to as miniature vases, miniature cups, ‘pygmy cups’, \(^92\) incense cups and accessory vessels) are not found with Bowl Tradition vessels but are found with those of the other three.\(^93\) His choice of the

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\(^90\) It suggests some of Brindley’s groupings may have started earlier and been of shorter duration.
\(^91\) This was a modification of ApSimon’s (1969) typology which in contrast to Kavanagh’s catalogues saw a number of urns related to vases etc.
\(^92\) Waddell correctly argued for the dropping of this ‘silly’ term. It is only used here when necessary to connect to previous author’s work.
\(^93\) However, there are two miniature bowls (Castlequarter, County Cork and no provenance) and as Brindley (2007, 235) points out that these are likely to mark the emergence of miniature vessels.
term ‘tradition’ both distanced his definitions from previously held misconceptions and presaged the shift from how culture was seen as an ethnic label to something that is actively participated in. He also argued that that the term ‘Food Vessel’ was redundant and should be dropped; that suggestion is followed here.94

There are relatively good catalogues of most Irish Chalcolithic and EBA pottery types. The earliest, Beaker pottery, is the least well documented; probably because it does not generally occur in Irish burial contexts, at least as full pots. For Ireland, Clarke’s (1970) catalogue of Irish and British Beakers, remain useful, supplemented by Case’s (1977a; 1995a; 1993; 2001) discussions, Gibson’s (1982) work on domestic Beaker pottery, Brindley’s (2004) work on the Ross Island assemblage and Carlin’s (2012) PhD on the depositional context of Beaker pottery in Ireland. Ó Ríordáin and Waddell (1993) have catalogued Irish bowls and vases, and Kavanagh (1973; 1976; 1977) Encrusted, Collared and Cordoned Urns and ‘pygmy cups’.95 Longworth (1984) subsequently produced a combined catalogue of Irish and British Collared Urns and Waddell (1995) reviewed the distribution of Cordoned Urns in both Scotland and Ireland. A catalogue of Vase Urns is included in Brindley’s (2007, Appendix A) work on dating. In many of these catalogues the pottery discussed is predominantly, if not entirely, from funerary contexts.

5.3.3. Characterisation of clays and tempers

While there has been little explicit theoretical discussion of the Irish pottery traditions some further insight, relevant to production and exchange, has been gained through scientific analysis of pottery. In particular, scientific characterisation of the clays and tempers has led to the conclusion that, at least in most cases, Chalcolithic and EBA pottery was relatively locally produced with local materials (cf. Sheridan 1993; Brindley 2004). We still have very little visibility into the organisation of pottery production and it remains unclear as to whether it was carried out in the main, or solely, by one or other gender, or whether it was a specialist craft or widely practiced by the majority of people; statements on the issue are generally vague (cf. Grogan and Roche 2010, 40), but most agree some

94 The term is still used in England and therefore still needs to be understood. Brindley (2007, 47) has also argued for its retention.
95 As Brindley (2007, 230) points out Kavanagh’s ‘Pygmy cups’ include diminutive ‘food vessels’
craft specialism is likely to have been involved in the production of the finer funerary pots. It seems likely, from comparisons with ethnographically similar-scale societies, that it was a part-time specialism and that actual pots were exchanged at a local level. At such a local level, in some regions the restricted availability of clays may have played a role but, at a wider scale, clay and suitable tempers are available in all parts of Ireland.

5.3.4. The distribution of Chalcolithic and EBA pottery traditions in Ireland

**Beaker pottery**

Beaker pottery is widely distributed throughout Ireland (Fig 5.2). The most significant concentrations coincide with where most fieldwork on sites of a relevant date has been carried out, such as the Boyne valley, and biases in the distribution resulting from recent infrastructure developments are clearly visible as linear trends, especially radiating around and from Dublin. From the known distribution, it now seems likely that, wherever significant work is carried out on sites of a relevant date, Beaker pottery may be found. For example, the sherds from Poulawack (Brindley and Lanting 1991) and those from Roughan Hill (Jones 1998) suggest that it could be quite widespread in County Clare (see chapter 9).

Figure 5.2 Beaker pottery in Ireland (from Carlin 2012). Reproduced with the kind permission of Dr Neil Carlin
**Bowl Tradition pottery**

Bowl Tradition pottery occurs most densely in northern and eastern Ireland, and western Scotland, with smaller clusters in western Ireland and eastern Scotland (Fig 5.3). It had until recently been found almost exclusively in funerary contexts (Ó Maoldúin 2014); occasional sherds now known from domestic contexts in the southwest of Ireland (cf. Jones 1998; Danaher 2004; Roche and Grogan 2006), and the relative lack of burial contexts excavated in some of that region, suggest that, like Beaker pottery, the true extent of Bowl Tradition pottery may be obscured; however, in Connaught, a complementary distribution of bowls in the west and vases in the east (Fig 5.4) suggests recovery has not completely biased distribution, at least in that region. Its distribution in eastern Scotland is of particular interest (Curtis and Wilkin 2012); there it occurs most frequently to either side (north and south) of the core Migdale-Marnoch metal working area in the Moray Firth region and east-central Scotland, both areas with geographically more easy access to western Scotland and on to Ireland.

![Figure 5.3 Distribution of Bowl Tradition pottery](from Waddell 2010, 159). Reproduced with the kind permission of Professor J. Waddell

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96 For example no wedge tombs have been excavated in County Clare, the area in which they are most densely distributed. Although normally considered secondary, Bowl Tradition pottery has been found in a number of wedge tombs, including Lough Gur in the southwest. There have also been comparatively few burial mounds excavated in that region.
**Vase Tradition pottery**

Vase Tradition pottery in Ireland also has a predominantly northern and eastern distribution, but there are also significant concentrations from Galway/Mayo and north Cork/south Limerick (no overall distribution map is easily available).

![Figure 5.4 The distribution of Vase and Bowl Tradition pottery in Galway, Mayo, Roscommon and Sligo (from Brindley 2007, 53). Reproduced with the kind permission of Dr Anna Brindley.](image)

In Britain, it is a predominantly northern and Welsh phenomenon (Sheridan 2004b). Accompanying urns, encrusted and vase, are found throughout most of the Irish (Kavanagh 1973; 1976) and British (Cowie 1978) distribution but are notably rare in the west of Ireland (Brindley 2007, 103 & 117). There are relatively dense concentrations of Encrusted Urns in the southwest of Ireland and of Vase Urns in counties Wexford and Dublin, suggesting regionalised practices; however, these rarely butt up against one another, like the Bowl and Vase Tradition in Connaught, and areas between these densities, such as Wicklow, have a relatively similar number of both types.

**Collared Urn Tradition pottery**

Collared Urn Tradition pottery is mainly a British phenomenon (Longworth 1984) and those found in Ireland are distributed in a manner that reflects that (Fig 5.5); they are most densely distributed in north eastern Ireland but also occur along the eastern and southern coast, as far south as east Cork. Brindley (2007, 133) has suggested that the fact that they occur predominantly in pits, which Mount (1995, 98-100) has shown are less likely to be discovered, may have obscured the extent of
the tradition in Ireland. They appear to have a similar date range in northern
Britain and Wales (Brindley 2007, 321) but it seems likely, given her assertion that
an earlier Food Vessel role is likely hidden within the Collared Urn Tradition of
southern Britain (Brindley 2007, 324), that they have a longer currency and
originated there.

Figure 5.5 Distribution of Collared Urns (after Waddell 2010, 159, with several additions). Reproduced with the
kind permission of Professor J. Waddell

**Cordoned Urn Tradition pottery**

Cordoned Urn Tradition pottery, on the other hand, is a Scottish and Irish
phenomenon (Fig 5.6). It occurs most densely on the east coast of Scotland (east
central), but also in south-western Scotland and widely across Ireland (Waddell
1995), and there are a few occurrences in northern England and in Wales. It has a
broadly similar date across most of that distribution (Brindley 2007, 315) and,
although it is clear the distribution is densest in eastern Scotland, no one place can
be pointed to as an origin.
5.3.5. Interpreting pottery traditions

At this broad level these traditions cannot be equated to spatial or temporal cultural or ethnic groups. They may cross-cut such divisions and, as discussed above, are better viewed as ‘communities of practice’, among which are smaller divisions of practice and across which other practices cut. Although they do indicate the existence of interaction along certain trajectories, particularly between Ireland and various parts of northern Britain, their distribution cannot necessarily be read as excluding intense interaction in other directions not sharing pottery traditions (as per Hodder 1982c). In certain instances, where traditions can be seen to occur alongside one another, spatially and temporarily, and form complementary distributions, such as bowls and vases in Connaught, we might suppose that the communal deployment of different types of pots represent conscious acts of group differentiation; however, why such patterns are not more easily discernible elsewhere is not entirely clear. It may be that on the apparent edges of these respective distributions, the need to proclaim differentiation was more of an issue. Elsewhere, on the spatial and temporal boundaries between these traditions, there are pots which are difficult to designate to one or the other tradition (e.g. Ó Ríordáin and Waddell 1993, #166 & 167) suggesting more permeable boundaries.

Many cemeteries have burials accompanied by pottery of several traditions giving the impression of burials from different traditions being buried on the same
cemeteries at the same time; however, this is far from clearly the case. For example, if one accepts Brindley’s chronological schema (Tab 5.1), only stage 1 Vase Tradition vessels temporarily overlap with bowls, and only those of stage 3. At sites where Bowl Tradition and Vase Tradition do co-occur, for example Keenoge (Mount and Buckley 1997) and Edmonstown (Mount and Hartnett 1993) the Bowl Tradition burials are often focal or otherwise clearly earlier burials. Sites like Carrig, County Wicklow (Grogan 1990), where Cordoned Urn pits were cut into an earlier Vase Tradition cist, clearly show how far later burials were often inserted into previous graves, which must have remained marked and were significant ritual foci in the landscape. At Tara (Ó'Sullivan et al. 2005; Bayliss and O'Sullivan 2013) we probably have the clearest evidence for burials of different traditions being buried at the same site during what are likely to have been the same generations. The Bowl Tradition burials again appear earliest, but there may be some overlap between Bowl and Vase Tradition (possible association of a bowl and vase) and Collared Urns were certainly deposited during the period that later Vase Tradition pottery was current.

It is important to note that almost all of the pottery (apart from the Beaker) in the catalogues we are working from, is from funerary contexts. A relatively substantial amount of domestic pottery of the various traditions has been recovered in the course of developmental work in recent times, but the information on this has not yet been consolidated and considered in comparison to the funerary pots.

5.4. A closer look within Bowl Tradition pottery

This section will look in more detail at Bowl Tradition pottery, the contexts in which it was deposited and the possibility of distinguishing different distribution patterns among the different stages of the chaîne opératoire involved in its production.

5.4.1. The contexts of deposition of Bowl Tradition pottery

Bowl Tradition pottery has predominantly been recovered from burial contexts, and most often those burial contexts have been pits or cists; however, it also occurs as secondary deposits in earlier Neolithic graves (Ó Ríordáin 1968; Ó
Ríordáin and Waddell 1993, 5-6) and wedge tombs (O'Brien 1999), and the large amount of unexcavated wedge tombs may be masking its true distribution.

Within the areas of Bowl Tradition cists and unlined pits there does not appear to be any regional or temporal preference for either grave form. Mount (1995; Mount and Buckley 1997) has argued that the cists should be considered a reflection of higher status; however, such a direct reading may be overly simplistic (see chapter 6) and there are alternative ways of viewing such variation (Brück 2004). Burial in either cists or pits does not appear to have been exclusive to a specific age or gender, but it has been noted in southern Leinster (Mount 1995) and Munster (Doody 1987) that adult males were more likely to be buried singly, while females and children were more frequently placed in multiple burials. Cremated and inhumed remains accompanied ‘Bowl Tradition’ pottery in both cists and pits and the significance of the choice between these different mortuary treatments is poorly understood. There does appear to be a broad regional and temporal preference in the choice between the two; cremation appears to have been more common in the north, and inhumation more common in the midlands and south east (Waddell 2010, 152), and overall inhumation appears to have been more popular during the earlier stages of Bowl Tradition burial. At a more refined level this patterning becomes less clear and both mortuary practices are often recorded at the same site.

5.4.2. The pots

Waddell (1976; Ó Ríordáin and Waddell 1993, 5-24) separated bowls into four categories on the basis of form and ornament: simple and bipartite, necked bipartite, tripartite and ribbed bowls. Both simple and bipartite bowls seem to have been predominantly northern phenomena but have scattered distributions. A majority of bipartite bowls came from cists and accompanied cremations but this is not an exclusive association. The distribution of necked bipartite bowls is similarly scattered but had a marked concentration in County Dublin and they are conspicuously absent from east Antrim and Down. A number of tripartite bowls have skeuomorphic lugs (thirty-five); these are predominantly from the north. Other regional groups that Waddell noted among tripartite bowls include a rare horizontal groove on the ribs of some Dublin and Westmeath bowls and pots with
reserved ornament was also common in the east midlands but unusual elsewhere. A group of squat tripartite bowls with lugs appear to form a subgroup from Antrim to Donegal and several tripartite bowls from the east and southeast have a distinctly globular profile. The distribution of ribbed bowls is mainly an eastern one but with significant western clusters in Sligo and Mayo, and altogether in the context of the overall distribution it is comparatively rare in the north.

There is also a considerable occurrence of burials with ‘Bowl Tradition’ pottery in south-west Scotland, particularly Argyle, the Isle of Man and the east coast of Scotland (Fig 5.3) attesting to shared traditions along an axis of interaction that remained important throughout the Bronze Age. Some particularly close vessel parallels, between north-eastern Ireland and western Scotland, have been interpreted as the movement (exchange) of pots (Burgess 1980); however, while it has not been specifically tested in this case, petrological studies rarely support such patterns and it seems more likely that what is reflected is the movement of potters through some social mechanism, such as matrimonial exchange. Such movement across the Irish Sea may have been no more, or even less, of a social distance than similar distances overland. There are, however, also considerable differences between the Bowl Tradition pots in Ireland and northern Britain. There are local Scottish forms that don’t occur in Ireland (Sheridan 2004b). Waddell’s (1991/1992, 33) suggestion that the wider distribution is related to the spread of a specific funerary ritual would seem appropriate.97

In her review of the dating of Bowl Tradition pottery Brindley (2007, 165-176) has moved away from this typology, based on form and decoration, and concentrates solely on the decoration which does appear to be the most constant temporal variable. She splits bowls into three stages (Fig 5.7). The first is characterized by densely packed linear arrangements, most commonly of short lines of impressed comb defined or undefined by lunate or triangular impressions, lines or rows of dots. The second includes motifs filled or placed against a filled background of enlarged triangular and lunate impressions creating saltires, triangles, lozenges and lunate and hemispherical shapes defined into zones by horizontal zigzag or

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97 As Waddell (2010, 154) has pointed out, in contrast to the everted rims of earlier beaker pots (or later Vase Tradition pottery) the generally inverted rims of these vessels would not have made them suitable for direct drinking vessels.
wavy lines. The main technique is once again impressed comb but there is more use of incised lines both to define zones and to decorate some pots. The third is characterised by much more open widely spaced ornamentation, often in undefined bands. Comb impressions are rarer, incised lines and grooves more common and bound stamps and whipped cord impressions are employed.

Figure 5.7 Brindley’s (2007, 177) three stage development of Bowl Tradition pottery. Reproduced with the kind permission of Dr Anna Bindley
In contrast to the rather rapid and widespread changing nature of the decoration on the pottery, certain aspects of Bowl Tradition pots were more regionally restricted and fixed through time, some of which were already mentioned in Waddell’s typology above. Perhaps the most established of those are squat tripartite bowls with angular profiles from the north of Ireland (Fig 5.8) and globular ribbed tripartite bowls from Leinster (Fig 5.9), that potters continued to make in those regional forms throughout the decorative changes. Within this contrast between these stable forms and rapidly changing decorative schema it may be possible to glean some insight into EBA spheres of interaction.

Figure 5.8 A sub-group of squat tripartite Bowl Tradition pots (from Sheridan 1993, Fig 23)

Figure 5.9 A sub-group of globular Bowl tradition pots (from Sheridan 1993, Fig 25)
5.4.3. Considering the chaîne opératoire

Techniques are as culturally informed as any other human practice (Mauss 1992 [1934]; Lemonnier 1993) and each technique, or stage, involved in making a pot can be considered in such a light. Such an approach is encapsulated in the chaîne opératoire method of looking at artefacts (Audouze 2002). In such an analysis of traditional pottery production in contemporary Africa, Gosselain (1992; 2000) illustrated how, while certain techniques involved in making a pot were only picked up through participation in production, decoration on the surface of pots was often simply copied. In other words, different levels or spheres of interaction might have a material manifestation. In the case of our Irish EBA Bowl Tradition pottery, although Sheridan (1993) has summarized what forming (coiling etc.) information is available, such detail has not been recorded in most cases and in any case may not be visible on many finished pots; however, the regionally restricted and temporally consistent shapes mentioned above are likely to reflect forming techniques and, using Gosselain’s (1992) case study as an analogy, are more likely to represent kin-groups, or otherwise closely related groups through which certain non-discursive techniques were handed down. The broader more rapidly changing decorative elements are likely to represent a looser network of interaction; one with a shared tradition of pottery on which more discursive surface aspects of shared identity were consciously displayed.

5.5. Cordoned Urns, their origin and relationships with pottery of other traditions

Cordoned Urn Tradition pottery is the latest of the traditions considered here. They are best known from funerary contexts (Kavanagh 1976), but there are also relatively considerable amounts known from settlement contexts (Waddell 1995; Ginn and Rathbone 2012), at least when a broad view of the tradition is taken into account (contra Kavanagh 1976). Cordoned Urn Tradition burials occur as isolated examples, in small cemeteries, under mounds, in flat cemeteries, or inserted into earlier cemetery mounds. The graves commonly consist of a simple pit, sometimes with a flat basal or covering stone, in which the urns normally sit inverted over cremated bone, but they are also occasionally found sitting upright. Grave gifts, such as beads, razors, battle-axes, whet-stones, plano-convex flint knives and
strike-a-lights, are most common in this tradition; beads and razors are discussed further in chapters 6 & 8, respectively. In the west of Ireland there seems to be a particular emphasis on single burials of males under mounds of bowl barrow form (Raftery 1939; Raftery and Inkster 1940; Riley 1936), but this practice does also occur elsewhere (cf. Urbalreagh, County Antrim and Fournocks III, County Meath).

5.5.1. The pots

The majority of pots are thirty centimetres or more in height and are generally of smooth barrel-shaped or slightly open profile, broken by one or two applied horizontal cordons that divide the pot into horizontal zones (Brindley 2007; Waddell 2010, 161-162). Decoration is often only in the uppermost zone and frequently comprises triangles, squares and rectangles formed by cord impressed lines. Occasional less formalised decoration includes looser designs of incised lines. The development within Cordoned Urns, like the previously discussed Bowl Tradition pots, was shown by Brindley (2007, 226) to be largely decorative, gradually becoming looser.

5.5.2. Origins

The origin of Cordoned Urns is generally either seen in Collared Urns (Abercromby 1912; Kavanagh 1976; Brindley 1980) or Beaker pottery (Longworth 1984; Waddell 1995) and the arguments rest on whether one believes one or the other exhibits more stylistic similarities. Those in favour of the Collared Urn origin point to the tripartite form, often created by the horizontal cordons, the similar size and proportion of the urns and the presence of twisted cord and incised lines; those in favour of a Beaker origin point to motifs, such as the flag pattern and the presence of cordons. Brindley has shown how the ‘flag pattern’ which she terms ‘panelled decoration’ also occurs on Vase Urns and Collared Urns; however, the same could be said of twisted cord and incised lines, which also occur in the Beaker, Bowl and Vase Traditions. There is, however, rarely much thought given to how such traits might be transmitted, and while interpretations of what this means in terms of exchange or movement are sometimes made, it is often done without any explicit theoretical foundation. This is not particularly surprising; since most

98 Hence inferring a connection to Longworth’s (1984) panelled ornamentation on Collared Urns.
ceramologists’ first training is in seriation they spend most of their efforts building careful typologies, and then, it could sometimes be argued, leap to conclusions. Once again consideration of the chaîne opératoire approach, this time combined with the idea of a ‘symbolic reservoir’, may shed some light on the issue.

5.5.3. Decoration as an analytical tool

Much of the argument about the origin of various pottery traditions concentrates on recognising the reoccurrence of ‘decorative traits’ from earlier traditions (cf. Brindley 1980, 199, contra. Longworth 1961). However, we have seen how particularly receptive to borrowing decorative traits can be (Gosselain 1992) and the applicability of this to the Irish EBA is supported by its usefulness as a dating tool (Brindley 2007); they would not seem to be the best elements to trace the ancestries of tradition, a problem compounded if one allows for a concept of a broadly shared ‘symbolic reservoir’ and the continued currency of motifs/arrangements on other media. Other stages of the chaîne opératoire, if accessible, would seem more suited to tracing the ancestry of traditions.

This does not mean we should abandon decoration to simply being a dating tool; the abstract triangular and lozenge motifs which occur on Cordoned Urn Tradition pottery and associated razors may or may not have been loaded with symbolic meaning; there are ethnographic analogies that can be proffered to support either case (Lebeuf 1961; Gosselain 2000). To take an analogy beyond a simple expansion of possibilities, we need further evidence from the archaeological context or a deeper understanding that would allow the construction of a relational analogy (Hodder 1982a). John Waddell (1995, 118) has pointed to apparent differences in the Cordoned Urn Tradition pottery deposited with females, as opposed to males, and the fact that the pottery which occurs in graves has a more restricted repertoire than that found on settlement sites. Such structural patterning is solidly established in the more comprehensively studied British Beaker burials (cf. Shepherd 2012) and is the kind of information we need to identify if we are to understand any of the social realities that might lie behind the decorative traits. In

99 Such typologies are of course an essential first step and it is only in their presence that further discussion can ensue.
the absence of a further detailed first-hand study of the material (beyond the scope of this thesis) this at least suggests that such structured patterning does exist.

5.5.4. Considering the chaîne opératoire

In support of her argument, for the origin of Cordoned Urns in Collared Urns, Brindley (2007, 292) points out that some of the earliest Cordoned Urns bear the closest resemblance to Collared Urns and to an apparently continuous sequences on some Scottish sites, such as Skilmafilly (Brindley 2007, 315-316). The similarity is indisputable; however, there are clear differences in the forming stages of the chaîne opératoire of the pots of these traditions; the similarities are decorative. Collared Urn Tradition pots appear to have been formed from a number of prefabricated rings, at least two. Cordoned Urns were seemingly coil built, from the bottom up, in a manner similar to Vase or Encrusted Urns. The approach to constructing a Collared Urn is therefore very distinctive and represents a very different way of conceiving the process, not easy (or perhaps desirable) to imitate. This distinctive approach may contribute toward explaining the ‘enormous tranche of ceramic tradition and development’ (Brindley 2007, 45) assigned to the Collared Urn Tradition in southern Britain by Longworth (1984). Although there is arguably a lot of variety within the tradition the distinctive forming stages of these pots which were stable over a long period of time led to their assignation in one long tradition. Collared Urns in Ireland date to a much shorter range (Brindley 2007, Fig 120) than in southern (Longworth 1984; Burgess 1986) or northern (Sheridan 2003b; 2009) Britain, where they almost certainly originated.

Hybrids or types that are difficult to assign exist on geographical and temporal boundaries between many traditions and are of particular interest here. These are in direct contrast to where traditions butt up against one another, such as the bowls/vases from Connaught mentioned above. Between Collared and Cordoned Urns there are several such pots, most obviously the pot from Drimnagh, County Dublin (Kavanagh 1976, #33). Kavanagh (1976) and Brindley (1980) consider this a Collared Urn; however, it is not clear whether the tripartite form was created in the process of pot construction or through the addition of cordons; this, in my opinion, is what should determine its assignation to one or the other tradition, not its decoration. Geographically, Cordoned Urn Tradition pottery occurs in zones
previously occupied by Bowl and Vase Tradition pottery for a more significant period than Collared Urns. The presence of cordons and urns within these traditions and a similar approach to pot construction suggests that the origins of Cordoned Urns are indigenous to the areas in which they developed. Any argument for a contribution from Beaker pottery has to account for a significant gap in time which, in the case of decorative motifs, is not necessarily an issue but, in terms of technique, may be. The contribution from Collared Urn Tradition is mainly decorative and there is a clear difference in the approach to how these pots were constructed, a real indicator of the potting background in which different potters learnt their craft. Hybrid forms should be assigned to traditions based on the approach through which the pot was constructed, on the less discursive and embedded stages of the chaîne opératoire.

Waddell’s (2010, 161) suggestion, or at least wording, of ‘how a British fashion impinged on the eastern half of the country’ is likely to be in error; however, Brindley (1980) and Kavanagh’s (1976) assertion that the origin of Cordoned Urns is to be found in Collared Urns, or that the two are ‘a single tradition’ (Brindley 2007, 315), does not seem appropriate either. The distribution of Collared Urns in the north and east of Ireland, limited as it is, is likely to represent a movement of potters or pots from southern Britain to Ireland and Scotland and, given that most pottery seems to be locally produced (see above), it would seem to have been potters accompanied by enough people to require that tradition for their burial. The limited movement of some Collared Urn Tradition communities would seem to have stimulated, through partial imitation, the development of the decoration on Cordoned Urns. Sequences on sites in Scotland certainly show interaction between the Collared and Cordoned Urn Tradition; however, the distinction between how the forming of the pots was approached is still at issue. The Cordoned Urn Tradition remains a distinct Irish/Scottish tradition which employed techniques already present in previous local traditions and continued to draw upon its own local ‘symbolic reservoir’, but its decoration was influenced by makers of the Collared Urn Tradition.

100 But see argument by Brindley above in discussion of the distributions
5.6. Discussion and Conclusion

In this chapter, I have argued that pots were likely produced by part-time specialists and exchanged at a local level. Furthermore, I have argued that the spread of elements of less discursive stages of pottery *chaîne opératoire* should be interpreted as the movement of people, while the spread of more discursive elements should be interpreted as the exchange of ideas.

There is an assumption implicit in pottery seriation that to find the origin of a particular type you must find an earlier type most like it; however, if we consider the ‘symbolic reservoir’ and *chaîne opératoire* concepts, only the less discursive pot forming techniques should be used to trace traditions. However useful they may prove as a dating tool, decoration and outward symbolic schema are liable to be frequently borrowed from other traditions or media and appear to leap generations.

This short examination of Irish catalogues concentrated on two aspects of EBA pottery, forms that were long-lived in respect to decoration and the fuzzy boundary between two distinct traditions. There are many other similar instances between and within traditions that could usefully be examined from the available literature but, to really delve deep into the *chaîne opératoire*, it would be necessary to look at forming techniques not visible on the pots but potentially visible in the sections of broken sherds. Brindley has shown us the value of decoration on Irish EBA pottery as a chronological indicator, but it is that very susceptibility to change that makes it a poor indicator of social groups. An appreciation of the *chaîne opératoire* approach should affect the way we as archaeologists record and describe pottery. It encourages us to see objects not as static components of a material culture but as the culmination of a set of active practices. As such, ceramologists need to be equipped with the skills to not just describe the formal characteristics of pot or pot sherds but also to, as far as possible, inform us of how they were made. It is apparent from this chapter that, even though we have excellent catalogues of most Irish EBA pottery, new first-hand studies that explicitly consider the relationship between domestic and funerary material and which employ a full *chaîne opératoire* approach are now required.
In the last chapter, mention was made of the correlation between the motifs on lunulae and Beaker pottery in Britain. The corpus of such Beaker pots in Scotland has recently expanded and it is clear that they are concentrated in an area that had significant contact with Ireland during the lead-up to the emergence of the Migdale-Marnoch metalworking tradition (Curtis and Wilkin 2012). Such a relationship between bodily ornamentation and pots supports the contention of the metaphor ‘pots as people’ (David et al. 1988) and while it appears that the role, and some meanings, of pots in burials changed over the course of the Chalcolithic and EBA (from vessel to Urn), it may be that they were always associated with the body. Their inclusion in burials must be considered in the context of a belief system and not simply as grave goods. The next chapter, through an examination of Chalcolithic and EBA beads and buttons will, while still focusing on understanding exchange, more explicitly consider the nature of funerary depositions.
Chapter 6 Beads and buttons in Irish Chalcolithic and EBA burials

‘Poor little beggar! He’s about... six years old I’d say. Sent into the next world with nothing but a little pot and a couple of bead necklaces’

Archaeologist Anne Johnson in Agatha Christie’s ‘Poirot’ (Murder in Mesopotamia: [1936] 2001)

Figure 6.1 Tara Boy’s bead necklace (Reproduced with the kind permission of the NMI)

6.1. Introduction

Beads are among the first archaeological indicators for the emergence of modern human behaviour (Henshilwood et al. 2004; D’Errico 2003); examples over 100,000 years old have been found (Vanhaeren et al. 2006) and they are likely to have played an important role in the origin of long-distance networks (Gamble 1993). Cross-culturally, their exchange is widely attested, they are often ascribed significant symbolic roles and are frequently highly gendered objects (Sciama and Eicher 1998; Dubin 2009).

Beads and buttons of a variety of materials survive from Chalcolithic and EBA Ireland, revealing networks of exchange both local and distant, through both space and time. Conveniently, a number of these are from burials and therefore form a relatively well documented corpus with good association and dating (Waddell 1990; Cahill and Sikora 2011). For the purposes of this study that corpus will form the subject (Appendix 1), but finds from other contexts will also be occasionally considered.
As in previous chapters, we should be cognisant of the production *chaîne opératoire* of the artefacts we are examining. However, for several reasons, this will not be as explicitly discussed in this chapter. Firstly, since there is very little direct evidence for the production, beyond the artefacts themselves, it might not be a very fruitful line of enquiry. Moreover, in this chapter, I wish to introduce a number of additional concepts, such as varied perspectives on the interpretation of ‘grave goods’, gender, and the concept of materiality. The concept of object biographies will once again play an important role.

**6.2. Method and Theory**

**6.2.1. Grave goods**

To the archaeologist in Agatha Christie’s ‘Poirot’ (quoted above) ‘the little pot and... couple of bead necklaces’ buried with a child were so paltry that she thinks of him as ‘a poor little beggar’. To archaeologists, analysing Irish and British Bronze Age burials, these are the type of objects that often lead to proclamations of the richest ‘grave goods’ of the period. Notwithstanding the material differences between the character of the archaeological remains in Mesopotamia, where that episode of Poirot was set, and the Irish and British Bronze Age, the very term ‘grave goods’ may contain a bias of our own imposition and both of the aforementioned interpretations may be seriously flawed. The word ‘good’ implies something which is bought, sold and valued primarily for its commercial worth. As discussed in Chapter 2, such assumptions may be wholly inappropriate to how things were valued and exchanged in prehistoric Ireland, and are especially reductionist when considering objects placed in burials.

New (or processual) archaeology has typically favoured measuring data statistically; attempting to put it on an empirical footing which could be retested. Binford (1971) attempted to establish cross-cultural laws linking wealth, status and/or social organisation with burial treatment through a comparative analysis of societies in the Human Relations Area Files (HRAF). However, this approach left little room for ideological determinants, or human agency; and, like other processual attempts to measure wealth (e.g. Shennan 1975), status/social differentiation (O’Shea 1984), through burial treatment, simply assumes that those
are the primary factors with which burials are concerned and therefore reflect. Ethnoarchaeological studies from a processual (Kramer 1982), post processual (Hodder 1982c) and practice theory perspective (Parker Pearson 1982) have all clearly shown the role ideology and belief can play in the structuring of burial practices. More recent processual attempts to consider burial treatments cross-culturally through the HRAF files have included the understanding that belief systems may have a role in determining burial practices. Carr’s (1995) study documents the range of factors likely to affect burial practice and Kamp’s (1998) study shows that a correlation between burial treatments and status is common; however, they are arguably weakened by problems inherent in the files themselves (David and Kramer 2001, 380-381), and more importantly fail to show how such correlations, which are common but not ubiquitous, can be established in an archaeological situation. Barrett makes the point that communicating status through burial goods would not have been particularly effective, as the mourners are likely to have already been aware of the deceased’s status in life, and that procession, sacrifice and feasting would be more effective vehicles with which to communicate to a wider audience (Barrett 1990, 186).

Parker Pearson has arguably been one of the most influential post processualist archaeologists writing on the subject of death and burial. While his earlier work (cf. Parker Pearson 1982) may have been open to criticism of being overly concerned with power relations (Tarlow 1992), his later treatments of the subject are more balanced and are an exemplary way of viewing mortuary practice, which he argues:

should be treated as the arena of activity in which are moulded the institutions through which social relationships are actively brought into being, transformed and terminated through exchanges and alliances... in many societies, funerals are not simply reaffirmations of social structure and social roles but a central moment in life, inheritance and economy. The dead do not bury themselves... identities forged through funerary rites are composed not of roles but of cultural practices... grave goods are not just elements of an identity kit but are the culmination of a series of actions by the mourners to express
something of their relationship to the deceased as well as to portray the identity of the deceased. Status is thus not so much a role to be reflected in mode of burial and associated grave goods but a panoply of practices which are historically situated and open to manipulation...

Concepts of honour and sacredness may be far more important than wealth and ownership in organizing a society’s values (Parker Pearson 1999, 84).

This is a view that draws heavily on practice theory (Bourdieu 1977; 1990) and accords with this thesis's view on how value and values are culturally specific (chapter 2). Parker Pearson, and others (Barrett 1994; Brück 2004), also rightfully question the assumption that grave goods were personal objects that belonged to the dead, and suggest other possibilities such as gifts from the mourners, heirlooms buried with the last of a line, objects used in the mortuary process; however, in some cases these reactive interpretations may go too far and it seems likely that at least some objects were personal.

One factor that is rarely archaeologically considered, but does pervade the burial practices of many societies, is fear. Fear of pollution, through contact with death, or fear of malevolent spirits is something that Timothy Taylor (2002) has explored in depth and should be considered.

It may perhaps be true that too much emphasis has been placed on death/burials in studies of religion and belief, as Insoll (cf. 2004) consistently argues; however, it would seem a particularly fruitful sphere in which to study such phenomena, while understanding that it is only part of the whole which might all be pervaded by belief/religion (Parker Pearson 1999).

6.2.2. Gender

Cross-culturally ‘gender’ permeates most aspects of life, from the construction of identity, to interpersonal relations, social organisation and rites of access to material goods (Sørensen 2000). The role of women in production and exchange has often been ignored in exchange theories, but can be shown to be considerable

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101 It is important to differentiate here between gender and sex. The former is a social construct while the latter is a biological designation.
in many ethnographic examples (Weiner 1992, 8-12). A consideration of gender is therefore indispensable to understanding exchange, or, more broadly, to understanding human interaction. It is important to note, that in doing so here, the intention is not necessarily to attempt a specifically ‘feminist perspective’, but rather to highlight the importance of gender in the study of exchange. For example, the exchange of marriage partners is often a stimulus for the exchange of objects (Goody and Tambiah 1973) and certain goods only circulate among one gender (Larick 1987). Objects may also be gendered, though are not ubiquitously so. The consistent associations of particular object types in burials of a certain gender might lead us both to an understanding of burial ‘practice’ and of the symbolic meaning behind those associations. Since, as archaeologists, we deal predominantly with material culture, a consideration of the materiality of gender (Sørensen 2000, 74-95) may be particularly relevant.

6.2.3. Materiality

The archaeological record of the Bronze Age is primarily comprised of artefacts and these are primarily digested as images, sometimes photographic, but most commonly drawn and written descriptions in corpora. It has been argued that the resulting lack of engagement with the physical materiality of Bronze Age artefacts is a particularly acute problem (Jones 2001). The materiality of the substances from which many Bronze Age beads were made seems to have been particularly significant. For that reason, along with handling actual archaeological objects at the NMI, samples of as many of those materials as possible were collected, further handled, broken and even burnt. The aim here was not strictly ‘experimental archaeology’ but rather to become familiar with the nature and materiality of those substances.

The different materials that beads were made from may have significance beyond the immediately obvious; meanings that may have been specific to particular

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102 At least, not in the strand that advocates for women’s rights in the present. While such a goal is undoubtedly worthy, employing the archaeological record as a means of advocacy in the present is not something to which I prescribe. Archaeology undeniably once took a biased androcentric perspective, but this has largely been redressed since Conkey and Spector’s landmark publication (1984), and while such perspectives are not something that have often been explicitly considered in relation to the Irish Chalcolithic and EBA, they have certainly informed a number of recent influential papers on the subject (e.g. Brück 2004).

103 National Museum of Ireland, Kildare Street
groups or people. Jet, for example, may have had very different associations for those who knew about its origin, where it was likely associated with the coastal landscape of Yorkshire and potentially even with the fossils found there. However, there are certain aspects of materials that are ever present, present to our senses as humans, phenomenological if you will. Jet has come to epitomise the colour black and, while the boundaries between different colours may vary between societies, black is rather universal. Jet also has electrostatic or thermal qualities which are sensed through touch, when it is burnt it gives off a distinctive smell. All of these qualities would have served to differentiate it and mark it as special, potentially with supernatural connotations. Aspects of the materiality of amber, although different in colour, are somewhat similar; it is also warm to the touch, has electrostatic qualities and gives off a distinctive aroma when burnt.

One aspect of the materiality of archaeological objects that has only relatively recently been considered is colour (Jones and Bradley 1999; Jones and McGregor 2002). It seems clear from ethnographic, historic and archaeological records that we can expect colour to have played a significant symbolic role. Red would seem to have had a particularly widespread symbolic importance (Scarre 2002, 228-229), no doubt due to its association with blood. However, as always we must be cautious about trying to directly interpret meaning. Red in our own society is often used to denote danger; in others it signifies life, power and even sexual impotence (ibid.). Furthermore, although most humans see the same colour spectrum how they classify colour may vary considerably. This is clearly illustrated by the way the boundaries drawn between different colours in different languages can vary. Nevertheless, we should be on the lookout for persistent associations which, in confluence with other data, might give us some insight into symbolic associations. Of course, other visual qualities such as luminosity or brilliance may also have been significant. (Keates 2002)

It may be that we should be particularly careful about inferring materiality or gender associations when dealing with ‘burial goods’. The symbolic significance of objects can transform depending on their context. Lyn Wadley (1997, 129) has, for example, suggested that, in South African Stone Age burials, the selection or rejection of ‘grave goods’ may have had more to do with their symbolic
significance in the burial context than their perceived materiality or gender. She showed how similar sets of grave goods were recorded with both sexes, and how typically male goods, such as arrows (in that society), may have been omitted because associations with evil, harmful or sexual symbolism, while typically female goods may have been included with both sexes because they were symbolically associated with communication with the dead.

6.3. Beads in Irish Chalcolithic and EBA burials

Beads made from faience, amber, jet, shale, lignite, sandstone, clay, bronze, crinoid fossil, shell and bone have all been found in Chalcolithic and/or EBA burials in Ireland (Appendix 1). It is likely that other organic materials, such as wood and seedpods, were also used to make beads and were deposited with burials but have not survived. Taphonomic processes may also have affected the survival rates of bronze and bone beads and problems with recognition may be responsible for the low numbers of bone and fossil beads.

Many of the materials from which beads were made were only available in restricted areas and the source of those raw materials can be traced; from this and the distribution of their find locations we can extrapolate some general information on patterns of exchange. However, this picture is likely to be obscured by differential depositional practices and simply tracing the geographical extent of exchanges does not bring us much closer to understanding the processes of those exchanges. A closer contextual examination of the materials, bead forms and individual find circumstances will be necessary to attempt to tease out those processes.
6.3.1. Jet

Jet is partially fossilised wood that, when polished, has a deep black lustrous sheen.104 Despite not occurring naturally in Ireland, it accounts for a substantial amount of the Chalcolithic and Bronze Age buttons and beads found here (Appendix 1). The nearest source of true jet, that is known to have been exploited in prehistory, is near Whitby on the northeast Yorkshire coast.105 It outcrops there as seams or pockets in shale which was laid down during the early Jurassic period, sometime between 175 and 185 million years ago. The colour of jet is considered the epitome of black, hence the phrase ‘jet black’. It is thermally very conductive and therefore warm to the touch after it has been handled. It also has electrostatic properties and can attract other objects. It is relatively easy to carve but does fracture conchoidally and when burnt it crackles and gives off a peaty aroma (pers. obs.). It was likely to have been valued not only because of its rarity, but also because of ascribed magical or symbolic attributes, at least partially due its rather unique material qualities, some of which it shares with amber (see amber below). A number of jet-like materials, such as oil rich shale, lignite and cannel coal were also used to make jet-like artefacts. These are scientifically distinguishable, but it can be difficult to tell the difference by eye. Extensive programs of research with

104 Andrew Jones (2002) has made the interesting suggestion that this polishing may have been done with red ochre and therefore connected with the transformative power of fire.

105 There is some true jet at Kimmerage in Dorset but no clear evidence of its exploitation and there may be some outcrops in Scotland (Shepherd 1981, 43); however, there is no evidence these were exploited.
that aim have been carried out on Scottish (Sheridan and Davis 2002), Welsh (Sheridan and Davis 1988) and English (Pollard et al. 1981; Hunter et al. 2007) material; however, to date no such work has been carried out on Irish jet and jet-like finds.

In Britain, from as early as the first half of the fourth millennium BC, Whitby jet was used to make elliptical beads. These were exchanged across considerable distances but only to a restricted range of places, primarily the southwest of England and Scotland (Sheridan and Davis 2002). In the later Neolithic it was used to make ‘belt sliders’ which were at least sometimes deposited with males in what have been interpreted as high-status graves (Brewster 1984). These have been found in Scotland (Sheridan and Davis 2002) and Wales (Sheridan and Davis 1988). While it hasn’t yet been positively identified, a toggle-like object from the Baunogenasraid, County Carlow, Linkardstown burial could feasibly be made from jet (Ratery 1974).106

The earliest chalcolithic items made of jet in Britain appear to have been tiny disc beads (Sheridan and Davis 2002). In later centuries jet was one of the preferred materials for V-perforated buttons, spacer-plate necklaces, larger disc bead necklaces, disc and fusiform bead necklaces and various rings. In Scotland, where late Beaker and Bowl Tradition pottery exist contemporaneously, V-perforated buttons are predominantly found in Beaker contexts and spacer-plate necklaces are almost exclusively found with Bowl Tradition pottery (Sheridan and Davis 2002, 815). However in Ireland, as will be discussed below, that association does not hold true. There was a general decline in the use of jet and jet-like jewellery in Scotland c. 1800 cal BC (Sheridan and Davis 2002, 819); however, there are later occurrences of heirlooms and other artefacts which appear to mimic contemporary fashions in Wessex (ibid.).

The distribution of jet, and jet-like artefacts, in Ireland is concentrated in the east (Fig 6.3), reflecting its origin in Britain. It includes V-perforated buttons, spacer beads, disc beads, fusiform beads and a biconical bead on the Tara (b30) necklace (Appendix 1).

106 May also have been of wood or lignite
6.3.2. V-perforated buttons

V-perforated buttons are a pan-west-European artefact commonly associated with other objects of the so-called ‘Beaker package’ (Harbison 1977; Shepherd 2009). They appear to originate in south-eastern Iberia, where they occur in pre-Beaker levels (Harbison 1977, 18). In southern Europe they are commonly made of bone and in northern Europe of amber. In Britain amber examples are found; however, they are most commonly made of jet.

In Ireland, V-perforated buttons made of jet, bone, shale, steatite and jasper have been found (further described below under those material types); however, jet is by far the most common material (Harbison 1977). Unfortunately, many of the Irish buttons are unprovenanced. Those with provenance were predominantly found with secondary burials in passage tombs and are mostly associated with Bowl Food Vessels, rather than with Beaker pottery as in Scotland (Sheridan and Davis 2002). Harbison (1977) divides Irish buttons into four groups based on their shape: conical, rounded or hemispherical, pyramidal and star-shaped. The jet buttons include one pyramidal, four conical and nine rounded or hemispherical
examples. Only the four conical examples have relatively secure provenance. Two are from burials: secondary burials found inside the mound of the hostages (burials 19 & 18) associated with Bowl Food Vessels (O'Sullivan et al. 2005, 107-112). The other two were found in Lissan, County Tyrone and Lurgan bog, near Dromore, County Down; however, the exact contexts of their find locations are not clear (Harbison 1977, 34).

Despite not having been found together in Ireland, V-perforated buttons are commonly found associated with stone bracers elsewhere. Bracers are normally interpreted as archer’s wristgaurds, but recently the possibility that they may have actually been associated with an elite practice of hunting with birds of prey has been suggested (Woodward and Hunter 2011-130). As a corollary, it has also been suggested that rings found in Britain, often of jet, may also have been part of that paraphernalia. If these arguments are accepted it could be that, rather than buttons *per se*, V-perforated buttons might have functioned as part of such a set. Woodward *et al.* (ibid.) point to medieval literary sources as a possible bolster to their argument; however, a consideration of the voluminous literature from early medieval Ireland, some of which may pertain to preceding late prehistoric times, only indicates relatively little potential support for such practices. If such practices did exist during the earlier Bronze Age in Ireland it seems they must have died out, only to be reintroduced in the medieval period.

Several unfortunately unrecorded pieces of jet, described as beads of various shapes, were found with two stone bracers, gold discs, in a wooden box bound with a gold band in a bog at Corran, 10km south of Armagh (Case 1977b). A gold disc and two siltstone wristgaurds in the National Museum of Ireland are likely to be part of this find. The disc is of Case’s ‘type a’ (ibid.) and bears a motif of repoussé decoration, comprising a laddered cross, similar to that found on the V-perforated buttons from Harehope, Peeblesshire (Shepherd 1985, 209), but encircled by several concentric rings. Harbison thought it unlikely that those pieces of jet were V-perforated buttons (Harbison 1977, 8); however, it is a distinct possibility. Alternatively, they could have been part of a spacer-bead necklace like those discussed below. The association between the V-perforated buttons and the discs

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107 Irish place names do include bird elements but none of birds of prey (Joyce 1912).
with the same motif/symbol is particularly interesting and seems to parallel the relationship between the decoration on lunulae and spacer-bead necklaces. The former is also repeated on the base of pottery, particularly of the ‘Bowl Tradition’ (and late Beaker) and the later on the sides of pots (again Bowl Tradition and late Beaker esp. stage 5-7 Beaker pots in Scotland). Some of these congruencies have been previously noted. What has not, to my knowledge been recognised before, is that the button/disc/pottery base motif is probably a skeuomorph of a basket base design that entails an embodied technique which may have been perceived as sunwise movement.

**Spacer beads and crescent-shaped necklaces**

Jet spacer bead necklaces are most common in Scotland, where around two thirds of all Irish/British examples (c. 54) have been found, and they are most commonly found in burials with females and almost exclusively with Bowl Tradition pottery (Sheridan and Davis 2002). Taylor (1980) considers them skeuomorphs of Irish lunulae, however, since lunulae are poorly dated, it is not clear which are earlier.108 Similar arrangements of amber beads including spacer beads with borings similar to the jet beads are found in Wessex (e.g. Upton Lovell G2) and much further afield in Mycenae (Harding 1974; 1993). Within Britain and Ireland, the mutually exclusive distribution of the three materials (Harding 1993; Fig 6.5), gold, jet and amber, being combined to create these strikingly similar forms (Fig 6.4), strongly suggests they were at least broadly contemporary and had a similar purpose. That they were treated differently in deposition may have had something to do with the inability to easily fragment lunulae and how that affected their subsequent life histories (Frieman 2012a).

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108 The bead necklaces are often deposited with graves in Britain and therefore have reasonably good dateable associations; however, in many cases the beads are demonstrably repaired etc. are already very old at their time of deposition and are likely to be heirloom objects.
Figure 6.4 Stylistic similarity between a crescent shaped jet necklace from Mount Stuart, Bute, Scotland and a classical Lunula from Blessington, County Wicklow (from Harding 1993, 56)

Figure 6.5 The differential distribution of lunulae, jet spacers, and amber spacers in Britain and Ireland (from Harding 1993, with additions), reproduced with the kind permission of Dr Anthony Harding
There are two crescent-shaped jet necklaces and two single spacer beads from such necklaces, from Ireland. The necklaces are from Drumconn Bog, Rasharkin, County Antrim (Jope 1951)\(^\text{109}\) (Fig. 6.3) and Cumber, County Down (Brindley 1994). The Rasharkin necklace is comprised of two triangular spacers, one wedge-shaped spacer and sixteen fusiform beads. The triangular spacers were probably terminal beads and combined one strand into four. The perforations in the triangular spacers are unusual, in that each individual thread emerges from the back of the bead to avoid a complex internal boring.\(^\text{110}\) The wedge combined four strings into eight, suggesting that the complete object that it originated from was an exceptionally complex necklace. Despite its idiosyncrasies it is likely to be of Scottish manufacture or commission.\(^\text{111}\) It appears that the necklace was not complete at its time of deposition; however, uncertainties over those circumstances make further supposition difficult. Its location, in Antrim, and Northern Ireland more generally, is a region containing many burials with Bowl Tradition pottery and given the predominant associations of such necklaces in Scotland, it seems likely to have been associated with users of that tradition. It was deposited in a bog, however, in the fashion with which Irish lunulae were sometimes deposited. The necklace from Cumber consists of two terminal plates, three spacer plates and seventeen fusiform beads (Brindley 1994, 36). The spacer plates combine four strings to five and five to eight, suggesting a necklace as complex as Rasharkin.

The single spacer bead is from Longstone, County Tipperary.\(^\text{112}\) It was found accompanying a cremation with a razor, a complete Food Vessel, the sherds of a second Food Vessel (Kavanagh 1991, 97) at least one of which has been identified as a tripartite vase (Brindley 2007, 92) and a small tablet of bone with four damaged perforations (Kavanagh 1991, 82). It was ‘broken and much worn’, evidently an heirloom or amulet that had remained in circulation for some time after being

\(^{109}\) Collected by Louis Clarke for Cambridge in 1938, but found in the late 1800s. Knowles (1881, 528) records it as being from close to Lisnacannon Fort in the neighbourhood of Rasharkin. It is now part of the Cambridge collection.

\(^{110}\) Apparently there are a number like this in Scotland (Sheridan pers. comm.)

\(^{111}\) In Scotland local craftsmen were certainly using jet-like material to create spacer necklaces (Sheridan and Davis 2002) but it may be that all the original jet necklaces were made at source in Whitby where flint saws have been found with burials

\(^{112}\) The site remains unpublished. Excavated in the 1970s by P. Danaher (see Herity, M. 1983) Longstone, in a Cultural Encyclopaedia of Ireland ed. Breffny. The bead illustrated in Kavanagh 1991 (Fig 26b)
separated from its parent necklace. Interestingly the borings that survive on the Longstone bead were made in the same fashion as those on the Rasharkin beads.

The second single jet (or possibly lignite) spacer bead was found in a low cairn located in a Bronze Age funerary site in Derrycraw townland, County Down (Chapple et al. 2009, 119). In addition to the cairn, the site included five ring ditches of varying morphology, a pit burial and a probable basket burial. The cairn also contained human bone, a sherd of a vase urn and charcoal, some of which returned radiocarbon date of 2550-2540 and 2490-2140 cal BC.\textsuperscript{113}

It has been noted previously that the decoration on both crescent-shaped necklaces and lunulae find very close parallels on Beakers (Taylor 1980) of stage 5/6 (Needham 2000). This is not simply restricted to the motifs used (lozenge or triangular motifs) but also extends to the spatial patterning of motifs (Jones 2001).\textsuperscript{114} That the lunulae occur most commonly in Ireland, the spacer plates with Bowl Tradition pottery in Scotland, and the stage 5/6 Beaker pots in an area mainly without lunulae, crescent-shaped necklaces or Bowl Tradition pottery, suggests that communities in these areas were drawing from a broadly shared `symbolic reservoir', but choose to deploy those symbols in different ways.

**Disc and fusiform beads necklaces**

Only one definite disc and fusiform necklace is known from Ireland. It was found in one side of a double cist in Oldbridge, County Meath (Coffey 1889-1901). The human remains had decomposed but were probably crouched inhumations. Enamel tooth cusps, possibly belonging to a female,\textsuperscript{115} were found with the necklace. In the other compartment of the cist, teeth, possibly from two males, were accompanied by an upright ‘simple bowl’ (Ó Riordáin and Waddell 1993, 7). The collection of beads comprised 13 fusiform beads, 55 disc beads and a triangular bead. The excavator raised the possibility that, rather than true jet, the beads might be a form of lignite. Since the beads were not found in situ,\textsuperscript{116} it is not

\textsuperscript{113} Beta 217353 (3850±70 BP)
\textsuperscript{114} As Jones points out in both pottery types and neck ornaments the motifs are typically executed in the upper zones
\textsuperscript{115} This identification of sex from teeth should be treated with caution. Coffey said that Dr Brown identified them from comparisons with a reference collection without knowing which chamber they were from.
\textsuperscript{116} They were found by sifting through loose soil from the cist (Coffey).
possible to know whether they were strung as one or more arrangements, or indeed if they were strung at all, prior to deposition. The excavator reconstructed them as a single necklace with the triangular piece as a pendant. However, given from what we know about the Scottish necklaces (Sheridan and Davis 2002) it seems likely that the triangular piece, at least originally, served as a fastener. There are eight disc and fusiform necklaces from Scotland (ibid.), a group among which this necklace sits comfortably. Many of these incorporated recycled pieces from other necklaces suggesting perhaps that these were the recombined remains of the more common crescent-shaped spacer-bead necklaces.

**Disc beads**

Two jet disc beads found in Loughloughlin, County Antrim were probably once part of a larger collection. The beads came from one of three cists in a cairn that had previously been interfered with; ‘amongst other things, a large number of little black beads ‘strung on a piece of wire’ were taken from it (Buick 1902). A ‘simple bowl’ and tripartite bowl with perforated lugs were recovered from the other two cists, and what little bone there remained was unburnt.

Disc beads (material as yet unidentified) have also been found with Beaker pottery sherds in a pit in Paulstown, Kilkenny (Carlin 2012, 84) and shale disc beads that were found in the mound of the hostages at Tara were most probably associated with a Bowl Tradition burial (O’Sullivan et al. 2005). Interestingly, the shape of these thin disc beads recalls the shape of ostrich shell beads which are occasionally found accompanying Beaker (and earlier) remains in Iberia (Chapman 1990) and Morocco (Rodrigue 2002, Fig 15).

**Fusiform beads**

Two fusiform jet beads were retrieved from a cist in Rathbennet, County Westmeath (Macalister and Murray 1931/1932). The cist was centrally placed in an earthen mound and contained disarticulated human remains, bones of small animals and two Bowl Tradition pots. One pot was a tripartite bowl with imperforate lugs and the other was a ribbed bowl (Ó Ríordáin and Waddell 1993, 141-142). The excavator noted copper staining on some of the bones and suggested

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117 The pots at least are now in Ashmolean Museum (1924.927. ex Knowles coll.)
118 The remnants of a skull were present when Buick and Knowles visited but there is no way of knowing how much had been discarded at that point.
that the remains had been excarnated, buried, dug up and reinterred without the accompanying metal objects and perhaps the remainder of the jet necklace (Macalister and Murray 1931/1932).

The Keenoge necklace came from one of fourteen grave cists (six cists and eight pits) found in a flat cemetery, during quarrying in Keenoge, County Meath (Mount and Buckley 1997). The grave in question was a pit which contained a young unburnt crouched adult female, unburnt bone from an adult male and three fragments of cremated bone. The beads were found around the neck of the female, suggesting that it was a tightly strung necklace worn in the burial. The necklace is comprised of forty beads; thirty-seven are fusiform, two are cylindrical and the end of one is internally bevelled. They are mostly perforated through their longest axis; however, a few are also transversely perforated. Strung end to end they form a necklace approximately 150 mm in diameter. Eleven of the beads are badly cracked. There were a minimum of twenty-six individuals buried at Keenoge: nine adult males, five adult females, four unidentified adults, five children or infants and three groups of bone too small to identify or unavailable for analysis. The only distinguishing factor about the young female adult wearing the necklace, other than the necklace itself, was her youth. This might be taken to mean that, rather than indicating status, it was an indicator of a life stage; perhaps because she was of a child bearing age. Mount and Buckley (1997) suggested that relative status might be indicated through the presence of a pot and interment in a cist rather than pit. These were factors they noted as being most commonly attributed to male burials but also afforded to one of the older females at Keenoge. While this differentiation may be statistically significant, any attribution of status must be treated with caution. Pots were made from local materials and did not represent any great investment of labour; the decision to include a pot in a burial is likely to have been symbolic, but what that was of is not entirely clear.

Several small beads or buttons ‘of black wood... pierced with a hole’ that were found in a cist accompanying a cremation and an ornamented urn near Skerry East in County Antrim may have been of jet or jet-like material but are now lost (Waddell 1990, 49).
The majority of jet objects are likely to have been produced near its source in Yorkshire by specialist producers, where flint saws have been found in Bronze Age graves (Sheridan and Davis 2002, 823). Spacer plates from crescent-shaped necklaces with complete borings were particularly complex to make. The drilling is likely to have been accomplished with bronze wire, with lozenge-shaped cutting tips, and a bow drill (Sheridan and Davis 2002; contra Shepherd 1981, 48). Various polishing agents are likely to have been used; residue found in perforations suggests a paste of barium sulphate and burnt bone and organic binder may have been used (Shepherd 1981); Jones and McGregor (2002) have suggested the use of red ochre.

The most persistent association with jet found in Ireland is Bowl Tradition pottery. Since Bowl Food Vessels are an Irish-Scottish phenomenon and given the large amounts of jet found in Scotland, it seems almost certain that the majority of jet in Irish deposits, although originally from Whitby, arrived here via intermediaries in Scotland. This is likely the case for all forms of jet (V-perforated buttons, crescent-shaped necklaces, disc beads and fusiform beads) even though in Scotland V-perforated buttons are more commonly associated with Beaker vessels. It seems clear from this, and from the overlapping of lunulae across different pottery traditions, that we should not view combinations of these elements as cultural packages but rather the distribution of the different elements as overlapping ‘communities of practice’ or ‘spheres of exchange’. There is a gender bias discernible in the predominant associations. In Scotland V-perforated buttons were more likely to be deposited with males, but were also occasionally deposited with females (Shepherd 1985). Unfortunately, in Ireland the few that have been found in secure contexts are old finds in which the sex of the skeletons was not recorded. In Britain crescent-shaped necklaces, on the other hand, were exclusively deposited with females. While ethnoarchaeological cases, where symbols are inverted, illustrate the dangers of transposing suppositions from neighbouring groups, in this case I would argue that this suggests that lunulae were objects associated with the female gender.
6.3.3. Faience

Faience is a glazed and fired siliceous paste with a ceramic-like core and a blue or green glassy exterior. Over 350 EBA faience beads have been found in Britain and Ireland (Beck and Stone 1936; Stone and Thomas 1956; Sheridan and Shortland 2004). The technology required to produce faience is believed to have originated in the Near East or Egypt, where it was in use from the fourth millennium BC (Nicholson 2009). The complex process involved in its production makes numerous independent discoveries unlikely and it was consequently once thought that the British and Irish beads were direct imports from Egypt, perhaps via Mycenae, in the fourteenth/fifteenth century cal BC. However, since they have now been shown to be of a distinct composition, they were almost certainly of indigenous manufacture (Sheridan and Shortland 2004). Furthermore, it is now clear that they were deposited here from as early as the nineteenth century cal BC (Brindley 2007).

The manufacture of faience involved mixing a paste, either applying or incorporating a glaze and then firing until it fuses at high temperatures (Sherdian and McDonald in Shepherd and Shepherd 2001). On its surface it can resemble glass, but it is rarely so highly fused, and under a microscope bubbles, impurities and pieces of unfused quartz are normally visible. It is also differs visibly from glass when broken, in that it has a core. In terms of production, another important distinction is that glass is ‘hot worked’, while faience is ‘cold worked’ prior to firing. The essential ingredients of faience are silica, calcium carbonate, an alkali and liquid, with the addition of metal compounds for the colouring of the glaze. These are likely to have been added in the form of quartz-rich sand (silica), mollusc/eggshell/crushed limestone(calcium carbonate), ash from burnt plants such as seaweed (alkali), water or bodily fluids (liquid), tin oxide (high tin content), and bronze filings (copper/tin in the glaze). It is not difficult to appreciate how the production of such a concoction could have had a magical or ritual dimension.

119 A third method of firing cores in powdered glaze is known ethnographically from Iran, but there is no evidence of that method being used within Britain or Ireland (Clarke, et al. 1985, 218)

120 True glass beads are not known in Ireland before the Late Bronze Age; however, two are known from Britain: one opaque glass bead associated with a Collared Urn from Gilchorn, Angus, one dark red and black circular glass bead with swirls fusing toward its centre found with a primary cremation in Wilsford Bell Barrow G42, Wiltshire (Clarke, Cowie et al. 1985, 217)
There is evidence that at least some Scottish faience beads (such as the Findhorn examples) were formed by wrapping paste around straw (Sheridan and McDonald in Shepherd and Shepherd 2001).

The Bronze Age faience beads from Britain and Ireland can be divided into five shapes: segmented, quoit, star, oblate and chunky annular (Sheridan and Shortland 2004). Only the first three of those shapes have been found in Ireland; thirteen are segmented, ten quoit-shaped and six star-shaped. All of those with provenance, apart from one from a lake settlement,¹²¹ are from burial contexts.

The largest concentration of finds of faience found in Britain or Ireland is in Wessex, and finds of faience in graves elsewhere are often considered as evidencing a connection with Wessex elite who had supposedly established control over the trade of tin (Sheridan and Shortland 2004). Skeuomorphs of segmented faience beads made of tin are known from Sutton Veny in Wiltshire (Sheridan 2003c, 20), a composite necklace Exloo in the Netherlands (Haveman and Sheridan 2005/2006) and a female grave from Buxheim in Bavaria are seen as further reinforcing the connection between faience beads, the tin trade and Wessex (Sheridan 2003c). The distribution of Irish faience (Fig 6.6) finds is notably concentrated along the east coast giving support to the idea that they originated in Britain, or at least belonged to an Irish Sea milieu. However, there is a distributional bias toward Northern Ireland and Irish faience is almost exclusively associated with Cordoned Urn Tradition pottery, an Irish/Scottish tradition (Waddell 1995), suggesting that if Irish faience was imported, it came via Scotland (like jet only centuries later). It is also possible, however, that there was a regional centre of production in Northern Ireland. The careful analysis of Scottish beads has led Sheridan and McDonald to suggest such a regional working centre in the Culbin sands area of Findhorn (Shepherd and Shepherd 2001).¹²²

Sheridan and Shortland (2004, 273) have suggested that, since there are no earlier star-shaped beads in Britain or Ireland that fashion may have originated in

¹²¹ Ballyarnet is from a lake settlement and is associated with Cordoned Urn Tradition pottery (Ó Neill et al. 2007)
¹²² More intensive work on the regional variations in technique, like Sheridan and McDonald’s work on the Findhorn examples (in Shepherd and Shepherd 2001) would need to be carried out to distinguish such putative centres (or persons) of production
Hungary. We can however, point to the jasper star-shaped V-perforated button found in Dowth as a precursor, of probable Beaker or Bowl Tradition date.

While most of the faience in Ireland is associated with Cordoned Urn Tradition pottery, at Ballyduff a bead was found associated with a Vase Tradition pot (Hartnett and Predergast 1953). The pot was of Brindley’s ‘Stage 2 vases’ type and along with a broadly corroborating radiocarbon date, can be dated to 1920-1860 cal BC (Brindley 2007, 259-262). Along with three finds of faience beads in Wales, two that were associated with contemporary pottery (Llandwm and Brynford) and one with another early radiocarbon date (Tandderwen), it forms a group that clearly predates those which occur with those from Wessex or with Cordoned Urns and Collared Urns elsewhere. The Ballyduff bead is also morphologically distinct from other Irish beads; it is a segmented bead but comprises only two segments which were separated by a deep groove that does not resemble the crimped effect on Scottish segmented beads (Hartnett and Predergast 1953). It is also wider in diameter (c. 8mm), has a smaller perforation (c. 2mm) and the material is notably
different from most other British/Irish faience. It is a pale greenish white and was apparently made by including the glaze within its body, and firing at a lower than normal temperature (*ibid*.). On the coast of Wales and Southern Ireland we appear to have the earliest faience in Britain/Ireland, at around 1900 cal BC. This is a milieu that likely included Cornwall, but may have had relatively little to do with the Wessex region, or an Irish/Scottish axis of communication.123

All of the other faience beads found in Ireland are associated with a later phase of faience use, associated either with Cordoned Urn Tradition pottery or contemporary burials. These are broadly contemporary with the so called Wessex elite. However, as mentioned above, their ceramic associations point to an Irish/Scottish milieu. Furthermore, while segmented beads and quoit shaped beads occur in Ireland, Wessex and Scotland, star-shaped beads which occur in Ireland and Scotland (and elsewhere in Britain) do not occur in Wessex (Fig 6.7). The one example that may evidence connections with Wessex is the boy from the Mound of the Hostages at Tara (b30), which is discussed further below.

123 Whether these early beads represent imports or a regional centre of production is surely worthy of further investigation.
It has been noted many times that faience beads are predominantly found with female burials and this does appear to hold true in Wessex (Gerloff 1975, 204-209; Harding 1974, 98)\textsuperscript{124} and elsewhere in Britain (e.g. Sheridan and Shortland 2004, 267). However, very few securely associated remains from Ireland have been sexed and it is clear from a number of so called ‘exceptions’ that it could vary.

Of the 10 quoit shaped faience beads from Ireland only three are from secure contexts and of those only two of those are from burials. The only one of those which has been sexed, from Harristown, County Waterford, was male. His cremated remains were contained in an inverted Cordoned Urn, with a bronze knife and a ring-headed bone pin and were one of seven secondary burials interred in a passage tomb (Waddell 1990, 145; Hawkes 1941). Another quoit shaped bead was found with cremated remains in a large urn next to a small biconical cup under a low mound in Knockboy, County Antrim, during 1898 (Rynne 1964).

\textsuperscript{124} With the exception of Rillaton and Figheldean
Unfortunately, those remains were not sexed and all that now survives is the bead and biconical cup. The example recently found at Ballyarnet, County Derry, was also associated with Cordoned Urn Tradition pottery but was not found in a burial context (Ó Néill et al. 2007). The other seven quoit shaped faience beads from Ireland are unprovenanced; however, most appear to be from County Antrim and are likely to be from burial contexts (ibid.).

Segmented beads are the most common. As mentioned above, there are 13 of these known from Ireland. The early example from Ballyduff was already discussed and of the remainder, apart from the four from the Tara burial, only two beads found in Kilcroagh, County Antrim were found in secure Bronze Age burial contexts (Williams et al. 1991/1992). There were four burials at Kilcroagh, three associated with Cordoned Urns and one unaccompanied by pottery, placed in pits dug into a small gravel knoll. Each of the faience beads accompanied double burials, with male and female cremations interred together, and associated with Cordoned Urns. One accompanied the cremated remains of a young adult female (twenty to twenty-five) and male (twenty-five to thirty), with a bun-shaped stone bead, a razor, a perforated bone object and a bovine long bone, under an inverted Cordoned Urn. The other accompanied an adult female, about thirty years old and a juvenile male about fifteen-sixteen years old and a razor, all placed in an upright Cordoned Urn.

Three faience beads were found at Carrig, County Wicklow (Grogan 1990). They appear to have accompanied a Cordoned Urn burial, but full details have yet to be fully published. At least one was star-shaped and another segmented; these were found with a razor in a Cordoned Urn (Kavanagh 1991, 82-83).

A bead found with what it presumed to have been a Collared Urn, and described as a ‘small perforated bead made of clay and glazed white’, from Carnduff, County

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125 It was found on a lake settlement dated to 1742-1522 cal BC. Samples from the outer rings of two oak palisade posts returned RC dates of 1742-1524 cal BC (UB-4893; 3344±39 BP) and 1690-1522 cal BC (UB-6864; 3331±32BP).
126 Sheridan (2004) gives two more findspots in NI; at least one of those (Portstewart) should be discarded (see Rynne 1964).
127 Several segmented faience beads were recently found in a ring ditch in Rath (Fitzgerald 2006); however, it was dated to the Iron Age. There is no other record of faience from Iron Age Ireland; perhaps this was a reused EBA burial?
Antrim sounds like it might have been actually faience (Herity et al. 1968, fn 4); however, it is now lost (Waddell 1990, 45).

Two beads from Luggacurran, County Laois, described as 'two little links of beads, of some mineral substance of a bluish colour, and highly polished and finished' are likely to have been segmented faience beads (Waddell 1990, 104-105). They were found in one of two adjoining cists. That in which the beads were found was a segmented cist and appears to have contained three unburnt individuals, at least one bowl and two bronze rings. The other cist contained a bowl and another unburnt individual. The beads are now lost, but if they were true segmented faience beads and associated with a Bowl Tradition pot; they might indicate another very early occurrence of faience beads in Ireland. The inhumations and the bronze rings, which find comparison in the Migdale hoard (Needham 2004), would be consistent with such a Bowl Tradition burial.

Only one of the six star-shaped beads would seem to come from a secure burial context. It is from the unpublished Carrig burial mentioned above (Grogan 1990) and seems likely to have been associated with a Cordoned Urn. These recall the shape of the earlier star-shaped V-perforated buttons, such as the jasper example from Knowth.

Faience beads were found at Longstone, County Tipperary during excavations there by P. Danaher for the Office of Public Works; however, these have not been published. According to Williams (1991/1992, 57), they were associated with a Cordoned Urn.

There seems little to differentiate the burials which contain faience from those which do not. Nonetheless many authors persist in claiming it as an indicator of elite status (Williams et al. 1991/1992; Mount and Buckley 1997). It may be that it was a rare substance, but if that was so, it was due to the knowledge of how to produce it rather than scarce material resources; the materials to create faience were freely available in any coastal area. The largest single find of British faience is from Findhorn, near the Moray Firth in northeast Scotland, where a twenty-five bead necklace was found with the cremated remains of a young adult female and a pre-natal or newly born infant, in a large inverted Cordoned Urn (Shepherd and
Shepherd 2001). It was also the only incidence of all three shapes of faience beads being found together. It seems likely that both the mother and child may have died during childbirth. What many archaeologists would consider one of the ‘wealthiest’ or ‘highest status’ burials, might alternatively be interpreted as one of the most emotionally charged, where the mourners might have been prompted to include such a valuable item because of the particularly upsetting circumstances of this death. Special care on the behalf mourners was also indicated by the cremated bone which had evidently been carefully collected and perhaps cleaned in water prior to deposition (Powel in Shepherd and Shepherd 2001).

6.3.4. Shell

Worldwide, shell is one of the commonest materials used for the manufacture of beads. It is also a material susceptible to breakage and this, along with problems of recognition, is likely to have led to a low retrieval rates during excavation. However, even with this proviso, it must be admitted that perforated shells are not common in Irish EBA burials; they are more commonly found here with Neolithic remains.

Cowrie shells were found in a cist with a Cordoned Urn, bone bead (or toggle: discussed further under bone below) and the cremated remains of an adolescent, in Carrigeens, County Sligo (Cahill 2011). Unfortunately, the cowrie shells were too fragmentary to tell if they were perforated and it was not possible to sex the remains. Cowrie shells have been found in several EBA burials in Britain (Grinsell 1953, 275-276) and definitely perforated examples were found associated with MBA (Middle Bronze Age) burials in Glencurran cave, County Clare (Dowd 2009). The Glencurran examples were perforated through the upper dome side of the shells and, whether they were attached to clothing or strung on a necklace, the underside of the shells would have been displayed. Cowrie shells have been employed by numerous cultures as ‘ornament, amulet/charm, money, gaming/gambling counter, divination piece, and for other purposes’ (Koerper 2001, 27). However, their most consistent cross-cultural association, and perhaps the reason they are so widely employed in other ways, is with fertility and the female

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128 Only one bone was dated and earlier and indeed latter Bronze Age remains are likely to be in the remains excavated (and remaining) from Glencurran.
BEADS AND BUTTONS

genitalia (Koerper 2001; Claassen 1998). This is due to a perceived resemblance between the slit on the underside of the cowrie shells and the female vulva, and is apparent in ancient Egyptian skeuomorphic amulets, the ancient Roman name for cowrie shells concha veneris (Hildburgh 1942), and even in the generic Linnaean name given to the species Cyprae.129 The lentoid bosses on EBA goldwork are often considered to mimic fusiform beads, but in my opinion they are more likely to be skeuomorphic representations of cowrie beads. This is most obvious on the pre-conservation photos of the Mold cape from Wales (Taylor 1980, fig. 29h).

6.3.5. Stone

Stone beads, like shell beads are relatively common in Irish Neolithic contexts; however, there are relatively few from Irish Chalcolithic or EBA contexts (Appendix 1).

*Kimerage shale and other jet like materials*

Kimerage shale is an organic, or oil rich shale laid down in the Jurassic period that outcrops in a band from Dorset to the Humber Estuary. However, it is not easily accessible away from its type location on the Dorset coastline (Sheridan 2008b, 88). It seems likely that Kimerage shale began to be used for beads because of its jet-like appearance. However it, like other oil rich shales and coals has properties that might have been considered magical themselves, not least from the fact that it also burns. This fact, as with jet and amber beads, has implications for any that might have been included with cremations; these would only have very rarely survived, and then only in a much degraded form.

*Buttons*

A V-perforated mudstone button was found with burial 25/46 inside the mound of the hostages at Tara (O'Sullivan et al. 2005, 104-107). It was associated with a Vase Food Vessel and sherds of an Encrusted Urn on a surface above burials 18 and 19 (found with jet). The source of the mudstone cannot be definitively located; however, it is interesting that the definitively imported material (jet) was associated with the earlier burials and that with the later burial from material that

129 Derived from Cyprus the birthplace of Aphrodite, Goddess of love
could have been sourced more locally. Perhaps what we have here is initial imports later locally imitated.

A star shaped jasper V-perforated button was found in the passage tomb at Dowth (Harbison 1977, pl. 21a), a steatite conical button in tomb 49, Carrowmore, County Sligo (Wood-Martin 1888, 145), a conical button at Knocknarea, County Sligo (Harbison 1977, pl. 24v) and a unperforated button in Cairn R2, Loughcrew, County Meath (Rotherham 1985). These all presumably accompanied Chalcolithic or EBA burials placed in the passage tombs. Given the predilection of its users for placing burials in earlier tombs it seems most likely that all of these were deposited by Bowl Tradition users.

Jasper was also used for the production of contemporary bracers in Ireland (Harbison 1977). Its red colour appears to have had some sort of special significance and, along with the number of perforations, it links Irish bracers with those on the continent rather than with those in Britain (Roe and Woodward 2009). There are numerous sources of jasper in Ireland and it was evidently collected as cobbles on beaches such as on Lambay Island, County Dublin (Cooney 2002).

In Ireland V-perforated buttons have also been found in caches or single deposits not associated with burials. A cache of twelve ‘stone’ buttons was found on Ballybooley Mountain, County Antrim (Wood-Martin 1895, 533) and others, such as those from Drumeague, County Cavan, were reportedly not retrieved but left where they were out of superstition (Glover 1975). There are several other V-perforated buttons of shale and steatite; however, they are all unprovenanced finds (Harbison 1977). The majority are believed to be from the north of Ireland.

**The Caltragh stone beads**

Sixteen stone beads were found accompanying cremated remains in two pits located among a scatter of potholes under a burnt mound, in Caltragh, County Sligo (Danaher 2007, 71-74; Danaher et al. 2013; Sheridan 2007). The first pit contained the well-cremated (uncrushed), but only partial, remains of a forty to fifty-year-old woman and twelve beads. The second contained the similarly treated remains of another forty to fifty-year-old person of indeterminate sex and the remaining four beads. There was copper/bronze staining on some of that bone.
suggesting that a metal object had accompanied the cremation and/or burial, but no longer survived.

The twelve beads from the first pit included three long and four short roughly fusiform beads, two chunky annular beads, a chunky asymmetrical bead, a roughly rectangular bead and a flat triangular bead. All, apart from the triangular bead which was carved from a creamy white, fine grained, laminar stone, were made from mottled brown sandstone with white flecks and patches. Two were of a notably darker greyish colour, and one had a skin of sorts, probably a result of their position in the pyre. The rectangular bead had a groove around its rim which may have held some kind of organic embellishment and two diagonal holes were drilled into the side of one of the short fusiform beads intersecting with the normal longitudinal borehole.

The four beads from the second pit were more fragmentary and wear on their broken surfaces suggests that they were curated as unstrung beads for some time; they were probably short fusiform beads. Intriguingly, as Sheridan has suggested, it appears as if all of the beads originally have come from the one necklace. The radiocarbon dates, although not as precise as we might like, suggest that at least one but possibly a number of generations passed between the burials. Furthermore, the contrasting condition of the beads suggests those with the earlier cremation may have accompanied it on the pyre, while the four with the later burial appear to have been retained, handled frequently and then deposited without being exposed to fire with the second cremation.

As the authors of the Caltragh report have said ‘It is hard to avoid the conclusion that the two individuals in the adjacent pits were connected in some way... the woman could have been the mother, grandmother, or ancestor at several generations remove of the other individual’ (Danaher et al. forthcoming). This is a rare insight into people who lived over three and a half thousand years ago, illustrating, perhaps, heirloom objects retained for either emotional or spiritual reasons.

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130 Cremation 1: alder charcoal (Beta 197656) 3460±80 BP (1 sigma 1890-1680 cal BC, 2 sigma 1980-1530 cal BC)
Cremation 2: burnt hazelnut shell(Beta 197657) 3320±40 BP (1 sigma 1660-1520 cal BC, 2 sigma 1690-1500 cal BC)
6.3.6. Ceramic

**Altanagh**

A collection of ceramic beads were found accompanying the cremated remains of an adult woman under an inverted Cordoned Urn in a mound in Altanagh, County Tyrone (Williams 1986, F171). The mound contained an earlier Neolithic tomb, Neolithic burials, Bowl Tradition burials and several other burials of Cordoned Urn date. The cremated woman was between twenty five and thirty years old, she was efficiently cremated but the bone was not subsequently crushed. It appears that her remains were carefully collected from the pyre and almost all were included in the burial (c. 1300 grams). The beads included eight fusiform beads and four ‘bun-shaped’ beads. A circular piece of bronze, perforated twice on one edge and potentially similarly on its opposing side where it was damaged, may have combined with the beads to form a necklace. A crescent-shaped crinoid fossil-rich stone (27) with evidence of repeated rubbing on its concave surface was also included with the cremation (Williams 1986, 66). While of different materials, the necklace does bear resemblance to the Caltragh, County Sligo necklace. Charcoal from the Altanagh pit was radiocarbon dated to 1750-1520 cal BC, a date broadly contemporary with Caltragh.

Danaher et al. (forthcoming) have suggested that the origins for the style of the Altanagh and the Caltragh necklaces lies in Wessex and that these represent local elites who were not able to obtain the riches of Wessex, emulating that style in a locally available material. However, I would argue that these are as likely to be local styles broadly recalling the design of earlier jet and gold crescent-shaped necklaces, and organic intermediaries and contemporaries that do not survive. There is plenty of EBA gold and other finery from Ireland, albeit mostly of an earlier date (indeed far more than from Wessex); it was possibly just not considered appropriate in these societies to bury such objects with the dead. It may not even be correct to refer to these burials as those of local elites; while the inclusion of the beads certainly signifies something, it is not necessarily elite status. The crescent-shaped crinoid-rich fossil is particularly interesting and further reinforces the connection between females and crescent shapes.

111 GrN-11449 3360±30 BP
6.3.7. Bone

Like shell, bone has been used to make beads in many cultures in many periods. In some part, this is likely to be due to the relative ease with which it is carved and that it is, as a by-product of hunting and scavenging, a plentiful resource. However, it is also likely to have been a symbolically charged material; beads made from wild animals might have symbolised the hunt and as a corollary male virility, those from domestic animals might have symbolised the home, and bone from specific species might have conferred qualities of, or protection from, the animal spirits from which it was taken. Unfortunately, once bone has been carved into beads, it has normally lost its natural articulated surfaces and is no longer identifiable by species and, to date, I am unaware of any study that has investigated the DNA of bone beads of any age. It would be particularly significant, for example, if any beads were made from human bone. Only one bone V-perforated button and four bone beads are known from Chalcolithic or EBA Burials in Ireland (Appendix 1). The fact that there are so few (especially in comparison to the Neolithic) might even be taken to suggest a taboo against or lack of interest in bone beads.

A V-perforated bone button was found in a cist with a perforated bone pin and unburnt human bone in Kinkit, County Tyrone (Glover 1975). The cist was segmented and a young adult of indeterminate sex was in each compartment; the finds accompanied the one in the western compartment. The pin is of a northern/eastern variety, and, along with the V-perforated button and inhumations, is consistent with the type of burial often found in Ireland with Bowl Tradition pottery. As mentioned above, bone V-perforated buttons are predominantly a south European, particularly Iberian phenomenon. There are also, however, at least six examples also known from Britain and numerous more from France (Harbison 1977).

The bone beads were from Edmondstown, County Dublin (Mount and Hartnett 1993, 42), Kilmainham, County Dublin (Walsh Excavations 2006:665) and Carrigeens, County Sligo (Cahill 2011). The Edmondstown bead was a hollow bone tube, the Carrigeens bead was barrel or fusiform-shaped (mentioned above because

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132 Bone pins with segmented heads are more common further west (Glover 1975, 152)
of the shell beads with which it was found) and the Kilmainham bead is not yet published.

Boar’s tusks have been found with at least ten prehistoric burials in Ireland (Mount and Buckley 1997, table 3), eight of which were Chalcolithic or Bronze Age. At least some of these were perforated (Ballinvoher, County Cork), suggesting that they were worn as pendants. They appear to be primarily associated with men and have been interpreted as indicating prowess in hunting (cf. Mount and Buckley 1997). They have also been found with male infants and it has been suggested that, in these cases, they are likely to be heirlooms. If we imagine a slightly less direct correlation, where hunting may have come to indicate male virility or a similar quality, they may have been used more broadly to refer to maleness.

### 6.3.8. Amber

The rarity of amber in Ireland prior to the later Bronze Age is striking, especially given the quantities that evidently circulated in Britain, especially Wessex, during the earlier Bronze Age (Beck and Shennan 1991). Four amber beads found at a stone circle in Kiltierney, County Fermanagh appear to have been Neolithic (Daniells et al. 1977). Of an EBA date there are the beads from the ‘Tara boy’s’ composite necklace (burial 30: discussed further below), County Meath, one survives from the reported burial in Knockane (Castlemartyr), County Cork (Day 1899; Cahill 2006, note 11) and there was reputedly one from Dromara, County Down (Waddell 1990, 76-77).

The Knockane burial is one of a number of rich burials from the Cork region (Cahill 2006); a trapezoidal gold foil cover also survives, which was apparently only a small part of the gold that ‘covered the skeleton’. The bead is described as ‘mitre-shaped’ and appears to be a piece of naturally shaped amber simply perforated and, as Cahill (2006, 271) notes, is perhaps best paralleled in the Exloo necklace (Haveman and Sheridan 2005/2006). The Knockane gold is best paralleled in the Sparrograda disc, also from Cork and, together they and related rich burials are generally seen as late in the EBA and emulations of Wessex fashions (Cahill 2006); however, it is also possible to view them as an intermediary goldworking tradition filling the gap between earlier Irish gold-working and the later Wessex tradition (Needham 2000).
There is also an amber dagger hilt from Liscahane, County Cork, found with sherds of encrusted urn (Power 1997, 155). The Dromara bead from County Down was found with a large urn, possibly a vase urn, and a biconical miniature vessel (Waddell 1990, 76-77; Brindley 2007, 234).

Spacer-plate necklaces of amber are a classic grave find from a series of elite southern English graves conventionally labelled as ‘Wessex 1’ which would seem to centre on the eighteenth/nineteenth centuries cal BC (Sheridan 2008b). These are very closely paralleled with beads found in Mycenaean graves (Harding 1974), which appear, however, to be later in date (Hughes-Brock 1998). There, they first occur as large collections in a restricted range of graves and then later in smaller numbers in a greater range of graves. Hughes-Brock (1998, 265) interprets this as ‘a trickling down the social scale through gifts of a few beads at a time as rewards from lord to vassal, marriage gifts, heirlooms, robbers’ loot, the salvaging of beads from tomb floors at funerals and so on’ and allows that they might also have sometimes been exchanged or bartered.

6.3.9. The Tara combination necklace

The Tara necklace was found with the crouched inhumation (b30) of a fourteen-year-old boy buried in a pit cut into the Mound of the Hostages, a Neolithic passage tomb (O’Sullivan et al. 2005, 177-182). The boy was laid out on his left-hand side with his head to the southwest. He was wearing the necklace and had a bronze razor and awl placed at his feet. The surviving necklace now includes four segmented faience beads, eight tubular sheet bronze beads, three amber beads, one jet bead and one bone bead (Fig 6.1). However, there appears to be two amber beads missing and the bone bead may not have been found with this burial. Not counting the bone bead, there would have been a total of eighteen beads. There was some confusion as to the bead material in the field notes, but a number of those records, combined with O’Sullivan’s observations, can be expanded upon to suggest a putative reconstruction.

- As O’Sullivan noted, no two faience beads lay next to one another; so it appears they were spaced out along the necklace.

133 The age and sex were recently confirmed by Laureen Buckley (pers. comm. after Haveman and Sheridan 2005/2006, 129)
• The jet bead and the largest amber bead, along with some faience and tubular bronze beads, were positioned under the lower mandible. As the two bulkiest beads in the necklace, and given their location, it seems reasonable to suggest that these either formed a focal point at the front of the necklace or flanked one made of some perishable organic material. From the perspective of the inhumation, the jet bead would have lain to the left and the amber bead to the right.

• From the plan it is evident that the four beads, which rest on the jaw, must have been on the left-hand side of the body extending away in that direction from the beads which may have formed a focal point at the front. They appear to comprise two tubular bronze beads followed by a small amber bead followed by a tubular bronze bead. An amber bead positioned at the end of that tubular bronze bead would appear to have come next in the sequence. Just southwest of that, a faience bead and tubular bronze bead appear as if they must also have lain on top of the body. Given their position, it seems most reasonable to suggest the faience bead came next in the series and the tubular bronze piece after that. Thus we have a putative series of seven beads extending away from the jet bead.

This combination of these materials in one necklace has no parallel in Ireland. It does have close parallels in England, however, where such collections occur in a recognisable horizon during the first half of the second millennium (Sheridan 2008b). Sheridan (2003c) has referred to the wearing of these combination necklaces as ‘supernatural power dressing’. The most common elements to be combined in such necklaces are jet, amber, faience, and Kimerage shale, while ‘wood, bone, animal teeth, sea shells, fired clay, bronze, tin, various types of stone, and natural geological freaks such as fossil encrinites’ and even a stalactite/stalagmite have been used (Sheridan 2008b). Their distribution is biased toward Wessex (Beck and Stone 1936; Gerloff 1975, 197-234), where over 20 examples are known, but there are examples known from elsewhere in England (Sheridan 2008b), northern Wales (Lynch 1974, 24) and Exloo in the Netherlands (Haveman and Sheridan 2005/2006). Sheridan and Shortland (2004), and others (Needham 2000), view the Wessex examples as an elite Wessex fashion and the wider distribution as an emulation of those fashions by local elites linked together.
through a Wessex-controlled tin trade and the ‘socio-ritual attraction of Stonehenge and its environs’ (Sheridan 2008b). However, despite the similarities in the necklaces, the Tara burial and some of the other distant examples, do not conform to Wessex fashions in a number of ways. Firstly, the Tara burial was an inhumation and male; most of the Wessex and other English examples were found with cremated remains that, when identifiable, were women.\(^{134}\) The Welsh composite necklace (Bredd Branwen)\(^ {135}\) was also found with a male and the Dutch example (Exloo) was not found with a burial at all, but rather deposited in a bog.

A probable crouched inhumation did accompany a thirteen-bead composite necklace found in a pit grave at the edge of a barrow in Cossington, Somerset (Sheridan 2008b). The skeleton had disintegrated but it appears likely that it was a crouched inhumation buried on its left side. The necklace is of particular interest because five of its beads were found articulated and the stringing can, on that basis, be postulated with more certainty. It seems that the faience bead was centrally placed; it was flanked on either side by the jet and shale fusiform beads and then in turn by five amber beads on either side. The amber beads from the Tara necklace are probably best paralleled in this and a few other southern English necklaces (Sheridan 2008b, 84). Sheridan points out that these also have parallels in Wessex and considers it likely that they came via Wessex, with an ultimate origin in Denmark (Sheridan 2008b, 85).

The only tubular bronze beads known from Ireland are those from the Tara combination necklace. However, the rate of survival of such small sheet objects through cremation and taphonomic processes would not be likely to have been high and there may have been others. There are a number of comparable objects from burials from Britain (Shepherd and Shepherd 2001, 122) and the continent (Haveman and Sheridan 2005/2006, 125).

\(^{134}\) Gerloff (1975, 197-198) has divided the Wessex ‘female burials’ into two groups: the ‘Wilsford series’ and the ‘Albourne series’. The Wilsford series is particularly rich and characterised by the inclusion of sheet-gold etc. These include cremations and inhumations; however, the Tara burial does not match the ‘richness’ of those burials. The Albourne series is less rich but can still contain sheet-gold, amber, shale, faience etc. In terms of grave-goods these are roughly comparable to the Tara burial but are all cremations.

\(^{135}\) Male skeleton dated to 2040-1690 cal BC (GrA-19652 3540 ± 60) (Sheridan 2008, 88)
Such composite necklaces were in use from the twentieth/nineteenth to the fifteenth century cal BC. The Tara necklace, the (Amesbury) Solstice Park necklace and probably also the Cossington necklace belong to the latter part of that dating framework (Sheridan 2008b, 87).

The Tara, Bredd Branwen and Exloo necklace are probably evidence of connections with Wessex. However, this should not be characterised as simple emulation. The way in which these items were used may have been subverted to the purposes they played in local power negotiations. It also seems unlikely that metal workers in Ireland would have had to obtain tin through Wessex, or Tara for that matter. Tin was used in Irish metalwork from c. 2200 cal BC and was widely used by c. 2000 cal BC, yet evidence for Irish contact with Wessex is relatively thin. There is evidence for more consistent interaction between the hubs of metal exchange: Ireland, Cornwall, Wales, Scotland and northern England; one neatly illustrated by the distribution of lunulae. Wessex may have controlled the flow of tin to the continent but, if so, this is likely be a relatively late EBA development and it seems unlikely that it managed to control more local networks of exchange.

6.3.10. Gold bead from near Tullamore

A gold button cover was found with the cremated remains of an adult woman and a child, aged between seven and eight, near Tullamore, County Offaly (Moloney 2011). The burial was in a simple pit and also contained some traces of melted copper, cattle bone and an antler awl. A sample of the bone was radiocarbon-dated to 1776-1601 cal BC.136 The button cover is of a Wessex type and may have encased a shale, jet or amber bead; it had not been burnt and must have been removed from the button and then included with the burial. The button cover is of a type generally considered as an indication of high status; however, the interment in a simple pit, seemingly unmarked (although a mound may have been removed) does not necessarily fit with that interpretation. The site is situated near a tributary of the River Brosna, which in turn feeds into the Shannon. That tributary also passes close to the River Barrow giving easy access all the way to Waterford. In that regard it is located not far from what was presumably an important portage route. This find does seem to indicate a Wessex connection and it would be very

136 At 2 sigma, no lab ref given (Moloney 2011)
interesting to see if the remains were suitable for isotope analyses, but it is important to stress its rarity.

6.4. Discussion and Conclusions

This study of beads makes two important contributions to our understanding of exchange in Chalcolithic and EBA Ireland. The first is on the shifting meaning and value of objects both within burial contexts and during their previous object biographies. The second is a further insight into the geographical extent and direction of exchanges.

6.4.1. The meaning and value of beads and buttons, both within burial contexts and during their previous object biographies

The identification of the materials, from which the varied beads and buttons found in Chalcolithic and EBA graves were made, indicates the exchange of materials, and/or objects. The style and arrangements of those beads indicate shared ideas, also likely maintained through exchange. However, interpreting the value and meaning invested in objects during exchange, or deposition, is far from straightforward. Adornment with beads, or its lack of, can portray many varying messages. For example, the Uduk of Eastern Sudan during periods of mourning, displacement or sorrow, go relatively unadorned regardless of their position in society (Sciama 1998, 18). Furthermore, the meaning invested in objects can go through numerous transformations during their respective biographies, at least one of which may have occurred during their deposition, and may vary among participants/observers. Although they may sometimes do, objects in burials should not simply be assumed to reflect elite status. Parker Pearson’s (1982) study of historical burials in Cambridge shows how, while funerary practices can be an arena for conspicuous consumption, this is not ubiquitous and can change over time. In the case of the beads deposited in burials during the Chalcolithic and EBA in Ireland a more diverse set of motivations also appears to be signified.

There is structured patterning evident in the beads and buttons found in the Irish Chalcolithic and EBA funerary record. Although the record is not entirely consistent, bead necklaces are predominantly found with women and V-perforated
buttons with men and this fits with the general pattern observed elsewhere, such as in Britain (Sheridan and Davis 2002).

During the Chalcolithic some women were afforded special burial (see chapter 7); however, these were not accompanied by bead necklaces or lunulae, their golden equivalents. Only two relatively complete crescent-shaped jet necklaces have been found in Ireland (Comber and Rasharkin). These and other jet objects originated in Whitby, Yorkshire and would appear to have arrived via Scotland; the easiest route and one marked by shared pottery styles and the deposition of crescent-shaped jet necklaces with female burials. The Comber and Rasharkin necklaces were not found with burials. The necklaces could have arrived on exchanged marriage partners, but they were deposited in accordance with local Chalcolithic practices. A consistent lack of burial goods is most likely to occur because of a society’s system of beliefs. In Southern Africa ‘the ‘/Xam, for example, seem to have buried their dead without grave goods and Ju/'hoansi children and some Ju/'hoansi adults were similarly treated. Ju/'hoansi believed that spirits had no physical needs and wanted nothing from the living, although they came to earth to enter human affairs’ (Wadley 1997, 121).

Certain colours are likely to have had a special significance. The focus on red and black (and dark grey), seen in Irish bracers, is also reflected, if less strongly, in V-perforated buttons. Red, because of its obvious association with blood, is often associated with life, or conversely with danger. Among the Khoe of South Africa the colour red is generally associated with women and with blood especially of the menstrual cycle (Anderson 1997). Among the Griqua, a Khoe group from the southwestern Cape, strings of mostly red beads are associated with girls undergoing their menarche and associated rites of passage to womanhood (Anderson 1997, 55). It was also ‘the favoured colour of glass trade beads, which were given to females by Khoe males’ (Anderson 1997, 56).

The relatively few necklaces of jet and other materials recovered from burials are likely later in date and predominantly associated with women: Keenoge, Oldbridge, Caltragh 1 and Altanagh. The first two of those necklaces (Keenoge and Oldbridge) have beads in different states of preservation and likely of different origins; and missing beads split from the third necklace (Caltragh 1) were found in a later burial
nearby. As collections of beads were split, recombined and exchanged, they are likely to have passed through several spheres of exchange and been valued in different ways. There are several ethnographically known cases where, because of rarity, beads which during one phase of their lives operated as numeraires (trade tokens or counters) were removed from the sphere of economic exchange ‘to become ancestral property, only changing hands as bridewealth, or validating claims to royal and aristocratic status’ (Sciama 1998, 38). We might imagine many such processes where the age, or specific life history of a bead, or collection of beads, might lead to it being transferred from one sphere to another.

In the case of the Caltragh beads, while it is unfortunate the sex of the second person could not be determined or that the dating could not be tighter, we get an unprecedented look into the ways in which heirloom objects may have been passed on. The overplaying of the role ancestors in European prehistory has been criticised (Whitley 2002). However, ancestors are venerated in many societies (e.g. Steadman et al. 1996) and many plausible attempts to draw analogies from such examples for European prehistory have been made (e.g. Parker Pearson 2000; Parker Pearson & Ramilisonina 1998a; 1998b; Parker Pearson et al. 2007).

In the case of Tara boy, the only clear case of a necklace being deposited with a man, the ambiguity created by placing an elsewhere female object in his burial, may have further reinforced the concept of ‘supernatural power-dressing’. Such liminal transgression, which could be termed supernatural cross-dressing, is practiced by religious specialists in many societies (e.g. Petra Ramet 1996, 4-5).

Single beads deposited in burials, such as the spacer plates from Longstone and Derrycraw, are often highly worn and are likely to have been heirloom objects passed down and perhaps exchanged through generations. Any ideas of the intentional storage of wealth in these objects seem an inappropriate imposition of modern economic strategies; they are more likely to have been valued as magico-religious objects and at least under normal circumstances to have circulated in a separate sphere.137 Where faience beads have been found in Irish burials they generally occur singly or in very small numbers. These may be token inclusions of

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137 Like a wedding ring, heirlooms can end up being used in purely economic exchanges in times of famine or other social stress, but such cases are a transgression of normal behaviour.
larger necklaces, originally belonging to either the deceased or one of the mourners. The case of the largest find of faience from Britain or Ireland, that from Moray in northeast Scotland, is instructive in that it accompanied what is perhaps one of the saddest events a community might have to struggle with, the death of a young woman and child. Other than the faience there was no indication that the burial was of particularly high elite status. Clearly motivations, other than expressing wealth, status, or negotiations of power, could also play a role in what was deposited with burials.

6.4.2. Further insight into the geographical extent and direction of exchanges

The majority of jet deposited in burials in Ireland was deposited with Bowl Tradition users, further evidencing strong connections with Scotland, through which jet would appear to have passed en route from Whitby. In Scotland, jet V-perforated buttons are predominantly found associated with Beakers in the north-east, while in Ireland they occur with Bowl Tradition pottery. Crescent-shaped jet necklaces in Scotland mainly occur in burials of Bowl Tradition users, while those few that reached Ireland were treated differently, at least in deposition. Employing an early processual model (cf. Renfrew 1975) one might interpret the distribution of V-perforated buttons as evidencing direct contacts between elite exchange peers in north-eastern Scotland and Ireland that bypassed intermediary Scottish Bowl Tradition users. While this remains a possibility, it is not the only possible interpretation and the problems of ‘equifinality’ remain (Hodder and Orton 1976). Such a distribution could simply be the product of differing depositional practices. There is no reason to suppose that intermediary groups, who evidently had access to jet (in the forms of the crescent-shaped necklaces), did not procure jet V-perforated buttons. In other cases where differential distributions are more clearly marked, such as the Wessex amber in the British EBA (Beck and Shennan 1991; Shennan 1993) and amber in the Irish LBA (Eogan 1999; Ó Maoldúin forthcoming-a), such models may be more applicable.

The second wave of faience deposition, that accompanies Cordoned Urns is evidence, of continued interaction between Ireland and Scotland and further marks north-eastern Scotland as an exchange hub. The occurrences of faience in
Wexford and Wales may mark a distinct earlier phase of use in the Irish Sea zone and the initial appearance of the technology.

The role of the Wessex elite in the trade/exchange of Irish gold with the continent (Piggott 1938, 94) was certainly overplayed in the past. There is, as Clarke et al. (1985, 127) point out, very little Irish gold found in Wessex. In more recent times, various authors (e.g. Sheridan 2003c) have instead substituted this with the trade of Cornish tin, but there is arguably even less compelling evidence that Wessex elite had control of the tin trade. I would agree with Needham’s (2008b) contention that the wealth evident in the Wessex region was more likely due to the eminence of Stonehenge as a ritual centre, than to a Wessex elite’s role in metal exchange. The hub of metal exchange was a Cornish, Irish, Welsh and Scottish milieu, one that was equally connected with exchange partners on the continent and was not mediated by Wessex. The earliest occurrence of faience in Ireland and Britain, on either side of the Irish Sea supports the idea that this exchange network continued beyond the Chalcolithic into the EBA. Indeed, the idea of Wessex as a ‘unified geo-cultural zone’ has recently been questioned. Needham and Woodward (2008, 38) have for example indicated the different connections suggested by the finds in coastal and inland Wessex, with the objects from Clandon barrow typifying the connections of the coastal area. The search for Wessex connections was part of what led to the recent isotope analysis carried out on ‘Tara Boy’s’ remains (Sheridan et al. 2013); it turned out he did not grow up on the chalks of southern England (his origin remains non-local but uncertain), but the Wessex-centric view of the Bronze Age of such research is evident.
Chapter 7 The role of exchange in the diffusion of an idea: A fresh look at the origin and distribution of wedge tombs

while... migration theories are regarded as out-dated explanations of culture change, it is worth revisiting the ‘Breton colonists’ model to consider... explanations to why Beaker Pottery, wedge tombs, and metallurgy were introduced to Ireland around the same time (O'Brien 2012a, 215)

Figure 7.1 Parknabinnia wedge tomb, Roughan Hill, County Clare

7.1. Introduction

The previous three chapters have focused on artefact types; metals, ceramics and beads of various materials. This chapter will focus on a monument type, wedge tombs. Since they were identified as a distinct class of monument the question of their origin has been central to opposing narratives of the Irish Late Neolithic and EBA. Some authors have argued that their origin lies in Brittany (e.g. de Valera and Ó Nualláin 1961; 1982), whereas others (e.g. Cooney and Grogan 1994, 84; Flanagan 1998, 91-94) have argued for a solely indigenous development. It is a debate that has intertwined with those on the origins of the Beaker phenomenon and metallurgy, and one that has been influenced by shifting theoretical paradigms, but on which major textbooks are still largely equivocal (Waddell 2010, 109). The aim of this chapter is twofold; to review afresh the evidence for an external or
insular origin and to consider the role exchange may have played in the diffusion of the ideas behind their construction.

7.2. Method and Theory

According to de Valera and Ó Nualláin (1961; 1982) the origin of wedge tombs was traceable to the *allées couvertes* of Brittany, and the earliest Irish tombs should be in southwest Ireland, where Beaker-using metal prospectors from Brittany first landed. This was how De Valera and Ó Nualláin explained the origin of all tomb types, arriving with successive waves of migration or invasion and then diffusing elsewhere while losing or gaining new typological traits. Their ideas stem from a time when culture-historical models were in the ascendancy, and migration, invasion and diffusion were the favoured mechanisms to explain cultural change. Internationally, such interpretations have been out of favour since the rise of processualism in the 1960s and subsequently the advent of post-processualism in the 1980s (Kristiansen and Larsson 2005, chapter 1). In an Irish context, Waddell’s (1978) seminal article, debunking the narrative of successive invasions to explain change in Irish prehistory, largely marked the abandonment of such models here and since that time many authors have argued for a solely insular origin (Cooney and Grogan 1994, 84; Flanagan 1998, 91-94; Springs 2005; 2009); however, like the earlier cultural-historical interpretations, these later interpretations are open to the criticism of being constrained by their contemporary paradigms. They stem from a time when processual and post-processual models focused so entirely on internal dynamics, and meanings, that it was difficult to include any external impetus to considerations of cultural change.

It is worth noting that Ó Nualláin (1989) and Burl (2000, 263) remained convinced of the Breton origins of Irish wedge tombs and other authors subsequently agreed (ApSimon 1986a; Shee Twohig 1990), or remained rather equivocal on the question (O’Brien 1999; Waddell 2010, 109; Brindley and Lanting 1992). Recent scientific advances, in particular isotope analysis, have rekindled an interest in population movement and in a Chalcolithic/EBA context the recognition of the Amesbury Archer’s probable life history (Fitzpatrick 2011) has been particularly influential. However, isotopes only move with individuals, do not survive into subsequent generations and, combined with the paucity of burial evidence, may miss or
wrongly suggest substantial movements of people. Such data needs to be carefully considered and dialectic theoretical perspectives which allow for a combination of migration, movement through established channels of exchange, transmission of cultural traits and indigenous developments are required.

One such recent approach is Kristiansen and Larsson’s ‘intercontextual archaeology’ where, rather than simply trace random similarities in material culture, they attempted to trace the transmission, adoption and transformation of social institutions (Kristiansen and Larsson 2005, 4-31) (see chapter 2). A similar attempt to trace the structured transmission of a symbolic package that might represent a social institution is considered here, but first it is necessary to review some previous arguments about wedge tomb origins.

7.3. The chronology of wedge tomb construction

De Valera and Ó Nualláin (1982) postulated a point of arrival in the peninsular southwest, because to their eyes the coastal distribution of wedge tombs in that region suggested landfall and its proximity to France made it a natural point of arrival. Such a model would require the earliest wedge tombs to be in the southwest but others (Waddell 1974; O’Brien 1999) countered that rather than the earliest dates coming from the south they appeared to come from the north. However, the most recent modelling of those dates now suggests that the construction of wedge tombs began rather suddenly and at broadly at the same time in northern and southern Ireland (Schulting et al. 2008).

One of the reasons Ó Nualláin suggested that the stimulus for constructing wedge tombs was likely to have come from abroad was the chronological break between the construction of earlier Neolithic tombs and wedge tombs in Ireland. In the allées couvertes of Brittany he saw a Neolithic monument of similar architecture in which deposition had continued through the Late Neolithic and into the EBA. Others had argued that wedge tombs had indigenous Neolithic origins, discernible in occasional finds of Neolithic pottery (Herring 1938; Herring and May 1940; O’Kelly 1959), or that wedge tombs were introduced from Brittany at a considerably earlier date (ApSimon 1986a; 1986b). Recent reviews of the available dating evidence (Brindley and Lanting 1992; Schulting et al. 2008) have dismissed
the evidence of Neolithic material in wedge tombs and place their earliest construction in the Chalcolithic (c. 2540-2300 cal BC); however, it should be noted that this modelling ‘makes the crucial assumption that the available sample is representative’ (Schulting et al. 2008, 12). Only a relatively small number of wedge tombs have been excavated (37 of 540) and, in the region, where they are densest, County Clare, none have been excavated. Statistical modelling accompanying the most recent review of the dates (Schulting et al. 2008) also indicates that the onset of their construction occurred at broadly the same time as Beaker pottery and metalworking arrived in Ireland. To its authors this suggests support for a combined external origin (Schulting et al. 2008, 12 & 15).

A review of Irish court tomb dates (Schulting et al. 2012) also suggests that these were constructed during a tighter chronological band than previously thought (c. 3750-3570 cal BC) and only after a significant gap of several hundreds of years were they commonly reused in the Chalcolithic and EBA. This later deposition in Neolithic monuments after a significant gap is not restricted to court tombs and similar practices are recorded from within passage tombs (O’Sullivan et al. 2005; Bayliss and O’Sullivan 2013), portal tombs (Kytmanow 2008) and Linkardstown tombs (Brindley and Lanting 1991). It is also a practice that has contemporary parallels in Britain (Bayliss et al. 2007). At present the only exceptions to this, where the deposition of human remains continued into the third millennium BC, are in the west of Ireland, in County Mayo and County Clare (Schulting et al. 2012). Perhaps significantly, the Clare site at Parknabinnia (Jones 2003) is situated among the densest concentration of wedge tombs in the country (Jones and Walsh 1996).

The only date for material from a wedge tomb in the Burren, or County Clare, is from cremated human remains hand-collected from Baur South wedge tomb. This returned a date of c. 2033-1897 cal BC (Grant 2009); however, we cannot be sure that this represents the initial use of this monument. Clearly to establish whether the earliest tombs were in the south, north or around the Shannon estuary more excavation would need to be undertaken, especially in areas such as the Burren in County Clare.

It is important at this point to note that the re-emergence of megalith building in Ireland during the Chalcolithic was not an isolated phenomenon; communities in
eastern Scotland built Clava Cairns (Bradley 2000), and in Cornwall and the Scilly Isles entrance graves (Ashbee 1972; Cunliffe 2013, 230-231). The architecture of these tombs is distinctively different; however, they are all areas with which communities in Ireland appear to have been engaged in particularly intense exchange (Waddell 1991/1992). Bradley (2007, 175) has suggested that the rituals at ‘the stone circles of northeast Scotland, Clava Cairns, four-posters, wedge tombs and some of the stone alignments found on the west coast of Scotland’ suggest they are all a related phenomenon. Bradley (2009) has also recently identified a few examples of wedge tombs in the Outer Hebrides of Scotland.

### 7.4. Architecture, orientation and distribution

There is remarkable consistency in the orientation of wedge tombs. They are invariably aligned with the wide and high edge of their wedge facing to between south and northwest, and are predominantly orientated to the southwest, thus suggesting a concern with alignment of the setting sun (O'Brien 1999; Jones 2007). A small number may also be orientated on significant Landscape features, such as Bull Rock in southwest Cork (O'Brien 2002) and Mizen Peak, again in southwest Cork (O'Brien 1999, 81).

The architecture of wedge tombs is also remarkably consistent, especially when compared to earlier Neolithic tombs; however, within that consistency considerable regional variances are still discernible (de Valera and Ó Nualláin 1961; 1964; de Valera and Ó Nualláin 1972; de Valera and Ó Nualláin 1982; Ó Nualláin 1989; Cody 2002) and excavation has shown how different the histories of even relatively closely situated tombs can be (O'Brien 1999, 192).

In the north, wedge tombs tend to have longer galleries and covering cairns are more likely to be U-Shaped, while in the south they tend to be simpler and shorter structures (Cody 2002, 282); however, tombs of the more typically northern shape are also found in the south, for example at Island, County Cork (O'Kelly 1958b). Jamb segmentation is also relatively common in the north, but rare in the south and completely absent from Clare and Tipperary (Walsh 1995, 122). Septal stone and portico combinations are relatively common throughout most of the distribution, but rare in northwest Clare and the peninsular southwest (de Valera
and Ó Nualláin 1982, 106; Cody 2002, 284). Single closing stones are most common in Clare, divided entrances (or ‘split portals’) are most common in the North and entrance jambs most common in the north Cork (Walsh 1996).

In northwest Clare tombs tend to be simple single chambered structures, whereas in east Clare they more commonly have porticos (de Valera and Ó Nualláin 1961, 101-106); however, we must be mindful of geological influence and, as de Valera and Ó Nualláin noted, the side slabs in northwest Clare often project beyond the end slabs creating what could be considered a portico. The distinctive box-like appearance of tombs in Clare is also, to some extent, likely to have been geologically determined (Jones 2004b, 66). Other regional variations particular to the Burren are the occurrence of overlapping double closing stones, interpreted by Walsh (1995) as a door feature, and possible ‘opes’ flaked into stones to the rear of the tombs (de Valera and Ó Nualláin 1961).
In Sligo, Ó Nualláin (1989, 109) noted a number of oval ground plans, the deliberate employment of larger stones at the west end of the galleries and outer walls, and that impressive frontal façades were common.

In Donegal, Cody (2002, 282) noted that a small sub-group on the Inishowen peninsula had galleries that converged from the front to mid-way along their length, from where they continued parallel to the rear of the monuments.

Combined, these differences led de Valera and Ó Nualláin (1964, 120-121) to architecturally group wedge tombs in several regional groups: one covering northwest Clare, west Mayo and west Galway; another stretching from southeast Mayo, across east Galway, east Clare and Tipperary; a third from northeast Mayo to Sligo and across Ulster; and the fourth in the peninsular southwest of Ireland (Fig 7.5).

There are very specific links between tombs within the aforementioned groups; such as the lack of portico combined with slabs creating a façade at Parknabinnia and Ballyanner South tombs in Clare linking them to Ballynastaig tomb in County Galway; however, not all the tombs in the Burren or west Galway have these features and very few survive to an extent where it is possible to tell. Clearly de Valera and Ó Nualláin’s belief of how tombs diffused may have influenced their grouping of tombs. One could try to plot all varying architectural features; however, that is beyond the scope of this study and in any case would likely, due to the poor survival of many tombs, be of limited value.
Elizabeth Shee Twohig (1990, 57) suggested that it was in west Tipperary, east Limerick and the east Clare highlands that wedge tombs most closely resemble *allées couvertes* (see architectural similarities below), and that if one were to accept the Breton origin, the Shannon estuary would be the most likely point of arrival/entry. This model would see a subsequent two directional spread of wedge tombs, one north and the other south (ibid.). The only wedge tombs excavated within this region are Baurnadomeeny, County Tipperary (O’Kelly 1959) and Lough Gur, County Limerick (Ó Riordáin and Ó h-Iceadha 1955); the former of which is not
firmly dated and the latter of which is within the early part of the early dates recognised in the recent review, but matched by Largantea in the north and Labbacalle in the South (Brindley and Lanting 1992).

7.5. An indigenous development?

Those in favour of an indigenous origin for wedge tombs point to shared architectural features with earlier megalithic tomb traditions in Ireland, particularly court tombs (Cooney and Grogan 1994, 84; Springs 2005; 2009; Harbison 1988).

The cairns of court tombs do often present an overall wedge-like trapezoidal shape and they do share significant architectural features with wedge tombs, most particularly pairs of jamb stones (Waddell 2010, 109). These distinctive chamber markers, sometimes combined with a sill stone, are (as mentioned above) not found within the allées couvertes of Brittany, but are found in both court and wedge tombs. In wedge tombs, jamb segmentation is most common in the north, where court tombs are also most common. There is, however, a number of mechanisms through which such features might have been taken on by wedge tomb builders. Court tombs were constructed during the Neolithic, in what now appears to have been a rather tight chronological band (Schulting et al. 2012). Chalcolithic and Bronze Age artefacts from the interior of court tombs in the north (Herity 1987, 154) provide evidence that communities re-entered the tombs, long after their construction and after an apparent lapse in activity, and could have been influenced by their architecture. It is the areas without court tombs (such as the southwest) or with court tombs that show no evidence of having been re-entered at this time (Clare/Tipperary) that wedge tombs do not have jamb stones.

In a study of the Sligo and Mayo court and wedge tombs, Springs argued for a continuity of populations based on the similar siting of tombs, burial practice, grave goods and potentially ‘genetically linked’ persons (Springs 2009, 2); however, from a reading of his thesis, only the first of these (similar siting) can be sustained. Within his study area court tombs are the most likely tomb type to be located near a wedge tomb. This is statistically significant when compared to passage tombs, which cluster in areas not coterminous with the other tomb types, and is a pattern that is clear from the wider distribution and siting of passage tombs; however, as...
he freely admits, the low number of portal tombs in his study area render
comparisons with that tomb type of little value (Springs 2009, 98). The Sligo/ Mayo
region is an area with a high number of wedge and court tombs. If Springs had
conducted his research in Cork or Kerry, where there are no court tombs, would it
have proved the negative of his thesis? What is of interest, in his statistical
analysis, is the increase in the correlation between wedge and court tomb
distributions when clusters only were examined (Springs 2009, 136). This does
suggest wedge tomb communities did concentrate in the same general areas as
court tomb users, a pattern also recognisable in Ulster (Clarke 2006) and in Clare
and Tipperary, where there are very few court tombs.

The most significant differences between tombs of the court and wedge traditions
are their orientation, size and the presence of the court in court tombs. Court
tombs are predominantly orientated to the east, but this does vary and there are
some examples, particularly in the north-east (e.g. Ballymacaldrack, County
Antrim), that are orientated to the southwest. Court tombs are frequently much
larger than wedge tombs and in that regard, portal tombs, which also have a
wedge-like shape, are a closer match. Indeed, distinguishing between a portal and
wedge tomb in the Burren, where they both can have a box-like appearance, can be
a difficult task; however, court tombs also vary in size and there is considerable
overlap. Although a levelled area has sometimes been noted to the front of wedge
tombs, the absence of a court marks their architecture and presumably the
associated ritual practice, as significantly different from that of court tombs.

A regional variety of court tomb, with very narrow, straight-sided courts occurs in
counties Clare and Tipperary. There are three (possibly four) of these in Clare
(Jones and Walsh 1996; Jones 2003) and one in Tipperary (O’Kelly 1958a). They are
all located in areas with later clusters of wedge tombs and arguably present a
closer architectural prototype for wedge tombs than court tombs elsewhere. The
similarities between the plan of the excavated court tomb at Shanballyedmond,
County Tipperary (Fig 7.6a) and the excavated wedge tomb at Island, Co Cork (Fig
7.6b) are particularly striking. Apart from the jamb stones, the main differences
here is the orientation; Shanballyedmond is easterly facing and open, Island is westerly facing and was apparently closed off.138

It should be noted that Brindley and Lanting (1992, 21) considered Island and Shanballyedmond multi-period constructions with the second phases occurring in the MBA and, according to this reading, it would be that later remodelling that give them their similarity.

7.6. A possible Breton connection?

7.6.1. Allées-couvertes

As mentioned before, those in favour of the Breton connection point to the allées-couvertes tombs; these they argue are architecturally similar, share features such as double walling and antechambers, and occasionally face west or southwest and continued to receive depositions into the Chalcolithic (ApSimon 1986a; 1997; de Valera and Ó Nualláin 1961; 1982; ApSimon 1986b). However, Burl has argued that the closest connection is with another group of tombs in Brittany, the Sépultures en V, such as Liscuis 1 in the centre of Brittany (2000, 263). Those in favour of an indigenous origin, argue that the Breton allées-couvertes tombs are rectangular rather than wedge shaped, are usually orientated to the east (L’Helgouach 1965, fig 110) and that no supporting evidence for a connection has been found in the excavation of any the south-western wedge tombs (Waddell 1978). De Valera and Ó

138 Indeed Shanballyedmond has often been referred to as a wedge tomb (O’Kelly 1958, 14).
Nualláin (1982) did counter that they did not agree with the normally held orientation of *allées-couvertes* and that a number of wedge tombs did not conform to the other specifications either. Apart from looking at the only partially illustrated catalogue by L’Helgouach (1965), much of this argument appears to have continued without any real examination of the architecture or associations of the French tombs, so for the present study, a short sojourn to Brittany was required.

At Liscuis there is a small cluster of three tombs, one *Sépultures en V* and two *allées-couvertes*. All were excavated in modern times (Le Roux 1976; Le Roux 1984) and it is the site that Burl indicated as having a close parallel for wedge tombs, so it represents a good place for our discussion to concentrate.

Collectively their use spans the period from c. 3950 to 2150 cal BC. They are located only 6km west of the dolerite axe factory near Plussulien; the products of which made up 40% of all of Brittany’s axes and were exchanged as far away as the Paris basin and southern Britain (Patton 1993; Cunliffe 2001, 201). Burl argues that unlike the sometimes rectangular, ungraded *allées couvertes*, *Sépultures en V* such as Liscuis 1 are trapezoidal, graded and have terminal cells in common with some wedge tombs. Burl, L’Helgouach (1965) and Le Roux (1984) also view it as orientated to the southwest. Liscuis 1 is somewhat different to other *Sépultures en V*, which are otherwise all orientated to the southeast (L’Helgouach 1965, 193). It is also clearly closely related to the two *allées-couvertes* at Liscuis, Liscuis 2 & 3, and Burl (1985, 36-39) suggests it maybe an intermediate form between *Sépultures en V* and *allées-couvertes*.

As Burl points out Liscuis 1 is, ‘slightly V-shaped’ (Fig 7.7). However, I would disagree with his contention that it is orientated south-southwest; what he describes as a terminal cell at the east-northeast end, I would consider a portico blocked off from the chamber by a septal stone (Fig 7.7-8). The tomb is certainly higher and wider at the east-northeast end and there are the apparent remains of a façade at that end. Liscuis 1 is, according to radiocarbon dating of charcoal, the

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139 They are all wider and higher to the northwest and depending on how one views their orientation one could say they are all orientated in that direction.
140 Burl is following the typical French interpretation here, de Valera and Ó Nualláin (1982, 119) would appear to have viewed them as I do.
earliest of the three tombs (c. 3950 cal BC) and therefore the least likely to be related to wedge tombs.

Figure 7.7 Liscuis 1: a) Facing west northwest, b) Facing northeast, c) looking southwest

Figure 7.8 Liscuis 1: excavation plan (from Le Roux 1984, 38)

Liscuis 2 and 3, on the other hand, are generally interpreted as facing north-northeast and east, respectively. Liscuis 2 is rather sinuous in plan with the main

141 Burl’s (1985) guidebook mixes up Liscuis 2 and 3 (cf. Le Roux 1984)
chamber orientated north-south and a chamber to the south turning south-southwest and to the north northeast (Fig 7.9). It does rise toward the south and could be variously interpreted as being orientated in either direction. Two radiocarbon dates were returned for Liscuis 2, suggesting activity from around 3300 to 2900 cal BC (Le Roux 1984).

Liscuis 3 is oval-shaped in plan and normally interpreted as east-facing. Parallels for its oval outline could be sought in a number of Irish wedge tombs, such as Lisduff, County Mayo (de Valera and Ó Nualláin 1964) and Cabragh, County Sligo (Ó Nualláin 1989). Behind what is normally interpreted as the façade a triangular opening leads from a small cell, which is described as a vestibule (Burl 1985, 38), to the main chamber. In my opinion, this narrowed space is as likely to be the rear of the monument, and the so called ‘façade’ (Fig 7.10-11) is a flat kerb surrounding the heel of the monument. Although very close together, there is the remnant of a double wall at this putative rear and the kerb clearly splayed out from this point. It is definitely wider and higher at its west end and I would interpret it as west-facing. Following my re-interpretation, the so called ‘terminal cell’ could be described as a portico blocked by a septal stone. From Le Roux’s excavation plan one can also discern what might be interpreted as part of the façade heading south from the portico. The small triangular opening (Fig 7.9, b) does match a similar arrangement at the rear of Liscuis 2 (Fig 7.9, c). The Liscuis 3 example was
deliberately flaked into shape and likely provided a secondary access to the monument, but only for a hand, not for a person and can be paralleled by the ‘opes’ in the rear of wedge tombs in the Burren. Liscuis 3 produced the latest dates indicating it was in use from around 2900 to 2150 cal BC and in my opinion is a good parallel for Irish wedge tombs.

Figure 7.10 Liscuis 3: a) Facing south-southwest, b) Facing north-east, c) Facing south & d) excavation plan and section (L’Helgouach 1965)
Following my re-interpretation, the two later Liscuis tombs are actually orientated south-southwest and west and at Liscuis a chronological shift in the orientation of similar tombs from east to west can be traced. Furthermore, if one follows the logic that the monuments are orientated in the direction of the widest and highest end, like wedge tombs, many other allées-couvertes are orientated in the same direction as wedge tombs. Nevertheless, it may still be that some of those tombs were sometimes entered from the east. In Irish wedge tombs, where large septal or blocking stones predominate, such as west Tipperary and east Clare, and excavation has sometimes failed to find blocking stone to the east end (O'Kelly 1959), some authors have suggested that this may have been the case (Shee Twohig 2002, 53); however, as others have noted, this may not be original and have simply been the easiest way for subsequent users (or looters) to access the monuments (Walsh 1995, 122).

Whether one agrees with the French/Burl interpretation of the orientation, or with mine, the dangers of accepting orientations without examining tombs oneself are clear. At the very least one needs to examine a plan and photograph when comparing supposedly alike tombs. Other allées-couvertes that offer particularly
close parallels include a tomb at Kernic, Plouescat; a tidally submerged monument on the north coast of Finistère. Although it has not been excavated, SOM pottery (Late Neolithic flat bottomed pottery often described as flower pot-like), Beaker sherds, fibrolite pendants, flint arrowheads and blades have been collected from around the monument (Burl 1985, 65). It is orientated southwest, features double walling, a large ‘septal-like slab’ and a rectangular forecourt, and narrows dramatically towards its north-eastern end (Fig 7.12).

Figure 7.12 Kernic, Plouescat, France (photo Andy Richardson)

Cupmarks, c. 5cm in diameter, have been recorded on many wedge tombs, most commonly on the capstones (O’Sullivan and Downey 2010) and interestingly on similarly dated monuments in Scotland, such as Clava cairns (Bradley 2000, 6). The capstone of at least one allées couverte tomb in Brittany, Bot-er-Mohed, is covered in cupmarks. Fig 7.13 below shows the side of the broken capstone which caught the light best during a visit in December 2013. The monument is believed to date to between 3000 and 2500 cal BC and traces of separating walls were detected through excavation (Commune de Cléguérec information panel).

Figure 7.13 Cupmarks on Bot-er-Mohed capstone
Jamb segmentation does not occur in *allées couvertes* and is not common in any Breton tomb type, but can be found elsewhere in north France, such as in *Les dolmens angevins à portique* (L’Helgouach 1965, 217-221), a gallery tomb type most common in the east of Pays-De-La-Loire, inland along the Loire.

### 7.6.2. Beaker pottery and wedge tombs

The differences in the style between Beaker pottery in Ireland and Britain, have led several authors (Burgess 1979; Case 1995b) to argue for a direct Beaker contribution to Ireland from Atlantic Europe unmediated by Britain. The practice of placing it in megalithic tombs also contrasts with that in Britain and much of central Europe, where it was more commonly placed as complete pots in pits with crouched inhumations. Combined, these two arguments could be used to support a Breton origin for wedge tombs; however, Waddell (2010, 109) argues that the majority of Beaker pottery is found in the north of Ireland, not in O Nualláin’s suggested landfall in the southwest, and is either insular in style, or has more in common with British Beakers than Breton.

Beaker pottery is the most common pottery type found in wedge tombs (O’Brien 2002) and has been found in 12 cases (Carlin 2012, table 5.1). These are mostly in the north of Ireland; however, that is also where the most wedge tombs have been excavated. The only three examples in southern Ireland where Beaker pottery has been found are Lough Gur, County Limerick, Carriglong, County Waterford and Baurnadomeeny, County Tipperary. The pottery from Labbacallee, County Cork is often quoted as Beaker, but O’Brien (2012b) has recently suggested that it is not, a view supported by Brindley (pers. comm.) and, until it is positively identified, or otherwise dated, it is of no further use to this discussion. The fact that Beaker pottery has not been found in any of the four wedge tombs excavated in County Cork is striking, especially given that two of those excavations (Altar and Toormore) were comparatively recent and very thorough. Beaker pottery has, however, been found in the landscape surrounding the densest collection of wedge tombs in the country, Roughan Hill, County Clare (Jones 1998), and elsewhere on

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142 Carlin lists 13 I have removed Labbacallee as per O’Brien 2012b and Brindley pers. comm.
143 According to Brindley (pers. comm.) it might even not be prehistoric
the Burren, suggesting that, if tombs in that region were excavated, it would likely be found (see chapter 5).

If we decouple the argument for a Breton origin for wedge tombs from Ó Nualláin’s south-western landfall perhaps there may still be some support for the former in Beaker pottery. While Waddell may be right to say that the majority of Beaker pottery found in Wedge tombs is either insular or has more in common with British Beakers, this could be secondary deposition in multi-period Beaker assemblages. Despite the typological uncertainties of the Irish material (Brindley 2004), Brindley and Lanting (1992, 25) have argued that most wedge tomb assemblages do include pottery that ‘can be termed the ‘Primary tradition’ in this country’ and this is the material most relevant to our discussion.

7.6.3. Metal-working and wedge tombs

Most authors who have argued for a Breton origin for wedge tombs viewed the builders as metal prospectors (de Valera and Ó Nualláin 1982).\(^{144}\) This argument is given some support by the recent review of dates (Schulting et al. 2008), mentioned above, that suggests wedge tombs were first built rather suddenly throughout the country at around the same time metallurgy was first practiced here. De Valera and Ó Nualláin were particularly impressed by the similar distributions of copper resources and wedge tombs. Others (Lynch 1981, 17; Harbison 1988, 102) dismissed this argument by countering that where wedge tombs were densest, i.e. in the Burren, there was no copper resource. Ó Nualláin (1989) later replied that there is copper in the Burren, as Jackson’s (1978) map clearly shows (Fig 7.14); the only question is whether those sources were exploited or not. The recent identification of probable Chalcolithic copper ore, not from Ross island, at Teeskagh in the Burren (Gibson 2013a), may be evidence of an alternative early source. An ancient mine working in Kilcommon, County Tipperary is located in an area of wedge tombs that, judging from their distribution, are likely to be related to those in County Clare (see below); this link is further supported by the occurrence of the only Munster court tomb outside Clare, Shanballyedmond, which is of a related type to those in the Burren (Jones and Walsh 1996), at the centre of this cluster.

\(^{144}\) ApSimon (1986a) argued for an earlier, Neolithic, arrival of wedge tomb builders.
Figure 7.14 Ireland – Bronze Age metals, ores and mines (from Jackson 1978, 109)
The overall distribution of wedge tombs is clearly very similar to the distribution of copper resources (Fig 7.15). This is particularly striking in the peninsular
southwest where many copper mines are known to exist (O’Brien 1994) and that link has been reinforced by O’Brien’s discovery of a bronze flat-axe and, more importantly, copper ingots at Toormore wedge tomb (O’Brien 1999). However, to date, those mines are all EBA rather than Chalcolithic. The only confirmed Chalcolithic mine, Ross Island (O’Brien 2004b), where the majority of Chalcolithic copper is generally accepted as having come from (see chapter 3), is at least 13 km northwest from its nearest wedge tomb (KE085-011 Crohane) and consequently O’Brien deems it unlikely that there is any connection. He has further postulated (2004b, 570-572) that the lack of wedge tombs in that area may be explained by the presence of a less segmented form of society associated with henges, such as at Lissyviggen (ibid., 497-501). Although it has become generally accepted that Ross Island was the only mine in operation during the Chalcolithic, it is far from proven; as O’Brien (1999, 243) admits finds such as the stone axeheads from Ballyrisode mine (O’Brien 2003) and very early copper axes like that from Arderrawinny (Harbison 1969a, #9) may indicate an, as yet, unidentified early phase of mining in Mount Gabriel-type mines.

One of the arguments levelled against the spread of metalworking technology with wedge tombs from Brittany was that there are few copper resources there and that it is therefore unlikely that the required expertise originated there. This is a somewhat circular argument as, had there been extensive deposits in Brittany, there would not have been a need for communities from there to travel and prospect. As it happens there may have been quite early exploitation of copper at Huelgoat, Finistère and St-Pierre-Montlimart, Maine-et-Loire (Briard 1965). The fact that these are deemed unlikely to have been sufficient to supply local demands (Patton 1993, 166) is the very kind of stimulus that might have prompted communities from there to prospect for metal elsewhere.

7.6.4. Other artefacts

Another argument that has been levelled against a Breton connection is the lack of explicitly Breton finds in wedge tombs (O’Brien 1999, 264). Putting aside the

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145 Another two wedge tombs are located in Gortlicka (KE076-038) and Gortnakilla (KE076-056) townlands. While they are approximately 15km southeast of Ross Island, they lie alongside the River Flesk which would be navigable in small craft and runs into Lough Leane, the lake surrounding Ross Island.
arguments about Beaker pottery, it is true that there is relatively little support for a Breton connection in the artefacts found in wedge tombs; however, an absence of evidence is not evidence of absence and artefacts do not necessarily point to an indigenous origin either; many of the artefacts found in wedge tombs are likely to be secondary depositions placed in the tombs long after they were built (O’Brien 1999, table 16). The only metal artefacts likely to date to the EBA are the axe and copper cake from Toormore, County Cork. Bone objects include a dagger mount from Largantea, County Derry and the pins/points from Labbacallee, County Cork. Lithics include arrowheads, various scrapers, blades and flakes and a javelin head. Two stone axes are also known; one from Boviel, County Derry and another from Lough Gur, County Limerick. Unfortunately, the practices associated with wedge tombs do not seem to have commonly included the deposition of artefacts other than pottery and on this count the evidence is equivocal.

The distinction between barbed-and-tanged arrowheads and hollow-based arrowheads has occasionally been discussed as a possible indicator of the direction of external contacts, but both types do occur along the Atlantic façade and elsewhere. A now woefully out of date distribution by Green (Green 1980, Fig 55) shows both types spread throughout the country but with only barbed and tanged examples in Munster. While a full reassessment is beyond the scope of this study, to show the undependability of that distribution it is sufficient to mention that hollow-based arrowheads have been found at Roughan Hill, County Clare (Jones 1998), Kilnacranna, County Tipperary (McLeod 2010) and Rathbane south, County Limerick (O’Donovan 2002) and there are at least two examples in the Cork city museum (O’Brien 2012b, Fig 51).

Barbed-and-tanged arrowheads are widely recognised as part of the ‘Beaker set’ and that association holds up in Britain (Green 1980, 120-143) and Ireland (Carlin 2012), where Beaker pottery is their most common ceramic association. In all cases where they have been found in or near Neolithic tombs, a secondary deposition can be argued for and they are notably absent from Grooved Ware sites such as timber circles (Carlin 2012, 190), except where they are likely to be associated with later Beaker activity. Consequently, an introduction of the form from an external source that accompanied Beaker pottery seems a relatively secure assumption.
They have been recovered from six wedge tombs (Carlin 2012, 133) but never in association with pottery of the Bowl or Vase Tradition (Woodman et al. 2006, 138), suggesting an even more distinct Beaker association.

Hollow-based arrowheads are sometimes assumed to be of a Neolithic date but an analysis of their associations does not support this (Woodman et al. 2006, 134-137) and their most common ceramic association is also Beaker pottery (Green 1980, 141-143; Carlin 2012). They also appear to have continued in use until considerably later, perhaps until a MBA date (Brady 2009), and it seems that larger forms (more than 50mm long), in particular, belong to this later group (Woodman et al. 2006, 134). Within the islands of Britain and Ireland, hollow-based arrowheads are a particularly Irish phenomenon. Only relatively few have been found in Britain where their predominantly west coast distribution led Green (1980, 146-147) to suggest that they are indicative of Irish contact. The origin of the form is somewhat of an enigma, but Woodman et al. (2006, 135) have suggested it might be found domestically in the hollow-based forms of Clark’s PTDs, particularly the lopsided forms that commonly have Grooved Ware associations in Ireland (Woodman et al. 2006, 153) and Britain (Green 1980, 155). They do occur along the Atlantic façade in Chalcolithic contexts in Portugal (Jones pers. comm. pers. obs.) and as far south as Morocco (Rodrigue 2002, Fig 12); however, Green (1980, 147) has also identified what he refers to as ‘genuine hollow-based arrowheads’ in Belgian museums; so while they may point to external contacts with Ireland, not shared by Britain, it is currently not possible to be more specific.

7.7. An ‘intercontextual model’ to account for the origin of wedge tombs

The most solid evidence for a Breton connection lies in the architecture and orientation of the tombs, as discussed above, but there may also be ancillary evidence in associated practices that combined may suggest the transmission of a socio-ritual institution.

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146 With the addition of Loughash (Davies and Mullin 1940)
147 Petit tranche derivative
148 Green refers to Grooved Ware by its old name of Rinyo-Clacton Ware
7.7.1. Veneration of the female form

There is rock-art in several Breton *allées couvertes* that supposedly represents a goddess. It occurs as pairs of breasts, under which a U-shape presumed to represent a collar is sometimes inscribed; these can occur singly, or in a series of pairs (e.g. Fig 7.16). These indicate a connection with female representations found in the sunken *allées couvertes* of the Paris Basin and in the rock cut-tombs of the Marne (Daniel 1955) where they are associated with the SOM (Seine-Oise-Marne) culture, which played such a prominent role in diffusionist theories (cf. Childe and Sandars 1950). Fleming (1969) has criticised the widespread mother-goddess idea but still accepts it for these groups, and the artefacts, which include SOM pottery, found in *allées-couvertes* do appear to support a connection (L'Helgouach 1965; Burl 1985). The case for a cult concerned with the female form, potentially associated with collars seems solid, even if interpretations that assume a deity may be a step to far.149

Figure 7.16 Four pairs of breasts with collars or necklaces beneath, Kergüntuil, Trégastel, Brittany

Of interest to this paper is the apparent relationship between wedge tombs and females, especially older females, something which both O'Brien (1999) and Jones (2007) have previously discussed. While they are not the only burials found in wedge tombs they represent a significant portion, especially of those that seem to be interred early in the history of the tombs (O'Brien 1999, table 15). Three examples are particularly noteworthy. At Cloghnagalla (Boviel, County Derry) the cremated remains of an adult woman appear to have been the original interment (Herring and May 1940); the finds included a barbed-and-tanged arrowhead and a

149 Elder, ancestor, pregnant or initiate females could equally be the subject of ritual attention.
variety of other lithics (dominated by hollow scrapers).150 At Labbacallee (County Cork), although other interments were also found, one was also of an adult woman (Leask and Price 1936; Brindley et al. 1987/1988; Jones 2007, 240-244). Her head was found sitting upright in the central chamber and her body was found articulated lying on its side in the end eastern chamber with a bone pin (which may be of human bone), fragments of animal bone and some decayed organic material. She was only about 1.57m in height and it seems her right arm was more developed than her left, which may have marked her out as unusual. It was noted that her teeth were heavily worn and while this may be due to diet, it might also be construed as indicating she was relatively old. At Island, County Cork three cremation deposits, of one or more persons, were found (O’Kelly 1958b; Jones 2007, 234-237); however, the only identifiable individual was an elderly female estimated to have been between 60 and 70 years of age, an extremely old age by prehistoric standards. It may be coincidental that two of these place-names include elements derived from *cailleach*, ‘the veiled one’ or ‘old woman’ (Joyce 1912b, 95-96),151 but the prevalence of elderly female and other female burials in wedge tombs is striking. Although it is admittedly a more tenuous link, the association of the female with these tombs does bolster the possibility of an institutional transmission, primarily observed in the architectural similarities.

7.8. Discussion and Conclusions

Type A dolerite axes produced at Plussulien account for 40% of all axes found in Brittany and estimates from the excavations there suggest that around six million axes may have been produced from the factory over around 1200 years, approximately 5000 axes per year (Le Roux 1970 after Patton 1983, 22). If connected, the products of the Plussulien axe factory are likely to have afforded the communities who constructed the *Sépultures en V* and *allées-couvertes* tombs at Liscuis no small degree of prestige. The collapse of demand and the subsequent reorientation of exchange networks that the arrival of novel materials, i.e. copper, would have brought about could have provided the motivation for ‘prospectors’. Should those prospectors already have been in contact with groups in Ireland, such

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150 Finds also Neolithic remains; however, as Brindley and Lanting (1992, 25) have argued these are likely to be a residual Neolithic burial disturbed by and incorporated into the wedge tomb.

151 It is also used to refer to nuns, but in these cases that is unlikely.
prospection, involving limited migration, could have been carried out through existing networks of exchange.

De Vallera and Ó Nualláin’s (1982) model of successive invasion/migration, cast in a culture-historical light, makes a convenient straw man for alternative models of social change (cf. O’Brien 1999, chapter 9); however, later models may also be as constrained by their contemporary paradigms. In O’Brien’s study of the Mizen peninsula, the most striking thing about the evidence for people during the preceding Neolithic, other than its paucity, is that their tombs are outliers of traditions (portal tomb at Arderrawinny/passage tombs on Clear Island & Roaringwater Bay) that suggest long-distance contacts (O’Brien 1999, 268). According to O’Brien these are indicative of contacts on either side of the Irish Sea, but given the art at Clear Island a Bretton connection is also likely. The often discussed late Mesolithic cattle bone from Ferriter’s cove would also appear most likely to have come from an Atlantic direction. It seems communities in the southwest may have had intermittent contact with Brittany for a long time prior to the Chalcolithic. Much of this chapter has argued against O’Brien’s (1999) contention that wedge tombs were a largely indigenous development. It is important to note that he has himself (O’Brien 2012a) since allowed, in the paper quoted at the start of this chapter, that a ‘French connection is likely to be the most significant in terms of a Beaker-hosted introduction of metallurgy to Ireland, and may also have influenced the development of the wedge tomb’ and now argues for a ‘combination of indigenous development with external influences’.

The earliest metal working in Ireland is associated with Beaker pottery. Most wedge tomb assemblages of Beaker pottery contain some of the ‘primary tradition’ of Beaker pottery in this country. Wedge tombs are remarkably like allées couvertes and it seems likely to this researcher that the combined arrival of Beaker pottery and metal-working expertise at the same time as wedge tombs began to be built in the north and south of Ireland suggests they are connected phenomena. Viewed in this light, wedge tombs could be interpreted as a physical manifestation of the transmission of an institution; a transmission that would have required the movement of a substantial number of people. Nevertheless, it is also true that some wedge tombs share architectural traits with court tombs and, in regions where
they both exist, they cluster in the same areas. The court tombs in County Clare and County Tipperary are somewhat intermediary in style between the classic court tombs of the north and Breton gallery tombs. Given the connections suggested by rock art (Bradley 1997) and passage tombs (Sheridan 2003a), we should be open to the possibility that contacts ran even deeper.
Chapter 8 Two regional case studies in Chalcolithic and EBA exchange: counties Clare and Cork

8.1. Introduction

Given the potential scope of this thesis, it proved necessary in previous chapters to take a selective approach, concentrating on artefact and monument classes that might prove particularly illuminating to the study of exchange. In this chapter, I attempt to complete a more comprehensive review of the evidence for exchange in two smaller regional case studies. The main aim of the chapter is to ascertain what additional understanding of exchange can be extracted from this more intensive regional approach and to consider if any insight can profitably be extrapolated out to the wider study.

The two case studies, counties Clare and Cork, are defined by modern county boundaries that are likely to have had little or no meaning in prehistoric times; however, they are convenient units of study. The prehistory of the first area is the subject of much of my supervisor’s previous work (Jones 1998; 2004b; Jones et al. 2011) and the prehistory of the second has recently been the subject of a comprehensive review by Professor O’Brien (2012b); both contain upland areas with relatively visible archaeological remains and lowlands where remains are less visible but recent linear infrastructure projects have effectively acted as test trenches.

The analysis of each area begins with a consideration of archaeological visibility and of any recognisable research biases. This is followed by an outline of topographical and geological constraints and opportunities, and an overview of previous settlement patterns and networks of exchange. Then, through a review of the archaeological remains for the Chalcolithic and EBA, this chapter will consider the role exchange played in the social developments in these two regions.
8.2. Clare

Figure 8.1 Karstic uplands of the Burren, County Clare. Looking north northwest from Turlough Hill.

8.2.1. Archaeological visibility and research biases in Clare

The existing visibility of archaeological remains in Clare is due to several factors. In the Burren a lack of significant soil cover and a longstanding tradition of building in stone, means that not only tombs, but also field boundaries and the foundations of many habitation structures from a variety of periods are visible without excavation. This visibility has encouraged a considerable amount of research in the region, including some of the first scientific excavations in Ireland (Hencken and Movius 1935; Hencken 1938), prolonged research projects concentrating on its prehistoric remains (Jones 1998; Draft) and structured synthesis of the archaeology (Jones 2004b). Targeted testing of several enclosures (Jones 1998; Gibson 2007) has allowed a certain amount of wider inference (Jones et al. 2011) and an on-going fieldschool in the region, primarily concentrated on Medieval remains (Caherconnell), has also excavated significant prehistoric remains (Hull and Comber 2011; Hull 2011). Other significant surveys were conducted under the auspices of a Heritage Council INSTAR project (Comber and Jones 2008).

Elsewhere in Clare, the Discovery Programme’s North Munster project carried out research on the Shannon catchment region; it included an intensive survey of a block of land around Mooghaun Hillfort in southeast Clare (Grogan 2005a; 2005b).
and an intertidal wetland survey of the Shannon and Fergus Estuaries (O’Sullivan 2001).

In contrast to the Burren, and aside from the North Munster Project, the remainder of Clare has been the subject of relatively little sustained research. This paucity has in some measure been counterbalanced by large infrastructure projects such as roads and gas pipelines that have traversed lowland Clare. However, such projects intentionally avoid upstanding monuments, and therefore, numerous enclosures of likely prehistoric date remain undated (cf. Grogan et al. 2007). While the reporting and publication of infrastructure projects has been uneven, there have been some significant publications (Delaney et al. 2012; Bermingham et al. 2012; Grogan et al. 2007) and many reports of archaeological excavations are now available through Clare’s county library website (http://www.clarelibrary.ie/eolas/coclare/archaeology/). All artefacts from Clare in the possession of the National Museum have also been usefully compiled (Gibbons et al. 1999).

8.2.2. Topographical and geological constraints and opportunities

County Clare is approximately 3,240 km² (www.osi.ie). It is naturally bounded to the west by the Atlantic Ocean, to the south by the Shannon Estuary and to the east by the Shannon River and Lough Derg. To the northwest it is bounded by Galway bay, whereas to the northeast the county boundary runs across the Slieve Aughty Mountains (Fig 8.2).
A natural corridor, into which County Galway extends southward somewhat, runs north-south through the centre of the county, between uplands to the west and east. The Fergus River and its tributaries run from the centre of this corridor into the Fergus Estuary to the south, creating a number of conduits that are likely to have proved useful for travel in prehistory. The geology is a mixture of carboniferous limestone, shales, sandstone and old red sandstone (Fig 8.3). In the northwest, limestone uplands form the karst landscape of the Burren; these fall off to where they meet shale, just north of the Aille river valley, which, along with the Dealagh and Inagh rivers, provide partial natural east-west conduits from the inland north-south corridor to the sea. Between those rivers and further to the south the land rises again in the form of shale and sandstone hills, from which numerous small rivers fall into the sea to the west and the Fergus estuary to the east. The southwest is composed of shale and sandstone, which is traversed from east to west by the Doonbeg River, and which extends out along the north of the Shannon estuary in a peninsula to Loop Head. In the northeast, old red sandstone forms the Slieve Aughty Mountains; to the south of these, low-lying limestone extends to meet Lough Derg. The River Rine and a network of lakes run along this gap between the hills. To the south and east of these more Old Red Sandstone forms the Slieve Bernagh Mountains and Knockanuaraha and Woodcock hills.
significant pass runs from east to west between these and several rivers flow south and east from their slopes and into the River Shannon.

Figure 8.3 Geological map of County Clare (Adapted from GSI_Bedrock_1 million)

8.2.3. Preceding settlement patterns and established networks of exchange

During the Neolithic, human habitation appears to have been concentrated in the upland Burren region, particularly in its south-eastern portion (Jones 2004, 51-54). The relevant question to be answered here is whether there are any established exchange relations and to what extent these Neolithic communities represent groups ancestral to the later Chalcolithic and Bronze Age. Jones (ibid.) has, for example, suggested that this area could be viewed as a ‘Neolithic core area’ from which populations later expanded (Fig 8.4); such origins would likely have greatly affected later exchange relations. Neolithic tombs in this area include portal tombs, court tombs and a Linkardstown tomb, and importantly, one of each has been excavated.
At the Linkardstown tomb, Poulawack (Hencken and Movius 1935; Brindley and Lanting 1991; Jones 2004b, 33-39), the Neolithic interment included 4 individuals, potentially representing a small family unit. Later, during our study period, further burials were inserted into the cairn and it was considerably enlarged. There was a significant time lapse between burial events; however, this does not preclude the possibility that the later communities viewed the monument as their ancestral burial ground, real or imagined.

At the portal tomb, Poulnabrone (Lynch 1988; Lynch and Ó Donnabháin 1994; Jones 2007, 69-73), a minimum of 21 individuals, probably representing a small community, were interred during the Neolithic, possibly after being transferred from another location. Strontium isotope analysis on teeth has indicated that all apart from one of those individuals are likely to have grown up locally or at least on similar geology. The ‘isotopic alien’ is likely to have come from south Connemara (Kador 2010, 10) and could represent an established set of relations with a group in one of those areas. There was also a much later late EBA burial of a neonate at Poulnabrone; however, as at Poulawack, there was a significant time lapse between burial events.
The court tomb, Parknabinnia (Jones 2004b, 46-51), is located on Roughan Hill (Jones Draft) in the heart of what was to become the densest spread of wedge tombs in the country. It is one of four, of a local type of atypical court tomb, which lacks a clear court (Jones 2004b, 46). Recent analyses of the radiocarbon dates (Schulting et al. 2012) suggest that activity at Parknabinnia, and at some court tombs in County Mayo, continued later than at court tombs elsewhere, into the Late Neolithic (3000–2500 cal BC). The relationship between these late burials and those in the surrounding wedge tombs may be pivotal to understanding the relationship between these monument types; however, none of the wedge tombs in this area have been excavated yet.

Established patterns of exchange are also detectable in the portable Neolithic material culture, particularly stone axes. While it is acknowledged that secondary sources are likely to have been exploited (Briggs 1997; Berridge 1994), in many cases axe sources can be determined (Mandal 1997) and general trends are likely to indicate the flows of exchange (Bradley and Edmonds 1993). In Clare, axe lithology is dominated by the locally available shale and mudstone (Tab 8.1). Nationally, shale is the second most common axe type; those from Clare account for over half of those with provenance. Although sources of shale are abundant (Cooney and Mandal 1998, 95) many of the Clare finds and those from the surrounding counties are possibly from Fisherstreet beach, Doolin (Jones 2004b, 40-41; Knowles 1904), or south of Killaloe (Cooney and Mandal 1998, 94-95), and the gradual decrease in the numbers in surrounding counties would support the supposition that this was a significant source (Fig 8.5a). Near the putative shale axe source at Fisherstreet Bay there is a court tomb (Fig 8.5b). It is of a more classic northern type than those on the uplands of the Burren and it may suggest established exchange relations with distant groups.

152 A large number of these were found in the River Shannon at Killaloe during dredging works
Exotic axe types include nine porcellanite axes from Tievebulliagh, or Rathlin Island, on the north Antrim coastline (Jope 1952; Sheridan 1986; Curran et al. 2001) and a tuff axe is from Cumbria in the north of England (Flynn 2008). Northern connections have already been suggested by the coastal court tomb at Doolin and a western coastal route is one way along which porcellanite axes are likely to have arrived; the Shannon would have provided another convenient route. It is important to note that these exotic axes form only a very minor percentage of the axes in Clare and that in neighbouring Limerick, for example, where a far lower total of axes has been found, seventeen north English tuff axes have been found (Cooney and Mandal 1998).

<table>
<thead>
<tr>
<th>Lithology</th>
<th>Number</th>
<th>Percentage of the total</th>
<th>Likely origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shale</td>
<td>600</td>
<td>76.33%</td>
<td>Locally available (probably predominantly from Doolin, possibly from south of Killaloe)</td>
</tr>
<tr>
<td>Mudstone</td>
<td>121</td>
<td>15.39%</td>
<td>Southwest Mayo/Dingle Peninsula/Tipperary/Local</td>
</tr>
<tr>
<td>Pelite</td>
<td>18</td>
<td>2.29%</td>
<td>Widespread: Identification difficult</td>
</tr>
<tr>
<td>Sandstone</td>
<td>9</td>
<td>1-2%</td>
<td>Many possible sources including local</td>
</tr>
<tr>
<td>Porcellanite</td>
<td>9</td>
<td>1-2%</td>
<td>Rathlin/Tievebulliagh Antrim coast</td>
</tr>
<tr>
<td>Schist</td>
<td>7</td>
<td>&lt; 1%</td>
<td>West Connemara</td>
</tr>
</tbody>
</table>
A significant cluster of archaeological remains on top of Turlough Hill, on the north-eastern extent of the Burren, has recently been the subject of survey (Bergh 2008). Remains include a large straight-sided cairn, an unusual multivallate feature, over 150 hut sites, a large enclosure and a long sinuous cairn. The arrangement of the hut sites, in two distinct complimentary distributions accompanied by a ritual monument, and the exposed upland location, have led to suggestions that Turlough Hill may have served as a seasonal gathering place, perhaps between two groups: one from the Burren and one from further northeast (Berg pers. comm.). If the isotopic alien at Poulnabrone were from the Slieve Aughty region and one were to postulate that they were linked with a Burren group through marital exchange, a seasonal gathering at Turlough Hill might be the kind of event through which such transactions were facilitated. While it is difficult to be precise about the dating of the remains on Turlough Hill, on the basis of comparisons with Mullaghfarna in County Sligo (Bergh 2008), it seems likely that they date from the Neolithic through to the EBA.

8.2.4. Wedge tombs and other burial traditions

The most prominent Chalcolithic/EBA monument type in Clare is the wedge tomb. The archaeological survey of Ireland lists 154 (NMS 2013); approximately eighty of those are on the Burren, making it the densest concentration in the country (Fig 8.6) and these are especially densely distributed in the southeast of that area around Roughan Hill (Jones Draft; 1998). There are also significant numbers in east Clare with localized concentrations at the base of and on the southeast slopes of Slieve Beanagh, just east of Tulla, in the Slieve Aughty Mountains, plus a loose scatter throughout much of east Clare and across mid-west Clare. Excavations in
the landscape of the Roughan Hill wedge tombs (ibid.) suggest that communities chose to construct their tombs in the vicinity of and overlooking their settlements, perhaps indicating practices which involved frequent commune with their ancestors. The widespread nature of the distribution suggests their relative densities may be a true reflection of population levels and notable gaps in that distribution, along the Fergus River/mid-Clare corridor and in south-west Clare, may reflect what were then heavily forested areas.

Unfortunately, no wedge tomb has yet been excavated in County Clare. A date for some human remains, hand-collected from Baur South wedge tomb, returned a date of c. 2033-1897 cal BC (Grant 2009); however, we cannot be sure that this represents the initial use of this monument. From comparison with wedge tombs excavated elsewhere (Brindley and Lanting 1992), we can assume the majority were built between c. 2300 and 2000 cal BC and that they continued to be used over several hundred more years, but the earliest dates and the region in which wedge tombs were first built remains poorly understood (chapter 7). The tombs in the Burren, northwest Clare, would seem to be morphologically close to those in south and coastal Galway (de Valera and Ó Nualláin 1972). Those in east Clare would seem related to those in Tipperary (de Valera and Ó Nualláin 1982), an area with potential early copper mining.

Wedge tombs were not the only place where Chalcolithic and EBA communities in Clare chose to bury their dead. As mentioned above, human remains of both Chalcolithic and EBA date have been found inserted into earlier Neolithic tombs. New cairns were also constructed to receive burial and two examples have been partially excavated: Coolnatullagh (Eogan 2002) and Gragan West (Jones Draft, 232; Cotter 1989). The archaeological survey lists (NMS 2013) 179 unclassified cairns, six burial cairns, one wayside cairn, two clearance cairns and four ring cairns in County Clare; the vast majority of which are in the Burren (Fig 8.6). Particularly noteworthy may be some of the very large cairns that occur on the north-eastern Burren hill summits, the largest of which, on top of Slieve carran, is 33 m in diameter and c. 7 m high. Others such as that on Turlough Hill have remnants of

153 Excavations to facilitate development were carried out beside Ballinphunta Wedge tomb, in the southeast of the Burren; unfortunately no artefacts or dating material were recovered (Hodkinson 1991).
straight sides, which could suggest a morphological link with the Linkardstown phase at Poulawack.

There are also a considerable number of barrows in Clare, none of which have been excavated, unless one includes the rescue excavation of the disturbed mound at Gragan West (Cotter 1989). While many of these may date to the later BA, a number may also date to the latter part of the EBA. In particular, many mound barrows have been shown to be multi-period in date, and in western Connaught (Galway and Mayo) bowl barrows have been shown to be predominantly associated with Cordoned Urn Tradition burials (Riley 1936; Rafery 1939; Rafery and Inkster 1940). In neighbouring Limerick, where a number of barrows have been excavated, the few that produced dating evidence were predominantly dated to the LBA; however, a ring barrow at Lissard produced an EBA burial associated with a vase urn (Ó Riordáin 1936). Flat cemeteries, such as Ballyconneely near Mooghaun (Read 2000), were also used in the latter part of the EBA.

The barrows in Clare are predominantly located along rivers and the coast, perhaps suggesting either a ritual concern with water, or a desire to be placed along routeways or boundaries. This moving to the water’s edge and placing of the dead in closed contexts suggests a significant change in ritual practice in both
landscape siting and in relation to how communities would have interacted with their ancestors, towards the end of the EBA. There may even be a chronological element discernible within this distribution; along the Aille River valley, barrows placed on prominences overlooking the river and valley tend to be mounds, while those lower down in the valley adjacent the river tend to be ring ditches, perhaps suggesting earlier larger foundation barrows with later burials placed down next to the river in the ring ditches. It is not clear whether these dramatic changes reflect shifting practices of indigenous communities or the arrival of new groups into Clare but it is paralleled elsewhere in Ireland and at least indicates external contacts.

8.2.5. Roughan Hill

Survey and excavation at Roughan Hill has revealed a complex Chalcolithic and EBA landscape, situated within the densest distribution of wedge tombs in Ireland (Jones 1996; 1997a; 1998; Jones and Gilmer 1999; Jones 2003; Jones et al. 2011; Jones Draft). This includes midden material, several kidney-shaped or conjoined-kidney-shaped farm enclosures and structural remains of circular dwellings, at least some of which have been shown to be associated with Beaker pottery. Carlin (2012, 71-73) has disputed the evidence for substantial settlement dating to the Chalcolithic at Roughan Hill on the basis of a lack of secure stratigraphy and contemporary parallels. While secure stratigraphical relationships can be elusive in landscapes with depleted soils, such as the Burren, the concentration of Beaker material associated with the structure at issue, and the complementary occurrence of only slightly later Bowl Tradition pottery at the neighbouring Farm 2, supports the Chalcolithic/EBA association. Furthermore, the density of wedge tombs at Roughan Hill is an indication that, from a socio-economic point of view, something particular to the region was occurring on Roughan Hill during the Chalcolithic and EBA.

The lithic assemblage at Roughan Hill was almost entirely comprised of chert. Diagnostic retouched artefacts included hollow-based arrowheads and sub-circular convex scrapers. There was a high proportion of relatively high-quality black chert, that may originate from the Tawin island area, on the coast of south County Galway (Jones Draft, 256), where many similar lithics have been found (Driscoll
2012) and the raw material is easily collected (Fig 8.7). Shale cobbles from which axes, grinders and pounders were made are likely to have originated in the west of the Burren, quite likely Fisherstreet Bay near Doolin (Jones 2004b, 40-41); however, shale flakes found at Roughan hill are evidence that at least some of these were at least finished there (Jones 2004b, 61). A fine grained stone artefact, of which the lithology still has to be identified (Jones pers. comm.), that may have served as a metalworking tool is not of local stone and is likely to have been obtained from some distance.

Figure 8.7 Naturally occurring high quality chert on Tawin Island, County Galway

Beaker, bowl and vase, tradition pottery was discovered during the excavations at Roughan Hill. The Beaker pottery was found in association with Farm RH1 (see section below on settlement) and comprised a poorly preserved mixture of fine and course wares that may represent up to thirty vessels (Brindley in Jones Draft). The decoration consists of incised horizontal lines, either single or multiple, occasionally grouped in zones and associated with other decorative elements. According to Brindley (Brindley in Jones, draft), it does not include any particularly early or very late Beaker elements and is likely to date from c. 2250 to 2150 cal BC. However, the chronology of Beaker pottery in Ireland rests on only a few sites and this pottery could still be earlier (2500-2300), as previously suggested by Jones (2004b, 63). Brindley highlights one comb lattice-decorated sherd as of special interest because of the similarity of its decoration with that on a sherd from Poulawack. There was also one cord-impressed sherd (#8) and a sherd decorated with a band of incised oblique lines (#190) among the assemblage. The
clay used for the pots included calcite and quartz grit; the calcite suggests that it was sourced locally.

A sherd of either bowl or Vase Tradition pottery was also found at RH1. While its fabric is not typical, on the basis of its decoration, Brindley (in Jones, draft) identified it as either Bowl or Vase Tradition. The sherd is worn, but ‘a narrow band of obliquely filled interlinked triangles’ is visible and, according to Brindley (in Jones, draft), has most in common with her stage 1 and 2 bowls and stage 1 vases (Brindley 2007). Further sherds of Vase Tradition pottery were found in Farm RH2.

8.2.6. Chalcolithic and EBA pottery traditions

Of the five main Chalcolithic to EBA pottery traditions found in Ireland four, Beaker, Bowl Tradition, Vase Tradition and Cordoned Urn Tradition pottery, have been found in Clare. No Collared Urns or pots of that tradition have yet been found.

Beaker pottery

In addition to Roughan Hill, Beaker pottery has been found at three definite (Poulawack, Poulnabrone and Mooghaun) and two possible (Coolnatullagh and Caherconnell) locations in Clare (Fig 8.8).

The Beaker pottery from Poulawack comprised only a single sherd (Hencken and Movius 1935; Brindley and Lanting 1991; Jones 2004b, 33-39) that accompanied the
inhumation of an adult male, placed in one half of a double cist. It was decorated with an impressed comb lattice or hurdle pattern similar to that on a sherd from Roughan Hill. Remains from both sides of the cist were dated; those from the side with the sherd returned a date of 2020–1686 cal BC\textsuperscript{154} and those from the other side returned 2185–1772 cal BC,\textsuperscript{155} suggesting a relatively late date, perhaps even later than that proposed by Brindley’s dating of the Roughan Hill material. However, it should be remembered that artefacts and/or bone could have been curated or circulated for long periods prior to being interred and at Poulawack the intentional deposition of a sherd with the burial shows how such fragments could retain social significance after being detached from their whole.

The Beaker pottery from Poulnabrone comprised two sherds, identified by Eoin Grogan (Carlin 2012, 186). These were found within the portal tomb that contained remains predominantly dating from the Neolithic, but also to the late EBA (Lynch 1988; Lynch and Ó Donnabháin 1994; Jones 2004b, 30–32).

At Coolnatullagh, during the partial excavation of a burial cairn (Eogan 2002), two sherds of pottery that were recovered have been tentatively assigned to the Beaker tradition Carlin (Carlin 2012, 185; pers. comm.).

At Caherconnell, the excavation of a doline, produced a substantial amount; ‘76 sherds, fragments and a quantity of crumbs’, of prehistoric pottery, predominantly dating to the EBA (Hull and Comber 2011), among which there was a rim sherd and two other fragments of probable Beaker pottery.

The only other Beaker pottery from Clare is a single residual sherd found in Area C at Mooghaun hillfort (Grogan 2005a, 323). The hillfort was shown to date to the LBA and the Beaker pottery was the only indication of Chalcolithic activity on the site.

Just north of the Clare border, in south County Galway at Rathwilladoon, Beaker pottery was found in association with a probable oval structure (Lyne 2012). Beaker pottery has also been found at a number of locations around the Shannon just over the county border in County Limerick (Carlin 2012, 205–211).

\textsuperscript{154} OxA-3262 3520 ±60 BP (2 sigma)

\textsuperscript{155} OxA-3263 3600 ±65 BP (2 sigma)
**Bowl Tradition pottery**

There are now two definite and one possible finds of Bowl tradition pottery in County Clare (Fig 8.9). Waddell and Ó Riordáin’s (1993) catalogue contains no Bowl Tradition pots from the region; however, ‘Bones, ashes and a small pottery vessel’ reportedly found in a cist at O’Brien’s bridge, in southeast Clare, in 1941 (Waddell 1970, 110; 1990, 56), may have been a Bowl or Vase Tradition burial. There are also the sherds from the Roughan Hill assemblage (Jones 1998) and further sherds have recently been identified among the remains from Cnoc Raithní on Inisheer (Helen Roche & Keith Murphy pers. comm.; pers. obs.).

![Figure 8.9 The distribution of Bowl Tradition pottery in County Clare](image)

**Vase Tradition pottery**

Vase Tradition pottery has only been found at two locations in County Clare, the doline at Caherconnell (Hull and Comber 2011) and with the disturbed remains of a probable burial mound at Gragan West (Cotter 1989).

![Figure 8.10 The distribution of Vase Tradition pottery in County Clare](image)
The Vase Tradition pottery at Caherconnell comprised a minimum of six vessels and included both Vase Tradition vases and an urn (Hull and Comber 2011). The associated remains, a circle of postholes, were interpreted as a domestic dwelling; however, Brindley (specialist report in Hull and Comber 2011) believes the pottery is of a funerary nature and has suggested that it might be redeposited material from a cemetery.

A decorated rim sherd of a Vase Tradition pot was retrieved from the disturbed remains of a mound at Gragan West (Cotter 1989). Many later artefacts were also recovered, but it is likely that the monument was initially an EBA burial mound. A bronze dagger (see 8.2.9) and a stone blade were also retrieved.

**Cordoned Urns**

Until relatively recently the only Cordoned Urn Tradition pottery from the Clare region was the antiquarian find from Cnoc Raithní burial mound on Inisheer, where remains of at least two Cordoned Urns were found (Jones 2004b, 159-160); however, now at least two more locations can be added to that distribution (Fig 8.11).

At least one and possibly two Cordoned Urn pots were among the Caherconnell doline assemblage (Hull and Comber 2011). While Brindley admits these could derive from a domestic or funerary context, given the co-occurrence with earlier

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As mentioned above, recent reappraisal of that material by Helen Roche (pers. comm.) has identified a number of other vessels in the assemblage.
probable funerary pottery, her interpretation of the material as originating from a funerary context seems most likely.

Excavation of a flat cemetery at Ballyconneely uncovered over eighty pits containing cremated remains (Read 2000). On the basis of preliminary comparisons between the pottery and that from nearby Mooghaun Hillfort, the majority of these appear to be related to the LBA; it was noted, however, that certain finer vessels are likely to be earlier in date. A possible razor, found with two bone pins, is typical of finds normally associated with Cordoned Urn Tradition burials and suggests the cemetery was in use from at least the late EBA to MBA.

The remains at Cnoc Raithní have often been considered an outlying element of a Northern/Scottish phenomenon, unusual in western Ireland and not present in Clare, evidencing ‘far flung contacts’ (Jones 2004b, 160). While they undoubtedly do provide evidence that communities on Inisheer were part of wider traditions, they should now be recognised as part of a tradition that was also present on mainland Clare. Elsewhere they are most regularly found in cemetery/barrow mounds or flat cemeteries; it can now be stated that where flat cemeteries of the right date have been excavated within Clare, they have been shown to be present (e.g. Ballyconneely) and it should also be noted that, other than the partial investigation of disturbed material at Gragan West, to date there have been no excavations of the barrow mounds in County Clare.

**Pottery summary and discussion**

The amounts of pottery from each of these four traditions found in County Clare is relatively low; however, given the complete lack of excavation of wedge tombs, potentially the most likely monument form to contain Chalcolithic and EBA pottery in Clare, and low number of barrows and cairns investigated, that distribution cannot be relied upon, and only its positive aspects should be considered.

These few fragments can be used to argue for the possibility that the distribution of these traditions may have been more widespread in County Clare than is generally assumed (Waddell 2010, 153 & 160); when one considers that no alternative pottery traditions have been discovered and that there were evidently
relatively high population levels, none of which have been shown to be aceramic, it is a difficult conclusion to avoid. Lack of Collared Urn tradition pottery is not particularly surprising, however; this is a predominantly British tradition and, apart from the concentration in the northeast, occurrences in Ireland truly are outliers (chapter 6).

8.2.7. Other settlement evidence

There are numerous natural dolines (sinkholes) on the karstic landscape of the Burren and excavations within two of these have revealed prehistoric and later remains.

A doline in the southeast of the Burren, near the early medieval fort of Cahercommaun, produced a corroded lump of copper associated with Chalcolithic dates (Gibson 2013a). Specialist analyses disagreed on the nature of the lump, one suggesting it was slag from copper smelting and the other copper ore. Either way, it would not have been naturally available locally and must have been brought from some distance and is evidence that metal was being worked in the Burren at this early date. It was high in arsenic but other impurities suggest that it did not originate from Ross Island, the only mine known to have been exploited at such an early date in Ireland. In light of this it may have either originated overseas or in an alternative Irish mine operating at the same time as Ross Island.

The doline at Caherconnell has already been mentioned in connection with Beaker, Vase and Cordoned Urn Tradition pottery. There was also a significant lithic assemblage retrieved from the excavation, which was almost exclusively made up of chert (O'Hare in Hull and Comber 2011). This could have been obtained locally but not without considerable effort for which there does seem to be some evidence within the Caherconnell assemblage; however, at least some of the better quality fine-grained black chert may have been obtained through exchange with communities living in areas where it is of better quality and was more easily available, such as the Tawin Island area in coastal South Galway.
8.2.8. Caves

Caves were used for habitation and deposition at various times throughout prehistory. There are antiquarian records of artefacts and remains, including large quantities of undated human remains which are likely to be Neolithic or BA in date, from various caves in Clare, most notably Elderbush and Bat’s caves, Newhall and Alice’s cave, Edenvale (Scharff et al. 1906; Gibbons et al. 1999, 45-46 & 175-176; Marion 2001). In more recent times Marion Dowd has conducted excavations in Moneen (Dowd 2013b; 2013a) and Glencurran cave (Dowd 2007; 2009) on the Burren. While the majority of the remains recovered from these excavations were MBA or LBA, an antler hammer and pig pelvis from Moneen were dated to the EBA, 2139–1895 cal BC157 and 1888–1669 cal BC,158 respectively (Dowd 2013a).

8.2.9. Chalcolithic finds

![Figure 8.12 The distribution of Chalcolithic finds in County Clare (excluding arrowheads)](image)

<table>
<thead>
<tr>
<th>Axes</th>
<th>Num</th>
<th>Type</th>
<th>Findspot</th>
<th>Harbison</th>
<th>Additional notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lough Ravel</td>
<td>Lough Ravel</td>
<td>Boghil</td>
<td>28</td>
<td>With a hone</td>
</tr>
<tr>
<td>2</td>
<td>Lough Ravel</td>
<td>Lough Ravel</td>
<td>Dromoher</td>
<td>58</td>
<td>N/A</td>
</tr>
<tr>
<td>3</td>
<td>Lough Ravel</td>
<td>Lough Ravel</td>
<td>Clooney</td>
<td>48</td>
<td>N/A</td>
</tr>
<tr>
<td>4</td>
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<td>Lough Ravel</td>
<td>Keevagh</td>
<td>101</td>
<td>N/A</td>
</tr>
<tr>
<td>5</td>
<td>Lough Ravel</td>
<td>Lough Ravel</td>
<td>N/A</td>
<td>42</td>
<td>N/A</td>
</tr>
<tr>
<td>6</td>
<td>?</td>
<td>Lough Ravel</td>
<td>Clifden</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Halberds</th>
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<th>Findspot</th>
<th>Harbison</th>
<th>Additional notes</th>
</tr>
</thead>
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<tr>
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<td>Clonloghan</td>
<td>199</td>
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</tr>
<tr>
<td>2</td>
<td>Cotton</td>
<td>Cotton</td>
<td>Clonloum</td>
<td>202</td>
<td>N/A</td>
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</tbody>
</table>

<table>
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<th>Daggers</th>
<th>Num</th>
<th>Type</th>
<th>Findspot</th>
<th>Ref</th>
<th>Additional notes</th>
</tr>
</thead>
</table>
| 2 sigma (3645± 46 BP) UBA-20291
| 2 sigma (3455 ± 40 BP) UBA 20319

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<table>
<thead>
<tr>
<th>Num</th>
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<th>Findspot</th>
<th>Simpson</th>
<th>Additional notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Early (Roe's axe hammer type)</td>
<td>Killaloe</td>
<td>8</td>
<td>From near Shruagh ford</td>
</tr>
<tr>
<td>2</td>
<td>Early (Roe's axe hammer type)</td>
<td>Killaloe</td>
<td>10</td>
<td>Basalt</td>
</tr>
</tbody>
</table>

Table 8.2 Chalcolithic finds from County Clare

**Axes**

None of what are considered the earliest type of copper axe in Ireland (type Castletownroche) have been found in County Clare. Six copper axes have been found (Tab 8.2); five are of type Lough Ravel and the sixth, for which no details are recorded (Gibbons et al. 1999, 29), is most probably also Lough Ravel. Five of these axes have some details on their provenance (Fig 8.12) and the sixth is only recorded as from Clare (Harbison 1969a, #42). One was recovered along with a stone hone from deep within a bog in the southwest of the Burren, at Boghil (Harbison 1969a, #28). Two were found, near Corofin, just south of the Burren, one at Dromoher (Harbison 1969a, #58; MacNamara 1901, 358) and the other in Clifden, by Lough Inchiquin (Gibbons et al. 1999, 29). Two others were found in southeast Clare, not far from one another, just north of Quinn; one in Clooney (Harbison 1969a, #48; Raftery 1941) and the other in Keevagh (Harbison 1969a, #101).

**Halberds**

Two type Cotton halberds have been found in bogs in east Clare; one from Clonloghan (Harbison 1969b, #199) and the other from Clounloum (Harbison 1969b, #202; Timoney 1970) (Fig 8.12). Type Cotton halberds are copper and a recent radiocarbon date 2294-2134 cal BC,\(^{159}\) obtained from a wooden shaft remnant (Bell 2014) has confirmed that they date to shortly before the widespread adoption of bronze, during the Knocknagur phase (Harbison 1968).

\(^{159}\) 2 sigma (3780 ± 29 BP) UBA 23195
Daggers
There are no copper daggers from County Clare; however, a flint dagger ‘dug up from a dried out lake’ at Scarriff in East Clare, of a type that suggests it originated in Denmark (Day 1895; Jones Draft, 257) and is probably of broadly Chalcolithic date. In an Irish context this is a unique find and, considering the other finds from the Scarriff area (under EBA finds below); this may have been a particularly important area of deposition.

Battle axes
There are two stone battle axes from the Shannon just south of Killaloe (Fig 8.12), one from near Shruagh ford (Simpson 1990, #8) and the other from within that vicinity (Simpson 1990, #10). Both are of Roe’s (1966) axe hammer type and are considered early series battle axes. In Britain they are typically associated with Beakers and riveted bronze daggers, so a broadly late Chalcolithic to early EBA date can be assumed. They are included in this distribution and later series ‘Bann types’ in the EBA distribution. The distribution of the few provenanced early series battle axes in Ireland is widespread with a small concentration in mid-Antrim. Simpson (1990) follows Fenton (1984), who studied the Scottish series, in suggesting that these were manufactured from cobbles that could have been collected from storm beaches or glacial deposits.

Gold finds
Two golden lunulae have been found in County Clare (Fig 8.12); an unaccomplished lunula at Porsoom near the south-west corner of the Burren (Frazer 1897, #26) and a Classical lunula from between Carrigaholt and Kilbaha in the extreme south-west corner of Clare (Taylor 1970). Unaccomplished lunula are more commonly recorded as from the north of Ireland but given the number that are unprovenanced, that distribution could be very biased to the quality of reporting.

Arrowheads
As mentioned in the chapter on wedge tombs (chapter 7), the introduction of barbed-and-tanged arrowheads may be associated with the introduction of Beaker pottery and they are often considered to have an Atlantic affinity. However, they are also found elsewhere on the continent and in Britain. Hollow-based arrowheads may be slightly earlier in date, and, while they also have parallels
elsewhere, arguments have been made for an indigenous origin. The most striking thing about their overall distribution is that they are widely found in Ireland but are only common in western Britain, suggesting a more exclusively Atlantic affinity. Seven hollow-based and three barbed-and-tanged arrowheads have been found in County Clare (Fig 8.13, Tab 8.3).

![Figure 8.13 The distribution of arrowheads by type in County Clare](image)

<table>
<thead>
<tr>
<th>Site</th>
<th>Arrowhead type</th>
<th>Context</th>
<th>Associates</th>
<th>Refs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teeskagh</td>
<td>B &amp; T</td>
<td>Doline</td>
<td>Neolithic-LBA</td>
<td>(Jones draft, 256; Gibson 2013a)</td>
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<tr>
<td>Cross More</td>
<td>B &amp; T</td>
<td>Stray find</td>
<td>N/A</td>
<td>(Gibbons et al. 1999, 35)</td>
</tr>
<tr>
<td>Caherconnell</td>
<td>B &amp; T</td>
<td>Disturbed</td>
<td>Beaker</td>
<td>(O’Hare in Hull and Comber 2011)</td>
</tr>
<tr>
<td>Lahardaun</td>
<td>H-B</td>
<td>Stray find</td>
<td>N/A</td>
<td>(Gibbons et al. 1999, 168)</td>
</tr>
<tr>
<td>Mooghaun</td>
<td>H-B</td>
<td>Hillfort</td>
<td>Neolithic-LBA</td>
<td>(excavations.ie 1993)</td>
</tr>
<tr>
<td>Poulnahrone</td>
<td>H-B</td>
<td>Portal tomb</td>
<td>Neolithic-MBA burial</td>
<td>(excavations.ie 1986)</td>
</tr>
<tr>
<td>Roughan Hill</td>
<td>H-B</td>
<td>settlement</td>
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<td>(Jones draft, 256)</td>
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<td>(Jones draft, 256)</td>
</tr>
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<td>H-B</td>
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<td>(Gibbons et al. 1999, 168)</td>
</tr>
</tbody>
</table>

Table 8.3 Chalcolithic and EBA arrowheads from Clare

When examining the overall distribution of Chalcolithic finds we should consider how they were likely deposited and the different sort of possible biases in their recovery. It seems probable that the axes, halberds, flint dagger, battle axes and
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lunulae were all intentionally deposited. The majority, apart from the lunulae and some axes, were found in bogs, rivers or lakes, suggesting votive deposition with little chance of recovery.\(^{160}\) The lunulae and some axes were, as was common elsewhere, deposited in dryland locations and likely intermittently retrieved for use, perhaps of a ceremonial nature. Many of the arrowheads on the other hand were probably chance losses, either on settlements, or during the course of their use.

Many of these Chalcolithic find spots are within or adjacent to areas with wedge tombs, but rarely next to wedge tombs. This distribution is partially determined by the practice of deposition in bogs, rivers and lakes; however, when considered alongside the distribution of wedge tombs, it does suggest that these Chalcolithic communities chose to make depositions on the edge of their territories and shows that the wedge tomb communities in both the Burren and east Clare had access to metal objects from an early date.

8.2.10. EBA finds

![Figure 8.14 The distribution of EBA finds in County Clare](image)

<table>
<thead>
<tr>
<th>Num</th>
<th>Type</th>
<th>Findspot</th>
<th>Harbison</th>
<th>Additional notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Killaha</td>
<td>Knockaninaun, Drumcliff</td>
<td>N/A</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>Killaha</td>
<td>Knockaninaun, Drumcliff</td>
<td>N/A</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>Killaha</td>
<td>River Cullenagh, Ennistymon</td>
<td>572</td>
<td>None</td>
</tr>
<tr>
<td>4</td>
<td>Ballyvalley</td>
<td>Knockroe, Ennistymon</td>
<td>961</td>
<td>Decorated</td>
</tr>
</tbody>
</table>

\(^{160}\) Although some bog finds may have been marked and retrieved.

251
Thirteen axes of an EBA date can be provenanced to County Clare (Tab 8.4); three of type Killaha, eight of type Ballyvalley, one of type Derryniggin and one unusual trunnion axe. Of those, eight can be assigned a more specific find spot (Fig 8.14).
Two of the Killaha axes were found together, near the Fergus River in mid Clare, at Knockaninaun, Drumcliff (Ryan 1976). They were found under a large recumbent boulder that may have once stood upright. The cutting edges of both axes were badly damaged and pitting on their surfaces suggests that they were poorly cast. The third Killaha type axe was from just southwest of the Burren, in the River Cullenagh in Ennistymon (H #572). Killaha axes mark the beginning of the widespread adoption of tin bronze and suggest networks extending into Cornwall; however, the widespread distribution of this type offers no clues to their region of manufacture (Waddell 2010, 138).

The find spots of five of the Ballyvalley type axes are known. One was found in a garden in Knockroe, one in Lough Reavac, Iragh, two in Scarriff River and one in a Glenwanish Bog, Inishcaltra (Fig 8.14). These are the most common form of Irish axe, but most do occur in the north and east of the country, and concentrations of hoards of this axe in the north-east have led to suggestions that it was the centre of their manufacture (Harbison 1969a; O’Flaherty 1995; Waddell 2010, 138). At least five of the Ballyvalley type axes have hammered decoration; this is mostly limited to irregular or oblique lines, but the Lough Revac axe was decorated with zigzag designs on its broad face. Zigzag designs are a decorative motif more common in the south than the north of Ireland (Harbison 1969a, 68). More unusually, one of the axes from Scarriff is covered in gold (Wilde 1861, 524); it is sometimes described as being covered with gold leaf (Harbison 1969a, 39), but this is a technological misnomer and it is more likely an example of ‘foil guilding’, which is first recorded in Syria and Ur in the early third millennium BC (Oddy 1991). This intriguing and unique find represents the only known example of such technology in Bronze Age Ireland (Armstrong 1922; Harbison 1969a, #997). In a search for parallels, Armstrong (1922) drew attention to a gold-covered halberd and tweezers both from Sweden, solid gold axes from Saxony and Hungary and model gold axes from Iberia. The only other Irish EBA objects found and known to have been covered in gold foil are the decayed organic hilt of the Topped Mountain dagger from County Fermanagh (Waddell 2010) and the buttons to which the Sparrograda and Knockane gold covers from County Cork were probably attached (Cahill 2006, 269-272), none of which are likely to have been metal. Two of the Clare Ballyvalley
type axes are undecorated; one of those appears to have been unfinished, suggesting that at least some metalworking took place in the region.

The trunnion axe is of a rare type of which, in addition to one from Clare (Gibbons et al. 1999, 270), only two other examples from Ireland are known (Harbison 1969a; Flanagan 1980). They are characterised by a pair of lugs extending from midway along their length, which are sometimes pierced (Harbison 1969, #1185) but are not always so (Flanagan 1980, 22). Hemp (1925) believed them to be of LBA date but Harbison includes it among his type Ballyvalley axes. In Britain they are confined to Wales and southern England (Hodges 1956). The one Derryniggin type axe recorded from County Clare (Harbison 1969, #1680) is only provenanced to the county. Derryniggin axes are relatively rare west of the Shannon (Harbison 1969a, Fig 3b), but a relatively substantial number are known to the south in north Limerick and Tipperary.

**Daggers**

There are five, or possibly seven, bronze daggers from Clare; one from Ballykeel, one from Gortaclare, two from the Shannon River in the vicinity of Scarriff, one definite and a second probable from Gragan West and a possible dagger tip from Ballyvally (Fig 8.14, Tab 8.4). Two reportedly come from bogs, one from a sand-pit, two from a river, one from a river bank and one from disturbed land clearance.

The definite Gragan West example is a plain flat dagger with three rivets of type Corkery (Harbison 1969a, #21) and according to the National Museum records it was found ‘4 feet below the surface of a bog’ (Lucas 1967, 7), but given the presence of a burial mound of the right date in the townland, one might wonder if they were associated. There is evidence of considerable re-sharpening on its cutting edge which led Harbison to conclude that it had been used as a knife (Harbison 1969b, 9). The second possible example was found c. 35 metres north of the aforementioned burial mound in unsecure deposits disturbed during land clearance (Cotter 1989). It is a fragmentary object but it does have a raised midrib suggesting a dagger of a more developed type than the other Gragan West example. One of the main routes through the Burren, Corkscrew Pass, runs through Gragan West. There is a notable gap in earlier Chalcolithic evidence, such as wedge tombs, here but there are a significant number of slightly later EBA finds.
and presumably burials. This would seem to reflect a growing concern with routeways, either to overlook them or be seen from them.

The Ballykeel dagger has four rivet holes and one surviving rivet but is otherwise unclassifiable (Harbison 1969b, #107). The Gortaclare dagger has a prominent midrib and probably once had six rivets (Fig 8.15). According to Waddell (2010, 142) its closest parallels are found in England and Brittany; within Gerloff’s (1975, plates 12-13) British catalogue it would find best parallels in the Armorico-British B type Cressington daggers. They have been found relatively widely distributed throughout Britain, from Dorset to Scotland, but are particularly prevalent in the Wessex region where they are associated with striking gold objects in Bush Barrow G and Little Cressington barrow 1. The probable dagger at Gragan West is likely to be of a related type. Only one of the two daggers from the River Shannon, in the vicinity of Scarriff, has any details recorded. It is well preserved and has a ‘narrow blade [with a] slight flattened midrib [and] its cutting edges may have been slightly bevelled’ (Gibbons et al. 1999, 116), suggesting that it is a relatively developed type.

![Figure 8.15 The Gortaclare dagger, County Clare. Reproduced with the kind permission of the NMI](image)

**Stone finds**

There is one late ‘Bann type’ battle-axe from County Clare (Fig 8.16) and another from Inisheer, the easternmost of the Aran Islands. The Inisheer example is unfinished suggesting that at least some were produced there. The one from mainland Clare is from Teergonean, just north of Doolin, a convenient place from which to cross to the Aran Islands (Fig 8.5b). Bann type battle-axes have been found in burials accompanied by a Cordoned Urn (Laheen, County Donegal), another by a Collared Urn (Tara, County Meath) and a burial or hoard including a small ornamented axe and bronze pin shank (Clonmore, County Carlow) (Simpson
They are almost completely absent from the southwest of Ireland, and outside of Clare the only other example from Munster is in Cork. Clare would seem to be at the southern extent of their distribution and, as with Cordoned Urn Tradition pottery, they are likely indicative of northern contacts.

Two, possibly four, EBA maceheads have been found in County Clare. The two definite maceheads are from Ballycar South (Gibbons et al. 1999, 6) and Raheen (Gibbons et al. 1999, 183). The possible maceheads are from Doonaghboy (Gibbons et al. 1999, 40) and Tomgraney (Gibbons et al. 1999, 190); both are broken fragments and could alternatively be parts of battleaxes or other perforated polished artefacts.

The only possible EBA mould from County Clare is half a stone mould that was found during the excavations for a canal in Killaloe (Gibbons et al. 1999, 68). No further details are recorded; however, the 'half' in the description suggests it was a two piece mould and therefore late EBA at the earliest.

8.3. Cork

8.3.1. Archaeological visibility and research biases in Cork

There was significant antiquarian interest in prehistoric Cork (O'Brien 2012b, 11-20) and, although many sites finds were looted and destroyed, several local antiquarians, most notably John Windale (Cahill 2006), amassed collections that are of relevance to this study. The first scientific excavations in County Cork were carried out as part of unemployment relief schemes during the 1930s. Excavations of relevance to this study include the Labbacallee wedge tomb (Leask and Price
1936), Kealkil stone circle (Ó Ríordáin 1939) and Curraghbinny hill-top cairn (Ó Ríordáin 1933). Subsequently, the presence of an archaeological department in Cork University led to a disproportionate amount of research in that area that includes a number of important BA excavations. Notably, Professor Michael O’Kelly excavated a BA enclosure at Carrigillihy (O’Kelly 1951), an EBA burial cairn at Moneen (O’Kelly et al. 1951/1952), a wedge tomb at Island (O’Kelly 1958b) and burnt mounds at Ballyvourney (O’Kelly 1954) and Killeens (ibid.). O’Kelly’s student, Edward Fahy, carried out excavations of stone circles at Bohonagh (Fahy 1961), Reanascreena South (Fahy 1962) and Drombeg (Fahy 1959), a hut-site and burnt mound at Drombeg (Fahy 1960) and at an EBA cemetery in Ballyenahan (Fahy 1954). A pioneering palaeo-environmental study during the 1970s that included another excavation of a stone circle just over the border in County Kerry (Cashelkeelty) by Ann Lynch (1981) is also worthy of mention, as are the archaeological surveys of County Cork (Power 1994; 1992; 1997; 2000; Ronan et al. 2009), which are the most comprehensive in the country. Fleischmann (1973) carried out an MA on the bronze collections in UCC and Cork museum. In more recent years, the work of Professor William O’Brien, not coincidentally a Cork native, has contributed in a major way to the understanding of Cork’s prehistory. Of relevance to this study, are his survey and excavation of EBA mines (O’Brien 1994), excavation of two wedge tombs (Altar and Toormore) (O’Brien 1999), his programme of survey and excavation on the Beara Peninsula (O’Brien 2009) and his recent overview of the prehistory of Cork (O’Brien 2012b).

As in County Clare, research projects have unsurprisingly been focused on the areas of densest visible remains which for the most part are in upland west Cork. Much of the best land is in east Cork and, as O’Brien (O’Brien 2012b, 25) notes, more intensive arable farming over recent centuries and decades may have depleted the number of sites in these regions. However, from an early date and largely due to Professor O’Kelly, many of the prehistoric remains disturbed in Cork during the course of development were salvaged (O’Brien 2012b, 23) and one of the first Irish infrastructure projects to include for archaeological mitigation was a hydroelectric dam in County Cork (Fahy 1957). In more recent years there have been several large linear infrastructure projects including gas pipelines (Gowan
REGIONAL CASE STUDIES: CLARE AND CORK

1988) and roads, and the results of five of the NRA projects have recently been published in one work (Hanley and Hurley 2013).

8.3.2. Topographical and geological constraints and opportunities

At 7,460 km² Cork is the largest county in Ireland and over twice the size of County Clare (Fig 8.17). Its physical landscape is characterised by an east-west topography that rises to the rugged peninsular west (O’Brien 2012b, 3-8).

![Figure 8.17 The topography of County Cork (O’Brien 2012). Reproduced with the kind permission of Professor William O’Brien](image)

To the north the county is bounded by the Mullaghareik and Ballyhoura Mountains. South of this, the River Blackwater, which rises in Kerry, runs all the way to the Waterford coast at Youghal. This is separated from the River Lee, further south, by a spine of upland rising from the Nagle and Kilworth Mountains in the East to the Boggeragh Mountains in the West. Further south, the River Lee and Bandon rise in the Sheehy Mountains and run eastward and then south entering the sea at Cork and Kinsale harbours respectively. East Cork is generally low-lying and consists of fertile plains.

The central east-west spine and the peninsular southwest of Cork are predominantly composed of purple and green ‘Old Red Sandstone’ (Fig 8.18). The valleys in-between are underlain by carboniferous limestone, shale and mudstone,
while the uplands of the northeast are comprised of Namurian sandstone and shale. Although there is considerable variation, the soils in the south, central and eastern part of the county tend to be more fertile (brown earth and podzols) and those in the west are less so (more acidic peaty podzols and gleys) (O’Brien 2012b, 9-10). This is likely to have been broadly similar in the prehistoric period, but we must also be mindful of how this would have affected the tree cover and consequently the ease at which land was available or traversable. The influence of the east-west topography on movement is especially evident in the ‘mid-Cork landscape’ where the majority of ‘late prehistoric monuments occur along the main ridges, or along the lower and mid slopes of the higher ranges’. However, as O’Brien (2012b, 8) warns us, and as sites revealed during road construction indicate, visible monument distributions may not directly reflect prehistoric settlement patterns.

As in Clare, coastal travel is likely to have been very important, and the sheltered bays and headlands of the southern coastline are likely to have been important features. The western shoreline is a classic drowned landscape with many islands, especially to the south in Roaringwater Bay. O’Brien (2012b, 8) suggests that, while the Blackwater and Lee were likely important corridors for movement in the Mesolithic, they were less so in later periods. He bases this on the visible archaeological remains and the likelihood that the ‘valleys were heavily wooded and poorly drained’. This is likely to be true for local traffic, but any trans-county
directional travel, such as might have been involved in the long-distance exchange of metal, is likely to have made extensive use of these rivers and settlement on the uplands could also be construed as overlooking those routes.

Of particular importance to this study are the copper deposits in peninsular west Cork. There are numerous exposures of copper both of sedimentary copper beds and a smaller number of rich quartz-sulphide veins (Reilly 1986; O'Brien 1994).

8.3.3. Previous settlement

Evidence for Neolithic activity in Cork it is relatively sparse and O'Brien (2012b, 43) suggests that ‘the adoption of the farming way of life may have been delayed in this region, particularly in coastal areas of the county where marine resources may have remained a more attractive subsistence option’. There are only two, possibly three portal tombs and two definite passage tombs in Cork (O'Brien 2012b, 47). These have an exclusively coastal distribution and, apart from the possible portal tomb at Rostellan in the eastern side of Cork harbour (Ronan et al. 2009), are all located in the peninsular west (Power 1992). The two passage tombs are located in Roaringwater Bay, one on Clear Island and the other on Ringarogy (Fig 8.19). A stone covered in Newgrange-type rock art was found not far from the Clear Island tomb and the Ringarogy tomb may be an ‘undifferentiated passage tomb’, suggesting connections with Waterford, Cornwall, the Scilly Isles, the Channel Islands and Brittany. The portal tombs are less individualistically classifiable and apart from suggesting a shared ritual understanding with the wider Neolithic of Ireland they do not point to connections in any particular direction; however, as O'Brien (2012b, 49) points out, the limited coastal distribution of both ‘may indicate small colonies of farmers along this part of the Cork coastline’. Pollen evidence suggests that any farming connected with these Neolithic monuments was relatively short-lived and that no sustained agriculture took place until the onset of our study period c. 2500 cal BC (Overland and O'Connell 2009; Mighall and Lageard 1999).
Square and rectangular Neolithic houses were discovered during archaeological testing in advance of the M8 near Fermoy (5 houses within 7km), the N28 near Ballincollig and a gas pipeline near Buttervant (O’Brien 2012b, 49-56). These appear to date to a remarkably narrow band in the early fourth millennium BC (McSparre 2008; Smyth 2010). Pottery at these sites included ‘Carinated bowls’ and pottery of the ‘Globular Bowl style’ (O’Brien 2012b, 55) indicating networks of exchange that would be open to research such as that touched upon in Chapter 6 for Chalcolithic and EBA pottery.

Stone axes, the most obvious and probably most significant objects of exchange during the Neolithic, were most commonly made from local sedimentary rocks, such as mudstone, shale and sandstone (O’Brien 2012b, 55). However, several porcellanite axes from the north have also been found in the county, indicating that long-distance exchange networks were already established at this time (Sheridan 1986).

There is relatively little evidence of Late Neolithic activity in Cork and no monument types are recognised as belonging to this period.161 Grooved Ware has been recovered from three sites in north Cork, however: two on the M8

161 The monument type most diagnostic of this period in Ireland is the henge (O’Brien 2004a; O’Sullivan and Downey 2012). These are found to the north in County Kerry (O’Brien 2004b, 569).
Fermoy/Mitchelstown road and one on the north Cork gas pipeline (Johnston and Kiely forthcoming), suggesting that the earlier settlement in this region continued and communities in Cork were still involved in networks of exchange along which contemporary trends in pottery passed. ‘Sui generis’ pottery, from habitation layers under the burial cairn at Moneen, suggests there may have been a local Late Neolithic pottery style (Brindley et al. 1987/1988). Some of the earliest copper axes, such as those from Castletownroche (Harbison 1969a), could be imports from the continent during this period.

<table>
<thead>
<tr>
<th>Lithology</th>
<th>Number</th>
<th>Percentage of the total</th>
<th>Probable origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mudstone</td>
<td>3</td>
<td>20%</td>
<td>Local/Widespread</td>
</tr>
<tr>
<td>Shale</td>
<td>2</td>
<td>13.33%</td>
<td>Local/Widespread</td>
</tr>
<tr>
<td>Porcellanite</td>
<td>2</td>
<td>13.33%</td>
<td>Rathlin/Tievebulliagh Antrim coast</td>
</tr>
<tr>
<td>Dolerite</td>
<td>2</td>
<td>13.33%</td>
<td>Connemara? Likely some from near Cork??</td>
</tr>
<tr>
<td>Andesite</td>
<td>2</td>
<td>13.33%</td>
<td>Limerick? Likely some from near Cork??</td>
</tr>
<tr>
<td>Pelite</td>
<td>1</td>
<td>13.33%</td>
<td>Widespread identification difficult</td>
</tr>
<tr>
<td>Sandstone</td>
<td>1</td>
<td>6.66%</td>
<td>Local/Widespread</td>
</tr>
<tr>
<td>Flint</td>
<td>1</td>
<td>6.66%</td>
<td>Glacial erratic/Antrim</td>
</tr>
<tr>
<td>Tuff</td>
<td>1</td>
<td>6.66%</td>
<td>North East England/Cumbria</td>
</tr>
</tbody>
</table>

Table 8.5 Stone axes from Cork (as of 1998). Information compiled from Cooney and Mandal 1998, 55-110

8.3.4. The archaeological evidence for activity in Cork during the Chalcolithic

**Wedge tombs**

There are 114 wedge tombs recorded in Cork (Fig 8.20). These are concentrated in western and mid-western Cork, most especially in the upper Lee basin and on the Mizen and Beara peninsulas (O’Brien 2012b, 70-73), and there are notably few wedge tombs in the north and east of Cork. Four tombs have been excavated under relatively modern conditions: Labbacallee (Leask and Price 1936), Island (O’Kelly 1958b), Altar (O’Brien 1999) and Toormore (ibid.). The only one in which pottery was found was Labbacallee; this was once mistakenly identified as Beaker pottery (O’Brien 2012b, 76; Brindley pers. comm.) and is now considered of unknown type.

Survey on the Beara peninsula has identified pre-bog field walls (Murphy 2009), at least some of which appear to be associated with wedge tombs. Although it does
not have the same density of wedge tombs the pattern of field remains revealed at
Cloontreem Valley (Hickey 2009) is very similar to that on Roughan Hill, Co. Clare.

Beaker pottery

Despite not being found in any Cork wedge tombs, Beaker pottery is known from a
number of other contemporary sites in Cork (Fig 8.20). These are all in the east of
the county; however, the lack of recent road-building in the west is likely to
account for this bias. The only old find of Beaker pottery is from the probable
settlement remains found under the burial mound, at Moneen (O’Kelly et al.
1951/1952). The form of the vessels remains uncertain; however, an associated
date of 2560-2390 cal BC\textsuperscript{162} suggests they are early (Brindley et al. 1987/1988). The
recent NRA publication of the Cork road schemes included finds of Beaker pottery
on nine sites (Hanley and Hurley 2013), in pits at six locations and as stray sherds
at a further three. Among these, AOO Beaker sherds at Lisnasallagh 2 (2490-2150 cal
BC\textsuperscript{163} and an early radiocarbon date (2600-2300 cal BC)\textsuperscript{164}
based with a fine
vessel with a soft S-shaped profile and decorated with lines and fringes from
Carrigohane 4, confirm the presence of early Beaker users in the region (Grogan
and Roche 2013).

\textsuperscript{162} GrN-10629
\textsuperscript{163} Beta 201097
\textsuperscript{164} Beta 178202
Associated postholes were found at one Beaker site, Curaheen 1 (Danaher 2013c); however, no structural pattern was discernible. The pits at several of the other sites appear to have been marked by a single stake or post and to have contained clearly structured deposits. For example, a pit at Barnagore 2, with the remains of between seven and ten Beaker pots, was filled by two distinct deposits. The lower deposit contained fine Beaker pottery and two water-rolled stones ‘deliberately placed in an upright position’ (Danaher 2013a, 68). The upper deposit contained less fine Beaker pottery and a fragment of a saddle quern. Wheat and barley grains and charcoal were also retrieved from the pit, and a sample of oak charcoal returned a radiocarbon date of 2480-2050.165

**Chalcolithic Artefacts**

Sixty-five early copper axes, fifty-two of which have further provenance, are known from County Cork (O’Brien 2012b, 63-66; Harbison 1969a) (Fig 8.21). The majority are of curve-sided shape and typical of those produced using Ross Island copper; however, several are of trapezoidal shape (such as the Castletownroche axes) indicating that may be particularly early in date or imports from copper-using groups on the continent (see Chapter 3). Thirteen were single finds, and the others were found in four hoards. Two of the hoards contained four axes (Castletownroche & Ballybeg East), one contained six (Capeen) and one contained twenty-five (Clashbredane). Clashbredane is the largest single find of Chalcolithic metal from Ireland. This dense distribution of Chalcolithic finds is reinforced by six copper halberds, two of type Carn and four of type Cotton (Harbison 1969b), six or possibly seven gold discs, four lunulae, and gold strips found in Mushera (O’Brien 2012b, 86-91; Cahill 2006).

165 Beta-1714110 (2 Sigma)
None of the discs or lunulae have secure archaeological context; however, some information on the find circumstances of several pieces is known (Fig 8.22). Two discs and the lunulae form a notable concentration around the Lee estuary, two of the remaining discs are from the western peninsular part of Cork and the final disc is from Ballyvourney, in the area of the Lee River basin. The Ballyvourney disc was accompanied by a gold nail-headed pin and may have been found near a skeleton (Cahill 2006, 265). The Castletreasure disc has a variation on the laddered cross motif more common in Northern Ireland (Case 1977b). The foil strips from Mushera are reminiscent of the Bellville plaques and possible diadem from County Cavan and Beaker ear-rings (Cahill 2006, 267), suggesting that they are early in date. XRF analysis has revealed high copper (3.2%) values (and silver 13%) suggesting that copper may have been deliberately added. The pin found with the Ballyvourney disc, the Sparrograda foil disc and Knockane foil plaque also had high copper levels. These might suggest relatively late dates, early experimentation of combining copper and gold in the Cork area (Sparrograda and Knockane are considered below, in the section under ‘EBA Artefacts’), or imports from elsewhere. The Ballyvourney disc was of regular early low copper content and similar in form to other early gold discs, so is likely either a late deposition or to have been accompanied by an import.
Although there is no definitive record of copper mining in Cork until much later in the EBA (see below) and isotope analysis would seem to suggest most early copper in circulation came from Ross Island, it is important to remember that, due to rising sea levels, if prehistoric coastal mines existed along the mineral-rich Mizen peninsula they may now be submerged and finds such as the stone axes from Ballyrisode copper mine (O’Brien 2003) may indicate an earlier phase of mining.

**Rock Art**

There is a considerable amount of prehistoric ‘rock art’ in West Cork (Fig 8.23), particularly on the Iveragh Peninsula (O’Sullivan and Sheehan 1993; 1996; Purcell 2001). It is of a style found widely along the Atlantic façade, from northwest Spain to Scotland, which is generally considered Chalcolithic to EBA in date (cf. Bradley 1997). Recent work at Loughcrew suggests that at least some ‘rock art’ precedes the construction of the passage tombs there (Twohig et al. 2010) and is therefore of Neolithic date. Nevertheless, its presence in West Cork further reinforces the impression of persistent interaction along the Atlantic façade in which communities in Cork often engaged.
Burnt Mounds

One significant result of the recent road construction in Cork was the indication that a significant number of the over 2000 burnt mounds (Power 1992; 1994; 1997; 2000; Ronan et al. 2009) in County Cork (Fig 8.24) may belong to the Chalcolithic/EBA. Five of the forty-five investigated returned Chalcolithic radiocarbon dates (O’Brien 2013, 181) and a further nine were dated to the EBA (Hanley 2013).
8.3.5. The archaeological evidence for activity in Cork during the EBA

EBA artefacts
There are twenty-five Killaha style axes (the earliest type of tin-bronze) from Cork (O'Brien 2012b, 96; Harbison 1969a). These are mostly single finds; however, there are several pairs and a hoard of six axes was found under ‘a pocket of loose stones’ in Vicarstown, County Cork (Power 1923). Interestingly, all of the Vicarstown axes were of similar size and seem to have come from the same mould, but even more intriguingly, all were worn only on one end of their cutting blades, some very heavily (O'Brien 2012b, Fig 96). The original interpretation was that they were hafted so they could not be reversed and used by the one workman to carry out the same kind of work; however, it seems more likely that it was some form of taboo that prohibited a rehafting reversal. Of importance to this chapter, it seems likely, from the occurrence of six items from the same mould deposited at the one location, that they were a local product. Stone moulds for the production of Killaha type axes have been found in Lyre (O’Kelly 1970) and Kilcronat (Coughlan and Raftery 1961, 226). The Kilcronat example is Old Red Sandstone and has a thin vein of quartz running through it (ibid.).
Figure 8.25 The distribution of later EBA axes, axe moulds, halberds and daggers in County Cork (from O’Brien 2012, 97 with additions). Reproduced with the kind permission of Professor William O’Brien

There are twenty-eight Ballyvalley/Derryniggin type axes from Cork (O’Brien 2012b, 99; Harbison 1969a), the majority of which are of Ballyvalley type (at least 20). Many of these are single finds and unfortunately few details of their discovery circumstance are recorded. There is a small concentration of four (three type Ballyvalley and one Derryniggin) from near Bandon; the two that give the Ballyvalley type its name were found together in Ballyvalley townland and the Toormore axe was found with a copper cake at a wedge tomb. There are two unfinished Ballyvalley axes from Cork (Harbison 1969a, #1573 & 1574), and a stone mould with six axe matrices of Ballyvalley type (one small slender and chisel like) and a dagger were found in Doonour, on Sheep’s Head Peninsula (O’Kelly 1969).

There are two tin-bronze halberds of type Breaghwy from Cork (Harbison 1969b, #299 & 316; Penny 1975); one is from Kanturk and the other has no details of provenance beyond Cork. Two daggers, one an ogival dagger of type Offaly with no provenance and the other, an unclassifiable dagger, were found with an inhumation in Ballyenahan, near Mitchelstown (Fahy 1954).

**Gold**

As mentioned above, the Sparrograda disc and Knockane plaque were both of unusually high copper content. Both are likely to be foil covers that once adhered to organic or other perishable materials that are rather unique objects in an Irish
context and bring to mind the button covers of Wessex type. However, they are also distinctly different and more like each other in style and form than any other parallels in Britain or Ireland; as Needham (2005) has pointed out, they may indicate an intermediary stage between early Irish and later Wessex gold-work. This could be evidence of innovation by a school of local gold-smiths or indicate contact with schools further afield. Gold jewellery was produced through melting as early as the mid-third millennium BC in Iberia, such as at the settlement site of Buraco de Pala, Portugal (Comendador Rey 1999, 64), a step that would be necessary if alloying took place; however, in the context of the alloying of other metals, such as tin-bronze, perhaps it is no surprise that metalworkers began to experiment.

The Sparrograda foil disc was reputedly found in a rock cleft, with two or three similar pieces, that workmen melted down and a bronze armlet (perhaps of Migdale type), supporting the suggestion that it might be of an earlier date than Wessex buttons and suggesting a milieu that may stretch to Scotland. The Knockane trapezoidal foil plaque was reputedly found with a burial covered with similar plates connected by wire and amber beads in a cave of mitre shape, one of which has recently been identified in the NMI (P1948:306) collection (Cahill 2006, e.n. 11).

**Copper mining**

Exposures of copper are plentiful in peninsular west Cork. Both sedimentary sand deposits and richer vein mineralisations exist; however, there is only evidence of the former having been exploited in prehistoric times.

To date, at least ten Bronze Age mines have been identified in Cork; four on the Beara peninsula and six on the Mizen peninsula (Fig 8.25). The best known of these, Mount Gabriel on the Mizen peninsula, has been extensively investigated by Professor O’Brien (1994) and shown to mainly date from 1700-1400 cal BC. The scale of mining at the Mount Gabriel type mines was at a smaller scale than at most other known mines in Britain and Ireland and O’Brien (1994) sees this as reflecting seasonal exploitation by small local communities. It should be noted, however, that even minimum estimates suggest enough metal to make 40-50 Toormore type axes would have been produced annually and when one takes into account that several
of these mines are likely to have been in contemporary use, the levels of production appear more significant.

In addition to the moulds and copper cake mentioned above, further evidence of the considerable metal-working activity in west Cork is found in an undated (but likely EBA) stone mould for bar ingots found in Dunbeacon townland on the Mizen peninsula (O'Brien 2012b, 110).

**EBA pottery traditions**

Finds of EBA ceramics are, like in Clare, relatively rare in Cork. Pots from burials include four Bowl Tradition vessels (Ó Riordáin and Waddell 1993, #125, 126, 367 & 368), nine Vase Tradition vessels (Ó Riordáin and Waddell 1993, #405-409 & 472-475), one Collared Urn (Kavanagh 1976, #23), eight Encrusted Urns (Kavanagh 1973, #17-22; Sherlock 2013) and two Cordoned Urns (Kavanagh 1976, #10-11). Other important ceramic finds include sherds of Bowl and Vase Tradition pottery, unusually found together within the one deposit, from Barnagore 4 (Danaher 2013b) and two unique cups (one with a face) and a spoon found with a Cordoned Urn at Mitchelstown 2 (Sutton 2013; Grogan and Roche 2013, 315-316).

![Figure 8.26 Burials by pottery type in County Cork (from O'Brien 2013, 142). Reproduced with the kind permission of Professor William O'Brien.](image)

166 Bowl tradition and Vase tradition vases are subsumed under ‘Food Vessel’ and all urns under ‘Cinerary Urn’.

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In one EBA cemetery in Ballynaboola, County Cork (Ó Riordáin and Patrick 2011), none of the three burials found was accompanied by pottery.

**Stone circles**

The stone circles of southwest Ireland are considered middle to late BA in date (O’Brien 2012b, chapter 5; 2004a); however, the dating evidence relates to activity surrounding or inside stone circles and not their actual erection.

The relatively recent radiocarbon dating of material from Reanascreena South (O’Brien 2004a), excavated by Fahy (1962) in the 1960s, would appear to provide the clearest dating (O’Brien 2012b); however, even in this case the dating of the stone circle is problematic. The monument consists of a multiple (13) stone circle with an internal diameter of just under 9.5 metres. The tallest stones are situated either side of the entrance opposite the axial stone, on the southwest of the circle. The stones are surrounded by a ditch, an external bank and pits. The pits contained possible tooling debris from the stones and were overlain by upcast from the ditch. This has been taken to suggest a single phase of construction for the circle and enclosing elements (O’Brien 2004a) but this, even if the assumption about the tooling debris is correct, only indicates that enclosing elements were built after the circle. Further arguments for a single phase of construction, such as,
that those who repaired the ditch edges with revetments were aware (presumably through memory) of the extent of the stones subsurface sockets (Fahy 1962; O’Brien 2004a, 328), seem even more tenuous. The radiocarbon dates from Reanascreena came from beneath the enclosing bank (1253–943 cal BC),167 above the initial silting of the enclosing ditch (259–417 cal AD)168 and a burial pit inside the stone circle (1001–835 cal BC).169 They prove that the stone circle was embanked in the LBA and therefore, as O’Brien (2004a) argues, that the embankment is not a henge. However, the arguments that the entire monument was built as a single entity are tenuous and the stone circle could still be considerably earlier.

Fahy excavated two other stone circles, Drombeg (1959) and Bohonagh (Fahy 1961). Pits in the interior of these produced material that has subsequently been radiocarbon dated to the LBA (O’Brien 1993), and pottery that has been reinterpreted as dating from EBA to LBA; both of these date associated material not the erection of the stone circles. The charcoal retrieved from Cashelkeelty stone circle (Lynch 1981) should be considered in a similar light.

Boulder burials, stone alignments and standing stones have been more confidently assigned to the later BA (O’Brien 2012b). Arguments that these might be considered as ‘part of a single cultural unit’ are only occasionally made explicit (Lynch 1981), but they may be implicitly influencing the certainty with which stone circles are dated to the later BA. The likelihood that such complexes are palimpsests of activity from over a long period is strong; their south-western orientation cannot be used as a temporally binding argument as it can be attested from the time of wedge tombs.

The reason Fahy and others originally believed these monuments to be of EBA date was because of the EBA dating of stone circles in mid-Ulster, Scotland and Brittany (Ó Nualláin 1984). The stone circles in mid-Ulster and most of Scotland are very different; however, those in northeast Scotland do clearly share a number of features with those in the southwest of Ireland. In particular, as Burl (2000, chapter 14) has pointed out, it is in the presence of portal stones opposite an axial, or

167 GrN 17510 (2895±35 BP)
168 GrN 17511 (1695±30 BP)
169 GrN 17509 (2780 ± 35 BP)
recumbent stone as it is known in Scotland, to the southwest, that suggests a probable link. The dating of stone circles in northeast Scotland has also proved difficult, but a number of them can now be firmly assigned a Chalcolithic/EBA in date (Bradley 2005). However, a link or influence from one tradition to the other does not necessarily mean they are contemporary. There are traits that unite the south-western Irish stone circles in a coherent group; they are consistently composed of five or more stones of an uneven number and usually decrease in height from portal to axial stone (Ó Nualláin 1984). The axial stone is also usually a thin slab, while the recumbent stone in northeast Scotland is more commonly a heavy block (Burl 2000, 264). It is possible that communities in the south-west of Ireland built stone circles, in a style influenced by, but at a later date than those in northeast Scotland. The issue here is how much later of a date; on the basis of the current evidence I would consider this question unanswered and leave open the possibility that they were already being built in the EBA in southwest Ireland. Furthermore, regardless of the chronology, I believe the architectural similarities suggest a link that is of consequence to our consideration of exchange, particularly of metal. It is in this milieu, one that included other important exchange partners such as Brittany, Cornwall/Devon, Northern England and Wales, that the tradition of building stone circles and rows was strongest. However, it is through the exchange connections between south-west Ireland and north-east Scotland, which were particularly strong during the EBA, which most (external) influence on the construction of stone circles in the south-west seems to have come.

8.4. Contrasts and comparisons

There are obvious similarities, but also stark contrasts, between the archaeology of the two case study areas considered. In Clare, the shale axes, likely from Fisherstreet Bay in Doolin, seem to have been important regional exchange items during the Neolithic. There is also other ample evidence for thriving communities during that period, represented by portal, court and Linkardstown tombs. In contrast, Cork appears to have been more sparsely occupied during the Neolithic and the few monuments there are coastal outliers. The two passage tombs probably indicate external contacts with other passage tomb builders in Ireland, but also potentially in Brittany. Contract archaeology has uncovered a number of
Neolithic sites in Cork with no surface expression, especially in the Blackwater valley area, but the overall picture remains one of a sparsely occupied landscape.

During the Chalcolithic, an upsurge in the construction of tombs (wedge tombs) suggests that communities in both study areas expanded dramatically. In both cases, the distribution of tombs and associated remains suggest small-scale segmentary societies. In Clare, some of these are concentrated around an atypical form of court tomb, but in Cork there are no spatially related earlier tombs. An argument for a combination of migration, exchange and indigenous developments can be made for these developments. In chapter 8, I argued that contacts with Brittany are likely to have played a particularly important role and we should at least be open to the possibility of prehistoric migration. Metal prospectors are the most likely migrants and such persons may have played a role in an institutional transmission physically manifested in wedge tombs.

Some of what are thought to be the earliest copper objects found in Ireland are from Cork (e.g. Castletownroche). These may date to a time before Ross Island was in production and indicate contacts with Brittany, or elsewhere on the continent, in the Late Neolithic (3000-2500 cal BC). It is through these channels that the first miners are likely to have arrived (see 4.3) and although there is no definite evidence of Chalcolithic mining in Cork, the possibility should be left open. Chalcolithic communities in Cork deposited large numbers of copper axes, suggesting that, in comparison to Clare, copper was relatively widely available. In Clare, a smaller number of early copper axes suggests that communities had some access to Ross Island copper and the recent find of Chalcolithic copper ore or slag (Gibson 2013a), seemingly not from Ross Island, suggests that communities there may have had access to an alternative, but perhaps limited supply of copper. A potential early copper mine in Kilcommon, County Tipperary, where wedge tombs that appear related to those in east Clare occur, is one possible candidate. It is likely that shale axes continued to be used during the Chalcolithic and EBA in local exchange networks, but with the appearance of copper axes they probably lost their importance in wider regional exchange networks.

Although both Clare and Cork lie outside the densest distributions of Irish Chalcolithic and EBA pottery traditions, examples of each those traditions, apart
from Collared Urns, have been found in each county. This, and the fact that no alternative pottery traditions have been identified, suggests that current distributions may be a product of depositional patterns or biases in recovery. The occurrence of these pottery traditions in counties Cork and Clare also evidences the level of connectivity between these communities and those elsewhere in Ireland.

The Chalcolithic and EBA artefacts from Clare suggest that communities there were continually engaged in widespread exchange networks. Tombs, pottery types and metal artefacts current elsewhere are found in Clare and occasional exotic finds, such as the Danish flint dagger and the gold foil-gilded miniature axe, both from the river at Scarriff, may indicate occasional and particularly long-distance exchanges. The location of Scarriff, on the Shannon River, is significant. The Shannon would have been a major conduit for exchange between communities in the southwest and northern Ireland. For established communities in County Clare, their situation beside this conduit is likely to have offered many exchange opportunities.

As the dominance of the Ross Island copper supply came to an end, the small-scale but widespread mining in peninsular west Cork seems to have largely taken over the role of supply, and this may have dramatically affected the trajectory taken by communities there. It ensured strong contacts between communities in Cork and other metal rich areas, such as Brittany, Cornwall, Wales and Scotland. An intermediary step in goldworking techniques between the Irish Chalcolithic production of discs and lunulae and the Wessex goldwork may be identifiable in the Cork finds from Sparrograda and Knockane. These and other unfortunately poorly recorded but tantalising finds from Cork speak of highly connected elites operating within an international milieu.

Sometime in the EBA or later BA communities in Cork (and Kerry) began to build stone circles of a type reminiscent of the Chalcolithic/EBA circles in northeast Scotland. Exchange between these two areas was important from the Chalcolithic on and this cultural transmission may have been a consequence of those long-term links. While the role of a communities agency in its social development should not be denied, clearly the opportunities presented by the substantial metal resources
in Cork and the consequent contacts they maintained though the exchange of those materials, played a dramatic role in social developments there.

The value of an object or idea can change as it moves geographically. In the case of metal axes, I have, for example, suggested that for communities in the areas outside of where it was mined, it may, at least initially, have simply fulfilled the role of earlier stone axes. However, for communities in those areas in which it was mined, metal and the axes it produced would have catapulted them into the centre of extensive exchange networks. The value of certain other objects or materials, such as jet and amber, were likely valued for their distant and perhaps unknown origin, but in their source areas they may also have had very different associations. With regard to our two case studies, it is apparent that there are many objects which can be identified as of local/regional, inter-regional or very long-distance origins (Fig 8.28). While the distance travelled by an object will not have necessarily determined the way in which it was valued, it is likely to have profoundly affected it. The origin and the producers of local/regional objects are likely to have been known. This does not mean that these objects will necessarily have been valued in a prosaic way, but the opposite may have been true of objects and ideas from further away. Those objects and ideas that arrived from very long distances are likely to have been valued as esoteric. At some point in the EBA the power structures of segmentary societies associated with wedge tombs appear to have broken down and individual burials accompanied by grave goods became more common. In Cork some of these burials, unfortunately poorly recorded, may have been accompanied by very rich grave assemblages including amber and gold. The journeys and exchanges to obtain such exotic goods may have been conceived of as cosmological and the knowledge and power they conferred used by emerging elites to usurp the old power structures (cf. Helms 1988).
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Figure 8.28 Local, regional, inter-regional and very long distance exchange networks
Chapter 9 The nature and role of exchange in Chalcolithic and EBA Ireland: Connecting people objects and ideas

9.1. Introduction

The aim of this thesis was to improve our understanding of the nature of exchange and its role in social change during the Chalcolithic and EBA in Ireland. Key objectives included disentangling what actually lies behind the distributions of material culture from the Chalcolithic and EBA, identifying and challenging ill-conceived notions about prehistoric exchange, and moving beyond simple characterisation to a better understanding of the role of exchange and the contextual meaning or value of what was exchanged. It was also hoped that this thesis would indicate key sites and artefact types for future excavation and characterisation studies.

9.2. Chapter summaries and discussion

Chapter 2 reviewed anthropological and archaeological theories of exchange with the aim of developing the theoretical perspective of this thesis. It found that the best way to avoid ill-founded assumptions about exchange was to be as explicit as possible about the source of analogies one uses in the interpretative process. Ethnographic and ethnoarchaeological analogies were found to offer the best way of widening perspectives and, when used explicitly, of being open to critical review. Processual attempts to model the mode of exchange, reciprocity, redistribution or market exchange, created potentially useful fall-off curves of distributional data (cf. Renfrew 1975), but, at least initially, failed to account for the fact that artefacts can have different meanings in different contexts (Hodder 1982c, 202). There have been subsequent uses of such fall-off curves, which have attempted to be more sensitive to context and these have arguably shown their continued potential (Beck and Shennan 1991, 109-131; Renfrew 1993). This thesis chose not to abstract information to fall-off curves; however, it does often focus on distributional data and attempts to gain insight from a wide-scale perspective of exchange systems. In order to stay sensitive to local meaning and the potentially active role of material culture, it was decided to stress the social context of
exchanges, the social aspects of production and consumption, the communicative aspects of exchange and the value of what was exchanged.

**Chapter 3** was predominantly concerned with the context of exchange, both physical and social. Rather than being overly deterministic, it sought to examine the constraints and opportunities that faced societies engaging in exchange. It concluded that a combination of ease of movement, natural resources, pre-existing contacts and technological knowledge were all important factors in the establishment of Irish Chalcolithic and EBA exchange networks, but conceded that, in the end, people and groups had to decide whether or not to enter into exchange with one another: a choice that would have been informed by various social, ideological and historical factors. The arrival of the know-how to extract and refine copper in the southwest of Ireland was clearly a significant development not only in technological but also social terms. As was seen in later chapters (esp. 3 & 8) Neolithic remains are not very plentiful in the southwest, but in the Chalcolithic and through to the later BA that region became a major megalithic centre. The situation of communities on the Antrim coastline, with resources such as porcellanite which were particularly important during the Neolithic, located on one of the most convenient crossing points to Britain, was also shown to have been particularly advantageous.

**Chapter 4** considered the flow of metal through a combination of a *chaîne opératoire* and an object biography approach. A diachronic change in the distribution of copper/bronze artefact depositions was shown to have articulated with a change in the organisation of production. In the Chalcolithic, during the time which Ross Island dominated supply, most objects and the biggest hoards were deposited in the southwest. At some time after c. 2000 cal BC there was a shift in production from Ross Island to more numerous and widespread small mines, such as at Mount Gabriel, and communities in the southwest of Ireland, while presumably still major producers of copper, do not appear to have deposited as many axes during this period. On the other hand communities in the northeast of Ireland began depositing a relatively increased number of axes during this period. O’Brien (2004b, 570-573) has tentatively suggested that during the Chalcolithic mining may have been controlled by a hierarchical society associated with henges
in north Kerry, so called ‘lunula lords’. This is a feasible interpretation; however, we should not entirely abandon the possibility that this mining was associated with wedge tomb-using groups. There are two wedge tombs located less than a day’s journey downriver from Ross Island (24 km), along the largely navigable Flesk River. Furthermore, conspicuous consumption in the southwest during the Chalcolithic was not concentrated in the immediate area around Ross Island, but rather in the broader south-western region of Counties Cork and Kerry. The largest hoards from this early period, Clashbredane, County Cork and Carhan, County Kerry, are from areas with wedge tombs and not henges. By establishing the date and importance of Ross Island and its link with Beaker using groups, O’Brien’s (2004b) work has been hugely beneficial to our understanding of metal production and exchange, but further investigation of North Kerry henges and the nearest wedge tombs would prove of significant further benefit to our understanding of the social context.

It was noted that copper cakes were only found deposited in the south of Ireland, relatively near possible metal sources, and that a higher number of so called ‘axe ingots’ and an axe ingot mould were found in the northeast of Ireland. It appears that in addition to the exchange of finished axes there was significant exchange of circular copper cakes from the south of Ireland to the northeast, where it was subsequently cast into ingot shapes, identifikationsformen (see section 4.4.4) that referred to their value and were suitable for exchange further afield.

Groups in north-eastern Ireland may have held a privileged place in exchange networks stemming back to their control of porcellanite and/or because of their geographical location at the most convenient crossing point to Britain. As the Migdale/Marnoch metalworking phase in northeast Scotland began their role as intermediaries in metal exchange is likely to have been significant. The Scottish connection was important throughout the EBA, and is especially evident in distributions of shared pottery styles, particularly those of the Bowl and Cordoned Urn Tradition.

On the basis of the current information from characterisation studies, it appears that, during the Chalcolithic, copper was mined in the southwest of Ireland and gold in the northeast. However, any models supposing a simplistic copper-for-gold
exchange are likely to be in error. From their mutual exclusive use and deposition, it seems likely that copper/bronze and gold circulated in different spheres of exchange and were valued very differently. In the EBA tin was sourced from Cornwall, and perhaps Brittany, and there were additional sources of copper, especially in Wales, northern England and Scotland. An intense network of exchange of bronze between these metal producing regions is reflected in distribution of gold lunulae; however, it is suggested here that such objects are likely to have been relatively rarely exchanged. Gold itself may have been exchanged in bar ingot form but the restricted distributions of lunula types, classical, unaccomplished and provincial, suggests that those objects were not freely exchanged and they are more likely to have been considered inalienable communal goods that perhaps sometimes moved with people, such as bands of prospectors.

Chapter 5 focused on the communicative side of exchange in pottery traditions, particularly the distinction between discursive and non-discursive communication. Through combining the recently improved typo-chronology of Irish EBA ceramics (Brindley 2007) and insight from a chaîne opératoire analysis of ethnoarchaeologically recorded potting traditions (Gosselain 1992; 2000) it tried to distinguish between the movement of information, objects and ideas behind the distribution of pottery. Characterisation studies of pots suggest they were not exchanged over great distances and the widespread distribution of different styles relates either to the movement of ideas or people. It was suggested that the spread of less discursive elements of pottery traditions might represent a movement, possibly exchange, of people, whereas the spread of more discursive elements represented the exchange of ideas.

There are many aspects of EBA pottery traditions that could be approached in this manner but I chose to focus on two areas, one within the Bowl Tradition and the other between Collared and Cordoned Urn Traditions. Within Bowl Tradition pottery, long-lived forms which are likely to reflect forming techniques were shown to be likely to reflect deep non-discursive interaction, possibly kin or apprentice networks, than the more widespread and rapidly changing surface decoration. The relationship between Collared and Cordoned Urns was interpreted
as one of decorative influence rather than as one descending from the other. It was suggested that Cordoned Urns emerged in Ireland/Scotland when small groups of Collared Urn Tradition potters, who originated in southern Britain, moved into Ireland/Scotland and influenced local decorative traditions. However, it was also argued that there was an important conceptual distinction in how the construction of these pots was approached, that reflects deeper learning networks.

Chapter 6 focused on the exchange of buttons and beads. Certain substances, such as jet and amber, were obviously exchanged over large distances, but it was also apparent that they were also often curated for long periods and are likely to have passed through several generations. There were clear gender divisions, with beads being more commonly associated with women and V-perforated buttons with men, and aspects of the materiality, colour, electrostatic properties, etc., appear to have been important factors in the selection of certain substances. In some cases a degree of status or wealth may be indicated by the provision of grave goods but close consideration of some of the ‘richest’ burials, such as Findhorn, Scotland, suggest other more emotive factors, such as grief, could also play a role. Curated beads and buttons were likely kept as heirlooms, and potentially provided links to powerful ancestors. The nature of how beads could be easily split may have encouraged curation, a practice most dramatically represented by the ceramic necklace split between two burials in Caltragh, County Sligo. That such ceramic necklaces were made of local rather than exotic materials has prompted the suggestion that they were owned by local elites emulating Wessex elites. Such interpretations are symptomatic of a Wessex-centric view of the Irish and British EBA. The various subjects studied in this thesis suggest Wessex had a relatively small role in the networks of exchange between Britain and Ireland. Wessex was certainly, and had for some time been, a very important ritual centre to which substantial amounts of people are likely to have travelled and this must have facilitated the exchange of information and some objects; however, the milieu in which Ireland was most enmeshed was with other metal-bearing regions, such as Cornwall, Wales and Scotland.

Jet, although originally from Whitby, probably came via Scotland and its exchange reinforces the concept of the east coast, especially the north-east coast, connection
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with Scotland. The almost mutually exclusive distribution of lunulae, crescent-shaped jet necklaces and crescent-shaped amber necklaces suggests that communities employed these objects to consciously differentiate themselves. Those jet necklaces that were found in Ireland were not deposited as they were in Britain, but rather in local ways, suggesting that in these cases the necklaces arrived as objects, or that if they arrived on the necks of marital exchange partners, those persons no longer retained rights to them after death. Finds of faience were similarly concentrated in the north-east, suggesting a milieu in which interaction with Scotland was significant. However, the earliest faience finds were from Wexford and Wales. The links between faience and metalworking are evident in this early distribution, and at some point the information behind faience production is likely to have arrived via northern France, into this Irish Sea milieu.

Chapter 7 concentrated on wedge tombs and their origins. It was argued that current interpretations which use cultural-historical interpretations as a straw man to argue against migration may be as paradigmatically constrained as those they criticise. There does appear to have been influence from the indigenous court tomb tradition; however, the morphological similarities between wedge tombs in Ireland and gallery tombs in Brittany can also be supported. Elements of the Beaker pottery tradition in this country are likely to have come from Brittany and most wedge tomb assemblages of Beaker pottery contain some of the ‘primary tradition’ of Beaker pottery. Knowledge of metal mining and working is likely to have come from Brittany at the same time that wedge tombs, relatively suddenly, began to be built across Ireland. This was approximately 1,000 years after the last court tombs were built. On the basis of this and evidence of ritual practice, such as port holes and veneration of the female form, it is suggested that the possibility of an institutional transmission from Brittany should be considered. If this hypothesis is correct, the transmission could have taken place within existing networks of exchange, but is likely to have involved a relatively substantial movement of people, such as metal prospectors and pastoralists looking for resources and suitable ground. Merging with local communities may have produced a form of hybrid culture.
Chapter 8 concentrated on two regional case studies in an attempt to conduct a more complete overview of available evidence and to provide a comparative perspective. The chapter revealed several similarities and contrasts between the nature and role of exchange in the two case studies, and working at this scale it was also possible to detect a number of research biases. Despite some prolonged projects in the Burren and the Discovery Programme’s work in the Mooghaun landscape, in comparison with Cork, Clare is relatively understudied. Particular gaps in our knowledge occur because entire classes of relevant monuments in Clare, such as wedge tombs and barrows, have not yet been subject to any excavation. Other assumptions, made on the basis of small number of excavations, such as the lack of Beaker pottery in Cork wedge tombs suggesting they are not Beaker-using groups, may be in error. Beaker pottery has been shown to have been current in Cork at this time and the lack of it in wedge tombs is as likely to be due to local depositional practices as it is to the pottery tradition of their builders.

Cork appears to have been relatively sparsely populated during the Neolithic. During the Chalcolithic, communities appear to have expanded dramatically and, by the LBA, the area was one of the major Megalithic centres in Ireland, if not north-western Europe. The exploitation of its natural copper resources, and competition between the different local groups carrying it out, are likely to have been major factors in this development. There is evidence for a relatively substantial Neolithic population in the Burren in County Clare but, as with Cork, these seem to have expanded substantially over the Chalcolithic and EBA. While copper resources may have been important to wedge tomb users, this points to the other economic base with which they appear to have been associated, upland pasture, suggesting that cattle and/or sheep were also very important. Despite not having any known copper resources, communities there appear to have had access to non-Ross Island copper from an early date. Kilcommon in County Tipperary, where there are wedge tombs seemingly distributionally and morphologically related to those in east Clare is a possible candidate. In the later EBA, the focus of settlement seems to have shifted off the highlands in the Burren, down to the coast, rivers and deeper low-lying soils elsewhere in County Clare.
Focusing on exchange at a regional level in these case studies also prompted consideration of where that exchange might have taken place. Although, the act of exchange does not leave a physical trace, we might imagine regular gatherings at which people conducted seasonal ceremonies and engaged in exchange. Sites such as Turlough Hill, on the northern edge of the Burren, may well have facilitated such inter-regional exchange between paired groupings. In the southwest, henges and later stone circles may have fulfilled this role.

Among the objects that were evidently exchanged, local/regional, inter-regional and very long distance networks could be discerned. Within Clare, although chert is widely available in the limestone areas, the quality of the material found at Roughan Hill suggests a regional network of exchange extending to Tawin Island in South Galway where such material is easily available. Similar networks of local/regional lithic exchanges are likely to have existed in Cork but in the absence of traceable resources they have not yet been identified. Judging by the admittedly limited existing characterisation studies of pottery in these areas, it seems likely that in both cases ceramics would have been predominantly exchanged at a local/regional level. Copper was locally available in Cork, but tin would have had to have been obtained from Cornwall or Brittany. Communities in Clare would have had to have obtained copper through inter-regional exchange and it seems probable that this would most commonly have arrived in the form of objects rather than raw materials. There are no known gold resources in either Cork or Clare and the lunulae and discs found there must have originated from elsewhere in Ireland. Other gold objects, such as those with the high copper content in Cork and the gold foil-gilded axe in Clare, may have come from even further afield. There was a number of other exotic finds, such as the flint dagger from Clare and amber from Cork, that suggest networks that may have extended all the way to Scandinavia. Such exchanges indicate long-distance travel, but may also have involved several intermediaries.

9.3 Understanding spheres of exchange and fungibility

The probability that different spheres of exchange existed was suggested in the review of anthropological theory (chapter 2), a supposition apparently supported by the lack of mixing of materials in production and deposition during the
Chalcolithic and EBA. We might also suppose from analogy with ethnographic examples, such as the Kula, that such separation extended further. Some objects are likely to have been considered suitable for bridewealth or dowry in marital exchanges and at various other rites of passage (birth, coming of age and death). Others may have been used for exchange at more prosaic times. However, we should also be open to the possibility that certain substances were bartered between groups. The reaction of anthropology against Adam Smith’s dictum on human nature has arguably denied barter its true place in human history. Accepting this does not mean reviving ‘homo economicus’; barter has been shown to be a socially embedded practice that exists in many ‘traditional societies’ (e.g. Humphrey and Hugh-Jones 1992). We do not know, for example, if the miners at Ross Island were part time/seasonal visitors who supplied their own food, whether they were attached to a community that supplied their food or whether they and metal workers were a separate caste who exchanged metal for food. Ethnographic examples of all three situations can be quoted and we should be open to the different possibilities. One example, that might provide an interesting analogy is that of the longstanding relations between castes of iron smelters and farmers in India, where ritually regulated reciprocal exchanges of food for metal are common (Neogi and Jaikishan 2011). Whereas in many parts of Ireland the role of exchange of metal axes is initially likely to have just replaced that of stone axes, if the assumed dominance of Ross Island for 300-500 years is correct, then we might imagine that such a community could have obtained many other resources through exchange for metal and a certain degree of specialism was likely. Later in the EBA, when mining was more widespread and small-scale, it seems more certain that miners would have been part-time. Wedge tombs are also associated with upland pasturage. Pastoral groups may have been quite mobile and could have bartered metal and animal produce with lowland agriculturalists, which would have had more mobility constraints.

9.4 Considering Value

There are a number of issues to consider under the rubric ‘value’ and what that can tell us about the nature and role of exchange during the Chalcolithic and EBA.
Inherent in the functional design of an object: weapon, tool, ornament and ritual paraphernalia is a reference to certain practices: conflict, domestic work, social display and ceremonies. Of course many of these can overlap; a weapon can be used for display, a tool can be used as a weapon and any object can be used in a ritualistic way. Nevertheless, as we saw in chapter 4, the fact these objects were made of different materials and deposited differently suggests that they belonged to different spheres of exchange and were valued in different ways. There was a chronological change in this pattern, with the deposition contexts of object types becoming even more distinct (for example, edged weapons were more exclusively deposited in rivers) and in the mixing of materials becoming more common (some weapons and tools were elaborated in gold). The more distinct depositional pattern of weapons might reflect the growth/entrenchment of institutions connected with war and conflict. The transgression of traditions such as decorating tools or weapons with gold might be interpreted as emerging elites manipulating the symbolism behind these substances to upset old power structures.

In chapter 6 the possibility that the materiality of an object could affect its value was discussed. For example, the colour red seems to have been important in Chalcolithic Ireland (one jasper V-perforated button and many jasper bracers), something shared with Beaker-associated objects elsewhere in Europe but not in Britain. The blackness of jet is also likely to have been significant and while the other material properties of jet probably added to its value, it could be copied in other dark substances. The unique properties of jet and amber – ability to retain heat, electrostatic properties, smell when burnt, etc. – are also likely to have added a sense of the esoteric to their value. The colour of gold and its resistance to tarnishing is likely to have influenced how it was valued. Direct engagement by researchers with materials is important; however, we must be careful, as with other phenomenological interpretations, while physical sensations may be cross-cultural, how they are perceived is not. Once again recourse to the ethnographic record offers important warnings.

The way in which an object was valued could also change over its life cycle or biography. This was most dramatically evident in cases where objects were curated after being partitioned or broken and no longer fulfilled their initial purpose of
design. The situation, in which these objects were found - placed in burials or otherwise carefully deposited, evidences that they continued to retain significant value. In these cases, objects may have been valued as heirlooms, perhaps giving access to the power of, or communication with, ancestors.

Certain objects appear to have been primarily associated with particular genders and may have affected the way certain objects were valued. These and the exchanges in which they were involved may have actively reinforced inequalities but at the same time may have represented the rights accorded to those segments of society. One of the notable things about the Irish Chalcolithic/EBA, when compared with Britain, is the relative lack of gold deposited in the form of personal grave goods. It seems likely that discs and lunulae were deemed communally owned inalienable objects, temporarily deposited and retrieved for communal ceremonies. However, it is important to note that value was not static but rather context-specific, dependent on perception and often actively contested.

9.5 Future directions for research

9.5.1. Wedge tombs

The extent to which internal dynamics or external influence played a role in the stimulus behind the origin of wedge tombs remains a question key to our understanding of social change in Ireland during the mid-third millennium BC. This thesis argued that the debate was largely silenced by the paradigmatic shift away from cultural historical models and that we should reconsider whether contacts with Brittany played a role. Roughan Hill, County Clare has the densest distribution of wedge tombs in the country and is the source of the most recent court tomb dates. It would seem the ideal place for the excavation of a wedge tomb and the investigation of possible links between wedge tombs and the indigenous court tomb tradition.

Further investigation of the wider Ross Island region, in Kerry, would also be desirable. The relationship between Ross Island, the north Kerry henges and the nearest wedge tombs is critical to our understanding of the beginnings of metal working in Ireland and Britain. The possible EBA mines elsewhere in Ireland (i.e. outside of the southwest), especially those near wedge tombs, such as Kilcommon
in the Silvermines Hills, County Tipperary in an area rich in wedge tombs might also provide a potentially rewarding avenue of research.

9.5.2. Characterisation studies

As new techniques become available it is critical that we frame the questions behind characterisation studies within our current understandings of the archaeological material. For example, the results of the recent isotope study of two lunulae which suggest that the gold does not come from Northern Ireland need further clarification. It would be most beneficial to see a programme of isotope analysis on a variety of lunulae types from a variety of places undertaken; however, this should be done in concert with a consideration of the social context of their production, use and deposition.

9.5.3. Pottery chaîne opératoire

There is huge scope for more comprehensive chaîne opératoire studies of Irish Chalcolithic and EBA pottery traditions. The large amount of Beaker pottery recently found in pits and in spreads on road projects (Carlin 2012), while in sherds rather than entire pots like those found in burials in Britain, needs to be compiled into a new typo-chronology and might, from the exposed sections, be particularly amenable to the investigation of early forming stages. The typo-chronologies of the other EBA pottery traditions that we do have, are almost exclusively built on material from burial contexts which may be of idealised forms. A considerable amount of related material from domestic sites is now known (Ó Maoldúin 2014) and a compilation of that material for comparison with the funerary pottery is overdue. Like the Beaker pottery, unlike the often intact pots found in cists, much of it consists of sherds that might be particularly amenable to analysis focused on less discursive aspects of production chaîne opératoire.
Chapter 10 Conclusion

Through a combination of chaîne opératoire and social biography approaches, and deconstruction of current interpretations, this thesis has developed a new perspective on the nature and role of exchange in Chalcolithic and EBA Ireland. It is important to understand that exchange was not primarily about acquiring goods; it was a communicative social act. The exchange of objects, ideas and people bound societies together in reciprocal relationships and helped prevent conflict, but on the other hand aspects of that process could be actively contested and lead to the usurpation of existing power structures. During the Neolithic there were extensive networks of exchange stretching across and between, Ireland and Britain. At the beginning of the Chalcolithic the surge in wedge tomb construction began at the same time as networks of exchange were radically reordered by communities that procured and worked metal. This thesis argues that the technological know-how to work metal and aspects of the Beaker package are likely to have arrived from Brittany. Furthermore, that external influence is likely to have played a role in the sudden construction of wedge tombs, perhaps even involving the transmission of an institution. However, the contacts behind this novel injection of external influence, while dramatic, may have been relatively short-lived and the closest networks of interaction continued to be between communities in Ireland and western Britain. This is particularly discernible in the distribution of subsequent pottery traditions, which stress the close relationships on either side of the Irish Sea, across which there is likely to have been a continuous exchange of ideas and people. Eventually, in those areas where wedge tombs were prevalent, the prevailing power structures collapsed and new ideologies, more focused on individual burial and often associated with barrows, emerged. The acquisition of foreign goods and the transgression of traditional norms are potential ways in which emergent elites may have usurped those old power structures.
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## Appendix 1 Beads from Chalcolithic or EBA burials

<table>
<thead>
<tr>
<th>Townland</th>
<th>County</th>
<th>Description</th>
<th>Pot type</th>
<th>Refs</th>
<th>Notes</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altanagh</td>
<td>Co. Tyrone</td>
<td>twelve burnt beads of fired clay</td>
<td>None</td>
<td>Williams 1986</td>
<td>--</td>
<td>3360 ± 30 (GrN-11449)</td>
</tr>
<tr>
<td>--</td>
<td>Antrim</td>
<td>faience</td>
<td>None</td>
<td>Williams 1991/1992</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Ballinchalla</td>
<td>Co. Mayo</td>
<td>two green bead like stones and another white bead like stone mounted on a stone disc - not retained</td>
<td>None</td>
<td>Cahill and Sikora 2011, 291</td>
<td>From grave 2: a cist with 3 deposits of cremated bone</td>
<td>--</td>
</tr>
<tr>
<td>Ballybrew</td>
<td>Co. Wicklow</td>
<td>lignite bead</td>
<td>Bowl Tradition</td>
<td>Mount and Buckley 1997</td>
<td>3 cists, bead with inhumation and mat impression, quartz crystal and pebble and scraper and two flakes and bowl</td>
<td>--</td>
</tr>
<tr>
<td>Ballyduff</td>
<td>Co. Wexford</td>
<td>segmented faience bead</td>
<td>Vase Tradition</td>
<td>Waddell 1990, 155</td>
<td>two young adults in a cist</td>
<td>3550 ± 50 (GrA-14604)</td>
</tr>
<tr>
<td>Caltragh</td>
<td>Co. Sligo</td>
<td>16 stone beads, 10 fusiform/semi-fusiform, 1 rectangular plate, 1 squat annular bead, two chunky annular beads, 1 almost circular bead and 1 triangular bead. All soft, fine-medium grained sandstone, apart from the triangular bead which was of a creamy white laminar stone.</td>
<td>None</td>
<td>Danaher 2007, 71-73/Sheridan appendix on cd 1-10</td>
<td>Two cremations: one female 40-50 and the other 40-50 year old of indeterminate sex</td>
<td>1690-1510 cal. BC &amp; 1960-1540 cal. BC</td>
</tr>
<tr>
<td>Location</td>
<td>County</td>
<td>Notes</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td>----------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carlow</td>
<td></td>
<td>M9 Carlow bypass faience beads from Seanda details of exhibition at Carlow Museum</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carrig</td>
<td>Co. Wicklow</td>
<td>3 faience beads. At least one star shaped and one segmented.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carrigeens</td>
<td>Co. Sligo</td>
<td>Perforated cowrie shells and a bone toggle-like object</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carnduff</td>
<td>Co. Antrim</td>
<td>A small perforated bead made of clay and glazed white.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carnenny</td>
<td>Co. Tyrone</td>
<td>Two stone beads in coarse bucket shaped pot</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Castlemartyr</td>
<td>Co. Cork</td>
<td>Amber beads</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross</td>
<td>Co. Galway</td>
<td>Two small coloured beads in ring ditch... copper alloy beads in cremation pit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dromara</td>
<td>Co. Down</td>
<td>Amber bead in biconical cup in large urn</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dublin</td>
<td></td>
<td>Faience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note in Seanda

- Cahill and Sikora 201, 435 in a cist with the cremated remains of a 14-16 year old
- Waddell 1990, 45 cist and inverted urn
- Excavations 1970:31 ring cairn with polished stone axe, three flint scrapers, and an arrowhead in cairn not with burials which were in 13 small pits under the cairn
- Cahill 2006 Skeleton found covered in sheet gold in limestone cave. Gold and several amber beads connected by gold wire
- Mullins Excavations 2006:784 cremation and ring ditch cemetery
- Waddell 1990, 77
- Williams 1991/1992
<table>
<thead>
<tr>
<th>Location</th>
<th>County</th>
<th>Description</th>
<th>Date/Reference</th>
<th>Finds/Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dundrum</td>
<td>Co. Down</td>
<td>shale bead? (described as a ring of shale)</td>
<td>Waddell 1990, 78</td>
<td>two short cists containing human bones...ten cinerary urns</td>
</tr>
<tr>
<td>Edmondstown</td>
<td>Co. Dublin</td>
<td>three stone disc shaped beads with cylindrical borings</td>
<td>Mount and Hartnett 1993, 41</td>
<td></td>
</tr>
<tr>
<td>Edmondstown</td>
<td>Co. Dublin</td>
<td>hollow bone tube</td>
<td>Mount and Hartnett 1993, 42</td>
<td>Possible bead</td>
</tr>
<tr>
<td>Glenga</td>
<td>Co. Tyrone</td>
<td>stone beads</td>
<td>Waddell 1990, 140</td>
<td>cist with stone beads and a perforated needle</td>
</tr>
<tr>
<td>Grange</td>
<td>Co. Roscommon</td>
<td>crinoid bead</td>
<td>Waddell 1990, 130</td>
<td>cemetary mound 13 buials one with bone handled dagger with six rivets also vase urn</td>
</tr>
<tr>
<td>Grange, Baldoyle</td>
<td>Co. Dublin</td>
<td>two amber beads, one globular and one conical</td>
<td>Elder, Excavations 2004:0460</td>
<td>ring ditch</td>
</tr>
<tr>
<td>Harristown</td>
<td>Co. Waterford</td>
<td>quoit-shaped faience bead</td>
<td>Waddell 1990, 145</td>
<td></td>
</tr>
<tr>
<td>Keenoge (burial 13)</td>
<td></td>
<td>40 jet beads</td>
<td>Brindley 2007, 370/Mount 1997</td>
<td>3730 ± 35 (GrA-2157)</td>
</tr>
<tr>
<td>Kilcroagh</td>
<td>Co. Antrim</td>
<td>2 segmented faience beads &amp; a bun shaped stone (chlorite) bead and perforated bone object</td>
<td>None</td>
<td>3460 ± 40 (GrA-14816)</td>
</tr>
<tr>
<td>Kilmainham (Military Road)</td>
<td>Co. Dublin</td>
<td>one ceramic and two bone beads; one is a finely worked cylindrical bead</td>
<td>Walsh Excavations 2006:665</td>
<td>cremation cemetery</td>
</tr>
<tr>
<td>Site</td>
<td>County</td>
<td>Find</td>
<td>Description</td>
<td>Reference</td>
</tr>
<tr>
<td>------------</td>
<td>----------</td>
<td>------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Kinkit</td>
<td>Co. Tyrone</td>
<td>bone pin and button</td>
<td>biconical cup (Kav 4)</td>
<td>Brindley 2007, 370</td>
</tr>
<tr>
<td>Knockboy</td>
<td>Co. Antrim</td>
<td>iquoit-shaped faience bead</td>
<td></td>
<td>Waddell 1990, 48</td>
</tr>
<tr>
<td>Longstone</td>
<td>Co. Kildare</td>
<td>stone bead</td>
<td>few coarse potsherds</td>
<td>Waddell 2010, 128</td>
</tr>
<tr>
<td>Loughloughan</td>
<td>Co. Antrim</td>
<td>two jet beads</td>
<td>lugged bowl</td>
<td>Waddell 1990, 48/Kavanagh 1991, 97</td>
</tr>
<tr>
<td>Luggacurran</td>
<td>Co. Laois</td>
<td>faience beads?, 'two little links of beads, of some mineral substance of a bluish colour, and highly polished and finished'</td>
<td>large vessel with simply rounded or flattened rims: EBA-MBA (Brindley initial assessment)</td>
<td>Chapple Excavations 2001:869</td>
</tr>
<tr>
<td>Mell 2</td>
<td>Co. Louth</td>
<td>Decorated glass bead.</td>
<td></td>
<td>Chapple 2011, 371-377 &amp; 443</td>
</tr>
<tr>
<td>Nevinstown</td>
<td>Co. Meath</td>
<td>Crinoids</td>
<td></td>
<td>Cahill &amp; Sikora 2011, 371-377 &amp; 443</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Location</th>
<th>County</th>
<th>Item Type</th>
<th>Site</th>
<th>Date</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oldbridge</td>
<td>Co. Meath</td>
<td>Jet bead necklace</td>
<td>Bowl</td>
<td>Waddell 1990, 128</td>
<td>Double cist, two men and a bowl were in the other chamber, only teeth</td>
</tr>
<tr>
<td>Rathbennett</td>
<td>Co. Westmeath</td>
<td>Two jet beads</td>
<td>Bowl</td>
<td></td>
<td>EBA from bowl association</td>
</tr>
<tr>
<td>Rathbennett</td>
<td>Co. Westmeath</td>
<td>2 cylindrical jet beads</td>
<td>Brindley 2007, 370</td>
<td></td>
<td>3550 ± 40 (GrA-14822)</td>
</tr>
<tr>
<td>Skerry East (near)</td>
<td>Co. Antrim</td>
<td>A quart measure of small button shaped pieces of blackwood, each of these was pierced with a hole'</td>
<td>Waddell 1990, 49</td>
<td></td>
<td>??</td>
</tr>
<tr>
<td>Tara (burial 30)</td>
<td>Co. Meath</td>
<td>Faience, jet, amber, bronze tubular beads</td>
<td>None</td>
<td>Brindley 2007, 370/ O'Sullivan 2005</td>
<td>3370 ± 60 (GrA-19180)</td>
</tr>
<tr>
<td>Termon</td>
<td>Co. Cavan</td>
<td>Amber</td>
<td>Brindley 2007, 370</td>
<td>Cist D</td>
<td>2750 ± 80</td>
</tr>
<tr>
<td>Tomfarney</td>
<td>Co. Wexford</td>
<td>Biconical clay bead</td>
<td>None</td>
<td>Sikora and O'Reilly in Cahill and Sikora 2011, 601 (picture 660)</td>
<td>Cist w/ cremations of at least 17 people</td>
</tr>
<tr>
<td>Unprovenanced</td>
<td>Co. Down</td>
<td>Amber bead</td>
<td>in large urn</td>
<td>Waddell 1990, 27 &amp; 77</td>
<td>No date but likely to be EBA-MBA from Urn association</td>
</tr>
</tbody>
</table>