Muddying the Waters: reconsidering Migration in the Neolithic of Britain, Ireland and Denmark

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ABSTRACT

This paper explores the current narratives of migration for the start and spread of the Neolithic with a particular focus on the role that the new ancient DNA data have provided. While the genetic data are important and instructive, here it is argued that archaeologists should also consider other strands of evidence. More nuanced appreciations of migration as a long-term process can be created by exploring modern mobility studies alongside considerations of continued mobility throughout the Neolithic in Europe. We can also re-interpret the material evidence itself in the light of these approaches to help trace multiple possible links and migrations from multiple different origin points. This involves the investigation of complex, but connected, practices, such as monument construction and deposition across wider areas of northern Europe than are currently normally investigated. Such an approach will enable us to address long-term processes of movement, migration and interaction and investigate how new, shared social experiences emerged in a setting in which mobility and migration may have been the norm.

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Introduction

The scientific breakthroughs of aDNA research that have taken place within the last decade have turned the Neolithisation debate upside down. The DNA results from Scandinavia and the British and Irish Isles seem to reproduce a picture of migrating farmers carrying a relatively high percentage of Anatolian/Aegean ancestry (e.g. Brace et al. 2019; Malmström et al. 2015; Mittnik et al. 2018; Skoglund et al. 2012; Skoglund et al. 2014). Thereby migration has been reintroduced as the main driver for the transition from a hunter-gatherer way of living to a permanently settled and agrarian lifestyle which often characterises the Neolithic.

There is no doubt that the new scientific achievements of aDNA have contributed significantly to our understanding of how agricultural practices spread from the Middle East to reach northwestern Europe around 4000 BC. However, we cannot understand the complexity of the Neolithisation process through aDNA studies alone, which often seem to assume that the incoming farming population came from a restricted region, and once settled would no longer be mobile. For Britain and Ireland this process has been presented as the migration of people from northern France or the Low Countries, and for southern Scandinavia an influx from northern Germany and the Michelsberg culture. Currently, migration is often only considered likely for the initial arrival of the Neolithic and is not thought to have had a lasting influence on subsequent communication networks. However, this picture is changing as it now seems that there was diversity in the origins of colonists in Britain (Brace et al. 2019) and continued long-term gene flow from the continent. Therefore, the background to the British, Irish and Scandinavian Neolithic is most likely in itself a situation of flux, mobility and admixture and we can no longer immediately assume that single, short migration events are the end of the story.

Against this background we find that the current considerations of mobility and migration are incomplete as they tend to focus on one-off events and one direction of influence. Moreover,

the movements of people in the Neolithic are often explained as reactions to 'hard' factors such as climate change and demographic pressures. Thus, mobility and migration are generally considered atypical and problematic events, a last resort instead of the norm, which again has resulted in an underlying 'a-mobile' approach that has already been soundly critiqued in other disciplines (e.g. Schiller and Salazar 2013; Sheller and Urry 2006; Urry 2007). Generally, we find that there is scope to expand current aDNA-produced narratives with a focus on archaeological evidence and the details of migration as a social process. This paper takes its point of departure in the debate on the Neolithisation of Britain, Ireland and Denmark. On this basis, we propose a model in which genetic and archaeological evidence are combined to provide a more nuanced narrative of the role of migration in Neolithic societies.

A journey without end – narratives of the Mesolithic-Neolithic transition

The transition from the Mesolithic to the Neolithic has garnered considerable interest and debate over an extended period of time throughout Europe. The debate will not be fully rehearsed here but there are some interesting parallels between the narratives in southern Scandinavia and those in Britain and Ireland.

Southern Scandinavia

Around the mid-19th century it was the different nature of the archaeological finds obtained from the shell middens (*køkkenmøddinger*) on the one hand and megalithic tombs on the other that allowed Jens Jacob Asmussen Worsaae to divide the Stone Age into two chronologically separated phases (Iversen and Solheim in prep.). Worsaae presented the division at a meeting in *The Royal Danish Academy of Sciences and Letters* in Copenhagen in 1859 and explained the introduction of megalithic monuments by the immigration of farmers who forced out, but partly mixed with, the indigenous hunter-gatherer population (Forchhammer 1859, 71, 98-105). Thus, the megalithic tombs were linked to the Neolithic and were evidently part of a larger European phenomenon – the so-called 'megalithic culture'.

This remained the prevalent view amongst scholars throughout the 19th and early 20th centuries and informed Oscar Montelius' *ex oriente lux* (light from the East) diffusionist model, which was highly influential internationally (e.g. Childe 1925, 1929). For Montelius (1899), megalithic culture originated in the Near East from where it spread to northern Africa and western Europe. The same understanding of the origins of the megalithic phenomenon and the introduction of agriculture was presented by Sophus Müller and later by Johannes Brøndsted (Brøndsted 1938, 142-44; Müller 1913, 229-56). In contrast, the German linguist and archaeologist Gustaf Kossinna used a limited series of pottery forms to coin the term Funnel Beaker culture, later confirmed by Konrad Jażdżewski (Jażdżewski 1932; Kossinna 1921). Kossinna believed that the Early Neolithic Funnel Beaker culture emerged in the Jutland peninsula from the local Mesolithic (Ertebølle) and subsequently spread southwards (Kossinna 1921, 143). This scenario did not gain widespread acceptance, although the term Funnel Beaker culture eventually became preferred to 'megalithic culture' (Becker 1947, 9). Also, irrespective of the applied terminology or preferred direction of spread, the concept of culture and of the inherent superiority of a Neolithic lifestyle remained unquestioned within the Scandinavian research tradition.

It was only with the arrival of new scientific approaches provided by processual archaeology's 'systems theory' that migration as the preferred explanatory model for cultural change was challenged and the basis for the introduction of agriculture in southern Scandinavia reconsidered. The perspective shifted from incoming farmers to the resident Ertebølle hunter-gatherers who were to a great extent viewed as the drivers of Neolithisation. The reason for introducing a Neolithic economy was initially mainly explained by demographic and climatic factors such as population pressure, or ecological and environmental changes, amongst which a supposed decline in the oyster population was proposed (Andersen 1973; Fischer 1974;

Larsson 1987; Rowley-Conwy 1985; Zvelebil and Dolukhanov 1991; Zvelebil and Rowley-Conwy 1984). In turn, social and ideological factors were increasingly considered as the field was influenced by new ideas from post-processual archaeology. Here elements such as exchange systems, communication networks, social positioning/competition and the acquisition of exotic 'luxury' goods were emphasised (Fischer 1982, 2002; Jennbert 1984, 1985; Klassen 2004, 318-343; Madsen 1987; Nielsen 1987; Tilley 1996, 73). Neither of these research traditions left much explanatory room for migration.

Britain and Ireland

As in southern Scandinavia, from the start of the culture-historic approach – up to and including the 1970s – the migration of people was understood as the principle driving force behind the arrival and spread of the Neolithic into Britain and Ireland. While Childe had identified the possibility of diffusion as a mechanism for the transmission of new materials and practices, the relative isolation and island status of Britain and Ireland off the north-west coast of continental Europe seems to have been implicitly taken as necessitating population movements. Indeed, Stuart Piggott, whose 1954 *The Neolithic cultures of the British Isles* can be seen as the pinnacle of the culture-historic approach, was happy to explicitly discuss 'immigrant agriculturalists' and 'colonists' (Piggott 1954, 15; also see Whittle 1977). For Piggott, the material culture of these migrants represents 'the introduction of completely novel equipment, and there are no signs that an immediate fusion took place with any Mesolithic traditions' (Piggott 1954, 15).

In Britain it was only with the interpretive turn of the 1980s that the Neolithic was understood as not necessarily being the outcome of migrations of people from continental Europe, although this approach was less popular in Ireland. Interestingly, some of the earliest considerations of the 'indigenous adaption' approach were in fact inspired by work on the southern Scandinavian transition to the Neolithic, particularly the work of Zvelebil and Rowley Conwy (1984, 1986). Thus, drawing on a different sequence of Neolithisation in southern Scandinavia, British archaeologists in particular began to argue that the native hunting and gathering populations may have been the driving force in the adoption of the Neolithic in these islands (e.g. Thomas 1988 as an important early example of this approach); Irish archaeologists remained sceptical of this solution and continued to include migration from the continent in their transition models (Cooney 2000). In Britain, discussions on the transition to the Neolithic became increasingly tied to a more general appreciation of the pros and cons of the different theoretical approaches. The new interpretive approach (allied to the indigenous adaption model) was associated with a rejection of evolutionist narratives, which were in turn equated with the old culture-historic approach (and migration-dominated narratives). The increasingly polarised debate therefore soon reached an impasse, with the archaeological record being deployed to vociferously support both viewpoints (exemplified in relation to Britain by Sheridan 2010 and Thomas 2013).

Differences and similarities

The trajectories of dominant interpretations in southern Scandinavia, Britain and Ireland have had a significant influence on one another. While processualist ideas initially reached Scandinavia via the filter of British archaeological discourse, the definition of 'complex' southern Scandinavian hunter-gatherers who were not self-evidently swept away by an allegedly superior Neolithic lifeway in turn had a fundamental effect on discourse in Britain. Although the archaeological evidence was far less rich there, the dominant – and necessary – concern with anti-evolutionist narratives led to the adoption of this scenario as also applying to Britain and to a lesser extent Ireland. The rejection of migration narratives therefore became a matter of theoretical preference that symbolised the emergence of British and Irish archaeology as a post-modern discipline. Although the resulting narratives were subsequently criticised (e.g. Sheridan 2010), this development often removed any consideration of migration as a social practice from the debate. With hindsight, this can be considered

unfortunate, as it left British archaeologists in particular ill-prepared for what happened next.

The archaeogenetic evidence

The advent of aDNA studies has once again placed narratives of migration at the forefront of current research, in particular for the Neolithic period. At a pace that often made it difficult for archaeological readers to keep track of new developments, two horizons of significant population change have now been established across most of Europe: initial Neolithisation processes, and the much later emergence of the Corded Ware and Bell Beaker cultures and related phenomena (e.g. Allentoft et al. 2015; Haak et al. 2010, 2015; Olalde et al. 2018). This also applies to Britain, Ireland and the North European Plain, even though given the sometimes challenging preservation conditions, sample numbers remain comparatively low in some areas.

Beginning with the picture for Britain and Ireland, a swing back to the idea that some migration of continental settlers may have been involved in the initial introduction of Neolithic things and practices was suggested by the interpretation of substantial numbers of radiocarbon dates (Whittle, Bayliss and Healy 2011, 848-871). These showed a pattern of slow and piecemeal appearance of novelties in the south-east of England, followed a century later by a spread into south-central England, from where, a century after that, there was a rapid expansion into much of the rest of Britain and over into Ireland (although some very early dates from the west of Ireland remained unexplained in this model). Studies of the pottery chaîne opératoire (Pioffet 2015) also revealed close links to adjacent areas of the continent, with pottery in south-east England showing most similarities to the Low Countries and that in the south-west to Brittany and western Normandy.

The first large-scale aDNA study in Britain was published in 2019 and identified considerable regional variation, reflecting 'multiple source populations with variable proportions of WHG [Western Hunter-Gatherer] admixture' (Brace et al. 2019, 769). However, it was argued that most of this admixture did not take place within Britain itself, but rather several generations before on the Continent. At the time Brace et al. (2019) were writing, the closest matches for this genetic signature were found within the Iberian peninsula, where expanding farming groups associated with the Early Neolithic Cardial culture of the sixth millennium BC had admixed with resident hunter-gatherer populations to a much greater degree than had been the case for the roughly contemporary Linearbandkeramik in central Europe. It is these admixed 'Iberian' farmers that were identified in Britain, although this did not necessarily imply a direct migration from Iberia to Britain. A similar picture was also confirmed for Ireland (Cassidy et al. 2016, 2020).

The area of modern-day France has always been considered the missing piece in this puzzle of the origins of the Neolithic in Britain and Ireland, but a spate of new work has begun to address this. In their geographically broad study, Rivollat and colleagues (2020; see also Brunel et al. 2020 for a similar picture derived using a different dataset) could show substantial admixture with local hunter-gatherers in southern France and across the Atlantic seaboard, so that people with an 'Iberian' genetic signature were widely present in western and northern France by the time Neolithic things and practices were first introduced into Britain. The authors hence see the British evidence as best explained by migrations from the Paris Basin, mediating 'Iberian' and southern French genetic ancestry, whereas the Irish individuals sampled so far could have a more direct Atlantic affinity. While it is clear that considerably more regional data is needed to draw out the details, this supports the idea of several origin points for the individuals who eventually came to settle in Britain and Ireland. This is all the more likely since several crucial areas, notably Brittany, have not yet yielded remains suitable for sampling.

In southern Scandinavia, initial Neolithisation seems to be more closely tied to the immediately adjacent areas of the continent, as shown in a series of papers by Skoglund et al. (2012, 2014; see also Mittnik et al. 2018; and based on mtDNA Malmström et al. 2015). Similarly, a recent large-scale

study by Allentoft and colleagues (2022, 12) argues that the high level of hunter-gather-associated DNA evident in Neolithic individuals from Denmark is a result of much earlier admixture within central Europe, and that migration is therefore the key process that introduced Neolithic lifeways into southern Scandinavia. On archaeological grounds, it is argued that local hunter-gatherer populations may have continued to live in coastal areas (Gron and Sørensen 2018), where Neolithic things and practices were slowly adopted. This is also supported by a recent genetic study from the island of Lolland, south-eastern Denmark (Jensen et al. 2019) and corresponds to a general European pattern of parallel survival of local hunter-gatherers, with potentially later introgression, as suggested by Lipson and colleagues (2017; see also Allentoft et al. 2022, 16). In southern Scandinavia, the picture is further complicated by hunter-gatherer, or mixed hunting-fishing-farming ways of life associated with the Pitted Ware culture, present from *c.*3100 cal BC onward (Iversen, Philippsen and Person 2021; Philippsen, Iversen and Klassen 2020). The model currently favoured sees individuals expanding south and westwards from the eastern Baltic, which seems supported by early archaeogenetic studies (Malmström et al. 2015; Mittnik et al. 2018; Skoglund et al. 2014), and then entering into complex negotiations and exchanges with Funnel Beaker farmers (Iversen 2010; Klassen et al. 2020).

While the broad-brush picture is becoming increasingly clearer, it is also evident that there was considerable regional, local and even individual variation. For example, one individual sampled from the passage grave at Gökhem in modern-day Sweden showed a strong 'Iberian' component, and is genetically much more similar to contemporary British and Irish Neolithic individuals than to the remaining Funnel Beaker population (Cassidy et al. 2016, 372; Skoglund et al. 2014). A similar west–east link has since been mooted by Sánchez-Quinto et al. (2019, 2) who claim 'a significant farmer-specific genetic affinity between the British Isles Neolithic populations and the Scandinavian populations'. These contacts across the North Sea may be artefactually visible based on several polished axes found in Britain that Saville (2004) argues may have been produced from Danish flint sources or even from Danish axes that were re-worked in Britain (see also Walker 2018, 85-98 for further discussion).

Focusing on a different axis of contact, according to Rivollat et al. (2020, 7) the individual sampled at Tangermünde in Saxony-Anhalt (dated to the Middle Neolithic, but probably following a foraging lifestyle, see Terberger et al. 2018) needs several ancestral components to fully explain the genetic signature: Neolithic farmers with ultimate roots in Anatolia, both Western and Eastern Hunter-Gatherers, and perhaps even a Pitted Ware component. Similarly, Lipson and colleagues (2017) could show that individual sites, like the Blätterhöhle in western Germany, saw much greater levels of gene flow between populations with predominantly Anatolian Farmer and those with Western Hunter-Gatherer signatures, and a similar situation has also been suggested for the somewhat earlier burial ground of Obernai in Alsace (Rivollat et al. 2020).

Problems with archaeogenetic narratives

Clearly the results of the ancient DNA analyses have made a significant contribution to our understanding of this critical period, however several large elephants remain in the room, partly due to the interpretative emphasis of many existing studies. First, the issue of the fate of the Late Mesolithic population has not been adequately discussed or resolved. Several works now show that genomic signatures originally associated with hunter-gatherer populations later re-emerged in a Neolithic context even in areas where they had at first disappeared in the Early Neolithic (this is generally described as 'resurgence', e.g. Lipson et al. 2017). Yet it remains to be theorised what this actually implies – long-term survival of 'encapsulated' hunter-gatherer groups, in spite of considerable disruption; in-migration of populations from areas always dominated by hunter-gatherers (e.g. the Baltic coast); or rather from now Neolithic populations with more mixed ancestry (e.g. from western Europe). Each of these scenarios has very different implications for Neolithic societies. It is also interesting to note that Britain and Ireland buck the wider European

trend of a WHG 'resurgence'. This could either be because Neolithisation processes were more disruptive in these island settings than elsewhere, or because such admixture had taken place during an archaeologically quite poorly documented pioneer phase, as recently argued by Julian Thomas (2022). This is a question that can only be solved through further targeted archaeological work, including the precise dating of any overlap between hunter-gatherer and farmer lifeways (e.g. Elliott and Griffiths 2018).

In addition, from an archaeogenetic perspective the migration process has so far been conceptualised in the simplest possible form, at least for Britain and Ireland: 'A large-scale seaborne movement of established Neolithic groups leading to the rapid establishment of the first agrarian and pastoral economies across Britain, provides a plausible scenario for the scale of genetic and cultural change in Britain' (Brace et al. 2019). Thus, migrants arrived into Britain and Ireland, settled down and got on with being Neolithic until the next wave of migrants turned up at the start of the Beaker period (Olalde et al. 2018). This offers a neat narrative, broadly reminiscent of earlier culture-historical ones, yet entirely fails to come to terms with migration as a complex social process. As has repeatedly been criticised (e.g. Frieman and Hofmann 2019; Furholt 2021; Hofmann 2015; Thomas 2022) we are being presented with models of single, directed and large-scale migrations involving the meeting of two previously separate populations – but each link in this chain can be questioned. Settling not just the 'what' happened (people moved), but also the 'why, how and when' questions, requires substantial amounts of data – isotopic, chronological, archaeological and more – and the testing out of different models and scenarios. Indeed, as more genetic data are accumulating, it is becoming increasingly evident that we are faced not just with single, wave-like events, but with constant admixtures of people which vary considerably both between regions and over time, as for instance argued by the narratives of long-term coexistence of hunter-gatherer and farming lifestyles in southern Scandinavia (Gron and Sørensen 2018) and by some of the regionally and chronologically more sensitive studies by aDNA scholars (e.g. Rivollat et al. 2020).

From a social anthropological perspective, a single mass migration is far from the only possibility, and the drivers of migration in non-state societies very often lie at smaller social scales, such as kinship groups, co-resident communities and so on (e.g. Bernardini 2011; Clark et al. 2019; Mills 2011). For Britain and Ireland, this may also be indicated in the otherwise surprisingly early radiocarbon dates for key sites like Magheraboy, Co. Sligo, and in the chronologically staggered introduction of Neolithic things and practices more generally (see Whittle, Bayliss and Healy 2011). There is therefore ample room to discuss how smaller-scale processes of migration and mobility coalesce into the larger-scale patterns that are the focus of most archaeogenetic publications.

Finally, the importance of material culture in the migration process remains under-discussed. Here we are not simply talking about the potential adjustments that would be needed to adapt established suites of domesticated plants and animals to new environments (Fuller and Lucas 2017) or the technological side of seafaring and navigation capabilities which are particularly pertinent for a migration to Britain and Ireland (Callaghan and Scarre 2009; Garrow and Sturt 2011). Rather, material culture is also crucial in binding newly established communities together. In spite of a complex history of the term, such processes of ethnogenesis involve the use of material culture and practices both in order to demarcate boundaries towards other groups, and to establish a shared common past or origin point as a focus for identification (e.g. Voss 2015), a necessary prerequisite for characterising a collective identity as 'ethnic'. Migration events and general regimes of mobility are key points at which ethnogenesis happens, although it must be stressed that ethnic identity is also deeply intersectional and analytically hard to separate from other aspects, such as gender, socio-economic status or kinship (e.g. Hu 2013; Voss 2015).

While archaeogenetics thus provides conclusive evidence for migration, the scale, speed and modality of the process all remain to be determined, using a variety of data. It is entirely possible that migration proceeded in multiple stages, each with their own respective dynamics. For instance, for

Britain Thomas (2022) proposes an early pioneer movement with very few individuals introducing new ideas, which in turn opened up the possibility for later, larger-scale streams aimed primarily at settlement. Depending on the situation in source and destination areas, migrations could have proceeded at a steady pace, or numbers and speed could have fluctuated. In any case, it seems unlikely that the movement of people to and from the Continent was ever interrupted. In addition, while clear preferential axes of movement are suggested in the literature – namely from northern France or the Low Countries to Britain and Ireland, and from central Europe to southern Scandinavia – it could be helpful to re-think these suggestions on a wider background, in particular since several key areas remain under-sampled, notably the Low Countries, Brittany and the very earliest centuries of a Neolithic presence in south-east England. The picture for southern Scandinavia, while now considerably more detailed from a genetic point of view (cf. Allentoft et al. 2022), also still needs to be considerably fleshed out in terms of how best to combine aDNA and archaeological evidence.

Where to go from here

We suggest a three-pronged approach. First, we can look at mobility studies more broadly to gain insight into the processes of migration for people on the ground. Second, we can explore the evidence for continued mobility throughout the Neolithic in Europe to clarify the background of these migrations. Finally, we can re-interpret the material evidence itself in the light of approaches from the first two points, focusing in particular on wider networks of contacts.

Modern migration studies

Inherent methodological and evidentiary differences may initially seem to limit the applicability of modern migration perspectives garnered from, amongst others, psychology, sociology, politics, and anthropology to the study of prehistoric migrations, which are used by only a small minority of researchers (see e.g. Anthony 1990, 1997; Burmeister 2000, 2016; Cameron 1995; Chapman and Hamerow 1997; Duff 1998; Gori, Revello Lami and Pintucci 2018). Likewise, very few contemporary migrations researchers have looked back to the distant past to understand better the longue durée of migration processes (Tsuda 2011; Tsuda and Baker 2015). However, new insights can be gained by bringing perspectives from modern migration studies to prehistoric case studies.

One field of research common within the analysis of prehistoric and modern migrations is the study of push/pull factors or the 'environmental and social disruptions' that may have caused communities to become displaced (Tsuda et al. 2015, 21). Within contemporary migrations, these disruptions in the 'home' areas are often the factor *initiating* migration, not guiding its trajectory, which is instead largely determined by social (often kin) networks that act as key pull factors promoting migration to particular areas. The resulting 'chain migration' can even lead to the formation of a 'culture of migration', where migration becomes the norm, rather than a crisis response (Tsuda 2011, 320).

Social networks, upheld through return migration and communication networks, help raise awareness of the suitability of a given area for future migration, they can provide guidance and support and help to create feelings of familiarity, situatedness and safety in unfamiliar landscapes and social settings (e.g. Brettell 2014; Tsuda 2011). While modern technology and rapid means of transportation have created very different possibilities here, it is important that we investigate the presence and role of such behaviours also within prehistoric migratory processes. The impact of return migration, for example, could be explored by re-analysing and interpreting cultural change within the original 'home' areas, rather than focussing solely on the impact in the colonised areas.

Within prehistoric research, migration is often represented as large waves of migrants sweeping from one area to another, while modern migrations are primarily undertaken by either individuals or households (Tsuda 2011). However, various scales of migrations are likely represented in each case,

from the concurrent movement of entire social groups – for example entire settlements or clans – to cascading migrations starting with individuals or households which eventually culminate in the movement of larger communities. The archaeological focus on the large scale may be partly due to methodological and evidentiary differences within archaeological and modern migration research. However, it remains to be established for each case what the likely unit of decision-making was. For example, many push factors in the prehistoric past would have impacted the whole community, whereas in contemporary societies with their greater economic differentiation, some individuals are affected more than others. The often-precarious safety situation of contemporary migrants also leads us to question how security, rights of transit and other logistical factors could have been negotiated in the prehistoric past (Tsuda 2011).

Within archaeological research, past migrations are often interpreted to have led to large-scale cultural changes, the adoption of whole sets of new cultural traits and substantial population turnover, but such dramatic impacts of incoming migration are rarely seen in the contemporary world (Tsuda 2011). Historically, there are obvious examples of indigenous populations marginalised and destroyed by colonising immigrants, especially in the Americas and Oceania, perpetrated through widespread (and government-sanctioned) conflict, genocide and disease. Yet while this may remain an unreflected trope for interpreting past migration events, these kinds of catastrophic processes are so far largely absent or difficult to identify from the archaeological record. It is to the substantial literature concerning interaction and integration that we must instead turn for insights into some of the social dynamics that could help explain the widespread cultural changes visible within the archaeological record of Neolithic Britain and Ireland, and southern Scandinavia.

One seminal anthropological text is Barth's influential study on *Ethnic Groups and Boundaries* (1969). Perspectives inspired by cultural ecology are here brought up to develop a typology of four modes of interdependence between ethnic groups:

1. They occupy different environmental niches and are in little to no competition for natural resources. Thus, each group may be largely independent, with interaction likely primarily taking place during exchange and ceremonial or ritual settings.
2. They occupy the same niche but in different territories, and therefore they may compete for resources, resulting in recurrent political and social negotiations or even hostilities.
3. They form a symbiotic interdependent relationship by occupying different niches and by 'provid(ing) important goods and services for each other'
4. They partially occupy the same niche, which would over time lead to either the displacement of one of the groups or greater interdependence and even integration of the different communities (Barth 1969, 19-20)

Barth's ecological perspectives, although relatively easily applicable to much archaeological data, overlook important social interactions and especially integration, in particular by implying that ethnic identities can be rather freely chosen in response to economic strategies. However, the social processes underlying interaction and integration largely depend on the relative permeability and flexibility of the cultural boundaries between the different communities (e.g. Alba 2006; Barth 1969; Taft 1953), which can sometimes imply substantial power differentials (Adey 2017, 104-166; Cresswell 2010). These potentially thorny interactions can be eased through boundary objects, practices, technologies or people that acted as 'brokers' between different communities (Mills 2018; Star 1989; Wenger 1998). The so-called boundary objects are not things that demarcate the boundaries of communities; rather, they are often pre-existing shared frames of reference (sensu Taft 1953), such as common cultural values, technologies, and practices found in both groups.

The pre-existing similarities do not need to be identical; rather, they simply need to appear similar enough to form a common ground between two groups allowing them to see eye-to-eye, on at least that aspect of life. Where boundary objects

exist, they thus help decrease perceived differences between communities, promote positive interactions, and act as points in which knowledge can be shared between the different groups. When the knowledge surrounding these boundary objects is exchanged between different groups, it signals a degree of cultural openness of one group to another by promoting feelings of familiarity (Carley 1991; Mills 2018; Wulf et al. 2010). This helps create communities around these shared practices and objects that foster the construction of a shared socio-cultural identity and the breaking down of cultural boundaries (e.g. Stevens, Veith and Wulf 2005; Wegner 1998). The active sharing of knowledge within these so-called 'communities of practice' (Wegner 1998) may further ease the transformation and innovations within societal practices and technologies to contain influences from diverse origins (Cohen and Toninato 2010).

These interconnected processes help blur cultural boundaries so that 'experiences and outlooks that were once distinctive to each side of the boundary are now shared' (Alba 2006, 350). The episodic boundary-blurring eases the processes of integration as it presents less of a 'rupture' between prior cultural ideals and newly adopted or transformed ways of living (Alba 2006, 351). Thus – rather than necessarily assimilation or acculturation or displacement – new hybridised identities, practices, and technologies can be formed through a collaborative transformation within the communities of practice (Laitinen 2002, 83; Wegner 1998). In these instances, cultural change can occur through different forms and scales of mobility (e.g. Adey 2017; Kaufmann 2002; Urry 2007), without necessitating significant displacement or destruction of local indigenous communities by incoming migrants.

An unsettled Neolithic

Part of the problem of existing narratives of the Neolithic migration process is that two states of being are contrasted absolutely – being mobile, or staying put. Indeed, the Neolithic is traditionally seen as 'sedentary', and therefore being on the move is all too easily conceptualised as a disruptive, large-scale, anomalous and to some extent cataclysmic process that needed harsh 'push factors' to begin and would have a major and immediate impact at destination. The situation is somewhat different in Britain, where mobility has been considered an important element of being Neolithic (e.g. Leary and Kador 2016; Whittle 1997), partly because there is little evidence for permanent domestic architecture for much of Britain (Cummings 2017, 76-83). While this degree of mobility was occasionally rather uncritically seen as a continuation of hunter-gatherer practices into the Neolithic (e.g. Barker 2006, 370-378; Thomas 1998), this is no longer tenable on current evidence. Although hunter-gatherers may have survived alongside Neolithic incomers, the way that mobility was organised between the two communities would have differed. However, even within a 'Neolithic' lifestyle, smaller numbers of individuals appear to have been on the move relatively frequently, whether for permanent resettlement or not. These could help explain the pockets of genetic signatures that stand out locally or regionally, but are also indicated by other lines of evidence. For example, isotopic studies of several megalithic tombs in southern Britain have shown that especially in the early centuries of the Neolithic, a substantial number of individuals may have continued to migrate from elsewhere, with north-west France as a distinct possibility (Neil et al. 2016, 2017, 2020). In addition, longstanding contacts between Britain and southern Scandinavia may also be evidenced by a small number of apparent Funnel Beaker flint thin-butted axes (*c.*3800-3000 BC) and a larger quantity of axes dating from *c.*3000-1500 BC found in Britain, although finds circumstances are often dubious (Walker 2018; re-dated using Nielsen 1978, 1979). This implies that migration routes, and the contacts on which they built, were potentially active for several centuries.

This kind of continued mobility at the scale of individuals and small groups of people is increasingly being recognised as the norm throughout Neolithic northern Europe and linked to a degree of economic diversification. For example, the farming system now suggested for the Funnel Beaker culture could involve a considerable degree of mobility through a reliance on slash-and-burn cultivation (Schier 2009) and the movement of cattle be-

tween communities, sometimes even across bodies of water (Gron et al. 2016). However, as manuring was also practised (Gron et al. 2021), there appears to have been diversity in economic strategies between and perhaps within groups. Dietary isotopes also show different proportions of marine resource consumption in burial populations as late as the Middle Neolithic (Fraser et al. 2018; Terberger et al. 2018). For the Michelsberg culture in both France and Germany, it has been suggested that the level of cattle keeping substantially increased, and that at least the smaller enclosures and some of the open settlements may be relatively temporary camps or cattle corrals catering for a partly mobile population (summary in Lietar 2017, 19-20; Geschwinde and Raetzel-Fabian 2009, 246-249; Seidel 2017; Turck et al. 2014). While agriculture continues alongside, there is thus a greater emphasis in these late fifth and fourth millennium BC Neolithic societies on economic flexibility and the use of diverse landscape niches. Sometimes, this seems to have been coupled with very short-lived settlement sites, best documented for the dendrochronologically dated sequences of the Alpine Foreland (e.g. Hofmann et al. 2016).

These widespread and pervasive changes are important, as they mark a fundamental change in the character of the Neolithic. Many individuals, as well as smaller and larger groups of people, were on the move seasonally or every few years as part of routine economic activities. In such a context, an expansion into new areas would not necessarily require any push factors, but could rather represent a tipping point within, or extension of accepted routine behaviours. Similarly, we should then not expect that these individuals and groups moved only once and then stayed put. Rather than a wave of advance, we would be faced with a series of intercutting, braided rivulets and streams, along which communication was and remained possible in both directions.

Identifying continued movements and influences

We need to consider such existing social connections as a serious motivation for migration and other kinds of mobility instead of focusing exclusively on environmental processes and overpopulation (push factors) as drivers of migration. This can be done by tracing longer-term patterns of similarity and difference, focusing in particular on the details of practices and how they changed over time. This approach will make it possible to trace unfolding patterns over the longer term and to use similarities and divergences in practice to identify at what points connections and mobility were high, and when this may be offset with the creation of more local identities and boundaries. In our ongoing project (*Deep histories of migration: exploring the Early Neolithic around the North Sea*), we have chosen to focus on two key pieces of evidence: monumentality and deposition practices. These are of course not the only indicators of traditions of practice but they are preferable to economic practices, as the latter would react very flexibly to local conditions. In contrast, monuments and depositional practices both have relatively visible, 'public' elements and less observable characteristics which would need more sustained, direct contact to pass between groups. It should therefore be possible to distinguish scenarios of continued direct contact from those of divergence from a common root. Another reason to focus on monuments and deposition practices is that objects (or monuments) both refer back to other, older traditions of practice but they also anticipate future events as they are entangled into a wider network of people, practices and traditions (Hodder 2012). This allows us to transcend common comparisons between single sets of elements and instead reveal underlying shared practices indicative of continuous movements and influences.

In the following case study, we will focus on monuments. Monumentality is central for the creation of community identities, social cohesion and world views, but also shows numerous local and regional idiosyncrasies. The timings of monument appearance and use are very similar in Britain, Ireland and southern Scandinavia (Eriksen and Andersen 2016; Klassen 2014), while it is problematic to argue for connections to France and the Low Countries. Monument types, especially dolmens (Cummings and Richards 2021), show obvious structural parallels between Britain, Ireland

and Denmark, while timber mortuary structures and causewayed enclosures are also found contemporaneously across these areas.

Case study: mobility, megaliths and making sense of diversity

Based on the perspectives and approaches described above, in the subsequent section we will explore how we might begin to analyse and interpret prehistoric migrations, explored through a short case study of the appearance of one particular form of monument found around the North Sea in the Early Neolithic – the dolmen.

The dolmen (known variously by regional names: stendysse in Denmark, portal tombs in Ireland and portal dolmens or quoits in Britain) is a well-known feature of the Early Neolithic either side of the North Sea. Found in vast numbers in southern Scandinavia (Eriksen and Andersen 2016), in considerable numbers in Ireland and in small pockets in western Britain (Cummings and Richards 2021), the dolmen may appear to represent the outcome of migrant Neolithic people settling down in these areas. Certainly the very early dates from excavations at Poulnabrone, Co. Clare, led the excavator to state that 'the builders of Poulnabrone were no more than a couple of generations descended from the first Neolithic settlers in the area' (Lynch 2014, 175). However, a deeper investigation of this form of monument including close scrutiny of the dating of many of these sites across north-west Europe highlights regional differences, temporal variation and other ambiguities (see Cummings and Richards 2021). It calls into serious question whether this form of monument could ever be understood as the outcome of the large-scale migrations of people at the onset of the Neolithic, the model currently implied by the aDNA. But if the dolmen was not an immutable part of the Neolithic package moving with the first 'wave' of migrants, then why are there such striking similarities in form across some parts of north-west Europe?

Confusions regarding this form of monumentality are considerable, much relating to typology. As we have already seen these sites have different regional names, and in both western Britain and Ireland there is further typological disarray in that monuments that are virtually identical to portal tombs but with the addition of extremely short passages are known as passage graves (or sometimes as 'simple passage graves' to differentiate them from the larger and later 'classic' passage grave (Hensey 2015; Kytmannow 2008)). Typological semantics may seem irrelevant in this debate, however since these terms have been used to argue for specific innovation networks related to the start of the Neolithic in different areas this is actually a key issue. This is particularly critical since there is no obvious source for dolmen monuments and as such an origin point from where the idea of dolmen building spreads alongside people moving has never been satisfactorily pinpointed. The most similar form of monument to the dolmen can be found in north-west France in the tradition of megalithic monumentality dating from the fifth millennium BC, but these monuments pre-date the dolmens of southern Scandinavia, Britain and Ireland by many hundreds of years (Scarre 2011). Indeed, most would argue they are fundamentally different monuments, being for the most part large passage graves encased in mounds or cairns. To confuse matters further, dolmens are not the only form of megalith being constructed in the Early Neolithic. In Ireland and Britain other forms of stone monument were built alongside dolmens, including the Cotswold-Severn tradition in Britain, and Clyde and court cairns in western Scotland and north-east Ireland, although some of these monument traditions are slightly later (Schulting et al. 2012). Again, the origins of these forms of monumentality remain obscure. On top of this not all areas clearly occupied in the Early Neolithic saw any megalithic construction at all.

On the other hand, there are remarkable similarities in monumental form across a wide area which are rarely explored or explained. Dolmens employ a large glacial erratic as a capstone which is supported by a small number of uprights, the whole being encased in a platform (or small cairn) of stones (Cummings and Richards 2021). This form of construction is consistent from the western shores of Ireland to the southern coasts of Sweden

Figure 1. The dolmen at Carreg Samson, Wales (Photo: Vicki Cummings).

(Figures 1 and 2). Moreover, the timing of dolmen construction is also paralleled in different areas, with construction taking place primarily between 3800 and 3600 BC (Schultz-Paulsson 2017). Some dolmens are clearly early in the sequence of Neolithisation, like Poulnabrone in Ireland mentioned above, but in other instances dolmens were constructed on top of a sequence of previous Neolithic activity, including settlement, as is often the case in Denmark (Eriksen and Andersen 2016). In these latter cases dolmens were being constructed many hundreds of years after the uptake of a Neolithic way of life, clearly setting them apart from initial processes of Neolithisation. This means that in some parts of northern Europe dolmen building happened perhaps 'a couple of generations' after the start of the Neolithic, while elsewhere many hundreds of years passed between the two. So what to make of this piecemeal and varied tradition, especially in relation to understanding migration?

Problems relating to our interpretation of dolmens arise if we understand them purely as expression of primary settlers arriving into new areas. In this scenario there must be an origin population (and therefore place) from where the idea or blueprint of the megalith came and which the migrants took with them and adapted in their new homeland. Clearly this was not the case. Moreover, if we conceive of migration as a short-term and one-way process then the delayed uptake of megalithic construction is also problematic, because it is difficult to envisage a situation where people remember how to build a megalith like their ancestors many hundreds of years before. However, if we envisage dolmen construction as a social strategy deployed at key times then there is no need to tie it to migrating populations. Indeed, if we abandon the idea of dolmens representing colonisation events at the beginning of Neolithisation then the concept and implementation of the dolmen can be part of an ongoing set of movements and contacts of people across wide areas and indeed over extended periods of time. Moreover, if we abandon the idea that migration and movement are uni-directional and instead see people moving back and forth between and across areas, it is easier to envisage how people may have been inspired by monuments

Figure 2. The dolmen at Ågerup, western Zealand (Photo: Vicki Cummings).

erected in different places and could wish to construct them at varyingly different times (i.e. upon arrival as in the west of Ireland, or many hundreds of years after the uptake of the Neolithic in parts of Denmark). It is just part of a suite of practices that people deployed throughout the Neolithic in relation to whatever was most pressing and relevant for themselves at that moment in time. This also explains why many areas saw no megalithic construction at all. The constant movement of people back and forth is a much better explanation for evidence such as the dolmen monuments than one-way migration. Indeed, one study, as we have already highlighted above, has now identified 'a genetic connection among Scandinavian, British and Irish Neolithic populations' (Sanchez-Quinto et al. 2019, 9473) based on individuals from a range of different types of megaliths across an extended time period. Thus the continued movement of people throughout the Neolithic, or at least in bursts beyond the initial onset of the Neolithic, seems a much more reasonable interpretation of dolmens across north-west Europe. What remains to be explored further is the (quite likely changing) frequency of such episodes of movement, their character, duration and extent.

Conclusion

Archaeogenetic analyses have put migration back on the agenda, but have so far focused mostly on the initial horizons of transformation, when genetic turnover can be documented at a large scale. This is slowly changing, but alongside the emergent focus on kinship and social inequality we have argued that archaeologists are now ideally placed to also address long-term processes of movement, migration and interaction, critically examining both watershed horizons and the periods in between, when mobility is unlikely to have stopped completely. The detailed archaeological evidence that has been collected over the decades is a unique asset that can now be brought to bear on this new set of questions.

This paper has aimed to introduce the way in which our current project (*Deep histories of mi-*

gration: exploring the Early Neolithic around the North Sea) will be investigating migration over an extended time period. The overall aim of our project is to get away from pursuing comparisons on an ad-hoc basis, relying exclusively on superficial morphological and typological similarities and single characteristics. Instead, by starting with sets of complex, but connected practices, such as details of monument construction and deposition, we can show whether contact was occasional, with only the easily observable elements being copied, or whether whole sequences of actions or hidden traits were adopted, implying more intensive episodes of communication and involving the further movement of people. This broadly practice-based approach will help us to trace multiple possible links and migrations from different origins. We will also explore whether generalised connections and widespread individual mobility or accidental convergence are the more likely process, all of which may be relevant at particular moments. This involves a shift of migration research from the large, continental scale to the complexity of regions and sites. It necessitates new theoretical angles, taken from migration research in other disciplines, and it needs the formulation of explicit scenarios of how people move and how this is manifested in archaeologically visible ways, for example through the transmission of innovations. All of this will allow renewed discussions about the impact of migration beyond the aDNA data, investigating how new, shared social experiences emerged in a setting in which mobility and migration may have been more than one-off events.

Thus, in our project we will compare and contrast regional case studies across Britain, Ireland and western Denmark to consider in how far shared material culture patterns can be linked to different kinds of transmission processes, of which migration is one possibility. As an example of this in this paper we have briefly discussed how dolmen monuments, originally conceived as the outcome of initial migrations of people, can now be understood instead as boundary objects – essentially material practices which acted as brokers between many different communities. As the project progresses we will also explore similarities involving more 'hidden' practices which can indicate the actual movement of people, and these then will need to be classified further in terms of intensity, direction, duration and impact. This needs multiple sources of evidence which integrated with the aDNA data should enable us to radically rethink the very nature of mobility throughout the Early Neolithic and rewrite the current migration narratives.

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