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Research Article

Transdisciplinary Theoretical Approaches to Migration Studies in Archaeology

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Abstract

Migration is an established topic in archaeology, approached by researchers in multiple ways. We argue, however, that new ways of thinking are needed to understand migration in new ways in relation to new results coming from ancient DNA studies and other archaeometric analysis. We apply a transdisciplinary approach and engage with (critical) migration studies, critical heritage studies and archaeology to unwrap essential theoretical aspects of migration. Based on our results, we propose a conceptual/theoretical framework as our contribution to migration studies in archaeology.

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Introduction

By human migration, we refer to the multi-directional movement of people and their thoughts, relationships, and materiality—in large groups, smaller units or as individuals, over long distances or within a region, and across various time scales. Migration is a specific form of mobility that occurs when people move 'to settle in another destination', resulting in a (semi)permanent stay (Fernández-Götz *et al.* 2023a, 3; see also Gori & Abar 2023; Hofmann *et al.* 2024). It is an established topic in archaeology, approached by researchers in multiple ways (Adams *et al.* 1978; Daniels 2022a; Fernández-Götz *et al.* 2023b; Hofmann *et al.* 2024). However, as discussed by many scholars, migration has been an under-theorized topic in archaeology (e.g. Anthony 2023; Daniels 2022a; Fernández-Götz *et al.* 2023b; Furholt 2017; 2019a, b; 2021; Hakenbeck 2008; Hofmann *et al.* 2024).

With this study, our aim is to provide analytic tools to re-theorize migration. We apply a transdisciplinary theoretical approach that draws on results from (critical) migration studies, critical heritage studies and archaeology. We elaborate on migration as a constant of social life and an endless flow of human encounters. We engage with variation between disciplines and show that, depending on disciplinary contexts, migration studies result in various and sometimes conflicting interpretations. Dealing with causes for migration processes, we also discuss aspects of people involved. Further, we underline the vast diversity of perspectives that can be applied in migration studies in relation to spatio-temporal engagements. Aspects of social transformation and migration relationships are discussed, followed by a section on cultural encounters, intercultural knowledge and skills involved when people meet cross-culturally. Our focus is to uncover complexities in what these topics may imply for migration studies in archaeology. Based on our findings, we propose a conceptual/theoretical framework to re-theorize migration, as our contribution to the field of migration studies in archaeology. We draw upon studies from the past *c.* 50 years that examine migration during the first half of the third millennium BCE in southern Scandinavia (see Supplementary material), to argue for the necessity of rethinking migration.

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Thinking in new ways to re-theorize migration

With the so called 'third science revolution' (Kristiansen 2014), migration studies have found a renewed place in archaeology (Anthony 2023). Ancient DNA (aDNA) studies and other archaeometric analyses (e.g. Allentoft *et al.* 2024; Seersholm *et al.* 2024) have significantly changed the ways in which we now can explore migration (Furholt 2021). The period spanning the first half of the third millennium BCE has become prominent in these studies, as it offers multiple examples of material culture changes and spatio-

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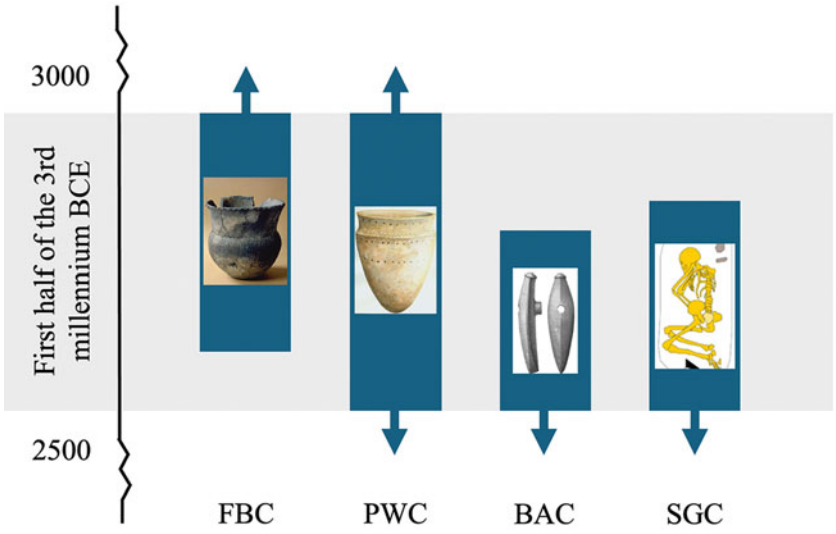


Figure 1. Schematic illustration of overlap in time for the archaeologically defined cultures in the first half of the third millennium BCE in southern Scandinavia: the Funnel Beaker Culture (FBC), the Pitted Ware Culture (PWC), the Swedish-Norwegian Battle-Axe Culture (BAC) and the Single Grave Culture (SGC), with examples of finds that have given name to each archaeologically defined culture. Arrows indicate earlier and/or later extensions for each archaeologically defined culture. Note that the presence in the landscape of FBC, PWC, BAC and SGC in terms of contemporality and intensity varies between areas in southern Scandinavia. (Re-worked from Iversen *et al.* 2021, 52, fig. 3, with additions from Brink 2009. Photograph of funnel beaker: Historical Museum Stockholm accession number 94838_HST; photograph of PWC vessel from Kihlstedt 2011, 49; drawing of SGC burial from Furholt 2019a, 118. Photographs are cropped.)

temporal variation in genetic ancestry related to external influx (Allentoft *et al.* 2024). Heyd (2023, 54) discusses these centuries as a time when present-day Europe was 'moving and shaking', as groups migrated throughout the continent. As a result, an intricate interplay of archaeological complexes (e.g. Yamnaya, Corded Ware and Bell Beaker) was formed. This happened 'against a background of a set of "indigenous" societies, genetically descended from "Early Neolithic farmers" and people of "western hunter-gatherer" ancestry' (Heyd 2023, 41). Several archaeologically defined cultures are known from southern Scandinavia from this spatio-temporal section of the Stone Age, with regional variation in how they materialized and transformed (Malmer 2002). These are the Funnel Beaker Culture (FBC), the Pitted Ware Culture (PWC), the Swedish-Norwegian Battle-Axe Culture (BAC) and the Single Grave Culture (SGC) (Fig. 1). FBC is linked to the first evidence of a Neolithic lifeway in south Scandinavia from *c.* 3900 BCE (Blank *et al.* 2020; Shennan 2018). People associated with the archaeologically defined PWC were largely maritime hunters (Fornander *et al.* 2008). The economy of the BAC and SGC were mainly based on a Neolithic lifeway, with animal husbandry and cattle herding as a significant part (Fornander 2013; Malmström *et al.* 2019). Genetic analysis from samples associated with these archaeologically defined cultures show differences, generally (and simply described) linking samples from FBC to Anatolian-derived ancestry (Seersholm *et al.* 2024), PWC to eastern Scandinavian hunter-gatherer-derived ancestry (Günther *et al.* 2018) and BAC and SGC to eastern steppe-derived ancestry (Allentoft *et al.* 2015; 2024; Malmström *et al.* 2019). Using Heyd's (2023) words quoted above about the first half of the third millennium BCE, FBC and PWC are 'indigenous' and BAC and SGC a result of present-day Europe 'moving and shaking'.

Since archaeology emerged as an academic discipline, questions about how to understand the relationships between these archaeologically defined cultures in terms of migration have been extensively discussed (e.g. Becker 1954; Brink 2009; Coutinho *et al.* 2020; Damm 1991; Edenmo 2008; Iversen 2015; Iversen *et al.* 2021; Kristiansen 1991; Å. Larsson 2009; L. Larsson 1986; 1989; 1991; 1992; M. Larsson 2006; Malmer 1962; 1975; Nielsen & Johannsen 2023; Prescott 1996; Prescott & Walderhaug 1995; Tilley 1982; von Hackwitz 2009). An early example is Müller's study from 1898. In a comparative study of graves, he concludes that the SGC and FBC archaeological complexes are significantly different. From this, he speculates that the archaeologically defined SGC culture is the result of 'a tribe coming from the south' (Müller 1898, 279). At the same time, he notes that we are 'still lacking [...] decisive proof that the single graves contain a new advancing tribe' and suggests that alternative interpretations to migration should also be considered (Müller 1898, 281).

While archaeologists for more than hundred years have drawn on aspects of both migration and diffusion to explain variation in the first half of the third millennium BCE, current aDNA studies and other archaeometric analyses are dominated by the so-called 'steppe migration/influence/ancestry' narrative (e.g. Egfjord *et al.* 2021), including what Allentoft *et al.* (2024, 334) define as a rapid and 'near-complete population turnover' at the time in southern Scandinavia (for critical discussions on this narrative, see e.g. Furholt 2019b; 2021; Nielsen & Johannsen 2023).

However, several studies have noted that archaeology is struggling to understand the implications of new results from aDNA and other archaeometric studies in terms of how we can conceptualize Stone Age migration in new ways (Anthony 2023; Hofmann *et al.* 2024). Johannsen *et al.* (2017) and Hofmann *et al.* (2024), for example, call for refined integrated transdisciplinary approaches. Along similar lines, Furholt (2021, 482) discusses that archaeology in general has not been able to 'integrate the current state of theoretical awareness into the archaeogenetic discourse', and thus fails to capitalize fully on the potentials that the results from aDNA and other archaeometric studies offer.

In principle, we agree with Furholt. But we also question that 'the current state of theoretical awareness' is sufficient to approach migration in new ways. Our rationale is as follows. Inspired by trends from evolving processual

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archaeologies in the second half of the twentieth century, a hesitancy to discuss migration developed (Kristiansen 2022). At this time, 'migration … almost disappeared from archaeological explanation in western universities' (Anthony 2023, 1; see also Härke 1998; Nielsen & Johannsen 2023). In a south Scandinavian context, Malmer's (1962) work became especially influential. To Malmer, variation could only be explained by diffusion and in-group social and religious change, not by migration or 'simple reference to waves of immigration' (Malmer 2002, 175). Malmer's work became instrumental, to the extent that Edenmo in 2008 notes that migration 'has few advocates today, after Mats Malmer's work from 1962' (Edenmo 2008, 15; see also discussion in Cassel 2000; 2008; van Dommelen 2014). At the time, criticism of Malmer's theoretical work on migration was discussed, migration theory was elaborated upon, and migration was considered as an explanatory model for variation in the third millennium BCE (Johansen 1989; Kristiansen 1991; L. Larsson 1992; Prescott & Walderhaug 1995). Nevertheless, from our reading of studies on migration in the first half of the third millennium BCE in southern Scandinavia published over the last *c.* 50 years (see Supplementary material), we see that an explicit and outspoken 'non-migration narrative' has dominated research for decades. While some researchers integrated theory and data (e.g. Holmqvist *et al.* 2018; Iversen 2010; Kristiansen *et al.* 2017; Å. Larsson 2009; Malmström *et al.* 2019; Sørensen 2014b; Vandkilde 2007), the 'non-migration narrative' has generally hindered the development of migration theory. This is reflected in that most of the studies from the last *c.* 50 years only address migration from *ad hoc* or *post hoc* positions—either by already ahead of analysis maintaining that spatio-temporal variation is or is not a result of migration (*ad hoc*), or by interpreting results from excavations, archaeological data analysis or aDNA and other forms of archaeometric studies in terms of migration, without engaging with migration theory as a tool to do so (*post hoc*) (see also Nielsen & Johannsen 2023 for similar discussion).

Consequently, as only a limited number of theoretical approaches to migration have been explored over the last *c.* 50 years in studies on the first half of the third millennium BCE in southern Scandinavia, it is reasonable to assume that new data emerging from new methods require us to think in new ways in order to re-theorize migration.

In the next section we unwrap what this means and what might be involved in terms of theory when archaeology engages with migration studies. Our approach is theoretical, with the purpose of exploring complexities in transdisciplinary approaches to migration. Hence, we do not present examples or new interpretations of what happened in terms of migration in the first half of the third millennium BCE. This is a topic we leave for future research.

Transdisciplinary theoretical approaches to migration

Migration, a basic organizing force

Migration has always existed, as a constant of social life and constituent element of humankind (Cabana & Clark 2011a; Greenblatt 2010; Hollfelder *et al.* 2021, *contra* Clark 1994; Hoerder 2002; Rodat 2020):

> Migration might be conceived of as physical movements of humans from one place to another, but on a deeper level it should press us to recognize movement and mobility as basic organizing forces of humans and all earthly reality, as hidden as it often seems within that reality (or denied by certain members of that reality). (Daniels 2022b, 18)

If we accept this, it means that we are impelled to analyse specific migration events within a flow of endless human migrations; but such an approach lacks precision (see e.g. Furholt 2021; Hofmann 2016, for discussion). Migration varies over time and place. Therefore, it needs to be analysed and understood as social behaviour in specific contexts.

No consensus exists on how to define migration. As discussed by Brettell (2023), researchers instead need to rely on a range of descriptions to capture and compare the variations that migration processes encompass. At the same time, we need to avoid definitions we use giving a static and homogeneous picture of processes that are 'flexible over the life course of an individual migrant or the domestic cycle of a household, varied within a population, subject to change over time, and laden with culturally contextualized meanings' (Brettell 2023, 199; see also Frachetti 2011).

Cabana (2011, 17) reminds us that archaeologists' frequent use of migration as *ad hoc* and *post hoc* explanations has resulted in an unspoken set of assumptions about the nature of migration. One such assumption is the conceptual link between people, culture and place, a way of thinking established more than a century ago and closely linked to the roles of archaeology in the formation of nineteenth-century modern nation states (e.g. Bonacchi 2022). Brettell and Hollifield (2015) show that research (and indeed more general discussions in society on migration) is dominated by axiomatic conceptualizations of culture as static, linked to modern geographic borders, defined by your place of birth, and something you carry with you unchanged throughout life as a ready-made package (see discussion in Favell 2023; Gabaccia 2023; Högberg 2013; 2016). It is an approach that presupposes a pre-existing 'purity', i.e. a group or culture unmixed since time immemorial. As Linton (1937) argued almost a century ago, such an approach makes us think in the wrong way. As all cultures are mixtures, pure or essential cultures have never existed (see also Liebmann 2013, 31). As an alternative, Furholt (2021) and others (e.g. Hoerder 2002; Robb 2013) emphasize that we need to understand culture as fluid, and social group composition as dynamic. This is in line with Hastrup (2010), who shows that the social environment in societies is characterized by a high degree of flexibility and intrinsic unpredictability.

Variation among disciplines

Migration studies is a well-established multidisciplinary field, with researchers working across several disciplines (Cabana & Clark 2011a, b; Cameron 2011; 2013; Clark 2001; Gabaccia 2023; Levy *et al.* 2020). While some encourage us to explore migration studies as a research field in its own right (Brettell & Hollifield 2023), others emphasize that migration is best embraced within each discipline (e.g.

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Table 1. Migration theories across disciplines, reworked from Brettell & Hollifield (2015; 2023).

Discipline	Research Question(s)	Levels/Units of Analysis	Dominant Theories	Hypothesis, examples
Anthropology	How does migration effect cultural change and cultural identity?	Micro/individuals, households, groups	Relational or structuralist and transnational, meaning-centred	Social networks help maintain cultural difference
Demography	To what extent do immigrant and native populations become more similar over time?	National and foreign-born populations, individuals, households, and ethnic groups	Theories of cost and benefit, structural theories in integration, assimilation and pluralist-based. Theories of economic, social structural, and cultural effects	Immigrants will not become successfully integrated when they experience significant membership exclusion
Economics	What explains the propensity to migrate and its affects?	Micro/individuals	Rationalist: cost-benefit and utility maximizing behavior	Incorporation varies with the level of human capital of immigrants
Geography	What explains the socio-spatial patterns of migrant networks and settlement?	Multi-scalar and scale jumping. Individuals, households, and groups	Relational, structural and transnational	Incorporation depends on ethnic, networks, legal status, residential patterns, and context of reception
Law	How does the law influence migration?	Macro and micro, the political and legal system	Institutionalist and rationalist, borrows from all the social sciences	Rights create incentive structures for migration and incorporation
Political Science	Why do states have difficulty controlling migration?	Macro, political and international systems	Institutionalist and rationalist	States are often captured by pro-immigrant interests
Sociology	What explains incorporation and exclusion?	Macro, ethnic groups and social class	Structuralist or institutionalist	Incorporation varies with social and human capital

Daniels 2022b; Hoerder 2002). Table 1 builds on Brettell and Hollifield (2015; 2023) and is a schematic overview that exemplifies the inherent logics of a selection of disciplines in their studies of migration. Note that we only use Table 1 here to exemplify how a selection of different disciplinary foci may result in specific ideas about migration. Others may add examples from e.g. history, archaeolinguistic or genetic studies.

At their core, theories of migration are often outlined from either a macro- or a micro-analytical perspective (Takeyuki 2011). While macro-theoretical approaches refer to large-scale changes for society, micro-theoretical approaches focus on the individual and small-scale transformative changes in social and material lives (Portes 2008). Uses of the terms 'macro' and 'micro' may refer to, for example, length of movement, frequency of movement, intensity of movement, or scale of groups moving (Porter 2022, 249). Macro- and micro-analytical perspectives are common in various disciplines, but multi-scalar perspectives also exist. Regarding Table 1, it is clear that disciplines work with various conceptualizations of migration, resulting in differences in how it is understood. For example, a focus on macro-analytical perspectives investigates structural effects of migration, while a micro-analytical approach studies individual migration experiences. Similar variation is common in archaeological studies (see examples in Hofmann *et al.* 2024). Studies may reach conclusions (right-hand column in Table 1) that at first glance seem contradictory. Applying for example, a macro-analytic cost and benefit perspective in a multi-scalar spatio-temporal approach might contradict results from a micro-analytical social approach (see Högberg *et al.* 2023). However, as Table 1 shows, such contradictions are typically the result of various disciplinary approaches to migration studies. Hence, for archaeology, results from different studies should best be understood not as exclusive, but as parts of the larger complexity that studies of migration encompass.

Causes for migration

As Chapman and Dolukhanov (1992) demonstrate, people's reasons (thinking and feeling) for migration are difficult to depict through archaeological analysis. Along similar lines, Anthony (1992, 174) argues that such causes for prehistoric migrations 'are likely lost forever'. Clark *et al.* (2019), however, remind us that archaeologists working with migration often infer causes without actually presenting an analysis to justify such interpretations. We agree with Anthony (1990; 1992) and others (e.g. Chapman & Dolukhanov 1992) that causes in prehistoric migration are difficult to unravel. But as archaeologists do elaborate on causes, we here briefly touch upon the subject to show its complexity. In doing so, we focus on causes related to structural factors that may be involved in migration.

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Table 2. Causes for migration: examples refined from Anthony (1990; 1992); Kristiansen (1991); Burmeister (2000); Hoerder (2002); Vandkilde (2007); Iversen (2010); Cameron (2011); Sørensen (2014b); Brettell & Hollifield (2015; 2023); Hofmann (2016); Clark *et al.* (2019); Daniels (2022b); Hofmann *et al.* (2024). Note: even if causes are for clarity here listed as exclusive, they should be understood relationally.

Internal	Pastoralism, foraging, trade, exchange, tradition, alliances
External	Malnutrition, starvation, changes in climate or ecology, reduced regional caring capacity, pandemic
Voluntary	Friendship, love, family or kinship relationships, social arrangements, work opportunities, curiosity, status, restlessness, aspiration
Forced, with no physical violence	Forcible wedlock, leaving children in care of others, oppression, stigmatization, hierarchies, birth order and inheritance traditions, demographic changes, change in population density, overpopulation
Forced, with physical violence	Invasion, occupation, conquest, population displacement, systematic extinction of sections of a population, genocide, enslavement

In Table 2, a multitude of causes for migration are exemplified as internal, external, voluntary and forced (Anthony 1990; 1992; Brettell & Hollifield 2015; 2023; Burmeister 2000; Cameron 2011; Clark *et al.* 2019; Daniels 2022b; Hoerder 2002; Hofmann 2016; Kristiansen 1991). As emphasized by many (see Daniels 2022b), causes are rarely independent. Instead, the reality of migration processes is characterized by multiple combinations. The multiple causes illustrated in Table 2, and the fact that causes are rarely exclusive but relational, make it imperative for archaeology to explain the basic outlines behind interpretations of causes presented in studies of prehistoric migration.

Those involved

Burmeister (2000, 543) shows that, normally, 'established societies or social groups do not migrate as a whole; usually the group of migrants represents a more or less clearly defined segment of the aggregate population'. Discussing migration frequency, Anthony (1990) demonstrates that those individuals or groups who have migrated before are likely to do so again. Established social structures such as kinship relations or previous experiences of migration provide opportunities for migration and may also contribute to an overall inter-generational willingness to migrate (Clark *et al.* 2019). Gender, age and class are important factors when discussing selectivity in relation to migration (e.g. Burmeister 2000). Brettell (2023) identifies that gender roles are often varied in migration networks with, for example, women and men taking on different but complementary roles (Sørensen 2014a). However, other studies show that analyses based on gender, age and class are sometimes limiting (e.g. Favell 2023). In archaeological studies of prehistoric migration, we must therefore remain open to broader definitions of people and groups that might have acted. In addition to gender, age and class, these can for example be: elderlies, adults, adolescents, children, traders, merchants, facilitators, artisans, apprentices, workers, builders, peasants, herders, hunter-gatherers, warriors, rulers, chiefs, leaders, religious practitioners, partners, man, wife, slaves, servants, unfree, shamans, emigrants, immigrants, or second-generation immigrants, to name a few examples. As Graeber and Wengrow (2021) discuss, we must assume that a mix of roles was common amongst migrants, and that individuals likely moved in and out of social roles based on the contexts in which they found themselves. Clark *et al.* (2019) discuss additional ways of naming migrants:

> If history is written by the migrants, the newcomers are typically portrayed as colonists and local groups are characterized as indigenous, aboriginal, or native, with connotations varying from inferior to quaint and pitiable. If history is written by the locals, the native-born are described as the hosts or defenders of the homeland and the migrants are identified as invaders, aliens, or foreigners. (Clark *et al.* 2019, 265)

In line with Clark *et al.* (2019), we do not see this form of value-based definition as a constructive way to work in archaeological research on prehistoric migration.

Variation, spatio-temporal scales

Although Hägerstrand (1957, 132) was early to point out that migration processes are best understood as feedback loops driven by social relationships, much work on migration assumes dualistic models that disconnect or oppose sending and receiving areas, and separate push factors of out-migration from pull factors of in-migration (Brettell 2023, 199; see also Hoerder 2002). Such models have proved inadequate for analysis of the spatio-temporal variation involved in migration processes (Brettell 2023). Along similar lines, Anthony (2022, 56) concludes that archaeologist have been slow to recognize that migration processes normally are 'complex, multigenerational human processes that take different forms based on different causes and different pre-migration social relations between the local people in the destination and pre-migration population in the home region'. From this, Anthony concludes that archaeology has failed to study how migration created new social dynamics in both sending and receiving areas (Anthony 2022, 56; see also Clark *et al.* 2019 for similar discussion).

One reason for this might be that migration is commonly described by using water metaphors, such as a 'stream', 'wave' or 'flow' (see Ammerman & Cavalli-Sforza 1979; Anthony 1990; 2022; Cabana 2011; Cabana & Clark 2011a for examples). The use of such metaphors creates an illusion of migration in only one direction. To continue with the water metaphor, a river delta may appear to be a more

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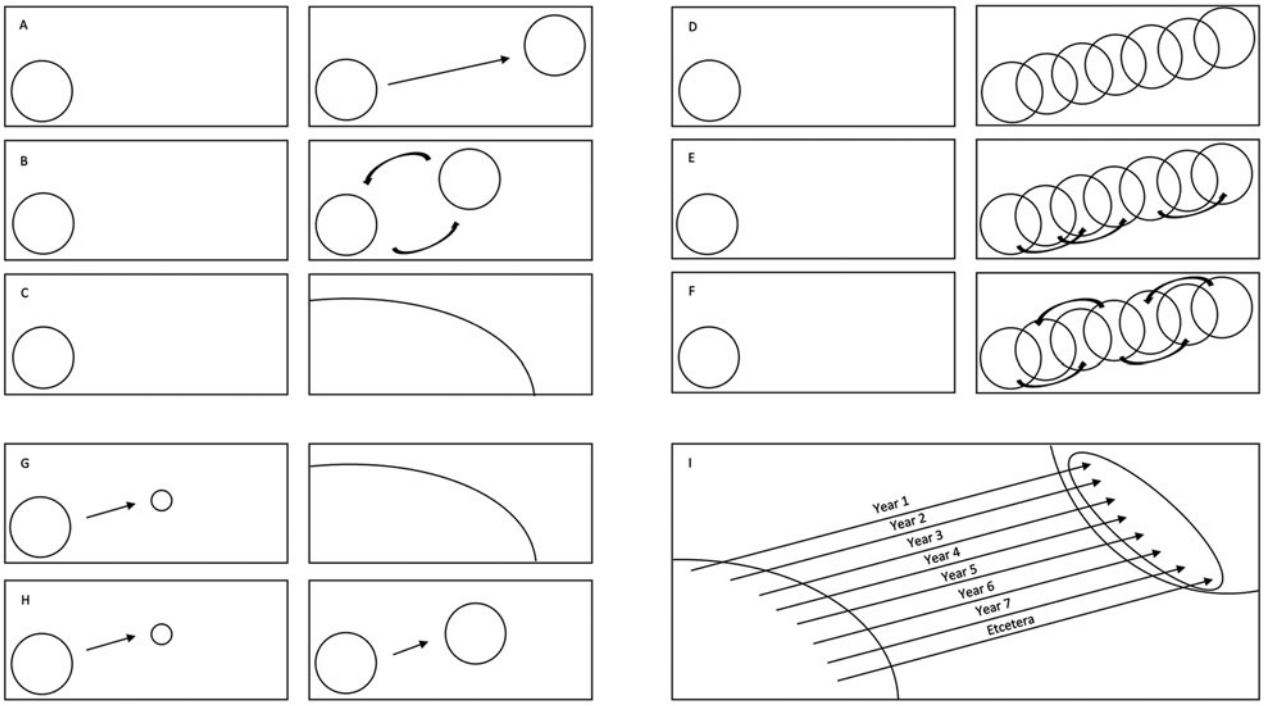


Figure 2. Schematic illustrations of hypothetical migration events. Rectangle symbolizes the landscape; circle = a group in a delimited location or area in the landscape; curved line in rectangle = a section of the landscape; arrows show direction of migration.

suitable image. A delta connects in many directions, and new links constantly arise when river streams merge, water breaks new courses or streams are stopped by sediment banks. But a delta is also inadequate as a metaphor since it presupposes a one-directional constant flow from the spring of the river to its mouth by the sea. Migration flows in multiple directions; forwards, backwards and sideways. As Anthony (1990) discusses, migration can, for example, happen through return migration; that is, by people moving 'against the stream', to use the water metaphor again.

To illustrate this complexity (beyond streams, waves, or flows), we have developed examples to show variation (Figs 2–5). Our intention is to illustrate complexity in how migration over time may result in various spatio-temporal effects. For clarity in these examples, they start from one specific spatio-temporal 'situation' and end in another. Needless to say, these 'situations' are dynamic, with a history as well as a future. Also, the word 'group(s)' in our examples is here used schematically to illustrate a segment of a population. As is clear from our discussion throughout the text, we recognize that groups are dynamic and complex clusters that normally are defined from contextual relations and seamlessly may flow into one another, often without clear boundaries, throughout the processes we illustrate.

Our examples are inspired by others (e.g. Anthony 1990; 2022; Brettell & Hollifield 2023; Burmeister 2000; Daniels 2022b; Moore 2001). Figure 2A demonstrates a simple way of describing migration, in the form of a group moving from one location to another. Although this form of migration is rare, it is common in explanations on prehistoric migration (see discussion in Anthony 1990; 2022; Cameron 2011). Return migration is a well-known aspect of migration (Anthony 1990, 898). Figure 2B shows the same simple model as in Figure 2A, but with the addition that migration can take place in multiple directions. Figure 2C demonstrates that migration does not have to end in a specific location, but in an entire landscape section. In Figure 2D, we illustrate a variant of a model where overlapping migration occurs to partially new areas, while former areas are still inhabited. Here, the result of migration over several generations is that the group has moved over the landscape, while individuals in each generation did not necessarily experience it as migration (see similar discussion on mobility in Furholt 2021). In Figure 2E & F, we add complexity with non-overlapping migration (Fig. 2E) and multiple directions (Fig. 2F) to the overlapping generations (see discussion in Hofmann 2016).

Figure 2G illustrates a scenario where a smaller group of 'scouts' survey potential areas to move to, with a group thereafter settling within a new landscape section. This has been described by Anthony (1990, 902) as 'leapfrogging', when 'great distances may be jumped, and large areas bypassed through the agency of advance "scouts" who collect information on social conditions and resource potentials and relay it back to the potential migrants' (see also Sørensen 2014a). Figure 2H exemplifies a scenario in line with Figure 2G, but where leap-frogging results in a group moving from one location to another, for example by 'scouts' having surveyed suitable places for a group to move to, which is then followed by group-organized migration (see Anthony 1990, 902f; Sørensen 2014a, 50ff).

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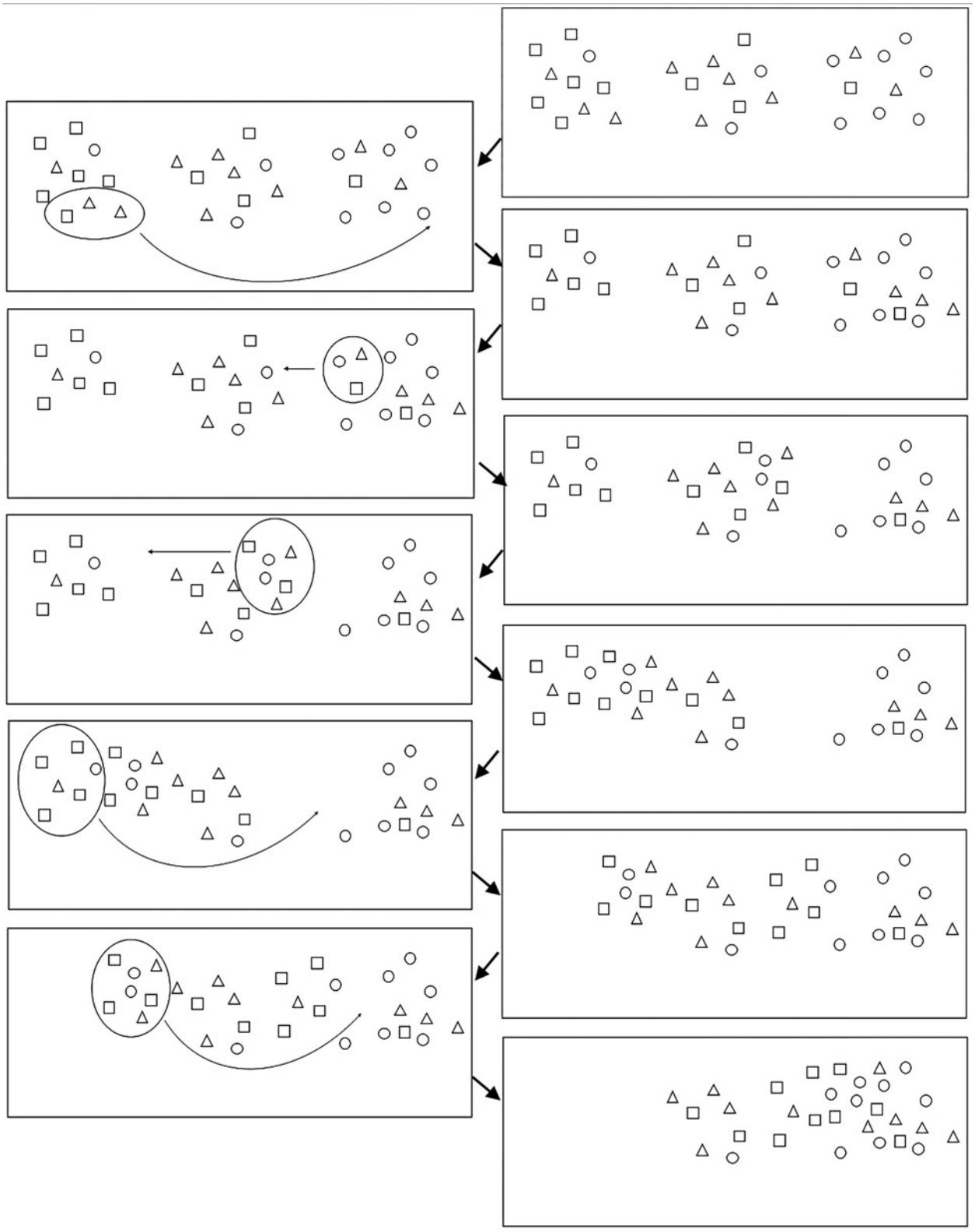


Figure 3. Schematic illustration of spatio-temporal variation. The right column of images shows three hypothetical groups (illustrated by triangle, circle and square) and how these change in relationships over time through migration (time is read from top to bottom in the figure) within a landscape (illustrated by rectangles). The left column of images shows the hypothetical clusters of migrations at different times, contributing to change.

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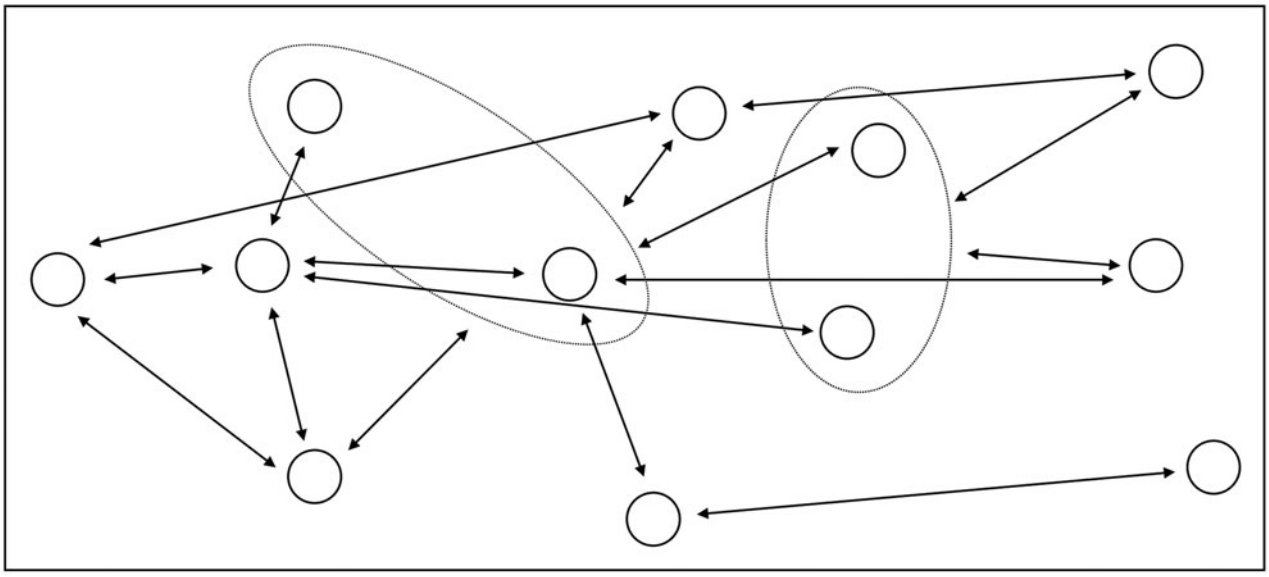


Figure 4. Schematic exemplification of spatio-temporal dynamics. Relations (arrows) over time (time is read from left to right in the figure) between groups (circles), starting from one group to the left, ending with three groups to the right. Segments of groups are migrating in multiple directions within a landscape (rectangle), over time new groups (circles and ovals) are formed. These interact with each other in various spatio-temporal ways.

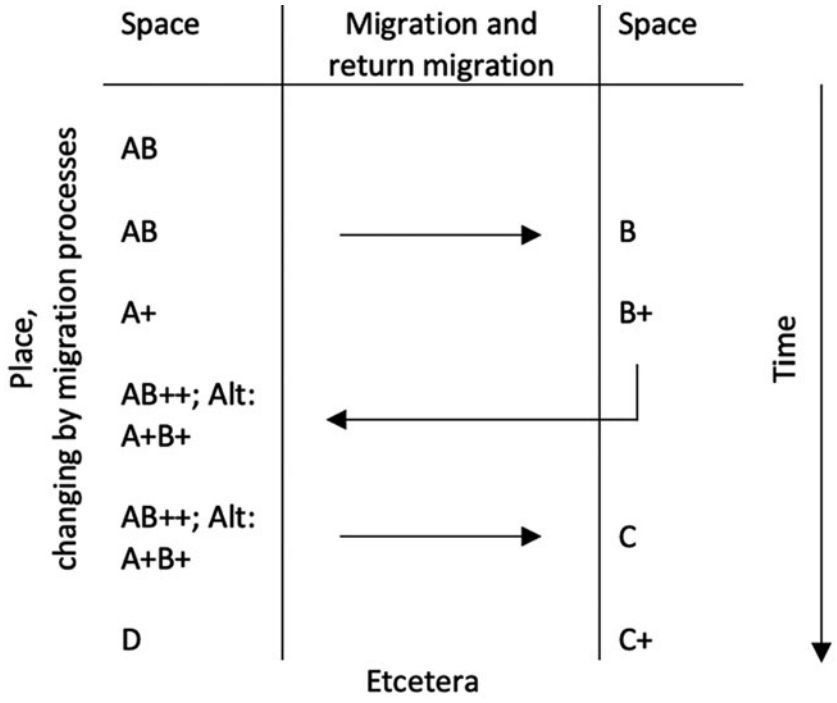


Figure 5. Schematic illustration of changes in places within the same spaces, caused by migration. When B migrate from AB, A and B change. A becomes A+ and B becomes B+. When B+ migrate to A+, A+ and B+ change, e.g. into AB++ or A + B+. Repeated over time, A and B will change and no longer resemble the A and B that existed from the beginning. Instead, by an outsider, they might be perceived as, for example, C and D. However, it is not uncommon for someone, for example A in a situation as described, not to acknowledge this change and instead claim that A is still A.

Figure 2I shows a scenario where repeated independent individual migration, with no collective agency, happens over time. Isayev (2022, 139) defines it as 'private mobility', not related to collective movement. However, over time, repeated migration events result in what after generations and in hindsight may appear as group movement (see also Furholt 2021). As Isayev shows, it can over time also result in an overall impression of the existence of a defined group driven by collective agency (Isayev 2022, 139).

In Figure 3, we elaborate on time and change in another way. Inspired by Hofmann (2016) and Furholt (2021) and their discussions on regional mobility, Figure 3 exemplifies how small migration events over time may result in large changes. At the top of the figure in the right-hand column, three clusters of a mix of groups are shown within the landscape (the rectangle), each group illustrated with squares, triangles and circles. The left-hand column shows examples of accumulative movements within the landscape, each resulting in minor changes illustrated in the column to the right. From one step to another, changes are small, with several of them almost negligible. However, if the top and bottom rectangles in the right column are compared, the cumulative

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Table 3. Various scenarios of social transformation from migration events (modified from Högberg *et al.* 2023; see also Ashworth *et al.* 2007). Note: the scenarios exemplified here should not be seen as exclusive, but may occur in parallel or change from one scenario to another over time.

Scenario	Migration	Transformation
Gradual population mix	Integration as a result of movement from one place to another, back-and-forth or circular	Melting pot: populations adapt to each other. Or a majority and minority relationship: a dominant group existing with others in various degrees of integration
Population replacement	Migrating or existing local group(s), dominate others by force or number	Assimilation: only the dominant form of relationship and social interaction is accepted
Parallel societies	Group(s) moving into an area live parallel to existing local group(s)	Pillars: a number of independent and specific cultures with few or no mutual connections

effect of small changes over time is clear and the result is large spatial changes in group relations and landscape use.

Tamar Wilson (1994) discusses 'network-mediated migration', i.e. migration networks that are 'facilitating rather than encapsulating, as permeable, expanding, and fluid, rather than as correlating with a metaphor of a rigid and bounded structure' (Wilson 1994, 275). Building on Wilson (1994), processes are in focus in Figure 4 to illustrate how social networks over time and space may connect migrants and those who remain at home (Burmeister 2000, 544). Inspired by, among others, Hofmann's (2016, 241) discussion on continued migration, Figure 4 illustrates spatio-temporal dynamics in relation to various multiple migration movements. To the left in the figure, 'social segments', to use a term from Anthony (2022, 60), of one group (illustrated with a circle) are migrating at different times to various locations. Over time, processes of migration (and indeed other forms of socio-economic processes) form new groups (circles and ovals). On the far right of the figure, migration patterns over time have resulted in three groups. None of these have a direct relationship to the 'social segments' migrating from the first group on the far left in the figure. But, through complex migration patterns over time, groups (i.e. circles and ovals) are connected.

'Space' and 'place' are useful analytical concepts for exploring spatio-temporal aspects of human experiences and relations (Warf & Arias 2009). Space is a location with a physical geography, for example a river valley where people live. Place is space with social and cultural meaning, for example what people living in a river valley refer to as a home full of place-specific memories and lived realities shared with others who also call the same space home. In migration, place tends to change while space is constant. In that sense, 'return migration', as in returning to the same place, is an illusion, as only the former space not the place is possible to be returned to. This is schematically illustrated in Figure 5.

Social transformation and relationships

In both sending and receiving communities, as well as in other communities in which people who migrate operate, they do so within existing systems of traditions, materialities, economies, social contexts, cosmologies, religions, networks, exchange and mobility systems, contact, trade and migration routes, power relationships, etc. They operate in ways that over time both constitute and change these existing systems, affecting the relations between involved groups (Daniels 2022b; Högberg *et al.* 2023). In Table 3 we elaborate on scenarios of social transformation because of migration events, including population mix and replacement, as well as a scenario where parallel societies may exist.

As discussed by Clark *et al.* (2019, 265), migration 'generates a complicated social map of migrant enclaves, zones of hybridity, and areas of local resistance'. This includes structural change, that may take various organizational and technological forms. It also involves socio-cultural changes, at the levels of values, norms, symbolic representations and mentalities (Rodat 2020, 179). Along similar lines, Burmeister (2017, 61ff, see also McSparron *et al.* 2020) elaborates on internal and external domains as proxies for analysing group agency and migration relationships. Some groups may retain features that refer to the group's history in the form of, for example, material culture within the internal domain (e.g. inside their house). At the same time, the group integrates new features in its external domain (e.g. the outside of the house). In this, aspects that are new and old for the group are under renegotiation. Building on the work of Burmeister (2000; 2017), McSparron *et al.* (2020, 230) present a theoretical model to examine group agency for both the migrant group and host community, and to study how variation in group agency may result in inter-group tensions or cooperation (see Clark *et al.* 2019, 265) (Table 4).

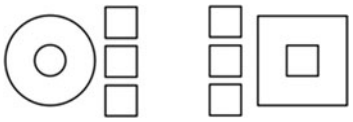
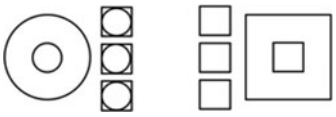
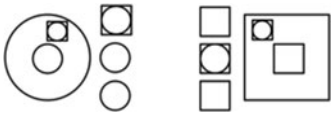
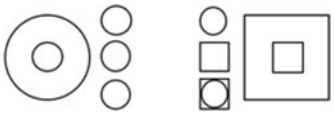
Cultural encounters, intercultural competences

Christiansen *et al.* (2017) discuss cultural encounters as a concept used when conceptualizing variation and dynamics in interaction between groups and individuals across 'established cultural boundaries' (Christiansen *et al.* 2017, 599). However, as discussed, cultural boundaries are rarely stable. Discussing aspects of cultural encounters and migration processes, Rodat (2020, 181) instead emphasizes that cultural boundaries are 'constructed and reconstructed not only by learning the norms and internalizing the values within the own group, but, above all, by comparing with other groups'.

Cultural encounters as a result of migration processes take place at individual, group and societal levels (Table 5).

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Table 4. Examples of variation in group agency and migration relationships as it may play out in internal and external domains. Legend column to the right: large circle = migrant group internal domain; large square = host community internal domain. Area with small circles and squares in between large circle and large square = external domain. Note that the figure only schematically exemplifies variation. It is not intended to illustrate processes of change from one relationship to another. (Modified from Burmeister 2000; 2017; McSparron *et al.* 2020, 228f, fig 1; see also Clark *et al.* 2019).

Group Agency	Migration relationships	Internal and external domain	Schematic illustration, relationships played out in internal and external domain
Low	The migrant group may be large, but not especially organized or resourced. Alternatively, the number of migrants is small but well organized. Such groups may subsist within the new community, but will be susceptible.	Migrant groups would adopt an external domain which de-emphasizes points of contrast between themselves and the host community. They might express themselves differently within the internal domain, away from the gaze of the host community. The host community do not compromise their established internal and external domains.	
Medium	The migrant group has technological knowledge, and/or organization skills. They are able to construct for themselves a niche within the host community. Such groups are not dominant, but are not entirely powerless either.	Migrant groups would have some ability to decide how to express their external domain and may use it as a place to display aspects of their identity. They might express themselves differently within the internal domain, away from the gaze of the host community. The host community are unlikely to feel the need to compromise their established internal and external domains.	
High	The migrant group has technological knowledge, and/or organization skills that gives them advantages over the host community, but they are unable to dominate completely and need the assistance of elements within the host community. The host community may feel pressure to accept aspects of the technological knowledge, and/or organization skills of the newcomers but may also resist change.	It is likely that the migrant group would want to keep an external domain which presents the values, iconography and ideology of their group, but it would perhaps be within the internal domain where evidence of compromise and co-operation with the host community would be found. There may be a subtle performance of resistance and acceptance of change in either the external or internal domains of the host community.	
Very High	The migrant group has such an overwhelming advantage over the host population in terms of numbers, organization, and/or technology that they achieve dominance over the latter group.	The migrant group would not need to differentiate an external and internal domain. Indeed, it may well be the host community that must differentiate their lives into internal and external domains.	

This involves social interaction and mutual influences or encounters with what is familiar or recognizable, but also different or foreign. The process in itself is what creates meaning. Boundaries that are involved become ready to be renegotiated when behaviours and actions are not compatible, social functions are incomprehensible, knowledge is different, or symbols contrast with each other. Hence, individuals, groups, or societies define themselves by meeting others. In this way, it is not culture *per se* that defines, but the boundaries created and re-created in processes of cultural encounters.

There are vast spatio-temporal variations in how cultural encounters can develop. As Hofmann *et al.* (2024) illustrate, these variations relate to differences in size of affected places (from small to large scale, from one place to many), in tempo and time (slow, fast; temporary, long-lasting, or permanent), or in intensity (from few persons in few places to many persons in many places). Practically, these normally come in combinations (Sørensen 2014a, 44ff).

What the processes of cultural encounters result in depends on variation in intercultural competence of the people, groups, or societies involved (Dietz 2018). Hoffmann and

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Table 5. Schematic list of terms for cultural interaction that illustrate variation in how to define cultural encounters as a result of migration processes. Note that listed concepts are not necessarily exclusive but integrated as various parts of the same complexity. Our purpose is to illustrate complexity from various angles. (From Gutmann 1994; Ashworth *et al.* 2007; Högberg 2013; Liebmann 2013; Clark *et al.* 2019; Rodat 2020; Hofmann *et al.* 2024).

Interculturation	A set of processes by which individuals and groups interact when identifying themselves as being distinct from one another.
Assimilation or acculturation	Relationships between majority and minority groups are unequal. Reduction of differences is always in favour of the dominant group. It implies a unidirectional adjustment of minority to majority culture.
Integration	Relationships between majority and minority groups are more equal. Reduction of differences and adjustments are done by all groups involved. Minority and majority groups strive to create something new. It implies not just combining, but reworking characteristics that existed before.
Subcultures	Marks the identity of various social groups, different from those of the society as a whole. They are part of society, while at the same time keeping their specific characteristics intact. Always defined in relation to a 'parent' culture, i.e. the culture they are a subset of.
Sustainable 'coalescent societies'	Formed when integrative institutions, inclusive ideologies, and new identities transcended or crosscut ethnic, linguistic, and other exclusionary and deeply rooted social boundaries. These changes involve redesigning the built environment and reorganizing religion and ritual to emphasize collective, universalizing, and participatory practices. Such practices include formalized systems for incorporation and ordering of groups based on their time of arrival as well as the borrowing of widely recognized symbols and concepts from other societies (Clark *et al.* 2019, 266).
Hybridity	'The new transcultural forms produced through colonization that cannot be neatly classified into a single cultural or ethnic category' (Liebmann 2013, 30). Often implies unbalanced power relations.
Creolization	Central to this concept is a factor of dislocation from what is understood as a cultural homeland, and cultural encounters with a host culture. Aspects of both are mixed, resulting in something new. The concept is anchored in colonial settings and post-colonial studies and as such describes specific types of cultural materializations. And, as Liebmann (2013, 29) discusses, since its emphasis is focused 'on diasporic populations, creolization is not a suitable concept for the investigation of all types of archaeological mixing'.

Table 6. Ethnocentrism and ethno-relativism according to Bennett (2004, 63); see also Kemp (2005).

Ethnocentrism	The experience of one's own culture as central to reality, and natural to apply as a model for valuing others. Beliefs and behaviours that individuals are socialized into are unquestioned and experienced as self-evident and as just 'the way things are'.
Ethno-relativism	The experience of one's own beliefs and behaviours as just one out of many conceivable ways to organize reality. They are possible to develop and improve to meet change and new circumstances. One's own culture is experienced as just one of several equally complex worldviews.

Briga (2018, 4) describe intercultural competence as 'the ability to mobilise and deploy relevant attitudes, skills and knowledge in order to interact effectively and appropriately in different intercultural situations' (see also Deardoff 2009; Dietz 2018; Högberg 2013). Learning from knowledge and skills is necessary to provide individuals, groups, or societies with abilities to understand culture as both self-experienced (essentialist understanding of both one's own culture and that of others) and in flux (understanding of culture as something in constant transformation). According to Bennett (2004), this requires moving from 'ethnocentrism' to 'ethno-relativism' (Table 6).

Figure 6 exemplifies activities, processes, outcomes, and practices that hypothetically can affect results from cultural encounters, and also move individuals, groups, and society from ethnocentrism to ethno-relativism (Table 6). In relation to archaeological studies of migration, the figure provides us with examples of qualities of intercultural competences that may have been involved in prehistoric migration processes and may have affected results from cultural encounters in various ways. Hence, if people, groups, or societies involved in cultural encounters are dominated by ethnocentric approaches to culture, the outcome of migrations will be different from a situation in which people, groups, or societies embrace ethno-relativism.

In summary, the theoretical review presented in this section shows the complexities involved in migration processes. As such, it elucidates hypothetical aspects related to archaeological research on migration (and beyond). Below, we take the above discussion as a point of departure and transform it into a conceptual/theoretical framework.

Concluding discussion

De Haas *et al.* (2020) argue that we are currently in a new age of migration. Never have so many people moved over such large areas in so many places on Earth. And, as Altschul *et al.* (2020) show, global migration will increase over the next decades. As discussed by many scholars, this calls for new ways to understand migration (e.g. Brettell &

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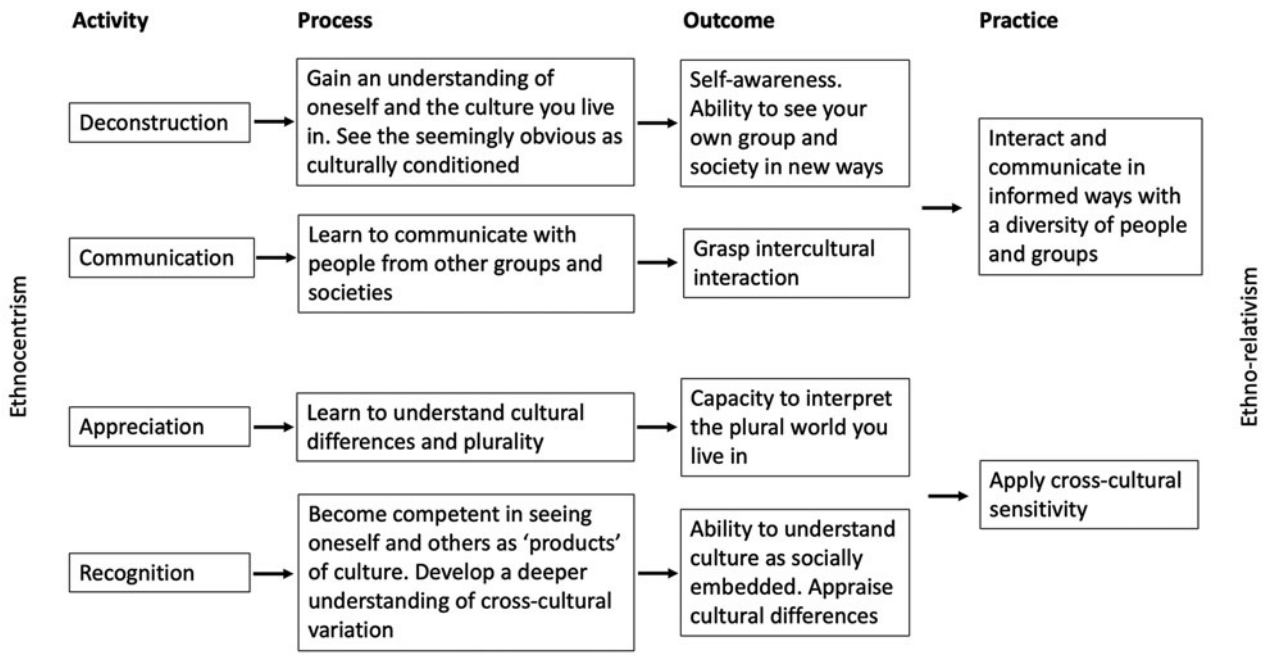


Figure 6. Schematic model on hypothetical intercultural competences that may affect results from cultural encounters. (Re-worked from Lorentz 2016.)

Hollifield 2023). As numerous studies cited throughout this text demonstrate, this also applies to archaeology. However, according to Hofmann *et al.* (2024, 1), archaeological perspectives on past migrations have for long been 'biased by specific national attitudes, historical traditions, and contemporary politics'. Such biases are deeply rooted in the way migration is understood (Gabaccia 2023). Hofmann *et al.* (2024, 11) illustrate for example how 'the present experiences of migration filtered through the news media' tend to influence many current migration narratives in archaeological studies. This occurs through, for example, 'crisis narratives' of uncontrolled migration or by conceptualizing migration through the lens of the history of European colonial expansions as models for human movement (see also Gori & Abar 2023, 25). Combined with a 'public perception of DNA … characterised by the idea that our genes offer a source of absolute truth about who we "really" are' and that 'with aDNA this idea has been projected onto the past' (Strand & Källén 2024, xviii), archaeological migration studies carry an overload of (often unintended) political baggage (see discussion in e.g. Frieman & Hofmann 2019).

We started our study from the assumption that new data from aDNA and other archaeometric methods require us to think in new ways to understand migration. This is an assumption based on our reading of studies that engage with migration in the first half of the third millennium BCE in southern Scandinavia (Supplementary material). We concluded that over the last *c.* 50 years, a prevailing 'non-migration narrative' has hampered migration-theory development. Hofmann (2016, 236) emphasizes that a focus for migration studies in Stone Age archaeology should be to understand migration as social and cultural behaviours embedded in given spatio-temporal settings (see also Cabana 2011; Cabana & Clark 2011a; Cameron 2011; 2013; Furholt 2021; Hofmann *et al.* 2024). As Högberg discusses (2013; 2015; 2016), this is in line with developed migration studies as the field has advanced in recent years by applying transdisciplinary approaches to understand variation and complexity involved in migration (see Brettell & Hollifield 2023; Takeyuki 2011). Along similar lines, we have applied a transdisciplinary theoretical approach to build a conceptual/theoretical framework to re-theorize migration. Table 7 summarizes our results, by outlining topics, questions and rationales for applying theoretical perspectives on archaeological migration studies.

If we return to the archaeology of the first half of the third millennium BCE in southern Scandinavia and reflect on it through the lens of our conceptual/theoretical framework (as outlined in Table 7), what examples of main challenges, key unanswered questions, significant over-simplifications, or lines of directions of additional approaches can we see? Without an ambition to map out all possible areas of interest, we here consider some examples.

A main challenge in archaeological migration studies is to find ways to embrace complexity. This does not mean addressing every aspect presented in Table 7 in each study. Rather, it involves developing a deeper understanding of the limitations and opportunities these aspects embrace in relation to specific archaeological spatio-temporal contexts. Hofmann *et al.* (2024, 6) conclude that as migration is 'a constant feature of Neolithic human society … there is no unitary model that can explain [all] past migration events'. Along similar lines, we conclude that a wide range of questions are explored in migration studies that are relevant to archaeology (see also Daniels 2022a): what do migrants do when they migrate? When do they migrate? How is migration initiated and when does it end? Is this at all a relevant question to ask? How does migration play

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Table 7. A conceptual/theoretical framework, outlined from our results.

Topics	Questions	Rationales
Limitations posed by ethno-nationalistic perspectives or boundaries	Is migration understood as an on-going organizing force of social life and society, or conceptualized in other ways? Are cultural, social, or territory-specific boundaries in focus, or is migration conceptualized beyond such limits?	Migration: - described using *ad hoc* or *post hoc* explanations - addressed as movements of humans from one place to another and/or from one static culture to another - conceptualized as if ethno-national states with their borders always existed - described as a flow of endless human movement - termed as social behaviour in specific contexts - addressed by assuming links between people, culture, and place without analysing these assumptions - used by conceptualizing culture as fluid and social group composition as dynamic
Variation in interpretation related to disciplinary focus	Are presented interpretations inspired by specific disciplines?	Migration explained from macro- or micro-analytic perspectives Theories related to economic, social, structural, or cultural rationales are addressed
Causes for migration	Are causes for migration presented? If so, how are they conceptualized?	Causes for sending and receiving communities, explained as internal, external, voluntary, or forced
People involved	Are those involved in migration described? If so, how?	Based on - gender, age, class - other roles given to those acting in migration
Variation on a spatio-temporal scale	How are variations and dynamics addressed in relation to different spatio-temporal scales?	Migration is conceptualized as: - linear, from one place to another - separating push from pull factors - dualistic, disconnecting or opposing sending and receiving areas - made up of feedback loops, integrating push and pull factors - multidirectional, including return migration on various spatio-temporal scales
Social transformation and relationships	How is social transformation due to migration events conceptualized and explained? Are aspects of group agency and migration relationships addressed?	Explanations address variation in migration relationships Result of migration explained as gradual population mix, population replacement or resulting in parallel societies
Cultural encounters	How are cultural encounters and mixture conceptualized and rationalized?	Cultural encounters as a result of migration processes are defined as: - interculturation - assimilation or acculturation - integration - subcultures - sustainable 'coalescent societies' - hybridity - creolization
Intercultural competences	Are aspects of prehistoric intercultural competence that may affect results from cultural encounters addressed? If so, how?	Based on: - ethnocentrism - ethno-relativism

out on varied spatio-temporal scales? Is it structured, impulsive or a combination of these and/or additional aspects? Do large groups or individuals migrate? Which gender, agency, or socio-economic structures are instrumental in initiating or regulating migration? What does migration lead to in terms of change and continuity? For whom does it lead to

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change or continuity; individuals, families, groups, or communities? Does everyone involved perceive that change has happened, or does migration occur in ways that extend over time and space, so it is actually perceived as continuity?

The theoretical complexities inherent in these questions contrast with the over-simplification found in the *ad hoc* and *post hoc* positions prevalent in many of the studies we have read (as discussed above). If migration theory as presented here is accepted as relevant for archaeology, then *ad hoc* and *post hoc* positions can no longer be applicable for analysing events in the first half of the third millennium BCE in southern Scandinavia (or in other spatio-temporal contexts). This implies that studies which, prior to analysis, assert that variation is or is not a result of migration (*ad hoc*), or studies that interpret analytical results in terms of migration without engaging with migration theory (*post hoc*), should acknowledge that they are only speculating from an *ad hoc* or a *post hoc* position.

Another challenge for future research is how to understand migration as an ongoing organizing force of social life and society. To start, we need to abandon the idea of linear 'one-directional' migration flow so common in archaeology, with a clear beginning and an end (see discussion in Frieman 2023; Hofmann 2016). Given that migration is multi-directional and constant, it is essential to recognize that what we in an analysis isolate as starts and ends of processes always have a history and a future with multiple spatio-temporal implications. A key challenge here is to find ways to combine an understanding of migration as ongoing, with the 'increasing regionalisation in material culture' (Hofmann *et al.* 2024, 159) we can observe in the archaeological data from the first half of the third millennium BCE in southern Scandinavia (see, for example, discussion in Iversen 2015; Nielsen & Johannsen 2023).

The topic of young male warriors and their violence as driver of change has become central in several studies that explore migration, transformation processes and changing social relationships in the first half of the third millennium BCE, in southern Scandinavia and beyond (see discussion in e.g. Heyd 2023; Kristiansen 2022; Kristiansen *et al.* 2017). Adding migration theory to this topic allows us to consider additional approaches to analysing social roles and transformation processes. Migration happened within existing systems of traditions, materialities, economies, social contexts, cosmologies, religions, networks, exchang, and mobility systems. Thus, migrating male warriors are both leaving and entering existing systems of relationships, as well as creating new ones in the process. Questions to explore in such a scenario include: how did these systems transform with this specific type of migration? How did they change through violence, and what happened after the violence? What additional social roles are relevant to explore? If we see evidence for population replacement (as exemplified in Table 3), how do we conceptualize variation in the spatio-temporal scales involved? For instance, when Allentoft *et al.* (2024, 335) define change over time in aDNA as evidence for a 'rapid population turnover' in the third millennium BCE in southern Scandinavia, what does 'rapid' mean in different spatio-temporal perspectives? Allentoft *et al.* (2024) elaborate on a timeframe of 200 years. From an archaeological deep-time perspective, 200 years is indeed rapid. From a human life-history perspective, it is not. If we compare year 1 with year 200 within this period, a 'near-complete population turnover' is evident. But, if we focus on, for example, years 20 to 70 within the same 200-year timeframe, we get a period of 50 years that may equal a lifetime. This opens other potential scenarios, such as periods of processes with gradual population mixing or parallel societies (as exemplified in Table 3), instead of a population replacement. Moreover, if we stay in this scenario and shift our focus from male warriors to other social roles, as for example children (see discussion in Baxter 2005), alternatives for additional approaches emerge. A group of children who grew up during what is retrospectively termed rapid change might perceive their time as normality (i.e., not rapid change). This allows us to ask questions about the variation in how different social roles played out in this specific time-slice of the Stone Age (see Hofmann *et al.* 2024, 111). This could be explored by examining, for example, spatio-temporal variation in processes of intra- and inter-generational knowledge transfer systems in relation to social learning and intentional teaching (Gärdenfors & Högberg 2017; Högberg 2008). In doing so, variation over time in the qualities of intercultural competences involved in migration processes may unfold, resulting in a range of ways to understand cultural encounters (see Figure 6 and Tables 5 & 6). Such theoretical endeavours might add complexity to the archaeological interpretation of transformation processes in the first half of the third millennium BCE. Potentially, this could lead to analyses of what happened (impact) as an addition to studies like Allentoft *et al.* (2024) that explains change based on the cumulative result of/outcomes from what happened (effects) (see Furholt 2021 for a similar discussion).

As mentioned, aDNA studies and other archaeometric analyses have significantly altered our approaches to how we can explore migration. Initially, findings from such studies were presented in generalized (atheoretical) terms of linear inheritance and population exchange (e.g. Skoglund *et al.* 2012). At the same time, a dominating trend to embrace a non-migration narrative in archaeological theory and analysis existed (see Edenmo 2008 for discussion). More than a decade later, conditions for exploring aspects of migration in the first half of the third millennium BCE (and beyond) have changed. aDNA studies and other archaeometric analyses have matured (e.g. Seersholm *et al.* 2024); non-migration narratives are no longer dominating as archaeologists have started to explore migration theories in new ways (e.g. Hofmann *et al.* 2024). Hofmann *et al.* (2024, 3f) conclude however, that 'the concept of migration is not yet fulfilling its potential for history-making, largely because discussion of key questions surrounding the process of migration … are only just beginning'. Given that the last *c.* 50 years of research on the first half of the third millennium BCE in southern Scandinavia have been dominated by an explicit and outspoken 'non-migration narrative', it is reasonable to assume that new interpretations may emerge

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from re-visiting these previous studies, in addition to exploring new ones. We hope that our conceptual/theoretical framework, as summarized in Table 7, may bring in novel perspectives to archaeological studies that address migration in ways not yet explored.

Supplementary Material. To view supplementary material for this article, please visit https://doi.org/10.1017/S0959774325000046

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References

Adams, W.Y., D.P. Van Gerven & R.S. Levy, 1978. The retreat from migrationism. *Annual Review of Anthropology* 7, 483–532.

Allentoft, M.E., M. Sikora, A. Fischer, *et al.*, 2024. 100 ancient genomes show repeated population turnovers in Neolithic Denmark. *Nature* 625, 329–37.

Allentoft, M., M. Sikora, K.-G. Sjögren, *et al.*, 2015. Population genomics of Bronze Age Eurasia. *Nature* 522, 167–72.

Altschul, J.H., K.W. Kintigh, M. Aldenderfer, *et al.*, 2020. To understand how migrations affect human securities, look to the past. *Proceedings of the National Academy of Sciences* 117(34), 20342–5.

Ammerman, A.J. & L.L. Cavalli-Sforza, 1979. The wave of advance model for the spread of agriculture in Europe, in *Transformations: Mathematical approaches to culture change*, eds C. Renfrew & R.E. Cooke. New York: Academic Press, 275–94.

Anthony, D.W., 1990. Migration in archeology: the baby and the bathwater. *American Anthropologist* 92(4), 895–914.

Anthony, D.W., 1992. The bath refilled: migration in archeology again. *American Anthropologist* 94(1), 174–6.

Anthony, D.W., 2022. Migration, ancient DNA, and Bronze Age pastoralists from the Eurasian steppes, in *Homo Migrans. Modeling mobility and migration in human history*, ed. M.J. Daniels. (IEMA Proceedings Vol. 11.) Albany (NY): SUNY Press, 55–77.

Anthony, D.W, 2023. Ancient DNA and migrations: new understandings and misunderstandings. *Journal of Anthropological Archaeology* 70, 101508.

Ashworth, G.J., B. Graham & J.E. Tunbridge, 2007. *Pluralising Pasts. Heritage, identity and place in multicultural societies*. London: Pluto Press.

Baxter, J.E., 2005. *The Archaeology of Childhood: Children, gender and material culture*. Walnut Creek (CA): AltaMira Press.

Becker, C.J., 1954. Die mittelneolitischen Kulturen in Südskandinavien. *Acta Archaeologica* 25, 49–150.

Bennett, M.J., 2004. Becoming interculturally competent, in *Toward Multiculturalism: A reader in multicultural education*, ed. J.S. Wurzel. Newton (MA): Intercultural Resource Corporation, 62–77.

Blank, M., K.-G. Sjögren & J. Storå, 2020. Old bones or early graves? Megalithic burial sequences in southern Sweden based on 14C datings. *Archaeological and Anthropological Science* 12, 89.

Bonacchi, C., 2022. *Heritage and Nationalism. Understanding populism through big data*. London: UCL Press.

Brettell, C.B., 2023. Theorizing migration in anthropology. The cultural, social, phenomenological, and embodied dimensions of human mobility, in *Migration Theory. Talking across disciplines* (4th edn), eds C.B. Brettell & J.F. Hollifield. New York/London: Routledge, 194–231.

Brettell, C.B. & J.F. Hollifield (eds), 2015. *Migration Theory. Talking across disciplines* (3rd edn). New York/London: Routledge.

Brettell, C.B. & J.F. Hollifield (eds), 2023. *Migration Theory. Talking across disciplines* (4th edn). New York/London: Routledge.

Brink, K., 2009. *I palissadernas tid. Om stolphål och skärvor och sociala relationer under yngre mellanneolitikum*. (Malmöfynd 21.) Malmö: Malmö Museer.

Burmeister, S, 2000. Archaeology and migration. Approaches to an archaeological proof of migration. *Current Anthropology* 41(4), 539–61.

Burmeister, S., 2017. The archaeology of migration: what can and should it accomplish?, in *Migration und Integration von der Urgeschichte bis zum Mittelalter*, eds H. Meller, F. Daim, J. Krause & R. Risch. (Tagungen des Landesmuseums für Vorgeschichte Halle 17.) Halle: Landesamt für Denkmalpflege und Archäologie Sachsen-Anhalt, 57–68.

Cabana, G.S., 2011. The problematic relationship between migration and culture change, in *Rethinking Anthropological Perspectives on Migration*, eds G.S. Cabana & J.J. Clark. Orlando (FL): University Press of Florida, 16–28.

Cabana, G.S. & J.J. Clark, 2011a. Introduction. Migration in anthropology. Where we stand, in *Rethinking Anthropological Perspectives on Migration*, eds G.S. Cabana & J.J. Clark. Orlando (FL): University Press of Florida, 3–15.

Cabana, G.S. & J.J. Clark (eds), 2011b. *Rethinking Anthropological Perspectives on Migration*. Orlando (FL): University Press of Florida.

Cameron, C.M., 2011. Captives and culture change. Implications for archaeology. *Current Anthropology* 52(2), 169–209.

Cameron, C.M., 2013. How people moved among ancient societies: broadening the view. *American Anthropologist* 115(2), 218–31.

Cassel, K., 2000. Where are we going? Attitudes towards migrations in archaeological thought. *Current Swedish Archaeology* 8, 33–49.

Cassel, K., 2008. *Det gemensamma rummet. Migrationer, myter och möten*. (Södertörn Archaeological Studies 5.) Huddinge: Södertörns högskola.

Chapman, J. & P.M. Dolukhanov, 1992. The baby and the bathwater: pulling the plug on migrations. *American Anthropologist* 94(1), 169–74.

Christiansen, L.B., L.P. Galal & K. Hvenegaard-Lassen, 2017. Organised cultural encounters: interculturality and transformative practices. *Journal of Intercultural Studies* 38(6), 599–605.

Clark, G.A. 1994. Migration as an explanatory concept in Paleolithic archaeology. *Journal of Archaeological Method and Theory* 1(4), 305–43.

Clark, J.J., 2001. *Tracking Prehistoric Migrations: Pueblo settlers among the Tonto Basin Hohokam*. (Anthropological Papers of the University of Arizona 65.) Tucson (AZ): University of Arizona Press.

Clark, J.J., J.A. Birch, M. Hegmon, *et al.*, 2019. Resolving the migrant paradox: two pathways to coalescence in the late precontact U.S. Southwest. *Journal of Anthropological Archaeology* 53, 262–87.

Coutinho, A., T. Günther, A.R. Munters, *et al.*, 2020. The Neolithic Pitted Ware culture foragers were culturally but not genetically influenced by the Battle Axe culture herders. *American Journal of Physical Anthropology* 172, 638–49.

Damm, C.B, 1991. Continuity and Change. An Analysis of Social and Material Patterns in the Danish Neolithic. PhD thesis, University of Cambridge.

Daniels, M.J. (ed.), 2022a. *Homo Migrans. Modeling mobility and migration in human history*. (IEMA Proceedings Vol. 11.) Albany (NY): SUNY Press.

Daniels, M.J., 2022b. Movement as a constant? Envisioning a migration-centered worldview of human history, in *Homo Migrans. Modeling mobility and migration in human history*, ed. M.J. Daniels. (IEMA Proceedings Vol. 11.) Albany (NY): SUNY Press, 1–28.

De Haas, H., M.J. Miller & S. Castles, 2020. *The Age of Migration: International population movements in the modern world*. New York: Guilford Press.

Deardoff, D.K. (ed.), 2009. *The SAGE Handbook of Intercultural Competence*. Thousand Oaks (CA): Sage Publishing.

Dietz, G., 2018. Interculturality, in *The International Encyclopedia of Anthropology*, ed. H. Callan. Hoboken (NJ): John Wiley & Sons.

Edenmo, R., 2008. *Prestigeekonomi under yngre stenåldern. Gåvoutbyten och regionala identiteter i den svenska båtyxekulturen*. (Occasional Papers in Archaeology 43.) Uppsala: Uppsala universitet.

Egfjord, A.F.-H., A. Margaryan, A. Fischer, *et al.*, 2021. Genomic steppe ancestry in skeletons from the Neolithic Single Grave Culture in Denmark. *PLoS One* 16(1), e0244872.

Favell, A., 2023. The state of migration theory. Challenges, interdisciplinarity, and critique, in *Migration Theory. Talking across disciplines* (4th edn), eds C.B. Brettell & J.F. Hollifield. New York/London: Routledge, 341–58.

Fernández-Götz, M., C. Nirnura, P.W. Stockhammer & R. Cartwright, 2023a. Rethinking migrations in late prehistoric Eurasia: an

https://doi.org/10.1017/S0959774325000046 Published online by Cambridge University Press

introduction, in *Rethinking Migrations in Late Prehistoric Eurasia*, eds M. Fernández-Götz, C. Nirnura, P W. Stockhammer & R. Cartwright. (Proceedings of the British Academy 254.) Oxford: Oxford University Press, 1–20.

Fernández-Götz, M., C. Nirnura, P. W. Stockhammer & R. Cartwright (eds), 2023b. *Rethinking Migrations in Late Prehistoric Eurasia*. (Proceedings of the British Academy 254.) Oxford: Oxford University Press.

Fornander, E., 2013. Dietary diversity and moderate mobility – isotope evidence from Scanian Battle Axe Culture burials. *Journal of Nordic Archaeological Science* 18, 13–29.

Fornander, E., G. Eriksson & K. Lidén, 2008. Wild at heart: approaching Pitted Ware identity, economy and cosmology through stable isotopes in skeletal material from the Neolithic site Korsnäs in eastern central Sweden. *Journal of Anthropological Archaeology* 27(3), 281–97.

Frachetti, M.D., 2011. Migration concepts in central Eurasian archaeology. *Annual Review of Anthropology* 40, 195–202.

Frieman, C.J., 2023. How to read an arrow on a map, in *Migration Narratives in Archaeology*, eds D. Hofmann, C.J. Frieman & A.J. Nyland. Leiden: Sidestone Press, 40–41.

Frieman, C.J. & D. Hofmann, 2019. Present pasts in the archeology of genetics, identity, and migration in Europe: a critical essay. *World Archaeology* 51(4), 528–45.

Furholt, M., 2017. Translocal communities – exploring mobility and migration in sedentary societies of the European Neolithic and Early Bronze Age. *Prehistorische Zeitschrift* 92(2), 304–21.

Furholt, M., 2019a. Re-integrating archaeology: a contribution to aDNA studies and the migration discourse on the 3rd millennium BC in Europe. *Proceedings of the Prehistoric Society* 85, 115–29.

Furholt, M., 2019b. De-contaminating the aDNA–archaeology dialogue on mobility and migration. Discussing the culture-historical legacy. *Current Swedish Archaeology* 27, 53–68.

Furholt, M., 2021. Mobility and social change: understanding the European Neolithic period after the archaeogenetic revolution. *Journal of Archaeological Research* 29, 481–535.

Gabaccia, D.R., 2023. Historical migration studies. Time, temporality, and theory, in *Migration Theory. Talking across disciplines* (4th edn), eds C.B. Brettell & J.F. Hollifield. New York/London: Routledge, 44–77.

Gärdenfors, P. & A. Högberg, 2017. The archaeology of teaching and the evolution of *homo docens*. *Current Anthropology* 58(2), 188–208.

Gori, M. & A. Abar, 2023. Comparing apples and oranges? Confronting social science and natural science approaches to migration in archaeology, in *Rethinking Migrations in Late Prehistoric Eurasia*, eds M. Fernández-Götz, C. Nirnura, P W. Stockhammer & R. Cartwright. (Proceedings of the British Academy 254.) Oxford: Oxford University Press, 21–40.

Graeber, D. & D. Wengrow, 2021. *The Dawn of Everything. A new history of humanity*. London: Penguin.

Greenblatt, S. (ed.), 2010. *Cultural Mobility: A manifesto*. Cambridge: Cambridge University Press.

Günther T., H. Malmström, E.M. Svensson, *et al*., 2018. Population genomics of Mesolithic Scandinavia: investigating early postglacial migration routes and high-latitude adaptation. *PLoS Biology* 16(1), e2003703.

Gutmann, A. (ed.), 1994. Multiculturalism. *Examining the politics of recognition*. Princeton (NJ): Princeton University Press.

Hägerstrand, T, 1957. Migration and area: survey of a sample of Swedish migration fields and hypothetical considerations on their genesis, in *Migration in Sweden: A symposium*, eds D. Hannerberg, T. Hägerstrand & B. Odeving. Lund: Gleerup, 27–158.

Hakenbeck, S., 2008. Migration in archaeology: are we nearly there yet? *Archaeological Review from Cambridge* 23(2), 9–26.

Härke, H., 1998. Archaeologists and migrations. *Current Anthropology* 39(1), 19–24.

Hastrup, K., 2010. *Kultur. Den flexibla gemenskapen*. Lund: Studentlitteratur.

Heyd, V., 2023. The mobility and migration revolution in 3rd millennium BC Europe, in *Rethinking Migrations in Late Prehistoric Eurasia*, eds M. Fernández-Götz, C. Nirnura, P W. Stockhammer & R. Cartwright. (Proceedings of the British Academy 254.) Oxford: Oxford University Press, 41–62.

Hoerder, D., 2002. *Cultures in Contact. World migrations in the second millennium*. Durham (NC)/London: Duke University Press.

Hofmann, D., 2016. Keep on walking: the role of migration in Linearbandkeramik life. *Documenta Praehistorica* 43, 235–51.

Hofmann, D., C.J. Frieman, M. Furholt, S. Burmeister & N. Nørkjær Johannsen, 2024. *Negotiating Migrations. The archaeology and politics of mobility*. London: Bloomsbury Academic.

Hoffmann, W. & E. Briga, 2018. *A Brief Overview on Intercultural Learning in Initial Teacher Education and Continuing Professional Development for Teachers of Upper Secondary Schools*. Intercultural Learning for Pupils and Teachers Project. http://intercultural-learning.eu/wp-content/uploads/2017/01/ICL-in-ITE-and-CPD.pdf

Högberg, A., 2008. Playing with flint: tracing a child's imitation of adult work in a lithic assemblage. *Journal of Archaeological Method and Theory* 15, 112–31.

Högberg, A., 2013. *Mångfaldsfrågor i kulturmiljövården. Tankar, kunskaper och processer 2002–2012*. Lund: Nordic Academic Press.

Högberg, A., 2015. The cultural encounters of Neolithization processes. A discussion of different ways to understand plurality, in *Neolithic Diversities. Perspectives from a conference in Lund, Sweden*, eds K. Brink, S. Hydén, K. Jennbert, L. Larsson & D. Olausson. Lund: Lund University, 52–7.

Högberg, A., 2016. To renegotiate heritage and citizenship beyond essentialism. *Archaeological Dialogues* 23(1), 39–48.

Högberg, A., Å. Berggren & K. Brink, 2023. Early Neolithic flint extraction in south-western Sweden: transregional practices on a local scale. *Antiquity* 97, 331–47.

Hollfelder, N., G. Breton, P. Sjödin & M. Jaokobsson, 2021. The deep population history in Africa. *Human Molecular Genetics* 30(2), R2–R10.

Holmqvist, E., Å.M. Larsson, A. Kriiska, *et al*., 2018. Tracing grog and pots to reveal Neolithic Corded Ware Culture contacts in the Baltic Sea region (SEM-EDS, PIXE). *Journal of Archaeological Science* 91. 77–91.

Isayev, E., 2022. The in/visibility of migration, in *Homo Migrans. Modeling mobility and migration in human history*, ed. M.J. Daniels. (IEMA Proceedings Vol. 11.) Albany (NY): SUNY Press, 133–46.

Iversen, R., 2010. In a world of worlds. The Pitted Ware complex in a large scale perspective. *Acta Archaeologica* 81, 5–43.

Iversen, R., 2015. The Transformation of Neolithic Societies. *An eastern Danish perspective on the 3rd millennium BC*. Aarhus: Aarhus University Press.

Iversen, R., B. Philippsen & P. Persson, 2021. Reconsidering the Pitted Ware chronology. A temporal fixation of the Scandinavian Neolithic hunters, fishers and gatherers. *Praehistorische Zeitschrift* 96(1), 44–88.

Johansen, Ø., 1989. De skandinaviske stridsøksekulturer – er deres oppkomst resultat av innvandringer, religionsskifte eller andre årsaker? *Viking. Tidskrift for norrøn arkeologi* 52, 70–90.

Johannsen, N.N., G. Larson, D.J. Meltzer & M. Vander Linden, 2017. A composite window into human history. Better integration of ancient DNA studies with archaeology promises deeper insights. *Science* 356(6343), 1118–20.

Kemp, P., 2005. *Världsmedborgaren. Politisk och pedagogisk filosofi för det 21 århundradet*. Göteborg: Daidalos.

Kihlstedt, B., 2011. Sittesta – gropkeramik och människor, in *Gropkeramikerna – seminarierapport 2011, nr 6*, eds P. Bratt & R. Grönwall. Stockholm: Stockholms läns museum, 46–57.

Kristiansen, K., 1991. Prehistoric migrations – the case of the Single Grave and Corded Ware cultures. *Journal of Danish Archaeology* 8(1), 211–25.

Kristiansen, K., 2014. Towards a new paradigm? The third science revolution and its possible consequences in archaeology. *Current Swedish Archaeology* 22, 11–34.

Kristiansen, K., 2022. Toward a new prehistory. Re-theorizing genes, culture, and migratory expansions, in *Homo Migrans. Modeling mobility and migration in human history*, ed. M.J. Daniels. (IEMA Proceedings Vol. 11.) Albany (NY): SUNY Press, 31–53.

https://doi.org/10.1017/S0959774325000046 Published online by Cambridge University Press

Kristiansen, K., M.E. Allentoft, K.M. Frei, *et al*., 2017. Re-theorising mobility and the formation of culture and language among the Corded Ware Culture in Europe. *Antiquity* 91, 334–47.

Larsson, Å., 2009. *Breaking & Making Bodies and Pots. Material and ritual practices in Sweden in the third millennium BC*. (Aun 40.) Uppsala: Uppsala Universitet.

Larsson, L., 1986. Skåne under sen Trattbägarkultur, in *Stridsøkstid i Sydskandinavien. Beretning fra et symposium 28.-30.X.1984 i Vejle*, eds C. Adamsen & K. Ebbesen. (Arkæologiske Skrifter 1.) Copenhagen: Forhistorisk Arkæologisk Institut, Københavns Universitet, 146–55.

Larsson, L., 1989. Boplatser, bebyggelse och bygder. Stridsyxekultur I södra Skåne, in *Stridsyxekultur i Sydskandinavien*, ed. L. Larsson. (Institute of Archaeology Report series 36.) Lund: University of Lund, 53–76.

Larsson, L., 1991. From MN A to MN B: A south Swedish perspective. *Journal of Danish Archaeology* 10, 205–12.

Larsson, L., 1992. Settlement and environment during the Middle Neolithic and Late Neolithic, in *The Archaeology of the Cultural Landscape. Field work and research in a south Swedish rural region*, eds L. Larsson, J. Callmer & B. Stjernquist. (Acta Archaeologica Lundensia Series in 4° 19.) Stockholm: Almqvist & Wiksell, 91–159.

Larsson, M., 2006. *A Tale of Strange People. The Pitted Ware culture in southern Sweden*. Lund/Kalmar: University of Lund & Kalmar Archaeology.

Levy, N., A. Pisarevskaya & Å. Scholten, 2020. Between fragmentation and institutionalisation: the rise of migration studies as a research field. *Comparative Migration Studies* 8, 24.

Liebmann, M., 2013. Parsing hybridity: archaeologies of amalgamation in seventeenth-century New Mexico, in *The Archaeology of Hybrid Material Culture*, ed. J.J. Card. (Center for Archaeological Investigations Occasional Paper 39.) Carbondale (IL): Southern Illinois University, 25–49.

Linton, R., 1937. One hundred per-cent American. *American Mercury* 40, 427–9.

Lorentz, H., 2016. Interkulturell kompetens – en pedagogisk utvecklingsmodell, in *Interkulturella perspektiv. Pedagogik i mångkulturella lärandemiljöer*, eds H. Lorentz & B. Bergstedt. Lund: Studentlitteratur, 109–33.

Malmer, M.P., 1962. *Jungneolithische Studien*. (Acta Archaeologica Lundensia Series in 4° 2.) Lund: CWK Gleerups förlag.

Malmer, M.P., 1975. *Stridsyxekulturen i Sverige och Norge*. Lund: Liber Läromedel.

Malmer, M.P., 2002. *The Neolithic of South Sweden TRB, GRK, and STR*. Stockholm: Royal Swedish Academy of Letters History and Antiquities.

Malmström, H., T. Günther, E. Svensson, *et al*., 2019. The genomic ancestry of the Scandinavian Battle Axe Culture people and their relation to the broader Corded Ware horizon. *Proceedings of the Royal Society B* 286, 20191528.

McSparron, C., C. Donnelly, E. Murphy & J. Geber, 2020. Migration, group agency, and archaeology: a new theoretical model. *International Journal of Historical Archaeology* 24, 219–32.

Moore, J.H., 2001. Evaluating five models of human colonization. *American Anthropologist* 103(2), 395–408.

Müller, S., 1898. Jydske Enkeltgrave fra Stenalderen, in *Aarb. for Nord. Oldkynd. Og Hist*. Copenhagen: Thieles Bogtrykkeri, 157–282.

Nielsen, S.K & N.N. Johannsen, 2023. Mortuary palisades, single graves and cultural admixture: the establishment of Corded Ware culture on the Jutland peninsula. *Praehistorische Zeitschrift* 99(2), 529–90.

Porter, A., 2022. Macro- and micro-mobilities and the creation of identity in the ancient Near East, in *Homo Migrans. Modeling mobility and migration in human history*, ed. M.J. Daniels. (IEMA Proceedings Vol. 11.) Albany (NY): SUNY Press, 229–47.

Portes, A., 2008. Migration and social change: some conceptual reflections. *Journal of Ethnic and Migration Studies* 36(10), 1537–63.

Prescott, C., 1996. Was there *really* a Neolithic in Norway? *Antiquity* 70, 77–87.

Prescott, C. & E. Walderhaug, 1995. The last frontier? Processes of Indo-Europeanization in northern Europe. The Norwegian case. *Journal of Indo-European Studies* 24(3–4), 257–76.

Robb, J., 2013. Material culture, landscapes of action, and emergent causation. *Current Anthropology* 54, 657–83.

Rodat, S., 2020. From multiculturalism to interculturation: current sociological approaches. *Social Sciences and Education Research Review* 7(1), 177–93.

Seersholm, F.V., K.-G. Sjögren, J. Koelman, *et al*., 2024. Repeated plague infections across six generations of Neolithic farmers. *Nature* 632, 114–21.

Shennan, S., 2018. *The First Farmers of Europe. An evolutionary perspective*. Cambridge: Cambridge University Press.

Skoglund, P., H. Malmström, M. Raghavan, *et al*., 2012. Origins and genetic legacy of Neolithic farmers and hunter-gatherers in Europe. *Science* 336(6080), 466–9.

Sørensen, L., 2014a. *From Hunter to Farmer in Northern Europe. Migration and adaptation during the Neolithic and Bronze Age* Vol. 1. (Acta Archaeologica 85.1.) Hoboken (NJ): Wiley.

Sørensen, L., 2014b. *From Hunter to Farmer in Northern Europe. Migration and adaptation during the Neolithic and Bronze Age* Vol. 2. (Acta Archaeologica 85.2.) Hoboken (NJ): Wiley.

Strand, D. & A. Källén, 2024. Critical perspectives on ancient DNA: an introduction, in *Critical Perspectives on Ancient DNA*, eds D. Strand, A. Källén & C. Mulcare. Cambridge (MA)/London: MIT Press, vii–xxv.

Takeyuki, T., 2011. Modern perspectives on ancient migrations, in *Rethinking Anthropological Perspectives on Migration*, eds G.S. Cabana & J.J. Clark. Orlando (FL): University Press of Florida, 313–38.

Tilley, C., 1982. *An Assessment of the Scanian Battle-Axe Tradition: Towards a social perspective*. (Studier utgivna av Kungl. Humanistiska Vetenskapssamfundet i Lund 1981–1982 1.) Lund: CWK Gleerup.

van Dommelen, P., 2014. Moving on: archaeological perspectives on mobility and migration. *World Archaeology* 46(4), 477–83.

Vandkilde, H., 2007. *Culture and Change in Central Europe and Prehistory. 6th to 1st millennium BC*. Aarhus: Aarhus University Press.

von Hackwitz, K., 2009. *Längs med Hjälmarens stränder och förbi – relationen mellan den gropkeramiska kulturen och båtyxekulturen*. (Stockholm Studies in Archaeology 51.) Stockholm: Stockholm University.

Warf, B. & S. Arias, 2009. Introduction: the reinsertion of space in the humanities and social sciences, in *The Spatial Turn. Interdisciplinary perspectives*, eds B. Warf & A. Arias. London/New York: Routledge, 1–10.

Wilson, T.D., 1994. What determines where transnational labor migrants go? Modifications in migration theories. *Human Organization* 53(3), 269–78.

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