

Moving to Stay in (a Woman's) Place

Was Patrilocality the Dominant Mode of Postmarital Residence across Later European Prehistory?

Penny Bickle, Daniela Hofmann, Stella Souvatzi, Marta Cintas-Peña, Katharina Rebay-Salisbury, Peter Schauer, Umair Khalil, Daniel Shaw, and Krista E. Van Vleet

This paper questions whether forms of female mobility and their relation to kinship were uniform throughout later European prehistory. Patrilocality has become the primary way in which sex-based differences in isotope and ancient DNA (aDNA) data are interpreted for this period, but often without discussing or differentiating this concept further. Using a meta-analysis of existing studies from the Neolithic to the Early Iron Age, we argue that scholars have collapsed kinship and residence, patrilocality and patrilineality. This has implications for how these societies are characterized, with implicit assumptions of patriarchy now underpinning many models of movement across prehistory. We argue that, while powerful, methods such as isotope and aDNA analysis provide only a partial window on what are complex patterns of social behavior. They can achieve their full potential only when contextualized within further proxies. A critical overview of the intersection of gendered mobility and kinship is used to outline alternative avenues for exploration. We present selected archaeological case studies (Neolithic Greece, the Early Neolithic Linearbandkeramik, Copper Age Iberia, and Early Iron Age southern Germany) to argue for the central importance of historical dynamics in understanding the diversity of practices that are currently hidden behind the label of patrilocality.

Online enhancements: [appendixes](#).

Introduction: Sexed Mobility in European Prehistory, the Current Picture

In European prehistory, it is widely accepted that females moved more than males (summarized in Kristiansen 2022:45–46). But how was this consensus reached, and how is this pattern to be interpreted? As feminist critiques of archaeology stress (Sørensen 2000), women are frequently treated as passive bystanders to historical change, with an assumed lack of mobility. For the Neolithic, early DNA analyses had suggested “a unique role for males” as pioneering migrators spreading farming (Balaesque et al. 2010). This echoed earlier influential models of the agricultural transition that used historical analogies from northern Europe where scheduling conflicts between hunting and

farming were resolved through gendering tasks: women tended livestock and performed agricultural work around permanent settlements; men moved around on hunting, fishing, and sealing expeditions (Zvelebil and Rowley-Conwy 1984:106). In the Bronze Age, men were characterized as mobile craft specialists, spreading metal technology and traveling as warriors and traders (Childe 1950; Kristiansen 1998; Rowlands 1980; Sherratt 1998; Treherne 1995). Women, if mentioned, just tagged along (Brück 2009). Childe (1950:76) describes Bell Beaker men as “always taking with them their wives to make their pots and brew their beer.” When women were thought to move, it was for marriage, often as passive exchanges for items such as cattle (e.g., Sherratt 1998), or they were forced into movement. Kristiansen et al. (2017), for example, have argued that Corded Ware cultures

Penny Bickle is Professor in the Department of Archaeology at the University of York (King's Manor, York YO1 7EP, United Kingdom [penny.bickle@york.ac.uk]). **Daniela Hofmann** is Professor in the Department of Archaeology, History, Cultural Studies and Religion at the University of Bergen (Øysteinsgate 3, 5007 Bergen, Norway). **Stella Souvatzi** is Assistant Professor of Prehistoric Archaeology in the Department of History, Archaeology and Social Anthropology at the University of Thessaly (Argonafton & Filellinon, 382 21, Volos, Greece). **Marta Cintas-Peña** is Associate Professor in the Department of Prehistory and Archaeology at the University of Seville (C/María de Padilla s/n, 41004, Seville, Spain). **Katharina Rebay-Salisbury** is Professor in the Department of Prehistoric and Historical Archaeology at the University of Vienna (Franz-Klein-Gasse 1, A-1190 Vienna, Austria). **Peter Schauer** is Associate Lecturer in Digital Archaeology in the Department of Archaeology at the University of York (King's Manor, York YO1 7EP, United Kingdom). **Umair Khalil** is Senior Lecturer in Economics in the Faculty of Business and Law at Deakin University (Melbourne Burwood Campus, 221 Burwood Highway, Burwood, Victoria 3125, Australia). **Daniel Shaw** is a PhD alumnus of the Department of Archaeology at the University of York (King's Manor, York YO1 7EP, United Kingdom). **Krista E. Van Vleet** is Professor in the Department of Anthropology at Bowdoin University (6000 College Station, Brunswick, Maine 04011, USA). This paper was submitted 21 XI 23, accepted 18 VII 25, and electronically published 24 XI 25.

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practiced “marriage by abduction.” Frieman, Teather, and Morgan (2019:156) identify this as a “gendered travel dichotomy” in which “men who travel do so for prestige, power and influence,” with mobility cast as dangerous and exciting, while women travel for men (Nash 2011).

This dichotomy between active mobility and passively staying put represents deeply held political responses to movement, to which archaeology is not immune (see Daniels 2022; Furholt 2019; Hofmann 2015). Once farming was established, settled life was thought to characterize later prehistory in Europe (broadly from the sixth to first millennia cal BCE). Low mobility became equated with stability and success and movement with disorder; a response to crises caused by famine, war, or climate change (Hofmann 2020); or violent conquest, as for the Corded Ware or Yamna cultures (e.g., Kristiansen et al. 2017). The dominant narrative for prehistory can thus be reduced to the following: when men chose to stay put, mobility signaled crisis or low status; when men chose to move, stability represented passivity.

Although advances in ancient DNA (aDNA) have revealed mobility as a constant feature throughout prehistory (Reich 2018) and isotopic data have shown lifetime mobility in almost all periods (Bentley 2022), these data did not disrupt the underlying valorization of gendered movement. As these forms of analysis directly target human remains, osteological or biological sex is one of the primary lenses through which data sets are interpreted, with the overwhelming conclusion that most movers were female. Strontium and oxygen isotopes suggested that females outnumber males among those buried away from their place of birth (e.g., Bentley et al. 2012; Knipper et al. 2017), often interpreted as women moving for marriage, at or around puberty. Similarly, lack of continuity in female aDNA lineages compared with male ones is widely thought to represent female migration after marriage and inheritance down the male line (e.g., Dulas et al. 2022; Fowler et al. 2022; Le Roy et al. 2016; Narasimhan et al. 2019; Rasteiro et al. 2012). Where both types of analysis are combined, unrelated and incoming females, with or without offspring at the same site, are identified (e.g., Haak et al. 2008; Mittnik et al. 2019; Schroeder et al. 2019; Sjögren et al. 2020). The papers cited above are groundbreaking and have established the significance of these methodologies for archaeology. Yet classification is often where interpretations stop, implicitly conflating female movement patterns and broader social organization, and archaeological explanations came to collapse residency, alliances, and women’s social roles under the umbrella of patrilocality.

Thanks to a Wenner-Gren symposium grant, all of us, a group of specialists in the fields of European prehistory and mobility studies, met to explore whether the overall impression—that later European prehistory was largely patrilocal and patrilineal—accurately characterizes the mobility data and allows adequate interpretations of later prehistoric social organization. This paper is a direct result of those conversations. Our aim here is not to refute that patrilocality may have been practiced in prehistory, but to first question its universality throughout the period and then to assess whether the current chain of inference that steps from

patrilocality, to patrilineality, and on to broader social models of gendered inequalities is appropriate. To do this, we develop a three-pronged critique: first, we explore the definitions of patrilocality and its implications for mobility, as we wish to counter their uncritical application to the archaeological record; second, we collate existing studies to statistically test whether the pattern of higher female mobility from the sixth to the start of the first millennium cal BCE (a time period bounded by the start of farming and hence more sedentary lifestyles and the rise of the Mediterranean city-states) is tenable; and third, we use selected case studies to outline interpretive alternatives for female mobility.

Defining Patrilocality

For European prehistory, the meanings of patrilocality, patrilineality, and patriarchy are rarely overtly discussed (see Bickle and Cintas-Peña 2024; Bickle and Hofmann 2022; Ensor 2021), and as a result implicit ideas about the (low) social positions of women persist uncritically. While European archaeology borrows anthropological models of kinship, the translation between these two fields, treated as separate disciplines in Europe, is not always direct (Gosden 1999). Thus, nuances are overlooked when these terms are adopted as interpretive tools for assessing archaeological data (Cveček 2024). Patrilocality, for example, is more restrictively defined in kinship studies, specifically referring to the coresidence of brothers, and is not used interchangeably with virilocality, which indicates that a couple’s residence after marriage is in the male partner’s locality (Ensor 2021). While terms such as virilocality and exogamy are found alongside various descriptions of female mobility in the relevant literature, patrilocality remains most frequent (see the appendixes; apps. S1–S3 are available online). “Marriage,” another term used very loosely in the archaeological literature, is distinct from, although related to, residence, descent systems, and power, and it can involve anything from forced relationships to offering long-term mutual support (Stockard 2002). Many of these terms have emerged already steeped in associations with gender hierarchies, and escaping these structures while maintaining a useful shared language is, we acknowledge, challenging.

Recognizing the implicit assumptions underpinning such terms is an important first step in bringing some clarity to the discussion. In brief, residence informs the place where ego lives, descent gives us information on relationships with kin, and power is linked to the capacity to get something done. Although sometimes a community’s forms of residence, descent, and power are, indeed, patrilocality, patrilineality, and patriarchy, it does not mean that the three of them always co-occur, and residence patterns do not necessarily or consistently imply specific modes of configuring kinship or establishing power relationships. In short, as Cveček (2024:4) has put it, patrilocality is “not one practice, but many.” In raising the divergent meanings that underpin the use of these terms, which often remain unspoken, our aim is to encourage researchers to examine more critically what they may be implying about past social practices in their own usage.

Even where female autonomy, and by extension mobility, is restricted through postmarriage residence, other factors are at play in determining a woman's social position. Analyzing data from nearly 75,000 women from the ages of 15 to 35 across the diverse marriage and descent patterns of contemporary India, Pakistan, Bangladesh, and Nepal, Khalil and Mookerjee (2019) show that compared with those in neolocal households, women in patrilocal households have worse autonomy in household and personal decision-making and that this is exacerbated with the presence of female in-laws. Female short-run mobility within the same city or region (e.g., visiting friends or natal kin) is also severely constrained. These effects are particularly strong for young brides, with married women progressively gaining status in their households. In contrast, patrilocal households do not necessarily imply worse female well-being. The presence of other family members can provide a deterrence against domestic violence by the spouse, compared with neolocal households, although this is not necessarily a function of kinship structures. However, kinship does prove to be an important lever, as young daughters fare much better compared with young daughters-in-law in patrilocal households (Khalil and Mookerjee 2019). In other words, patrilocality does not predict worse female welfare.

In other cases, women retain considerable economic power in virilocal or patrilocal settings. Among the southeast African Nguni herders, a particularly productive cow is reserved for the new bride's personal use, and further wealth can accumulate once a woman negotiates marriage settlements for her daughters. A married woman can thus wield substantial economic clout that she can use to her advantage (Ngubane 1987: 173–176). Overall, when married women maintain some economic independence and where there is a support network of other kin relatively nearby, a wife's postmarital standing is not reduced by moving in with her husband's family (Palriwala and Uberoi 2005:8).

Finally, women's agency and mobility vary over the life course and in relation to place, marital status, and historical moment. Among indigenous Quechua and Aymara speakers (Bolivia, Ecuador, and Peru), kinship is cognatic or bilateral, with the mother's and father's sides equally important (Van Vleet 2002, 2008). Residence after marriage traditionally is patrilocal for the first years of marriage; however, couples eventually establish their own household, usually virilocally or neolocally. Female mobility is not stigmatized in highland Andean communities, and women and girls travel, sometimes extensively, to herd animals; access fields or markets; go to school; visit family and friends; attend regional religious, political, and social events; and earn money in urban centers. However, a daughter-in-law initially has less autonomy than an unmarried woman; she typically is in a subordinate role in her affines' household and takes on a great deal of household labor (Van Vleet 2002, 2008). Relationships of authority and hierarchy are established through various practices, including physical violence between husbands and wives, mothers- and daughters-in-law, and/or the wives of brothers (Van Vleet 2002; Weismantel and Wilhoit 2019). Especially before having children, a

woman may easily leave her husband if their relationship is too laden with conflict. When women bring their own wealth into marriages in the form of movable property (including livestock), inherited land, or earnings, they may establish a marital household or return to their natal household more easily.

Inherently dynamic in both temporal and spatial terms, mobility is thus a process that emerges in relation to a range of contextual (institutional, environmental, etc.) factors, individual and interpersonal relationships, and individual and collective purposes. While residence after marriage may be one example, kinship offers several other reasons for movement, such as care for pregnant kin, children, or the sick and elderly, as well as adoption and fostering. Among the Baatombu of Benin, fostering is even the preferred form of raising children (Alber 2004). A married woman takes on the rights and responsibilities of raising girls from her patrilineal clan, and her husband raises boys from his patrilineal clan. Residence at marriage is virilocal, but a gendered division of labor and patrilineality shape the movement of girls, typically by the time they are toddlers. Whereas Baatombu society exhibits an institutionalized domination of men over women, it is not patriarchal in the narrower sense of a system in which the father is the ultimate authority of a kin group. Collapsing patriarchy, patrilineality, and patrilocality obscures the temporal as well as spatial dimensions of mobility across an individual's life course.

Variability in postmarital residence patterns and the resulting social positions of women has also been shown by comparative cross-cultural studies. For instance, Borgerhoff Mulder et al. (2019:9) note that in their sample, a wealth transmission bias that favors sons over daughters is largely independent of kinship systems and postmarital residence, so that even patrilocal societies do not predictably show these kinds of sex-based differences. Similarly, while certain kinds of economic systems (e.g., a horticulture focus and reduced pastoralism) are necessary for matrilineal systems to retain intergenerational stability, these associations do not always hold and are not statistically significant (e.g., Holden, Sear, and Mace 2003; Surowiec, Snyder, and Creanza 2019). Finally, the correspondence between unilocal residence patterns and unilineal kinship systems is far from absolute (Ember 2011). Not least, colonialism may have had a strong impact on the overall prevalence of specific kinship systems, generally favoring patrilinearity and patrilocality (Shenk et al. 2019), so that recent societies may be a rather partial guide to past diversity. While these intercultural, comparative approaches and methods differ from the qualitative and case study-based starting point we have chosen here, it is encouraging to note the convergence of key results—namely, the importance of local context and the flexibility with which kinship systems and residence patterns can be adapted to new economic setups and ecological shifts.

Another angle drawn on to support patrilocal postmarital residence in Indo-European-speaking societies is linguistics, occasionally used to paint an aggressive picture of gendered social relations based on mobile warrior bands capturing women and imposing language change (e.g., Kristiansen et al.

2017; Pronk 2023). These models are often bolstered by a partial reading of mythological texts, which are unlikely to be representative (Burmeister 2023). While there is general consensus among historical linguists that Indo-European societies are unlikely to have been matricentric, based on kinship terminology, others also find little consistent evidence for a patricentric approach (Moravec et al. 2018). According to Fortunato (2011:118, 126), neolocality was adopted at several points in the sequence, and overall the linguistic tree points to situationally flexible residence strategies. Moravec et al. (2018:597–599) calculate that on average, Indo-European-speaking societies changed their postmarital residence rules every 425 years, but they also stress variation and the many local and regional causal factors that play into language dynamics. This means that linguistic evidence cannot be used to support just one long-lasting postmarital residence pattern, kinship system, or way of structuring gender relations that remains valid across the spatial and chronological extent of a given language family.

In sum, marriage is just one among many possibilities for female movement, and its effect on a woman's social standing varies according to economic context and over the life course. Mobility can be chosen or forced (Cameron 2016) or driven by the social embedding of economic tasks. Only some of these factors may represent specific kinship organizations. Patterns of residence, descent, and power must, therefore, be disentangled in archaeological research, rather than the presence of one being taken to imply all others. Restricting our explanations for female movement in European later prehistory to marriage patterns does a disservice to both the agency of mobile women and the possible variety of forms of mobility.

Archaeological Evidence for Patrilocality after 6000 cal BCE: A Reappraisal

Before exploring the potential diversity of reasons for greater female than male mobility in later European prehistory, we consider whether this pattern accurately reflects the data sets available. We focused on reviewing aDNA and strontium isotope data sets, the most often cited evidence, to analyze whether greater female mobility was as widespread and consistent as perceived in the summarizing literature. The focus is late prehistoric Europe from roughly 6000 to 1000 cal BCE (after which point matrilocality was common; Cassidy et al. 2025; Pope 2022). To be clear, the aim here is not to reinterpret the data but to assess what the interpretive conclusions are based on the papers presenting the primary results. In this sense, this analysis is a meta-assessment of the published literature undertaken to investigate the interpretive chain, highlighting the implicit slide from higher female mobility to certain forms of postmarriage residence to male dominance in narratives of European prehistory.

Results from aDNA

Ancient DNA does not inform us about geographical origin but about ancestry, biological relatedness, population structure, and

the size of the mating network (e.g., Sikora et al. 2017). Movement of individuals and populations across geographical spaces is inferred through statistical procedures, most often principal component and admixture analyses. While aDNA analysis does not show individual mobility, it may reveal individuals of different ancestry than the majority or different subgroups within a population. Recent studies of whole cemeteries are providing insights into biological kinship and internal population structures (e.g., Furtwängler et al. 2020; Mittnik et al. 2019), and it is these we mostly draw on here.

To explore female mobility from aDNA, we carried out an exhaustive literature search and found 24 relevant studies within our time frame, with 977 individuals in total (see app. S1).¹ Juras et al. (2020) studied 80 Bronze Age individuals from southern Poland, finding continuity in mitochondrial genomes, and they could “not rule out” matrilocality, while four studies made no comment about sex differences (Cassidy et al. 2016; Lee et al. 2012; Sánchez-Quinto et al. 2019; Schieb et al. 2019). Sixteen studies, mostly from the end of the Neolithic and the beginning of the Bronze Age, concluded that Neolithic and Bronze Age communities were both patrilocal—with women moving for marriage—and patrilineal. This is based on females being less likely than males to show relatedness to others at the same site—or higher mitochondrial DNA diversity compared with intergenerational continuity in Y chromosome lineages. Conclusions vary, arguing that the data are consistent with patrilocality and/or patrilineality or less confidently suggesting that this model could explain the data. Many studies follow Meyer et al. (2012:20) in assuming that there is “clear evidence that biological kinship was the basis for social relationships,” but this is the only paper to have explicitly stated this. For aDNA, at least, the picture is dominated by case studies from a narrower span of prehistory, from the end of the Neolithic and beginning of the Bronze Age (ca. 4000–2000 cal BC), and for the time being, we urge caution in extrapolating from these studies more widely.

Results from Strontium Isotope Analysis

Strontium and oxygen isotope systems are used for inferences about a person's mobility (Britton 2020), with strontium dominating the discussion of female mobility. The $^{87}\text{Sr}/^{86}\text{Sr}$ ratio relates to the geochemical signatures from the land from which individuals' diets were sourced (Bentley 2006). Differences between locally bioavailable strontium ratios and values from human tissues are often used to characterize individuals as local or nonlocal (and therefore as [im]mobile). While the routes to interpretation are complex and require careful comparison with baseline signatures, the aim here is to assess whether the data as presented indicate greater rates of mobility for women and to investigate the conclusions presented in the primary literature.

1. Data collection for this analysis was carried out across one calendar year from March 2022 to March 2023. Studies published after this date are not included in the analysis.

For strontium isotopes, we identified studies of 228 archaeological sites, representing 3,284 individuals. Osteological sex information (i.e., F, F?, M, M?) was reported for 1,751 individuals from 227 sites, or 53% of the data set. Studies sampled 1 to 115 individuals per site, with an average of 11 individuals per location. Many authors are understandably reluctant to extrapolate social practices from studies with such low numbers. Papers, usually those with more data points (e.g., Bentley et al. 2012, 379 individuals; Irregheer et al. 2012, 49 individuals; Knipper et al. 2017, 83 individuals), do conclude that there is greater female mobility, but most emphasize complexity. Dapaermentier et al. (2020) suggest different residence strategies in the Carpathian Basin during the Middle Neolithic, with two roughly contemporary cultural groups practicing patrilocality (Tiszadob/Bükk) and matrilocality (Esztár). Frei et al. (2019) conclude that the Bronze Age saw high rates of mobility for both sexes rooted in diverse strategies. In the Corded Ware–Bell Beaker complex, women dominate among nonlocals (Kristiansen et al. 2017), a pattern not found in contemporary studies of the Early Bronze Age in the United Kingdom (Jay et al. 2019), whereas at the Bronze Age Tollense battlefield, the majority of the mostly young males were nonlocal (Price et al. 2017).

We then explored whether the aggregated strontium isotope data set supports the conclusion that women moved more than men across later European Neolithic prehistory. For each site, the authors' own reported likely local range for strontium isotope ratios was used to determine the number of outliers by biological sex (see app. S2; fig. 1). While we recognize that designations of local and nonlocal can be debated, our aim is to assess whether the overall impression that

women moved more than men is reflected in the data as currently interpreted.

We first assessed the whole data set, asking whether there were more local males than local females and whether nonlocals were more likely to be male or female, before dividing the data set chronologically. We chose to aggregate by time rather than archaeological culture to have numbers sufficient for statistical analysis and to account for contemporary movement between cultures (Furholt 2019). Assigning strict temporal boundaries proved challenging, as studies used typology-derived dates and radiocarbon dates to varying extents. We therefore used wide divisions: before and after 3000 cal BCE and five 1,000-year time slices (1: before 5000 cal BCE; 2: 4999–4000 cal BCE; 3: 3999–3000 cal BCE; 4: 2999–2000 cal BCE; and 5: after 2000 cal BCE). Because of low numbers, time slices 2 and 3 and time slices 4 and 5 were grouped together. We carried out exact binomial tests to statistically determine whether the number of nonlocal females in each time slice was significantly greater than the number of nonlocal males (app. S3.2; tables S3.1, S3.2 [tables S3.1–S3.3 are available online]; fig. 2). Nonlocal females outnumbered nonlocal males only before 5000 cal BCE, with equal numbers of nonlocal males and females in the following time periods, although the number of nonlocal females in time slice 3 is particularly low. We attempted to divide our data set by archaeological culture and geographical region, but low numbers meant that results were statistically viable only for the Linearbandkeramik (LBK), Corded Ware, Neolithic Balkan cultures, Tisza and related cultures, and Yamna. Of these, there were more nonlocal females than males only in the LBK; all others had equal numbers of male and female nonlocals or more males (app. S3.3).

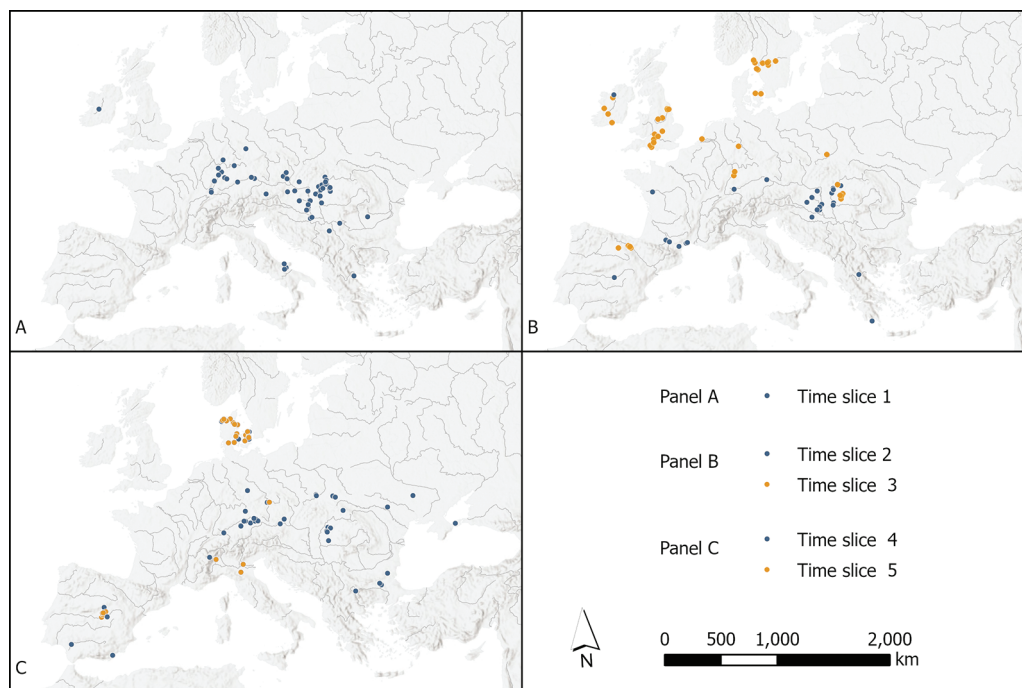


Figure 1. Maps showing the locations of sites included in the strontium isotope data set, depicted by time slice (mapping by Helen Goodchild, base map, Environmental Systems Research Institute).

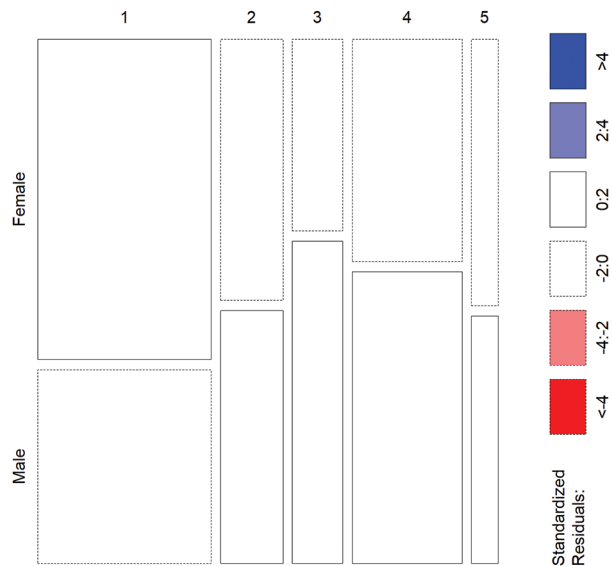


Figure 2. Mosaic plot showing the distributions of nonlocal females and nonlocal males by time slice (indicated at the top of the plot). The width of the columns represents the sample size, and the height of each bar represents the proportion of females or males. Note the somewhat larger proportion of females in the first time slice but also that the proportions are roughly equal or show more males in time slices 2 to 4. The colors represent distance away from the null hypothesis of equal males and females moving; red would represent greater male and blue greater female mobility. (Image: Peter Schauer.)

Discussion

Both aDNA and strontium isotope data present more variability in male and female mobility—and a more balanced picture between the sexes—than we expected based on the current consensus in the literature. Female isotopic nonlocals were not always more numerous than males over time, and all aDNA studies do not report greater female genetic diversity. Rather, apparently fueled by a small number of high-profile and often quoted studies, a broad tendency toward more female mobility or diversity in female genetic lineages in some settings has created an expectation of a universal pattern. Some notable contrasts also emerge. Although the strontium isotope data for the period ca. 5000–3000 cal BCE suggest equal rates of male and female nonlocals, the aDNA evidence for this time slice suggests greater female genetic diversity, implying more mobility of females (e.g., Dulias et al. 2022; Haak et al. 2008; Mittnik et al. 2019; Moore et al. 2022).

Considering the data set by region or in shorter time slices (not attempted here to avoid numbers that would be too low for statistical analysis) may add yet greater complexity, but sampling levels are an issue. Small numbers lead to the identification of only a few nonlocals or outliers, whose sex (let alone gender) may not be representative. Furthermore, the selection of individuals for burial may not reflect living communities, especially if (as Ensor [2021] suggests) postmortem mobility was high, with peo-

ple returned to their natal lineages for interment. This possibility is rarely considered for prehistoric Europe. Time depth is another challenge, particularly for cemeteries, which may provide an aggregate picture of average behavior over the use life of a site, smoothing over change, fluctuation, and adjustments.

Overall, the universal narrative of women as the most frequent movers in later European prehistoric societies does not stand up as a constant; this appears only where large-scale overviews (e.g., Curry 2023) smooth over the more nuanced accounts of female mobility and kinship arising from the primary studies themselves (e.g., in the case of Hazleton North chambered tomb; Cummings and Fowler 2023). It seems even less likely that all women would have moved for the same reasons, broadly “for marriage,” and their identification as nonlocals is therefore not the end of interpretation. Patrilineality (descent through male lines), inferred from descent patterns in aDNA analysis, does seem stronger after 3000 cal BC, but we need to be aware of the differences in the social position of women at various stages in their biographies. For example, Stockhammer and Massy (2023) suggest that the relatively strict pattern of nonlocal females in the Bronze Age Lech Valley, southern Germany, includes many different possible roles for these women, from moving after “marriage” to working as servants, as wet nurses, or as craft specialists. Such complexity was likely to prevail throughout later prehistory and includes times when kinship patterns continued as archaeological cultures changed (e.g., Mittnik et al. 2023), as well as places when varied mobility patterns are found with spatially close groups with similar material cultures (e.g., Dapaermentier et al. 2020). To illustrate this, we have chosen a qualitative approach, providing four case studies from across later European prehistory.

Alternative Mobilities for European Prehistory

Given the results above, we suggest that the study of female mobility must be more carefully contextualized in a society’s wider mobility patterns. Beyond bioarchaeological proxies, this could include evidence of the economic system, settlement data, movement of materials, and other aspects. This will provide fewer clear-cut answers, but inferences will better reflect the complexities of mobility. In what follows, we outline how this broader approach can make a difference to narratives of prehistoric mobility in Europe across our two largest time slices (i.e., before and after 3000 cal BCE), refiguring how female and other forms of mobility are interpreted.

Mobility before ca. 3000 cal BCE

Before ca. 3000 cal BCE, our meta-analysis of the strontium isotope data suggests that roughly equal numbers of women and men moved, with more females than males classed as nonlocal only before 5000 cal BCE and in the LBK. The aDNA data covering this period overwhelmingly propose patrilocal and patrilineal practices (e.g., Beau et al. 2017; Fowler et al. 2022; Furtwängler et al. 2020; Goude et al. 2020). Here we

present two case studies, from Neolithic Greece and Neolithic Central Europe, stressing the multiple sources of evidence for movement and kinship.

Flexible settlement patterns in Greece. In Neolithic Greece, aDNA and biomolecular investigation remains restricted by low numbers of burials. However, the plentiful settlement evidence shows that households did not remain stable in social, material, and compositional terms (see Souvatzi 2008:98–101, 230–233). Changes in village layouts reflect the development of new or the modification of existing social institutions. At some sites, such as the tell-like site of Mandra (Toufexis 2017) and the flat site of Stavroupolis (Grammenos and Kotsos 2002), the small, scattered huts of the initial phases were later replaced by solid, above-ground rectangular buildings. Dikili Tash, established in 6400/6300 cal BCE, remained a large, flat site for a long time, taking its tell form only from 5400 BCE onward (Lespez et al. 2017:51–52). The average dwelling floor size (60 m²) falls between the cross-cultural indicators for matrilocality (more than 80 m²) and those for patrilocality (less than 43 m²; e.g., Hrnčíř, Vondrovský, and Květina 2020), while the formal settlement layout of the later Neolithic phases, with the houses arranged in regular rows separated by narrow lanes, points to a unilineal descent group, possibly matrilineal. For instance, one dwelling with three rooms of equal size, separate entrances, and almost identical internal organization, material contents, and structural features is compatible with matrilocal dwellings housing multiple interrelated households (see Peregrine 2001). In general, newly established villages could have been founded by relocation of an older village or by only some households budding off. In such settings, who was coresident with whom and for how long must have varied; there is too much idiosyncrasy to suggest a single, rigidly followed system (see fig. 3; see also Ensor 2013).

Mobility between settlements can also be attributed to deliberate fissioning to remain within the limits of a cooperative social order. Tell patterns in eastern Thessaly indicate powerful social constraints on demographic and territorial expansion—that is, tell number and spacing imply regular fissioning and the possibly conscious relocation of whole villages (Perlès 2001:121–151; see Peltenburg [1993] for Neolithic and Chalcolithic Cyprus). The diachronic settlement pattern in Neolithic Greece also does not exhibit progression from smaller to larger or more complex settlements (Souvatzi 2007). Greek Neolithic communities had a long and successful history of resistance to hierarchization. Instead, there was flux and ambiguity (Souvatzi, Baysal, and Baysal 2018). Mobility, including female mobility, was evidently not monolithic. While it is not possible to reliably reconstruct female biographies directly, the evidence also does not support the imposition of stock explanations of patrilocality.

Mobility in the Neolithic of Central Europe. Sequences like the above in Greece are being uncovered across the European Neolithic. Where dating evidence is good, as in the waterlogged settlements of the Alpine Foreland, the fourth and third



Figure 3. Changes in the floors, entrances, and internal organization of buildings A, Γ, and Z2 at Middle Neolithic Sesklo over three successive building phases, showing the dynamic relationship between architecture and the social groups inhabiting it (Souvatzi 2008, fig. 4.10).

millennia BC show exceptional settlement mobility, with most sites inhabited for under 15 years and individual houses for even less (e.g., Hofmann et al. 2016). Similarly, Leppard (2021) has drawn out the structural tendency toward fissioning that fueled expansion across the western Mediterranean. Finally, the monumental longhouses of the Central European Early Neolithic LBK housed individuals with varied histories of mobility (e.g., Hedges et al. 2013), and settlements were fluid in composition. Over the LBK's duration, we potentially see a change from mobility as a group-centered behavior linked to obtaining a favorable social position to it being more circumscribed and involving

individuals and smaller groups in an increasingly territorial landscape with opportunities for diverging economic choices (Hofmann 2020).

Breaking these general patterns down to the level of female mobility is challenging. In the Alpine Foreland, house sizes and settlement layouts were stable in some phases and more diverse in others (e.g., Hofmann et al. 2016), so following Ensor (2021), relatively predictable systems of reckoning descent may have prevailed only episodically. Daily female mobility was likely predicated on the economic strategies of households or groups of households cooperating in resource exploitation (e.g., Doppler 2013). Understanding female mobility thus requires understanding gendered tasks. If we follow Burri (2007) in assuming that pottery production was mainly a female pursuit, then we can trace the migration of groups of women to specific sites, followed by technological hybridization (Gross 2017; fig. 4). For the LBK, use wear on stone tools buried in graves suggests different tasks for males and females (Masclans et al. 2021). In addition, high variability of muscle loading on female skeletons indicates that females were not all living and moving in the same ways (Macintosh, Pinhasi, and Stock 2017).

Both Ensor (2021) and Hrnčíř, Vondrovský, and Květina (2020) have used house sizes as proxies for LBK postmarital residence patterns. Although it is difficult to identify living quarters in what are likely multifunctional buildings, they argue for a combination of patri-, matri- and bilocality, with combinations of all attested at the same sites. While this needs further investigation, it does dovetail with the interpretation of aDNA data from the early LBK burial site of Nitra, Slovakia. Here, a large (but incomplete) cluster spanning four generations coexisted with smaller sets of two or three biologically related individuals and those who did not share genetic relations with anyone. While the latter include more females than males, a pattern also repeated for isotopic nonlocals and supporting a reading of patrilocalty as one common practice in the LBK, there are both males and females among the “missing” individuals who must have migrated out, and both mother-child and father-child pairs could be identified (Gelabert et al. 2024). In a pioneering community at the beginning of LBK expansion, kinship relations may have been particularly flexible, but if this pattern is reproduced elsewhere, then both settlement and economic as well as bioarchaeological evidence would point to female mobility following a variety of opportunities and demands, rather than a single imperative of postmarital residence, with mobility varying across the life course for both males and females (Morell-Rovira et al. 2024). In sum, where chronological control is good, we can see that female mobility varied with historically contingent factors and economic choices.

Mobility after ca. 3000 cal BCE

Our meta-analysis of the strontium isotope data suggests that men moved more than women after ca. 3000 cal BCE. The interpretation of aDNA data covering this period overwhelmingly proposes patrilocal and patrilineal practices (e.g., Dulias et al.

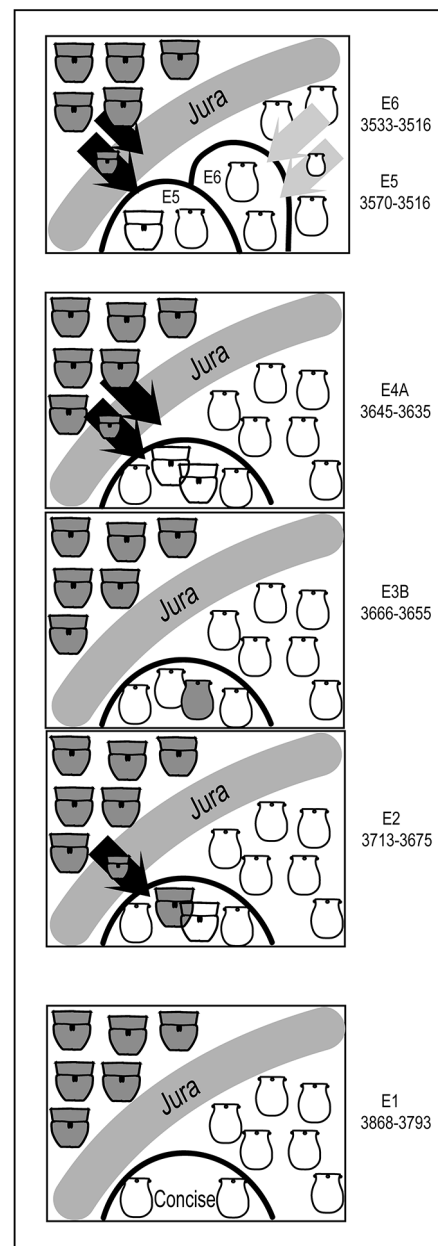


Figure 4. Development of pottery forms and tempering (gray shade: calcareous; white: crystalline) over several settlement phases at the site of Concise-sous-Colachoz (Lake Neuchâtel, Switzerland), in relation to pottery style influences from north of the Jura Mountains. Several episodes of influxes of pottery producers can be recognized, followed by periods of hybridization. (Drawing: Renate Ebersbach, after Burri 2007, fig. 198.)

2022; Haak et al. 2008; Mittnik et al. 2019; Moore et al. 2022). Here we present case studies from Chalcolithic Spain and the Early Iron Age to draw out additional perspectives on women's status and care relationships.

Rethinking women's social position in Chalcolithic Spain. In Chalcolithic southern Spain (ca. 3200–2200 BCE), the exceptional site of Valencina provides evidence for potential

genealogical links between women based on the control of long-distance trade. Around 3000–2800 cal BCE, the second chamber of the highly elaborate megalithic tomb 10.042–10.049 was used for the interment of a single individual, 17–25 years of age (Robles Carrasco and Díaz-Zorita Bonilla 2013). The individual was surrounded by unique, lavish grave goods—a large African elephant tusk; various ivory, stone, and amber objects; and other items—leading to a designation as the “Ivory Merchant” (e.g., García Sanjuán, Lucíañez Triviño, and Cintas-Peña 2020; García Sanjuán et al. 2018, 2019; fig. 5). Peptide analysis has shown the Ivory Merchant, originally cautiously identified as a possible male (Robles Carrasco and Díaz-Zorita Bonilla 2013), to be female (leading to a renaming as the “Ivory Lady”; Cintas-Peña et al. 2023). The strontium ratio indicates a local origin (Díaz-Zorita Bonilla 2017).

A couple of generations after the original interment, this person was commemorated by the deposition of further exceptional objects in the upper level of the chamber: various ceramic plates and more ivory objects, including another elephant tusk (this time from an Asian elephant) and a rock crystal dagger with an ivory handle decorated with mother-of-pearl beads. At the same time, the Montelirio tholos, the only Iberian grave comparable to 10.042–10.049 in wealth, was erected ca. 100 m away. The Large Chamber of Montelirio contained the remains of 20 adults, several of whom wore complex beaded attire. All 15 individuals that could be sexed osteologically are definite or possible females (Pecero Espín 2016). They were deposited with artifacts made from exotic raw materials. Together with the use of red cinnabar (possibly causing the extraordinarily high levels of mercury in the bones of some individuals; Emslie, Mckenzie, and Shaller 2016; Emslie et al. 2021), this has led to their interpretation as priestesses (García Sanjuán, Fernández Flores, and Díaz-Zorita Bonilla 2016).

While the grave goods in these two tombs are deliberately unique, there are subtle similarities in style and assemblage composition, with ivory playing a key role (Lucíañez Triviño, García Sanjuán, and Schuhmacher 2021). This also links them to a collective tomb at nearby La Molina, containing a female individual (E1) with an extensive ivory assemblage, including an elephant tusk (Juárez Martín 2010). A genealogical connection to burial 10.042–10.049 and Montelirio has been suggested, although the preservation-related absence of aDNA makes it impossible to assess whether this was founded on biological or uniquely on social, ideological, and/or cosmological connections (García Sanjuán et al. 2018, 2019; Lucíañez Triviño, García Sanjuán, and Schuhmacher 2021). There are also osteobiographical similarities between these individuals: the Montelirio women and the Ivory Lady showed elevated traces of mercury in their bones (García Sanjuán et al. 2024), and the social status of these individuals may have been acquired through hard work: the Ivory Lady, La Molina E1, and various Montelirio individuals exhibit early-onset spinal arthritis, related to physically demanding tasks, and several of the Montelirio women show strong muscle attachments in the lower extremities, connected to frequent walking.



Figure 5. Dagger from the upper level of the second chamber of structure 10.042–10.049 at Valencina, southern Spain. This exceptional artifact consists of a rock-crystal blade and incised ivory hafting with mother-of-pearl beads. It is thought that it formed part of a commemorative deposit for the grave's female occupant. (Photo: Miguel Ángel Blanco de la Rubia. Courtesy of Research Group ATLAS from the University of Seville.)

Overall, the Valencina sequence has been interpreted as aggrandizing an individual, the Ivory Lady, holding a prominent position through controlling exotic resources, acquired either during travel (Lucíañez Triviño, García Sanjuán, and Schuhmacher 2021:28) or through the redistribution of surplus (García Sanjuán et al. 2018). Exotic items supported a

ritual-based status for the Montelirio individuals, partly reliant on explicit (possibly genealogical) connections to 10.042–10.049. Here, women could acquire status positions at a young age, based on personal mobility and/or the mobility of objects. A recent analysis of all strontium values available for Copper Age Iberia has suggested that women were more frequently buried in places different from those where they grew up, perhaps linked to a residential pattern of bilocality biased to patrilocality, particularly at megasites like Valencina (Cintas-Peña and García Sanjuán 2022). At the Copper and Bronze Age cemetery of Humanejos near Madrid, it was a young, isotopically nonlocal female that stood out as having the richest grave good assemblage (Cintas-Peña et al. 2024). Overall, the Iberian case is a good example to show that bilocal or male-centered residential patterns do not necessarily imply a lower status for women but that women were key in establishing valued long-distance connections.

Women's lives at the threshold to classical antiquity. Images on situlae, bronze wine buckets used in banquets, illuminate some aspects of female activities and mobility around the Alps in the Early Iron Age. Inspired by Etruscan ideals and adapted to the local context (Rebay-Salisbury 2016), they illustrate a protohistorical elite world seemingly familiar from the canon of classical texts. Spinning and weaving were ideologically and practically strongly associated with women, as evident from depictions on situlae and pottery and from spindle whorls, ceramic spools, and loom weights in graves. Cloth and textile production, however, is not solely a homebound activity. Quercia and Foxhall (2014) found that loom weights from Late Bronze Age Greece and Italy were often personalized—for instance, with fingerprints or by stamping with jewelry such as fibulae. The distribution of these personal possessions suggests that women may have moved, visiting each other's households, and contributed to textile production beyond their own home (Quercia and Foxhall 2014).

Men outnumber women in Iron Age images at a ratio of 4:1; people in motion—marching as soldiers, traveling on horseback and in carts, or walking in procession—especially appear male. On the situla Certosa di Bologna, women carry firewood and vessels on their heads, presumably to a funerary cremation; only once, on the new situla from Montebelluna (Serafini and Zaghetto 2019), does a woman appear as a passenger on a two-wheeled chariot (fig. 6). Since the second frieze shows the consummation of marriage, it appears that this scene is a rare case in which marriage mobility is referenced (Rebay-Salisbury 2023). The situla from Pieve d'Alpago (Gangemi, Bassetti, and Voltolini 2015) is even more explicit. After a scene of courtship and sex, the product of a successful marital union is shown—the birth of the successor.

The birth scene includes two midwives, who could have been members of the household. However, particularly the support of the maternal grandmother is a beneficial factor for the survival of infants (Hawkes et al. 1998), and assuming that some elite women changed residence upon marriage, their

mothers and other female relatives may have traveled considerable distances to support them giving birth. The movement of one female individual may have triggered a cascade of women traveling—with her or to visit. Midwifery and obstetrics are not trivial skills and had reached considerable sophistication, with archaeological evidence of the use of pessaries by the sixth century BCE in what is today Germany (Scherzler 1998) and foetotomy by the fourth century BCE in what is today France (Corde et al. 2015). Knowledge about such gynecological procedures likely spread with traveling practitioners, whom today we would call (female) doctors and midwives.

After birth, the babies' constant need for care and feeding is probably most often met by the mother breastfeeding. To keep her mobile, devices such as baby slings or baskets are necessary, but the—at least temporary—separation of mother and baby is archaeologically evidenced by feeding vessels that enable other members of the community to take over this task. Their increased frequency coincides with the beginning of urbanization in Late Bronze Age Central Europe (Rebay-Salisbury et al. 2021). This may suggest increased female mobility at this time. A separation of mothers from their children may have also arisen through the adoption and fostering systems that developed in the Iron Age (Karl 2005). For education, training, and political reasons, children were brought up away from their birth families, where they could learn valuable skills and cement social bonds. At La Tène Basel-Gasfabrik, Switzerland, the isotopic signatures of such a social system appear in the bones of nonadult individuals (Knipper et al. 2018). Two of the most lavish burials in southwest Germany, located more than 100 km apart but linked via an avuncular relationship, also demonstrate that early Celtic elites practiced matrilineal dynastic succession (Gretzinger et al. 2024). In the metal ages, kinship connections expanded over wider regions, and “making family” necessitated increasing mobility, at least for the elites.

Toward a New Tool Kit for Interpreting Female Movement in Prehistory

From the above, it is clear that inferring a society's kinship organization from majority patterns in a restricted set of evidence—usually bioarchaeological data—is insufficient, albeit common. The dangers are, first, that some aspects of past life—power relations or descent—are derived uncritically from postmarital residence and, second, that the multiple possible axes of behavioral variability in the past are neglected. These axes of variability operate at several scales (fig. 7). While some local communities are homogeneous in their specific combination of descent, residence, and marriage strategies, there is no reason to assume that linguistic groupings, bearers of the same archaeological culture, or coresident communities would necessarily be uniform in their practices. In addition, individual biographies create a multitude of personal experiences, even within broad sets of norms. We should hence never assume either homogeneity or variation but use archaeological analyses to infer what people actually did. This requires several stages of analysis.

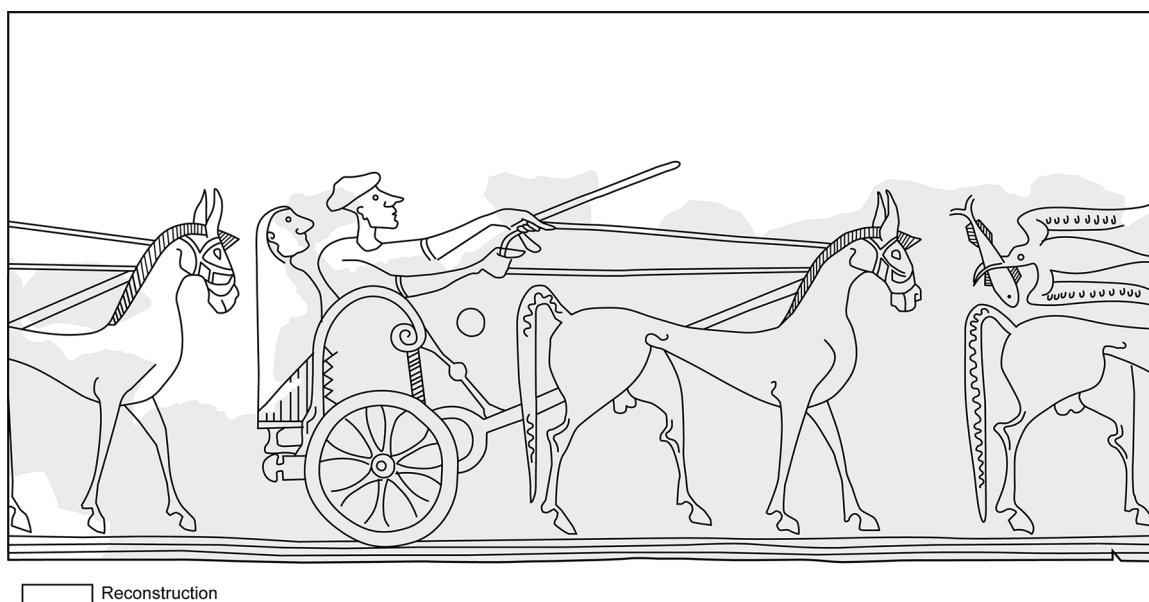


Figure 6. Detail from the situla found in grave 244 at the necropolis of Montebelluna, northern Italy. The image shows a female and male figure, identified by their characteristic dress, traveling on a horse-drawn chariot as part of a larger procession. (Drawing: Kirsty Harding, after Bianchin Citton [2014], fig. 4.)

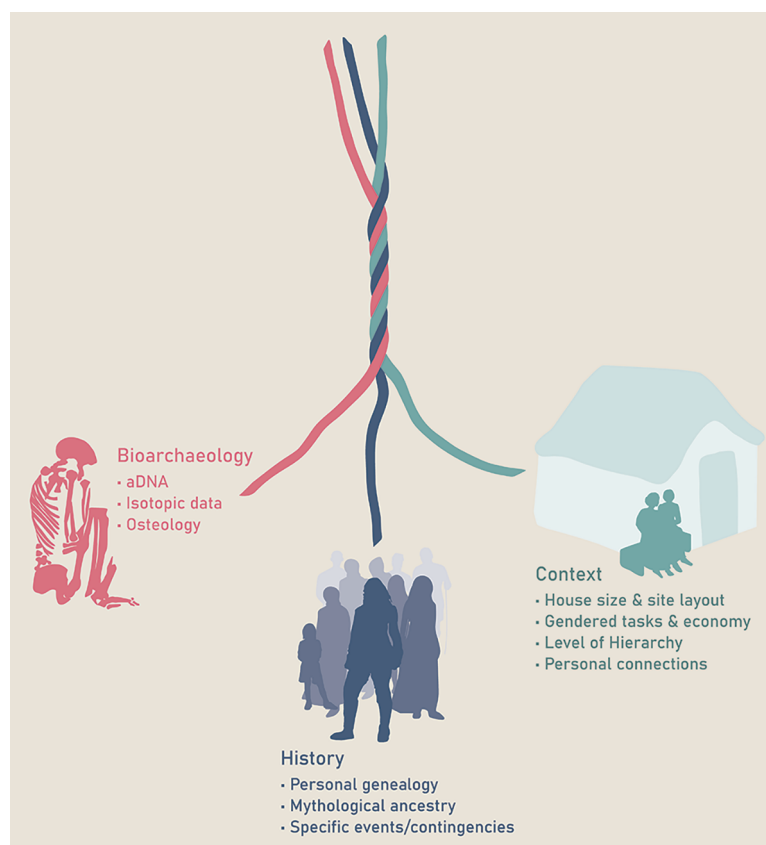


Figure 7. Schematic representation of the different strands of investigation that need to be taken into account in research on (female) mobility. (Drawing: Kirsty Harding.) aDNA = ancient DNA.

First, bioarchaeological data, such as isotopes and aDNA, remain our most direct indicators of mobility and biological relatedness. However, as our meta-analysis from Europe has shown, there is more variation and temporal structure in the data than is currently discussed in the literature. Often, “Is there patrilocality?” is posed as a yes/no question. More interpretive work is necessary. A lack of clear patterning or a diversity in patterning, with a dominant model and several subsidiary models for mobility and its relation to biological relatedness, should not be explained away but taken seriously. Postmortem mobility, as suggested by Ensor (2021), should be considered and could be investigated using, among other approaches, indicators for partial disarticulation before burial. Inferring relative social status from mobility patterns is a separate analytical step and should, among other approaches, weigh grave good provision, dietary status, and general health indicators across gendered life stages. There may well be several points in an individual’s biography at which mobility is a frequently chosen strategy.

Second, we need to appreciate that kinship has a strong historical dimension, not only in the maintenance of lineage across generations but also in terms of the positions individuals occupy at different life stages and the changes that accumulate over time. This is another neglected aspect in studies focusing on establishing “the” kinship system or postmarital residence rule in operation at a site or across an archaeological culture many centuries in duration. At an individual level, where there is a postmarital change of residence, new ties may thicken over time, but without loosening older ones. This can affect further episodes of mobility later in life, beyond the resolution of isotopic analysis. How kinship relations are maintained over time and distance, including how this relates to longer-term notions of ancestry and descent, needs to be addressed anew (e.g., Whittle 2003:107–132). Biological relatedness is only one strand in the wider web of historical kinship relations that anchor a person in their time and their place.

Third, any patterns revealed through bioarchaeological analysis must be contextualized within a society’s wider mobility patterns using other lines of evidence, such as settlement and economic systems. How permanent are settlements and individual buildings in them? What sorts of landscape zones are exploited, and would (gendered?) task groups need to be away for longer periods of time? How do nonlocal artifacts or traditions enter another region? Answering these kinds of questions requires the more traditional archaeological tool kits that have often been sidelined in recent discussions. One aspect could be cross-cultural investigations of house sizes and settlement layouts, as advocated by Ensor (2021), but this must be paired with traditional landscape surveys to identify smaller or temporary sites, with dating projects to pin down the durations of buildings and settlements, with artifact sourcing, and with the full suite of methods needed to understand a past economic system. In short, mobility as a total social fact requires substantial interdisciplinary input.

Even after all this, however, we are not likely to get a single answer, particularly if we want to write gendered mobilities or

the mobilities of any specific social group. Yet by opening up the interstices between blocks of data, by showing how different kinds of evidence allow different points of view, we can trace how dominant interpretive patterns like patrilocality are supported only by parts of the data and are themselves partial and uncertain. Letting the past be genuinely different in this way, we keep open the possibility of also writing different outcomes for our present—the most fundamental task of archaeology.

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