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Migration and mobility in the latest Neolithic of the Traisen valley, Lower Austria: Archaeology

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Abstract
In the course of the project “Das Endneolithikum im Unteren Traisental (The Endneolithic of the Lower Traisen valley)”, 184 graves from 16 grave groups situated at 10 sites were investigated. Most of the graves belonged to the Corded Ware culture and 27 graves to the Bell Beaker culture. In this article we concentrate on the grave groups designated Franzhausen I, Franzhausen II and Franzhausen III. “Foreign” types and raw materials were concentrated in the graves of Franzhausen III but not in those of Franzhausen I. This raises the question of whether these two grave groups, which differ in material culture and chronologically, also differ with respect to the associated migration patterns. To answer this question, the human remains were investigated by \( ^{87}\text{Sr}/^{86}\text{Sr} \) isotope analysis. Franzhausen II, which features graves belonging to almost all of the Late Neolithic phases found in Franzhausen, was used as a control group. Samples of the teeth needed for analysis were available for 49 individuals. Among these 49 individuals, six were identified as outliers; five of those came from Franzhausen III.

The investigation of the archaeological material and the \( ^{87}\text{Sr}/^{86}\text{Sr} \) isotope analyses of skeletal remains of the Late Neolithic of Traisen valley revealed that both types of investigation are capable of detecting human mobility and they can provide mutual confirmation of results. For the population of this period we have ascertain that the migration rate for the earlier phase of the Corded Ware culture was greater, whereas a more sedentary life style can be discerned for the later phase of the Corded Ware culture and the later phase of the Bell Beaker culture. Nevertheless as the numbers of investigated individuals are still low, we must treat these results with caution and steer clear of far-reaching interpretations.

Keywords
Migration, Corded Ware culture, Bell Beaker culture, Austria, Traisen valley, Franzhausen

Background
As we are living in “the Age of Migration” (Castles and Miller, 2003), it is not surprising that migration is a topic of discussion among archaeologists as well. Migration is a complex social process, one which affects both migrating and non-migrating persons and societies, as well as the places that migrating individuals are associated with or come into contact with (Oswald, 2007; Strasser, 2009). Crossing borders as it does, migration is a topic of interest in many disciplines of the sciences and humanities: sociology (individual and social causalities and consequences, transformations and social consequences), political science (political participation of migrants, citizenship, integration, comparison of migration and asylum policy of different countries), jurisprudence (rights of migration and asylum, also in different countries), economics (economic causalities and consequences of migration, changes of the labour market and the job situation), geography (structure of populations, demographic changes, migration as a spatial and social phenomenon), history (social-historical and economic-historical comparisons and descriptions of migrations), psychology (individual causalities and consequences of migration, mastering and development of identity during and after migration), cultural and social anthropology (social intercourse with alien or foreign values, research on (new) social and cultural behaviours of migrant and nonmigrant populations, analyses of politics and integration measures, of transnational and global processes und their local impacts, as well as of questions of identity and ethnicity) (Oswald, 2007; Strasser, 2009) and physical anthropology and human biology (demography, evolution) (Gage, 2000; Huss-Ashmore, 2000).
Migration and mobility in archaeology

Archaeologists have been interested in migration and mobility for as long as the discipline has existed, drawing on those topics to explain, for example, cultural change (siedlungsarchäologische Methode, Kulturkreislehre [Bernbeck, 1997; Demoule, 2006]) and foreign artefacts (Childe, 1950). Having been banned from use in archaeological interpretations in the second half of the 20th century, particularly by processual archaeologists, (see also Beran, 2009; Pyzel, 2009) migration theories made a comeback in the new millennium (Andresen, 2004; Burmeister, 2000; Demoule, 2006; Prien, 2005)

In the fields of archaeology and physical anthropology, the terms migration and mobility are often used as synonyms, which is not the case (see also Nehlich et al., 2009). “Migration” translated literally means wandering (lat. migrare = to wander), meaning movement of individuals or groups in geographical or social space (Strasser, 2009). On the basis of various criteria, such as duration, distance, motivation etc., migrations are classified into various subtypes (Oswald 2007, 16; Strasser, 2009; Treibel, 2008). If one focuses on geographical space, migration can be defined as a change of residence, together with change of the social relations and crossing of social, (political) and/or cultural borders (Oswald, 2007), that may be associated with push or pull factors in the form of living conditions, climate, conflicts (Demoule, 2006) or, last but not least, marriage. In contrast, mobility describes short-term movement, for example that associated with hunting, gathering, collecting, exchange and trade of raw materials and items; attending rituals or visiting relations or the acquisition of knowledge and skills (Thomas, 2005).

In this paper, the terms migration and mobility are used with these different meanings, since the two phenomena leave different traces in the archaeological record. Migration can be detected by recognizing the presence of new or foreign technologies, for instance; mobility in the use of raw materials of foreign origin and syncretistic grave goods. The two phenomena can also be traced by performing different isotope analyses, migration, e.g., by $^{87}\text{Sr}/^{86}\text{Sr}$ isotope analyses. Nevertheless it is hard to distinguish between mobility and migration in the archaeological record, because in a highly mobile society the statistical chance of dying and being buried abroad is higher than it is for less mobile societies (Kern, 2003).

The Late Neolithic with its widespread distribution areas of cultural phenomena, such as the Corded Ware and Bell Beaker cultures, was the period selected for (early) isotope analyses in prehistory (Price et al., 1994; Grupe et al., 1997; Price et al., 1998; Grupe et al., 2001; Price et al., 2004; Heyd et al., 2005).

Migration and mobility in the Traisen valley in the Late Neolithic

The Traisen valley

The Traisen is a river that rises in the Alps, and, flowing northward, reaches the Danube near Traismauer, approximately 40 km west of Vienna (Fig. 1). The geological subsoil in the southern part of the valley is made up of sandstone and limestone from the Alps, while in the north there are glacial sediments, like gravel covered by loess. Northwest of the Traisen valley are the granites and gneisses of the Bohemian Massive. Over the last 40 years, large scale rescue excavations conducted for the most part due to gravel extraction, hundreds of thousands of post-holes and thousands of settlement pits and graves from the Early Neolithic to the Middle Ages have been uncovered, causing the Traisen valley to
become one of the best known archaeological areas in Austria. Preliminary report about this excavations are published since 1981 in “Fundberichte aus Österreich” (e.g. Neugebauer, Gattringer, 1981). In the course of the project “Das Endneolithikum im Unteren Traisental (The Endneolithic of the Lower Traisen valley)” 184 graves from 16 grave groups situated at 10 sites were investigated. Most of the graves belonged to the Corded Ware culture; 27 graves were from the Bell Beaker culture. Both cultures were distributed over wide areas of Europe in the 3rd millennium BC. Both cultures buried their dead in a crouched position, with males and females oriented differently. In the Corded Ware culture males were buried with their heads to the west; females’ heads were oriented to the east. Both men and women faced south. In the Bell Beaker culture, males were buried with their heads to the north, females with their heads to the south, both sexes faced east. Anthropological analyses have shown that adherence to these rules was very high, with only a few exceptions (Kern, 2001).

The project on the latest Neolithic in the Traisen valley mentioned above is the first comprehensive synthetic study for this period in Eastern Austria dealing with geographic background, mortuary practice, anthropological studies, biomechanics, typology and raw material analyses of the grave goods, such as ceramic and stone artefacts, bone/antler artefacts and copper artefacts, use-wear analyses, experimental studies (Kern and Lobisser, 2010; Grömer and Kern, 2010), archaeological investigations, radiocarbon dating and $^{87}\text{Sr}/^{86}\text{Sr}$ isotope analyses.

Franzhausen

The most important site investigated in this project is Franzhausen, which holds 135 graves in six spatially divided grave groups (Franzhausen I – Franzhausen VI). In this paper we will concentrate on Franzhausen I, II and III, as isotope analyses were performed on skeletal remains from these groups. Franzhausen I is the latest grave group of the Corded Ware groups from Franzhausen. No decorated beakers were found in any of the 15 graves, but excavators did find a lot of other vessels, such as jugs and jars and large amphorae, that were not present in some other grave groups of Franzhausen. Only two graves contained tools made of flint and in only one grave was there an axe. Copper artefacts were found in four graves. Only one grave did not contain any grave goods. None of the graves were completely empty, but two did not contain skeletal remains. $^{87}\text{Sr}/^{86}\text{Sr}$ isotope analyses could be performed on teeth from 9 individuals. Of the 71 graves of Franzhausen II, 57 belong to the Corded Ware culture and 15 to the late Bell Beaker culture. Franzhausen II encompasses the earliest grave in Franzhausen that contained a beaker with cord impressions; it also contained a footed bowl that is typical for the Kosihy-Čaka-Makó Group (Kern, in press). There were nine completely empty graves (eight Corded Ware, one Bell
Beaker), ten graves that contained human remains but no grave goods (based on skeletal orientation, seven of these were Corded Ware, three Bell Beaker) and 6 that had no human remains but did have grave goods. Teeth from thirty individuals could be used for isotope analyses. The 16 graves of Franzhausen III can be divided chronologically into two phases. Both phases predate Franzhausen I. Pottery is scarce in most of these graves. The graves of male individuals often contain only tools made of stone and bone (Fig. 2–3). In the graves of the later phase, pottery typologically similar to that in Franzhausen I was found, but the surface was often roughened. The grave group from the later phase had only one grave with copper artefacts. Only one grave had skeletal remains but no grave goods and there were no empty graves. Three graves contained grave goods but not skeletal remains.

Comparing Franzhausen I, Franzhausen II and Franzhausen III, we can see that the number of vessels per grave increases over time while the number of graves with stone artefacts decreases.

The raw materials making up the grave goods can be separated into three groups: local materials that were available within 20 km, regional materials available within 100 km and nonregional materials that were brought from a distance of over 100 km. Examples for nonregional materials are daggers (Fig. 5.15) made of Arnhofen tabular flint from present-day Bavaria and tools made of erratic flint that must have been brought from at least as far away as present-day northern Bohemia or northern Moravia. Analyses of the copper artefacts have revealed that the copper came from Slovakia. This confirms the movement of raw materials and items which, obviously, entails the movement of individuals. Given all this mobility of raw material, human mobility must have been high in the Traisen valley in the late Neolithic. But what can we say about migration?

Some of the vessels, like the footed bowl mentioned above, show close connections to neighbouring areas. Bowls of that type are distributed in the Carpathian Basin and are rare in Austria and Moravia (Kulcsár, 2002; Matějíčková, 1999; Ruttkay, 1973). Some of the decorated beakers are similar to beakers found in present-day Moravia; others resemble beakers that have been found in present-day Bavaria. Thin section analyses of 39 vessels of the Corded Ware and the Bell Beaker cultures from Franzhausen II showed that almost all of these vessels were locally produced. That means that it was not the vessels that moved, but the persons who made them. “Foreign” types (e.g. cord decorated beaker, hammer headed pin (Krückennadel) were present in Franzhausen III but not in Franzhausen I. That raised the question of whether a difference in the migration patterns associated with these two grave groups, which are different in terms of material culture and chronology, also exists. To answer that question, $^{87}\text{Sr}/^{86}\text{Sr}$ isotope analyses were performed on the human remains (Irrgeber et al., this volume). Franzhausen II, which contains graves belonging to almost all of the Late Neolithic phases found in Franzhausen, was used as a control group. Samples of the teeth needed for analyses were available for 49 individuals. Among these 49 individuals, six were identified as outliers (Irrgeber et al., this volume).

Archaeological interpretation of the results of the $^{87}\text{Sr}/^{86}\text{Sr}$ isotope analyses

Franzhausen I

The grave of only one nonindigenous individual (Feature 353) was found in the grave group of Franzhausen I. Unfortunately the grave of this juvenile male (sexed archaeologically based on skeletal orientation) did not contain any items (Fig. 2, top).
Fig. 2 | Franzhausen I, Feature 353 and Franzhausen III, Feature 2
Fig. 3 | Franzhausen III, Feature 6 and Feature 8
Fig. 4 | Franzhausen III, Feature 738
The low migration rate in this group also seems to be reflected in the local types of pottery, which show more similarity to vessels of the Pannonian plain. In this grave group, silex artefacts were present in only two rich male graves. It is probable that as connections to present-day Moravia were cut off objects made of erratic flint became precious. On the other hand, though the results point to a low migration rate, this may be misleading: migration of persons coming from the east can pass unrecognized due to the similarity of the strontium isotope values of the regions (Price et al., 1994).

Franzhausen II

A total of 30 individuals were analysed, 22 belonging to the Corded Ware and 8 to the Late Bell Beaker culture. All individuals analysed were indigenous. That is interesting with respect to the Corded Ware Culture, because several influences and foreign artefacts and types were found in the graves of the investigated individuals: evidently, these were not connected with migration.

For the Late Bell Beaker culture, the low migration rate is reflected in the local types of pottery.

Franzhausen III

Out of ten individuals analysed, five were indigenous; three male and two female individuals were of foreign origin, all with values that likely reflect the older metamorphic highlands. In the graves of two males (Features 2 and 6) only artefacts made of bone and stone were found (Fig. 2, bottom, and Fig. 3, top). The axes were made of amphibolite and the chipped tools of erratic flint. The stone knife of Grave 6 is typologically comparable to the “flammförmige Messer” of the Corded Ware Culture found in Moravia and Bohemia (Valde-Nowak, 2000). In the grave Feature 738 (female) a stamp decorated beaker was found (Fig. 4.2) and in Feature 1055 (female) there were beakers decorated with stamp and cord impressions (Fig. 3.2, bottom, and Fig. 5.6–7). The grave Feature 8 also contained a “Krückennadel” (Fig. 3.3) characteristic for Middle Germany and Eastern Europe (Gessner, 2005). Feature 1055 was a richly furnished grave of a woman aged 25–35 years. It contained three vessels, copper earrings and stone tools made of various foreign raw materials, such as a dagger of Arnhofen tabular flint. The concentration of foreign materials and types in this early Corded Ware Group correlates with the high migration rate of the individuals.

Comparison to earlier results

These strontium analyses were the first for the Corded Ware culture in Lower Austria and, as far as I know, none have been conducted on material from Moravia either (though there may exist as-yet unpublished results). Comparing the results with Corded Ware graves from Central Germany, where a higher mobility rate, or, in my terms, migration rate was detected for women (Haak et al., 2008), we can see a different migration pattern emerging for the Late Neolithic population in the Traisen valley.

Price and colleagues (2004) have published strontium isotope analyses on Bell Beaker individuals from Lower Austria. Researchers have investigated skeletal remains taken from five graves from three
Fig. 5 | Franzhausen III, Feature 1050
sites: Graves 8 and 16 from Zwingendorf-Alicenhof (Kern, 2001; Wiltschke-Schrotta et al., 2001); Graves 2 and 3 from Henzing (Friesinger, 1976; Jungwirth, 1976; Neugebauer, 1994), cited as Henzig in Price et al. (2004); and one from Hetzmannsdorf (Hasenhündl, 1990). Chronologically these three sites represent three slightly different phases. Zwingendorf is the oldest site and featured one decorated beaker in a grave (unfortunately without skeletal remains, therefore no isotope analysis was possible), Henzing is comparable to Franzhausen II, and the Hetzmannsdorf site falls on the border of the Early Bronze Age. Henzing is geographically (marked on Fig. 4 and 6 in Price et al. [2004] as HN, not HE as indicated in the text) and chronologically closest to the late Bell Beaker graves from Franzhausen II. Grave 8 (young female) from Zwingendorf unfortunately did not contain any grave goods; in Grave 16 (male) were found one bowl, two jugs and one tiny fragment of a big vessel. Migration has been suggested for the two individuals from Henzing (Price et al., 2004). However, as the graves of Henzing were destroyed during gravel extraction, and the archaeological and anthropological remains were collected only afterwards, the connections between grave goods and skeletal remains are not clear. Thus the inventory of Grave 2 and Grave 3 cannot be seen as closed finds. Nevertheless an investigation of the archaeological objects of all the graves mentioned above indicates that they belong to the later phase of the Bell Beaker culture, as do the individuals of the Bell Beaker culture at Franzhausen II. No bell beaker was found in any of those graves; where pottery was present it was regional ware (Begleitkeramik). The low migration rate in the Bell Beaker graves of Franzhausen II supported the findings of Grupe et al. (1997) and Price et al. (1998), who also saw a more sedentary population in the younger phase of the Bell Beaker culture in contrast to a tendency for more migration in the older phase.

Summary

The investigation of the archaeological material and the $^{87}$Sr/$^{86}$Sr isotope analyses of skeletal remains of the Late Neolithic of Traisen valley revealed that both types of investigation are capable of detecting human mobility and can be used to confirm one another’s results. With respect to the population under study, we can state that a higher migration rate exists for the earlier phase of the Corded Ware culture, whereas a more sedentary lifestyle can be discerned for the later phase of the Corded Ware Culture and the later phase of the Bell Beaker culture. Nevertheless as the numbers of investigated individuals are still low, we must treat the results with caution and steer clear of far-reaching interpretations.

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References


