

Review of: Scharl, S. & Gehlen, B. (2017). *Mobility in Prehistoric Sedentary Societies. Papers of the CRC 806 Workshop in Cologne 26-27 June 2015. (Kölner Studien zur Prähistorischen Archäologie 8). Rahden /Westfalen: Marie Leidorf.* 304 pages, 155 illustrations. ISBN 978-3-86757-368-9.

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This is a timely collection of papers that demonstrate how well integrated strontium isotopic analyses by now are in archaeological research. It is also methodologically interesting in that archaeological indications of mobility can be compared with the strontium evidence and thus produce a more nuanced picture.

The book covers a wide spectrum of contributions in time and space, but with a focus on Neolithic societies, especially the Linear Band culture, one contribution from the Michelsberg Culture, one from the Globular Amphora Culture, and one from the Yamnaya Culture. Then one Urnfield and one Iron Age contribution, one early Medieval contribution, and finally one from Egypt. It reflects the heavy research focus on the Linear Band Culture in recent years, which also included ancient DNA.

The papers provide a much more detailed and nuanced picture of mobility than has previously been possible, from local to interregional, and also animal mobility is included. On the whole, the results once again demonstrate that mobility was much more common than previously assumed among sedentary societies, but they also show a great variety from residential mobility to individual patterns of mobility.

We have already a substantial body of research on the Linear Band Culture, both isotopic, archaeological and genetic, so how does the new results complement the picture? Here we find both archaeological studies, and isotopic analyses, and they both point to mobility as an inherent feature of this culture. Silviane Scharl presents a comparative analysis of discussion of mobility and innovation transfer, summarized in a table of case studies that represents different types of transfer, linked to different types of exchange and kinship strategies, such as exogamy, or economic strategies, such as transhumance. All in all a highly stimulating paper. It is followed by Birgit Gehlen's study of mobility during the Neolithic transition in western central Europe. It is a well documented analysis of interaction and transfer of new technologies such as pottery, between forager and Neolithic communities.

Four studies of Linear Band culture form a group of their own. Mahal Ismail-Weber analyses local mobility of LBK groups in Brandenburg, using a kind of site-catchment analysis, Nadia Balkowski analyses settlement dynamics and population dynamics towards the end of the LBK, while Hans-Christoph Strien analyses local mobility and group affiliation in the Rhineland. Ute Seidel uses excavation data from the Michelsberg Culture, including a mass-burial to present a high resolution analysis of the buried individuals, including genetic data and strontium isotopes. Internal kinship relations are documented as well as mobility, showing that two non-local males were the founding fathers of the family. This scenario is further linked to the organisation of society and the enclosure sites.

From the Globular Amphora Culture Claudia Gerling and Jamis Lewis carried out a high-resolution laser ablation analysis of cattle teeth from a typical burial of three cattle and two humans, the wagon drivers in all probability. Interestingly the cattle demonstrated a varied mobility in their early life, but also late in life. They were not local, and also the two humans were non-locals. This picture corresponds with archaeological evidence of the expansionist and mobile nature of the Globular Amphora Culture, linked to their use of cattle as draught animals for wagons. Cattle in the Linear Band Culture in opposition are mostly local, whereas cattle mobility has also been demonstrated in the TRB Culture in Sweden.

Also the steppe Yamnaya Culture is known for its mobility and seasonal migrations of herds, including cattle and sheep. Here Elke Kaiser presents first results of a strontium project, which demonstrates how difficult it is to trace mobility in a steppe environment. Building upon the work of Gerling there was some mobility, but problems of establishing baselines in the large steppe region makes interpretation difficult. Natalia Shishlina instead did strontium analyses for diet in another study north of the Caucasus, and could demonstrate quite big variability, both through time, but also geographic variability. Steppe culture may look homogenous but conceal seasonal and temporal variability.

The Urnfield study by Simone Reuß and Carola Metzner-Nebelsick was among the most ambitious contributions: here a large representative data set from cemeteries in Bavaria and North Tyrol was subject to both an archaeological and strontium analysis. Burials with foreign objects could then be compared with their strontium evidence, just as social stratification could be cor-

related with their isotopic background. Migration from Southern Bavaria into North Tyrol has been suggested on archaeological grounds. This could so far not be confirmed, there are both correspondence and non-correspondence between foreign archaeological and strontium signatures. The picture is complex. However, there is still more material to be analysed.

From the early Iron Age Julia Koch presents a study of individual mobility based on a combined archaeological and isotopic study of the famous Magdalenenbergle burial mound. Within this single burial mound 123 adult individual, 16 children and 6 indeterminable were buried, all with grave goods, and 81 could be employed for strontium analysis. This was a period of intense interaction and acculturation across the Alps from northern Italy, as well as from neighbouring regions along the Danube, which also shows in the material culture. Interestingly, Koch combines grave goods and strontium values in a single diagram (Fig. 5), which demonstrates that many individuals with local objects were born outside the local region and thus acculturated. Likewise, some individual with foreign objects were born locally, but could have travelled later in life and returned with these new objects. The buried community thus displays a mix of local and non-local influences and travels, but also a strong local integration of foreign individuals into the cultural and ritual mould of the Magdalenenbergle community.

The Early Medieval study by Eva Stauch set out to validate the migration history of an Early Medieval cemetery from Wenigumstadt during the period 450-650 AD, divided into short periods of one generation. The study is exemplary, out of 309 excavated burials 138 provided material for strontium analysis from a single community. This allowed a solid comparison between archaeological and strontium mobility indicators through time. The results showed a very good correspondence, and by combining the two, also supported by written sources, a migration of families from Anglo-Saxon England could be demonstrated, as well as from Bohemia. For each chronological period burials with migrating individuals amounted to more than 50%, sometimes even higher. These two centuries were indeed characterized by high mobility.

This collection of articles is a good indication of the direction of research right now in European archaeology: many new projects combine in various ways archaeology and science, sometimes in exemplary ways. It is also clear though that strontium isotopes are only one type of indication and

needs to be complemented by a careful archaeological analysis. We also get an illustration of the potential of laser ablation analysis for documenting seasonal movements of cattle. Two objectives for future strontium isotopic analyses appear: firstly, the need for larger samples from specific cemeteries/localities if we wish to achieve a representative picture of mobility, as demonstrated by the Wenigumstadt and Magdalenenbergle cemeteries. Secondly, there is still much work ahead in establishing baselines to allow more precise determination of origins. And finally: strontium isotopic analysis can rarely detect major migrations: here we need aDNA to document the full genetic impact of population movements. The strength of isotopic tracing is the documentation of individual or small group mobility. Only when this amounts to high numbers from several/many cemeteries within a region we can conclude that migrations were possible. When such results are correlated with archaeological indicators the full impact of the method appears, as demonstrated by several contributions in the book. It therefore comes highly recommended.

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