What can archaeogenetics contribute to historical research on kinship and relatedness? A medievalist's view

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Zusammenfassung

Welchen Beitrag kann die Archäogenetik zur historischen Verwandtschaftsforschung leisten? Die Sicht eines Mediävisten

Das Gebiet der Archäogenetik hat spektakuläre Fortschritte bei der Rekonstruktion der biologischen Verwandtschaft zwischen den Mitgliedern einer Bestattungsgemeinschaft vollzogen, die nun in umfangreichen Stammbäumen visualisiert werden kann. Die historische Interpretation dieser genetischen Ergebnisse ist jedoch alles andere als eindeutig. So wie die genetische ›Abstammung‹ (ancestry) nicht einfach die ethnische Identität widerspiegelt, sollten wir nicht davon augehen, dass solche Stammbäume einen direkten Zugang zur sozialen »Verwandtschaft« ermöglichen. Dieser Beitrag fasst kurz die anthropologischen Debatten über Verwandtschaft (ist Kinship überhaupt ein sinnvoller Begriff?) sowie neuere Forschungen über Verwandtschaft in der mittelalterlichen Geschichte zusammen und was sie für die Interpretation genetischer Daten bedeuten. Wir können mit diesem Material jedenfalls nicht ohne eine klare Unterscheidung zwischen biologischer und sozialer Verwandtschaft arbeiten und müssen alle verfügbaren Spuren verfolgen, um zu beurteilen, inwieweit sie sich möglicherweise überschnitten haben. Dies ist eine der Aufgaben des ERC Synergy Grant-Projekts HistoGenes, das sich mit der Bevölkerungsgeschichte Ostmitteleuropas vom 5. bis 9. Jh. befasst. Von einem solchen interdisziplinären Unterfangen können wir in vielen Bereichen neue Hinweise erwarten: auf reproduktive Gemeinschaften und Strategien; den Status und die Positionen von Frauen; die Bedingungen für die Vermischung (admixture); Änderung oder Bewahrung der ›ancestry‹; die sozialen Rollen und Statusunterschiede; die soziale Organisation von Bestattungsgemeinschaften; die Auswirkungen von Krankheiten; die Chronologie, den Anfang und das Ende der Gräberfelder; die Demografie der Fundplätze; die Beziehungen zwischen gleichzeitigen oder aufeinanderfolgenden Fundstellen; die Auswirkungen von Migrationen und Mobilität; sowie weitere Aspekte.

Summary

The field of archaeogenetics has made spectacular progress in the reconstruction of biological relatedness among the members of a burial community, which can now be visualised in extensive pedigrees. However, the historical interpretation of these genetic results is far from straightforward. Just as genetic ›ancestry‹ does not simply reflect ethnic identity, we should not take it for granted that such pedigrees give direct access to social ›kinship‹. This chapter briefly summarises anthropological debates about kinship (is that a meaningful term at all?) and recent research about relatedness in medieval history, and what they mean for the interpretation of genetic data. I argue that we cannot deal with that material without a clear distinction between biological and social relatedness, and have to follow all traces available to assess to what extent they may have overlapped. This is one of the tasks of the ERC Synergy Grant project HistoGenes, which addresses the population history of Eastern Central Europe from the 5th to the 9th century. In such an interdisciplinary venture, we can hope to find new clues about reproductive unions and strategies; the status and positions of women; conditions for admixture; changes or maintenance of ancestries; social roles and status differences; the social organisation of burial communities; the impact of diseases; the chronology, the beginning and the end of cemeteries; the demography of the sites; relations between contemporaneous or successive sites; the impact of migrations and mobility; as well as other aspects.

Debates about relatedness

The historical interpretation of genetic data is far from straightforward, as is the study of kinship[1]. It had long seemed self-evident that ›kinship‹ was based on biological relatedness, and that clearly-delineated kin groups were the primary form in which societies were organised, at least until the more complex, functional groupings of modern soci-

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1 I use the term kinship here both for past perceptions and for modern scholarly concepts of relatedness, and for a critique of ideological overtones in both discourses. I hope it becomes clear that we need to avoid using the term for genetic reconstruction of biological relatedness. For the problems of historical interpretation of genetic evidence, see Geary/Veeramah 2016; Bösl 2017; Geary 2020; Meier/Patzold 2021; Samida 2021; Pohl forthcoming.

ety limited their influence. Indeed, we find an elaborate terminology of kinship in many texts and languages of the past, and we can assume that it mattered. If we now have the means to trace biological relatedness in the genome, scholars, and even more so the general public, might be tempted to see this as a confirmation of ideas of ›natural‹ kinship in our written sources. The same has already occurred with genetic ancestry, which has been taken to represent the biological basis for ethnic groups or nations (Geary 2020; Pohl forthcoming). However, we should not take the biological definitions of ethnicity and kinship in ancient and medieval texts for granted. Historical research on early medieval ethnicity has shown that, in many cases, it was more the idea of common blood and origin than actual shared ancestry that united an ethnic group (Geary 2002; Pohl 2013).

What the sociologist Rogers Brubaker has called ›groupism‹ (Brubaker 2004) – the habit of taking coherent ethnic groups for granted as social units – is also common in the study of kinship. But can we take coherent kin groups for granted in the Early Middle Ages? What the texts talk about when they use the language of kinship are not necessarily biological kindreds. The rhetoric of relatedness is often used to strengthen social bonds between biologically unrelated (or only loosely related) people by emphasizing their ›natural‹ character, whereas not all biological relations may be socially recognised or even become apparent. Noble kindreds are well-attested in the texts, but it is far from clear who belonged to them and who did not – just as in the ethnic groups of the period.

This leads to several problems in the historical interpretation of kinship. First, biological relatedness and social kinship surely overlap in certain cases, but they do not coincide. Therefore, we cannot automatically conclude from first- or second-degree relationships derived from the genomes that the individuals concerned were part of a family, and non-related individuals were not. Many social anthropologists have long realised this fact. According to M. Sahlins in his influential book ›What kinship is … and is not‹ (Sahlins 2013), at the root of kin relations between humans is not the objective fact of birth, because »sexual intercourse is not prior to the social relations between persons, marriage etc. […] What is reproduced in the birth is a system of kinship relations and categories in which the child is given a specific position and a positional value« (Sahlins 2013, 63; 65). Therefore, biological relatedness does not determine social relations, but is at least as much formed by social agency and cultural codes. As the anthropological examples that Sahlins adduces clearly show, »the different cultural discourses of procreation are highly variable as concerns the substantive relations of parents and their offspring« (Sahlins 2013, 86). We should therefore distinguish between, on the one hand, the biological links between individuals that genetic sequencing can demonstrate with great probability (although the precision diminishes beyond the third degree, and with weak signals in ancient DNA); and on the other hand, the social significance of kinship relations.

However, this distinction has been challenged because it is derived from the binary opposition between *physis* and *nomos*, nature and law/convention, fundamental in Western ontology since classical Greek philosophy. Kinship is understood quite differently in many other societies. Sahlins hinted at the problem with the Western binary model that kinship belonged to the realm of nature, whereas other social relations were constructed (Sahlins 2013, 14). His solution clearly was to focus on the variability of kinship patterns and discourses, and avoid overall models that would essentialise kinship systems.

We have to acknowledge that ideas and concepts of kinship differed considerably between societies in the past as in the present (Parkin/Stone 2014). What we should avoid, first of all, is grouping all ›traditional‹ societies (until recently the realm of ethnology) and juxtaposing them to ›modernity‹, as J. Goody has forcefully argued (Goody 1983, 3). We therefore have to historicise the terms and concepts we use, whether it is ›kinship‹, ›family‹, ›kindred‹, ›clan‹ or others – they did not mean the same in different societies. We cannot take it for granted that these concepts provided an almost immutable foundation to the development of past societies, but have to be attentive to the different ways in which they were conceived and constructed.

The basic facts of biological relatedness may be immutable, but they are surrounded by a wide area of kinship practices: fertility rates; incest taboos; marriage bans; polygyny/polyandry; regulations for abortion; uneven conditions for the survival of mothers and children; the social roles of mothers/fathers and of female/male children; relations between mother/father and child; patrilinearity/matrilinearity; the extent of adoption and ritual brotherhood; chastity requirements; inheritance rules; and the entire structuring of family relations. All of these factors result from cultural codes and social practices, and reflect back on the practices of reproduction. Therefore, they also also had an impact on the structure of biological pedigrees, which we can now reconstruct on the basis of genomic data (cf. Popli et al. in this volume). In most societies, human reproduction was one of the most highly-codified areas of life, being essential for the survival of the community, for conflict management and for individual satisfaction. In many cultural contexts, kinship could also be closely linked to transcendental spheres of inter-personality, as Sahlins has argued: He defines kinship as »mutuality of being« – »kinsfolk are persons who participate intrinsically in each other's existence« (Sahlins 2013, 9).

This wide range of issues, along with the concept of kinship, has become a fruitful area of historical research[2]. Whereas older historical scholarship has mainly followed prosopographic and genealogical approaches and has taken the existence of consistent families and clans for granted, recent research has tracked the changes and variations in concepts and practices based on relatedness. It has also shown that not only the shape, but also the importance of kinship ties differed, not only between various societies,

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2 For an excellent overview for the Early Middle Ages: Hummer 2018. For medieval and early modern studies, see also Goody 1983; Murray 1983; Charles-Edwards 1993; Spieß 1996; Bouchard 2001; Mitterauer 2003; Sabean et al. 2007; Lubich 2008; Ubl 2008; Jussen 2009; Patzold/Ubl 2014.

but also within them. Kinship was also always a source of contention and conflict in which stake-holders not only pursued contrasting interests, but also could rely on differing concepts (cf. Thelen in this volume). For instance, the rather extensive incest ban up to the sixth or seventh degree that the Church prescribed in the Middle Ages met with a lot of resistance from the rulers or aristocrats concerned, but was quite regularly enforced (Ubl 2008). On the other hand, papal attempts in the 8th and 9th centuries to stigmatise or forbid marriages with women from other peoples *(alienigenae)*, based on Old-Testament precedent, had little impact in the longer term (Pohl 2007).

Is kinship an appropriate term for the wide range of meanings that the concepts and practices of relatedness can assume? Several scholars have recently argued that in fact kinship did not exist, or that the term should at least be avoided. In 1984, the social anthropologist D. M. Schneider argued that many societies around the globe did not have a concept of ›kinship‹, and that it was a modern Western creation (Schneider 1984). The ›lineage model‹ of a society constituted by male lineages proposed by H. L. Morgan in the 19th century, which had long been influential in ethnology, has largely been abandoned in the later 20th century; as A. Kuper stated: »There do not appear to be any societies in which vital political or economic activities are organised by a repetitive series of descent groups« (Kuper 2004, 93). In a more subjective sense, H. Hummer showed that the concept of kinship did not exist in the Middle Ages because »it was never an abstraction by which people of the time conceptualised their social life. There was no term ›kinship‹ that bound together the cluster of sociological phenomena that we now associate with the concept: marriage, alliance, incest, descent, terminology, procreative myths, parenthood, and so forth« (Hummer 2018, 4). The same could of course be said for terms such as society, state, economy, ethnicity, identity, culture, development and many more, without which it would be hard to interpret the past. What is important is to criticise and deconstruct these terms, and not take them for granted, ›smuggling‹ unwarranted assumptions from the present into the past. Yet, as M. Godelier has reminded us, we should then reconstruct our concepts, adapting their meaning to the evidence from the time and place under scrutiny (Godelier 2011). If we understand kinship not as a clearly-circumscribed group structure, but as a social process in which »kinship is constructed through human action or agency« (Stone 2004, 252), the concept (like that of ethnicity) may still serve to understand ways in which relatedness mattered in past societies. This requires maintaining a critical view of our own disciplines and the ways in which they have shaped their terms and models according to Eurocentric concerns (Hummer 2018, 7). Wherever available, the voices from the past can guide us in translating their concerns into modern concepts.

In the last ten to twenty years, scholars in the Humanities have made considerable efforts to liberate the study of kinship from its overwhelming biological paradigm. That also meant overcoming the way in which research on its forms fell too readily into the dichotomy of biological, that is, ›real‹, vs. spiritual/metaphorical or ›artificial‹ kinship (Hummer 2018, 84–94). As Hummer has aptly observed, in many cases a perceptive disclaimer in the introduction was followed by a rather traditional binary approach employed in the analysis. More radical models are now gaining ground (Hummer 2018, 102–111), in line with efforts to overcome white/Western epistemologies and to turn to indigenous truths. In a highly influential article, the Brazilian anthropologist E. Viveiros de Castro has turned to the way in which the Amazonian populations he studied would conceive kinship (Viveiros de Castro 2008). In their society, Viveiros de Castro argued, ›affinity‹, that is, human bonds in general, was taken to be a natural fact because it concerned all close relationships, whereas ›consanguinity‹, biological relatedness, was ›constructed‹, an outcome of certain social practices. M. Strathern (1988) has concluded from her research in Melanesia that a vital link within the community was constituted by feeding, eating, sharing, caring, or remembering, which in many societies is perceived as a participation in other bodies, whether of the living or of the dead. Kinship is thus not perceived in the Western sense as relatedness between individuals, but as based on ›dividuality‹ and ›transpersonal praxis‹ (Sahlins 2013, 19–53; cf. Alber in this volume).

These are fascinating and challenging perspectives, but they also create some problems. In the studies where these concepts were proposed on the basis of highly perceptive observation and cultural translation, they have opened new horizons. Yet as a new general paradigm intended to replace the old dichotomies, they risk liberating research on relatedness from one simplifying binary by embracing another: the contrast between Western modernity and its divisive individuality and rationality on one side, and more natural and inclusive and ›dividual‹ indigenous epistemologies – the world we have lost, or rather, destroyed. This debate is beyond the scope of this paper, and is reflected in more depth in other contributions to this volume (see the contributions of Alber, Thelen, and also Alt in this volume). It is, however, relevant for assessing the epistemological significance of the genomic evidence for our understanding of relatedness. In archaeogenetics, we invariably deal with the genome of a single human being in its biological relations to other human beings. And in archaeology, we recover the remains of distinct human bodies, which in the period were usually buried in separate graves. Native epistemologies may well have given these bodies and burials different meanings, but in most cases we can only speculate about them.

What did being related mean in early medieval Europe?

Medieval kinship is often connected with images of royal dynasties and noble families who form the basis of the state, but also tend to subvert it in the interest of their kin group. They boast of long patrilinear pedigrees and a consolidated and well-circumscribed family structure. However, scholars have long recognised that kinship in the early medieval West was hardly agnatic and patrilineal. K. Schmid (1957) and G. Duby (1981) argued that until c. 1000 AD cognatic kinship prevailed, when the ›feudal transformation‹ led to a more agnatic system and a flowering of patrilineal aristocratic lineages. That was an important step forward; but eventually, it

turned out that things are more complicated. C. Bouchard (2007) has noted a spread of patrilineage in the Carolingian period, while cognatic kin also remained important after the 11th century (Goetz 2014). The idea that distinct aristocratic kin groups were a basic feature in the Later Middle Ages has also been challenged in recent research (Bouchard 2001; Sabean/Teuscher 2007; Jussen 2009). S. Teuscher (2011) argued that the interest in bolstering one's position by a noble lineage evolved in parallel with the early modern state, only reaching its first peak in the 15th century.

Kinship certainly is rather elusive in the early medieval West (e.g. Murray 1983). As Hummer (2018, 1) has observed, »as soon as one begins to trace out a kin group, the trail just as quickly fades«. To give an example: One of the few consistently-attested early dynasties in the Early Middle Ages were the Agilolfings, the family of the 8th-century Bavarian dukes, whose prerogative to rule Bavaria was even affirmed in the Bavarian law code (Pohl 2016). Yet generations of scholars have debated who they were and where they came from, and became entangled in following seemingly contradictory traces to Suebi, Warni, Burgundians, Longobards and Franks (e.g. Jarnut 1986; Deutinger 2014). Earlier Bavarian dukes are not called Agilolfings in the texts, but we know that one of their daughters, Theodelinda, was married to the appropriately-named Longobard king Agilulf. For the last Bavarian duke Tassilo III, dethroned by Charlemagne in 788, his Carolingian mother may have been politically more relevant than his Agilolfing lineage (which is never emphasised). Therefore, if we address early medieval kinship, we should not depart from circumscribed kin groups, kindreds, families, or dynasties, but from the forms of relatedness and their relevance. This can hardly be expressed in neat patrilineages, whose nodes and connecting lines may have had rather varied significance.

Important changes in the concepts and practices of relatedness seem to have happened during Christianisation and the transformation of the Roman World, which the anthropologist J. Goody (1983) has put in focus. The prerogatives of the *pater familias* faded out to some degree, and the pagan ancestor cult was abandoned. The task of guarding the memory of the dead gradually passed to ecclesiastical institutions, who received pious donations to pray for the deceased and keep their memory alive. Burial was moved to Church grounds, and funerary ritual was gradually Christianised, which led to the (if gradual) disappearance of grave good habits and of cremation practices (Paxton 1996). Christian norms were also introduced to curb many Roman ways of constituting a family or ›gens‹, a clan. Taking concubines was condemned, which at least in theory reduced the options for reproduction to the legal marriage (we know that the Merovingians did not take this rule particularly seriously). Clerics, monks and nuns had to follow strict chastity, which was also recommended to lay-people except for the purpose of procreation. Divorce, for instance in cases when the wife could not give birth to children, was prohibited. It took some time until marriage became a sacrament, and the Church thus achieved full control over it. Overall, this reduction of options for reproduction must have contributed to the demographic decline that we see during this period.

Adoption, a rather current Roman practice, was also reduced and partly replaced by godparenthood (Jussen 1991). Marriage between close kin was progressively prohibited, not only between first cousins (an option in many societies), but up to the 6th and 7th degree (Ubl 2008). Widows were advised not to remarry, and certainly not within their kindred. Arguably, much of this weakened the cohesion within kin groups, and opened them up to more distant relations. Goody argued that these measures first of all were intended to strengthen ties within the Christian community at the expense of the kin groups, and to redirect much property, for which there was no close heir, to the Church (Goody 1983, 194–216). Critics have doubted whether we can assume an ecclesiastic ›grand strategy‹ to that end. There may be valid arguments against some of Goody's assertions. Yet P. Brown (2012) has clearly demonstrated that in the 5th/6th century, clerical authors developed a consistent theological argument to encourage property donations to the Church; and I. Wood (2018) has reconstructed a massive process of land transfer to ecclesiastical institutions in 6th to 8th-century Gaul, which may have amounted to about one third of the total landed property. Early medieval churchmen were perfectly capable of judging the social impact of the measures they advocated or introduced. We should not regard their actions as simply guided by material interests, though; more likely, most of them acted in a genuine belief in furthering the only salvific creed.

In what ways, then, did relatedness become significant in early medieval Europe? Here, I can just briefly sketch a few contexts where we can trace some of its meanings. The first are royal/ducal dynasties and noble lineages. In older scholarship, they were mostly regarded as well-structured Germanic male lineages, but there is little evidence that they were (Pohl 2016). There are sufficient attestations showing that a noble ancestry (*stirps, progenies, genealogia* or similar) mattered. Strikingly, though, there was little interest in how it was actually shaped. We have a 16-generation genealogy of the Ostrogothic Amals from 6th-century Italy, but it was most likely compiled by the Roman official Cassiodorus, who used it to convince the senate that their Gothic kings had a lineage as noble as the senatorial *gentes*, families. But in general, king lists were more relevant. The Merovingians did not publicise their pedigree, and even their dynastic name is first mentioned a century and a half after King Clovis united the kingdom in c. 500 AD (Wood 2003). To establish Charlemagne's pedigree, one of his courtiers asked the Longobard scholar Paul the Deacon, who inserted it in his Chronicle of the Bishops of Metz. In his version, the first ancestor was the saintly bishop Arnulf of Metz, whose son had married the daughter of the mayor of the palace, Pippin I. Thus, the Carolingian genealogy that became standard in the course of the 9th century merged a male descent from a saint and a female one from the man who had first acquired the function of mayor of the palace for the family.

This remarkable lack of interest in a precise patrilineage on the European continent in the sixth to eighth centuries is in contrast to many other contemporary societies. Genealogies are well-attested in Britain and Ireland in the period, where they were styled after Old-Testament pedigrees (Hummer 2018, 273–279), and they seem to have played a role in

Scandinavia. Aristocratic inscriptions from Tang-period China (7th/8th centuries) praise the dynasty and its ancestors in ways unknown from early medieval Europe (Tackett 2014). Even more striking is the contrast to the early Islamic period, which produced massive genealogical handbooks, for instance by al-Zubayrī (9th century) or al-Hamdānī (10th century). The individual genealogies were either traced back to the family of the prophet and established the superiority of the Qurayshīs, or to the mythical founder of the tribe; the tribal genealogies were then extended backwards to the ancestors of the North- and South-Arabians, so that theoretically every Arab could be placed in a genealogical connection to every other Arab (Szombathy 2003; Mahoney 2016). The Islamic example with its all-inclusive patrilineages is very useful for assessing what early medieval continental Europe did not produce. Although patrilineages mattered, continental European ruling and aristocratic houses had quite some leeway in manoeuvring around them. Merovingian kings were quite flexible in deciding which of their sons, usually from several partners, was legitimate; to delegitimise one of them, it was sufficient to publicly cut their long hair (Wood 2003). In Longobard Italy, several newcomers to the throne derived their legitimacy from marrying women descended from more prestigious dynasties. And in many post-Roman kingdoms, strong queens succeeded in maintaining their grip on power, often as legal guardians of their sons – for instance, Amalasuintha in Ostrogothic Italy, Brunhild (who was a Visigoth) in the Frankish kingdom and Theodelinda (whose father was a Frank from Bavaria) in Longobard Italy. Lateral kin surely also mattered in more modest families. There were only some obstacles to a wide range of lateral connections. For instance, many Roman and barbarian law codes forbade marriages between Romans and ›barbarians‹, which was not always effective (at least in royal houses) but must have had an impact (Pohl forthcoming a).

We know much less from written sources about early medieval Eastern and Northern Europe, where Christianity had never arrived or was eventually marginalised after the end of Roman rule. There are some bits of information about women and marriages in the Eastern European steppe realms. Both Attila, king of the Huns, and the early khagans of the Avars had numerous sons by several wives to whom they were simultaneously betrothed in some way (Pohl 2018, 368 f.). Once it was documented that the Avar khagan took along several of his wives on a long military expedition, where they enjoyed themselves in the hot baths of a captured city. An Avar high priest who had intercourse with one of the khagan's wives had to flee to the Byzantines to escape a death penalty. In the late Avar realm, the position of the *katun*, the (principal) wife of the khagan, must have become quite prominent. A Latin poem depicts the scene when the Avars had to submit to a Frankish army in 796, when both the khagan and the katun appeared and were told that ›their reigns‹ *(regna)* had ended. This strong role of the khagan's consort corresponds to 8th-century Old Turkic

inscriptions and to Chinese sources about eastern central Asia where khagan and katun also acted in unison and had a shared rule (Pohl 2022). Written sources say little about the relations of more modest people; for that, we have to rely on archaeological, and now also on genetic evidence.

There is, of course, the chance to form hypotheses about the role of kinship among Huns or Avars from ancient and modern evidence about steppe societies[3]. Most authors assume a strong patrilinear clan structure and mobile units that roughly correspond to ›family‹ groups. These groups would then constitute overarching tribes, which in turn could form nomadic states or ›commonwealths‹ in which tribes were arranged in a hierarchical order (Kradin 2005). However, D. Sneath (2007), working on the basis of Mongol material, has challenged this model, and has argued for horizontal aristocratic power networks instead. That does not mean that we should abandon clans and tribes as possible structural elements in the organisation of European steppe empires of the Early Middle Ages; but we cannot take them for granted either.

What can the genetic study of relatedness contribute to historical knowledge about kinship?

This is not the place to describe the swift development of new bio-informatic methods to trace relatedness, which has taken place over the last few years (cf. Krause 2019; Geary 2020; Fowler et al. 2022). It is important to distinguish, however, between this relatively new approach and the older line of research on what geneticists generally call ›ancestry‹ (Mathieson/Scally 2020). This was the approach chosen in the early days of archaeogenetics, when only the non-combining parts of the genome were sequenced. Y-chromosomes could trace the male line, while mitochondrial (mt-)DNA indicated the female line. Both parts of the genome mutate only very rarely, so it was possible to extrapolate past genetic similarities from modern DNA and conceptualise differences as ›haplotypes‹. In the general public's view, this gave rise to the illusion that every modern individual carries in their genome the basically undiluted heritage of past populations. Today's individuals could still be Romans, Goths or Vikings, at least to some extent – these ancient peoples could be ›our‹ ancestors.

However, this image of ancestry was rather limited, for the direct male and female lines account for only a small percentage of the total ancestors, and the non-combining parts form a miniscule part of the genome. The two great breakthroughs since the 2000s were the opportunity to sequence whole genomes, and to analyse ancient DNA taken from skeletons. What this powerful new evidence revealed was not so much descendance but admixture. Already in the Iron Age, the population of Europe, which was the result of an admixture between several (mainly three) distinct groups of the population, had become genetically rather homogene-

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3 Krader 1955; Taşbaş 2019; Pohl 2018, 198–209; see also the overview by Z. Rácz in the supplementary material, in Gnecchi-Ruscone et al. 2023.

ous, save for a few minor exceptions (Patterson et al. 2012; Krause 2019). With new methos of fine-grained analysis, however, genomic studies could move from prehistory to historical periods (Schiffels et al. 2016). Geneticists could continue to identify the components that had shaped the genomes of particular individuals of the past. They still speak of types of ›ancestry‹, for which they use proxies of other, already analysed population groups to which particular individuals or populations could be related.

For historians, the genetic use of ›ancestry‹ may be confusing (Eisenmann et al. 2018), because it does not refer to actual ancestors, just to populations with genetic similarities, which could point to common origins, later scenarios of admixture, geographical proximity, or admixture with genetically similar groups. This should not be confused with actual relatedness (Nash 2007). The risk is that claims for distinctive genetic ›ancestry‹ can be used for ideological constructs of national continuity and biological determinism (Burmeister 2021). Within a biologically-related descent group (a lin-eage of related individuals), the genetic ›ancestry‹ can differ considerably, and can also completely change within a few generations. One reproductive union of partners with different ancestry reduces the statistical average of each of these two ancestries in the children to 50 %, and if admixture continues, in the following generations to 25, 12.5 and 6.25 %. For instance, if Avar men of Eastern Asian ancestry and their descendants (as described by Gnecchi-Ruscone et al. 2022) would have continued to marry European women, their Eastern Asian ancestry could have almost completely disappeared within four generations.

Methods to ascertain actual biological relatedness on the basis of genetic data were developed more recently. A high degree of genetic similarity between two individuals can safely be ascribed to first- and second-degree relatedness, and further degrees can be made plausible with a decreasing degree of precision. Parent-child and sibling relationships can also be distinguished from each other. On the basis of these methods, and if a sufficient number of related individuals has been found, pedigrees that show the exact position of each of these closely-related individuals can be reconstructed. This method carries great potential for the analysis of the communities whose members were inhumated in cemeteries that have been completely excavated. A further approach complements the analysis of ancestry and of genetic relatedness: IBD (Identity-By-Descent) scans groups of individual genomes for identical sections, which do not prove direct descent but some kind of closer or more distant relationship, depending on the length of the shared section, possibly also through a common relative. Such relations can also be detected between analysed sites, and be visualised as regional or supra-regional networks.

The ERC Synergy Grant project HistoGenes, a collaborative project including archaeologists, geneticists, historians and anthropologists in Vienna, Leipzig, Budapest, New York and other institutions (including the State Office for Heritage Management and Archaeology Saxony-Anhalt – State

Museum of Prehistory in Halle [Saale]), is currently using all these methods on an unprecedented scale of over 6000 genomes from Eastern Central Europe in the 5th to 9th centuries (Pohl et al. 2021). This allows sampling entire cemeteries, which is the best way to make sense of pedigrees and relatedness in the communities buried there (Gnecchi-Ruscone et al. 2023). At the time of writing of this article, it is too early to mention specific results, which will be published in forthcoming articles (Gnecchi-Ruscone et al. 2023; Wang et al. forthcoming). This will include the largest burial site so far to be completely analysed at Mödling in Austria (Wang et al. forthcoming). However, some observations based on the new methods can already be outlined here (cf. Daim et al. in this volume).

In the HistoGenes project, we are exploring under what conditions the analysis of genetic relatedness can unfold its full potential[4]. First, the biological pedigree cannot be used as a proxy for social kinship (Brück 2021). Second, as already stated, only entire cemeteries allow valid statements about the whole range of relatedness, and quantitative analyses of a number of issues. Large cemeteries (preferably over 100 burials) are more interesting in this respect, because statistical results can be more robust. Higher coverage yields better results. Third, this is a multi-disciplinary venture, because the pedigree alone can only provide some insights. It not only needs geneticists but also, crucially, archaeologists with access to the full range of information on the excavation. Anthropologists have to control the skeletal material, and, very importantly, provide reliable assessments of the age-at-death. This, not least, supports the construction of the pedigree, helps to establish a better chronology, and allows distinctions between age cohorts to be made. Further scientific methods that contribute are Sr, C, N and possibly O isotope analysis, hinting at mobility, changes or differences in nutrition. ^{14}C-dating is not always easy for the period under scrutiny in the project due to the fluctuations in the calibration curve, but offers an independent way to test the dating. Further scientific methods can be used on the finds where appropriate.

It is a complex workflow to which historians can and should also contribute. They will only rarely find directly relevant information about a particular early medieval site in the written record, although there are exceptions, for instance the Austrian site of Mautern (Favianis), Krems-Land district, which is being sequenced in HistoGenes, and is described in some detail in the Vita Severini recounting the activities of St Severinus in the second half of the 5th century (Pohl/Diesenberger 2001). In many other cases, historians can provide some chronological framework and historical context that are important for the interpretation of the cemetery. Specific practices of relatedness can also be compared to written evidence. To give just two examples: In some places, for instance at the Longobard-period cemetery of Szólád, Somogy County (Hungary; mid-6th century), we are missing a number of mothers whose position we can reconstruct in the pedigree (Amorim et al. 2018). One possi-

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bility to explain their absence may be found in 7th-century Longobard law, which suggests that widows were expected to return to their former families if they had no other adult male who could take them under his legal guardianship, *mundium* (Rothari 199, in Azzara/Gasparri 1992; Pohl-Resl 1993). A second example are levirate unions, again of widows who marry another male member of their family after the death of their husband. This is an arrangement repeatedly attested in Chinese sources for the Xiongnu and other steppe peoples, and could explain the cases in which women in Avar-period cemeteries also had children with their husband's brother or their stepson (Gnecchi-Ruscone 2023; Wabnitz/Liccardo forthcoming). Historians can help to design the research questions to be addressed and find historically plausible ways to interpret the evidence. In fact, the entire team should work together from the conception of the project to its publications. This is what the HistoGenes project is exploring as a best-practice model.

The close collaboration of the disciplines then allows the project team to look for hints to what degree social kinship may have corresponded to the outline of the pedigree established on the basis of the genetic evidence. In many of the cemeteries from the late 6th to the 8th century studied so far in HistoGenes, the majority of members of the community were biologically related. It should also be noted that genetically, man and wife are not related, although both have first-degree relations to their children. Wives without children in the sample count as unrelated in the pedigree, while socially they would be regarded as part of the family in their lifetime. Where we have genetic evidence for relatedness, we can assume close social relations, for instance in the case of multiple inhumations in a grave, especially of adults with children. If these were indeed parent and child, we can hypothesise that biological and social relations coincided. To a degree, that can also be inferred from burial groups constituted of closely related individuals. Grave good evidence can also point to cultural commonalities among biologically-related individuals, for instance, analogous markers of status or the use of atypical jewellery, inhumation practices or other shared cultural features within biological kindred (cf. Daim et al. in this volume).

Multiple partnerships raise the question whether these were acknowledged unions or not. Were men who had children with two or more women polygamists, serial monogamists or adulterers? And what about women with multiple reproductive unions? If their partners were closely related to each other (as mentioned above), was that a case of levirate, that is, a practice current in many societies to keep widows within the clan? The anthropological data about age-at-death may give important clues here. What we do not know, however, is whether a reproductive union was a legal marriage, an acceptable but not legally binding relationship, or whether a child had originated from a secret encounter. We cannot trace partnership if no children are buried on the site, for instance, because no children were born or the daughters married into another community. What we can note in some cases is that social links in burial or cultural features existed between biologically unrelated persons, for instance, if a woman was buried with a child that was genetically unrelated to her. The better we connect the genetic data to other types of evidence, the more information there is to gain about gender roles and the circumstances of female lives.

A crucial observation from the study of genetic pedigrees in their cultural and social context is that biological relations do not simply shape social kinship, whether to a greater or lesser degree, but depend on social practices. In that sense, the new genomic evidence supports recent approaches in social anthropology. As Sahlins has argued, every birth is the result of reproductive practices that are to a large extent guided by social norms – marriage alliances or bans, arranged or forced marriages, incest taboos, male license, and the whole set of the ›elementary structures of kinship‹, as C. Lévi-Strauss (1969) has called them (Sahlins 2013). One could also add all the strategies employed to bypass those norms and bans, often in secrecy. The elaborate genetic pedigrees produced in the HistoGenes project also illuminate the incidence of social norms (Gnecchi-Ruscone et al. 2023; Wang et al. forthcoming). They may attest to strict patrilinearity or bilateral connections, to the age when mothers first give birth, or to avoidance of consanguineous unions and to the habit of looking for reproductive partners outside the community[5]. In one cemetery, female partners were chosen almost exclusively from among women of similar ancestry. This means that what we would regard as genetic ancestry was maintained by a preferential reproductive pattern social norm over several generations. In all these senses, biological relatedness may be the result of deliberate kinship practices.

The historical evidence for early medieval perceptions and practices of kinship can help to avoid a further mistake: We should not try to arrange the pedigrees that bioinformatic methods can reconstruct within a burial community until they fit a model of clear-cut lineages or clans. What we do see in the first results is that in many burial communities, most members were in some way related to each other, and can be integrated into complex pedigrees. In the Avar period, the genetic evidence also points towards exogamy and patrilinearity. However, larger pedigrees cannot always be disentangled into distinct lineages or clans. Rather, they are connected by multiple reproductive unions, by sisters marrying into two lineages, by exceptional cases of matrilinearity, by individuals with second- or third-degree relationship with more than one male lineage, by IBD-connections between sections of the pedigree and by other overlaps. This blurred picture corresponds to the archaeological evidence, which rarely displays clear boundaries between groups of graves even if these are mostly structured by relatedness. Rather than straightening out the uncertainty in the pedigrees to arrive at clear-cut kindreds, we should take the overlaps as indications that it may not always have been clear to which clan an individual belonged (cf. Pálsson 2002).

What we can learn from recent debates about relatedness and affinity in social anthropology is that beyond the ex-

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planations of the evidence that seem plausible to a scientifically-trained mind, a greater variety of interpretations may be possible. This is particularly important in the illiterate societies that dominated much of Eastern and Northern Europe in the ancient and early medieval periods, where our written evidence is patchy. In the case of early medieval steppe peoples, we can extend the options for understanding their cultural codes by relying on more or less contemporary inscriptions of the ancient Turks and Bulgars, and by taking modern anthropological observations into account (Kradin 2005). However, we will not be able to reach an in-depth understanding of lived human relations among the people whose burials we have studied, which is comparable to the insights proposed by social anthropologists on the basis of their observations and ›thick descriptions‹ (Geertz 1973) of living communities. We should not be tempted to fill gaps by borrowing from the anthropology of contemporary steppe populations and generalising our reconstructions of social relations as an adequate model for ›the‹ peoples of the steppe.

On the whole, the evidence and approaches from social anthropology can be inspiring, and in some cases allow the formation of hypotheses that can then be tested against the multi-disciplinary evidence we have assembled. On the other hand, the reconstruction of genetic relations may also serve as a reminder that the hermeneutics of transpersonal relations and the indigenous epistemologies, which explain them, are not the only possible approach to past relatedness. Even in periods with a rich written record, such as the Late Middle Ages, historians can say much less about the ›mutuality of being‹ than anthropologists can find out about recent or contemporary Amazonia or Melanesia. These sophisticated models are not easily transferable to early medieval Europe.

For our field of study, we need a clear and operable distinction between the biological relatedness established on the basis of genetic data, and the social/cultural relatedness we can infer from archaeological and historical evidence. The pedigrees may already be scientific constructions, but there is little room for doubt whether or not a child was born from his/her genetic parents. Only on the basis of this distinction can we then assess in which cases the two concepts of relatedness may have corresponded or not, and detect ways in which they were entangled. Written evidence can allow tracing the social meaning that certain scenarios encountered in a burial community may have had

(Halsall 1995; Halsall 1998). It should be noted that this process of interpretation of the multiple genetic, archaeological, anthropological and isotopic evidence is not a confrontation between ›hard‹ scientific data and ›soft‹ cultural hermeneutics in which only the scientific results can serve as proof. Both the bioinformatic analysis of genetic or isotopic data and the methodologies used by the historical disciplines are methods that assess probabilities, whether with or without the use of statistical tools and algorithms. If archaeological or historical dating on the one hand and the chronology of the pedigree or ^{14}C data on the other hand contradict each other, this does not necessarily mean in every case that it is the archaeological or historical chronology that is wrong. These discussions require intensive interdisciplinary collaboration and some familiarity with the methods of the other disciplines.

Used in this way, the genetic results and the complementary methods offered by other disciplines can clarify many issues raised by the sites and the periods under scrutiny: reproductive unions and strategies; conditions for admixture; changes or maintenance of ancestries; the status and positions of women; social roles and status differences; the social organisation of burial communities; the impact of diseases; the chronology, the beginning and the end of cemeteries; the demography of the sites; relations between contemporaneous or successive sites; the impact of migrations and mobility; and others. The reconstruction of biological pedigrees provides important clues to many of these issues, but it needs to be contextualised with all the other approaches that can tell us more about the distant past, with an awareness of current methodological debates.

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