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Abstract

This article introduces some early data from the Leverhulme Trust-funded research programme, 'The Impact of the Diasporas on the Making of Britain: evidence, memories, inventions'. One of the interdisciplinary foci of the programme, which incorporates insights from genetics, history, archaeology, linguistics and social psychology, is to investigate how genetic evidence of ancestry is incorporated into identity narratives. In particular, we investigate how 'applied genetic history' shapes individual and familial narratives, which are then situated within macro-narratives of the nation and collective memories of immigration and indigenism. It is argued that the construction of genetic evidence as a 'gold standard' about 'where you really come from' involves a remediation of cultural and archival memory, in the construction of a 'usable past'. This article is based on initial questionnaire data from a preliminary study of those attending DNA collection sessions in northern England. It presents some early indicators of the perceived importance of being of Viking descent among participants, notes some emerging patterns and considers the implications for contemporary debates on migration, belonging and local and national identity.

Keywords

collective memory, indigenism, migration, national identity, popular history, popular science, population genetics

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Introduction

A sense of national or regional identity is a complex achievement, which draws upon multiple sets of relations such as kinship, ethnicity, social role, place and ideas of civic citizenship. Many of these are located in the present or the recent past, such as 'where I live', 'where I was born', 'who my parents are'. But some stand in a relationship to an imagined 'remote past', stretching back over several hundreds of years. For many people this relationship is limited in scope, consisting perhaps of a diffuse image of the past based on images from popular history books, school education, museum visits or broadcast media sources. However, there are occasions when the relationship to the remote past can become suddenly animated. The remote past can take on extraordinary relevance for an everyday sense of national and regional identity when it coalesces around a new and vivid material form.

In this article we explore how the remote past is made relevant in the present for participants in a study of population genetics in the UK. We argue that whilst contemporary genetic testing certainly offers a new kind of relationship to the past, it does so through highly mediated means, which serve as a kind of 'attractor' for imagined identifications. This is a particular instantiation of the 'genetic imaginary' in Stacey's (2010) sense, in regard to the creation of extra-scientific narratives around the 'transferability of the informational components' of the human body. Genetic code may be treated as a literal inscription of the past, but more importantly it is a resource around which identity-relevant versions of the past can be narrated and contested. These versions of the past are heavily remediated (cf. Bolter and Grusin, 1999). By this we mean that the narratives of the past are constructed out of images and information that are not only drawn from popular media sources, but are themselves shaped through an ongoing dialogue with previous media texts.

Identifying with the remote past necessarily passes by way of such mediated processes. It is a work of imagination that retrospectively projects images historically in order to lay claim to them as cultural memory. Brownlie's (2012) work on contemporary political and cultural usages of the Norman Conquest is a good example – she outlines how the position of the Norman Conquest, the Battle of Hastings, and the date 1066 in cultural memory serves to situate Englishness both in relation to Britishness, and also to Frenchness and European-ness. Thus, we construct a history that fits with our present needs, and then find comfort in the apparent reassurance given to us by this imagined past (a process the philosopher Henri Bergson once referred to as the 'retrograde movement of the truth').

It is a well-explored paradox within memory studies that self-conscious reconstruction and invention through mediatisation may nevertheless support powerful identifications and a deep-seated 'feeling' of belonging (see for instance Schwartz et al., 1986, on the reconstitution of the Masada legend in Israeli national identity). In the case of British identity, the history of successive phases of migration and settlement offers a great many potential images for identification – ranging across Normans, Saxons, Vikings and so-called Ancient Britons. These images can, of course, only really be known through a shifting array of popular texts, film and television representations, museum displays, school work, etc. But the status of these images as highly mediated does not appear to

detract from their holding power. In other words, our awareness that we do not know specific aspects of the past directly, that we know it only through a variety of media images, does not make us feel any less connected to them. As we will go on to show, there are people who feel a specific and personalised connection to their 'Viking ancestry' and that this is key to their sense of being British, despite the paucity of the available evidence.

Considered from this perspective, genetic code has a distinctive place in the remediation of the past. On the one hand, it might be argued that genetics offers the 'hardest' form of contemporary evidence available to accounts of ancestry and belonging. Through analysis of DNA, most commonly mitochondrial and Y-chromosome DNA, it is possible to map patterns of historical migration on a large general scale and to identify common ancestry by pointing to specific genetic markers. But on the other hand, the conclusions of such analysis are rarely definitive – population geneticists compare the analysis of DNA to that of hermeneutics of interpreting a palimpsest. And whilst it may be possible to plot common ancestry between contemporary DNA samples, it is necessary to turn to other historical, statistical and archaeological sources to provide the narrative that makes sense of that ancestry.

We might then say that genetic code is one component in the series of resources that constitute an 'archival memory', through which it is possible to reconstruct and identify with the past. We use the term 'memory' here – not uncontroversially – to indicate that what is at stake is not a general historical account, but rather a personalised narrative of one's relationship to the past with respect to belonging and national or cultural identity. Jan and Aleida Assman locate 'archival memory' within a more general framework of 'cultural memory' (A Assman, 2011). This latter consists of formalised knowledge that exists in a highly mediated form carried along specialised routes, and which makes reference to a wide time frame, including a remote and sometimes mythic past. This is usually contrasted with communicative memory, which is 'living' or 'embodied' memory, embedded in informal traditions, and shared across interacting generations (typically 3–4, or around 80–100 years) (J Assman, 2011). Genetic code is a relatively new kind of cultural memory, having only recently become legible for memorial purposes through the development of better and cheaper forms of genetic typing. As a consequence of these new technologies, basic DNA testing is commercially available and relatively affordable to anyone seeking to create a family history, particularly since the first appearance of commercial genetic testing companies in the early 2000s. As we will discuss, the growth in the popularity of such companies has led to concerns being raised about the manner in which genetic information is returned to participants, and the uses to which this information is put, both from a scientific and an ethical standpoint (Bolnick et al., 2007; Lee et al., 2009; Tutton, 2004).

The commercial availability of DNA testing raises a further issue. Andrew Hoskins points to the role of the internet and related social media in transforming memorial practices into 'digital memory'. By this he means a form of memory which is 'fluid, de-territorialised, diffused and highly revocable, but also immediate, accessible and contingent on the more dynamic schemata forged through emergent sociotechnical practices' (2009a: 41). Digital memory scrambles the distinction between cultural and communicative memory by opening up access to formalised knowledge and making

it sufficiently mobile that it can be reformulated and embedded 'on the fly' across a wide range of memorial activities. For example, opening an account with a website such as Ancestry.com enables access to a range of official historical records. Distant family members can work together on building and editing a family history, adding in other personal documents and photographs, and sharing the results through social media. The results of DNA testing can now be included in this mosaic as another resource which can be combined and reworked in an evolving memorial reconstruction of the past.¹

In what follows we explore this remediation of the past through the memorial use of genetic code. We first describe how DNA testing has given rise to what Sommer (2012) calls 'applied genetic history'. We then discuss the ways in which population geneticists seek to make claims about identity in both the popular and expert spheres. The purpose is to show the complexities of the sorts of claims that are made within population genetics and the necessary constraints and assumptions that ought to be placed on such claims. These provisos and internal tensions are not typically discussed within sociological analysis. We then provide some brief ethnographic reflections on a study exploring the relationship between surnames and the Y chromosome and discuss some initial material drawn from participants. Our analysis of their responses to a 'participant motivation' questionnaire focuses on their own aspirations and investment in genetic testing, which are contrasted with what the testing is likely to deliver. Finally, we conclude with some thoughts on the challenge that 'applied genetic history' presents to the intersection of cultural and communicative memory.

Applied Genetic History

The remediation of DNA data is arguably most notable through the manner in which population genetics research is reported and commercialised, both in 'popular science' and 'popular history'. Marianne Sommer characterises the ways in which population genetics have been incorporated within the 'history boom' as 'applied genetic history', and argues that it is marked by 'novel kinds of mediatisation, commercialisation and personalisation of historical knowledge as products' (2012: 226). A concern raised by many sociological critiques of this form of 'applied genetic history' argues that it often tends to reinforce essentialist notions of identity, even while being framed in the language of anti-racism (for example Nash, 2011b).

The paradox of 'popular' population genetics is that while it can be claimed to scientifically undermine notions of racial purity (although some of the contradictions in employing genetic evidence to 'prove' that race is a social construct have been usefully explored by Smart et al., 2012), it is mediated in such a way as to promote the existence of identifiably discrete 'peoples', not just in antiquity, but also in the present day. More particularly, the methodological need to identify those with a deep historical link to a specific place has the potential to demarcate between 'indigenous' and 'recent arrivals', which inevitably assumes potentially problematic socio-political resonance (cf. Fortier, 2012). The key question for us here is how individuals incorporate the findings of their own genetic make-up within their personal and familial narratives, and how this in turn becomes situated within the memory of the nation.

Much of the communicative memorial work carried out by individuals can be seen as somewhat of an imaginative extrapolation from the genetic reading, which involves positioning themselves within an 'imagined genetic community' (Simpson, 2000). This extrapolation does not, however, occur in a vacuum, but is rather an intrinsic part of 'applied genetic history' discourses. In the British context, this process involves an elision by which the genetic evidence that the Y-chromosome signature of an individual fits in with wider patterns which may reflect historical migrations to Britain is interpreted as that individual being identifiably Celt, or Anglo-Saxon, or Viking, etc. In other words, while the field of population genetics deals with (as the name may suggest) populations, the findings of population genetics are often remediated, particularly in the popular sphere, as though they could be made to apply to specific individuals.

This elision becomes particularly pronounced in cases where population genetic research is employed for commercial gain through genealogical testing companies, which sell individualised results to their customers without, arguably, fully explaining the caveats inherent in applying population studies to the individual level, beyond a disclaimer in the Terms and Conditions. The ramifications of this shift in the public understanding of genetics have created increasingly public disquiet and disagreement within the field. For example, the individualised genetic histories tailored for television documentaries have recently been dismissed as little more than 'genetic astrology' (Richards and Macaulay, 2013; Thomas, 2013). The gap between what population geneticists can accurately establish in a research setting, and the claims made by marketing campaigns for a commercialised population genetics may be said to encourage a form of genealogical consumerism, with matching unrealistic expectations. Nonetheless, the proliferation of companies offering tailored genetic ancestry testing would suggest that the market reflects a desire for an individualised experience of the past. This is something that Alondra Nelson (2008), in the context of African-American and Black British consumers of genetic genealogy testing, has described as a search for a 'usable past', one that can be incorporated into ancestry narratives that have already been constructed, but are regarded as incomplete.

Sommer's analysis of the current state of 'applied genetic history' concludes with a call that 'it seems essential to know more about the ways in which different segments of customers deal with the information about genetic identity and history' (2012: 241). In this article we respond to Sommer's call by offering some preliminary analysis of how individuals directly engage with 'applied genetic history'. The data we present comes from 'The Impact of Diasporas on the Making of Britain: evidence, memories, inventions' research programme, based at the University of Leicester and funded by the Leverhulme Trust. The interdisciplinary space the programme provides for collaborative work between population geneticists, social psychologists, historians and archaeologists, among others, allows for data-driven primary research that investigates the links between memory, identification and DNA, more or less in 'real time', as opposed to the retrospective, secondary analyses that represent the majority of the work carried out to date. (Tutton's [2002, 2004] work with participants in genetic research on Orkney is an exception, insofar as it involves first-hand interviews, although these were carried out some years later, rather than contemporaneous with the testing itself.) This collaboration also provides the opportunity for a more genetically informed analysis of such issues, given

that it has been a characteristic of much of the sociological critique to date to treat population genetics as something of a homogenous field, rather than a discipline with its own strong debates about methodology, analytic procedures and ethics. In the next section we outline the background to the current study.

What Population Genetics Can and Cannot Do: The Example of Surnames and the Y Chromosome

The intellectual and methodological foundation for the current research project within population genetics rests on Turi's work, which centres on utilising the Y chromosome and hereditary surnames as a route to addressing the question of the genetic legacy of the Vikings in the north of England (Bowden et al., 2008; King and Jobling, 2009a, 2009b; King et al., 2006). Historically, the practice of using hereditary surnames took hold among the nobility after 1066AD, becoming widespread among the population by 1500AD. Most surnames are rare and while some surnames (particularly the common ones) are found across the country, many surnames have a 'home' where the surname is thought to have originated, perhaps many hundreds of years ago. Thus a person's surname often contains within it information about where his or her family (through the paternal line) originated from, at least for a certain temporal definition of 'originated'.

Surnames in Britain have predominantly been inherited down the male line and should, therefore, mirror the transmission of the Y chromosome. Unlike the vast majority of our DNA, which is a complex patchwork of that of our ancestors, the Y chromosome has on it the gene that determines maleness and is therefore passed down through the male line. Indeed, geneticists often concentrate on analysing Y chromosome and mitochondrial DNA (which is only inherited down the female line) precisely because they have a simple pattern of inheritance. These two pieces of DNA are passed down through the generations virtually unchanged save for the gradual accumulation of mutations: tiny errors (which can be likened to a typo) that occur when the body's copying mechanism makes copies of the DNA to be passed down into egg or sperm. The typos that occur create variation (sites where people differ are known as 'markers') and allow geneticists to determine the Y chromosome (and mtDNA) type of an individual. This typing can be carried out at varying resolution using different types and numbers of markers.

Y chromosomes (and mtDNA) have the added evolutionary benefit of being geographically localised on a broad scale: certain types of Y chromosome are found in particular parts of the world. Though all humans ultimately trace their ancestry back to Africa, over time, as people moved out into Europe, Asia and the Americas, differing mutations arose on the Y chromosome, making particular Y-chromosome types more prevalent in particular regions.

In her earlier work, Turi conducted the first comprehensive study of the link between surnames and the Y chromosome in Britain (King and Jobling, 2009a). The central question addressed was as follows: if a surname and a Y-chromosome type should, in theory, be passed down through the generations, is it the case that all men with the same surname are related, sharing the same common ancestor, presumably the original founder for the surname, and therefore also his Y-chromosome type? The results of the research showed that despite the time depth of surnames and the factors that could break the link between

surname and Y-chromosome type (such as non-paternity or maternal transmission of surname) a strong, though not perfect, link exists between a surname and a Y-chromosome type and that link is stronger the rarer the name. Furthermore, given the geographical specificity of surnames, the Y-chromosome type of a man alive today bearing a surname with a specific regional origin can be expected to be a Y chromosome from that region dating back conceivably to the time when that surname originated. In the absence of a time machine and although not expected to be foolproof, the link between surname, Y chromosome and geography does at least provide an avenue to shed some light on the genetic make-up of a region in the past – albeit, due to the patrilineal inheritance patterns of surnames, down through the male line/Y chromosome only.

This forms the crux of the sampling strategy for the current project: to sample men bearing old surnames which evidence points to having originated in the north of England in an area of Norse Viking migration and investigate whether, as a group, these men show a higher degree of Scandinavian ancestry than those in the rest of Britain where the Norse Vikings didn't settle. The sampling method rests on the assumption that surnames provide a link to the past; however, because surnames are predominantly inherited down the male line, it restricts the sampling to men only. (If a corresponding method of sampling historical mitochondrial types were possible, that would be pursued simultaneously.) It should also be stressed that, given the time frame of the historical development of surnames (*c.*700 years), it cannot be said that an individual has an identifiably 'Viking' surname (although certain locative surnames do have linguistic roots in Old Norse). Rather, the hypothesised link rests with a surname that has been determined to be old, rare and extremely localised to an area associated with Norse Viking migration (King and Jobling, 2009a; Redmonds et al., 2011).

In the context of the discussion around 'applied genetic history', it is important to be clear on what claims it is possible to make from this research. While the project seeks to investigate the genetic legacy of the Vikings in the north of England at the population level, it is reliant on the participation and goodwill of individual participants. Inevitably, participants' expectations and perceptions of what the research can tell them about their ancestry have been remediated by popular discourses around population genetics, which can be prone to exaggeration or distortion. While the sets of expectations that participants bring to the sessions is interesting in studying identification, it is important, for reasons of ethics and intellectual honesty, to be aware of the limits of the information that can be returned to individuals. There are a number of caveats in terms of the interpretation of what individual results can reveal about someone's genetic ancestry.

Population genetics uses techniques developed for looking at the patterns of DNA in groups of people, not in a single individual. In a population genetics study, complex statistical analysis is carried out and probabilities are attached to the conclusions drawn. In the popular sphere, however, the results of these studies are commonly interpreted to draw conclusions about an individual's genetic history. While it is possible to tie an individual's Y-chromosome type to a region, or occasionally a restricted area, of the world, based on the distribution of modern Y-chromosome types, in general definitively tying one man's Y-chromosome type to a single historical/cultural group is highly problematic, if not impossible.

In summary, population genetics does not offer unambiguous answers to questions of identity and ancestry. It is able to make claims about the distribution of genetic markers over time and is able to engage with socio-historically structured practices, such as the use of surnames, in the production of these claims. However, the selection and analysis of genetic markers is shaped by a number of technical, economic and social factors – not least the generation of the markers themselves. Moreover, the modelling of this distribution requires the use of analogues (such as Norwegian men for Vikings) and assumptions drawn from contemporary historical analysis of migration patterns. If genetic code is a form of cultural memory, then it is one which needs considerable technical expertise to be cautiously and provisionally interpreted.

Remediating Viking Origins: Genealogy, Genetics and Identity

The data discussed in this article derive from an early pilot study carried out in January 2012, where over the course of a weekend, DNA collection sessions were held in four locations across the north of England: York, Harrogate, Lancaster and Keswick. The sessions were advertised beforehand in the local media, as well as on genealogical websites, with men with certain highly localised surnames in particular being encouraged to attend. Advertisements were worded as follows:

In this project we want to learn about British history by studying the Y chromosomes of men with old local surnames, to provide us with a link to the DNA of people in the past. We are particularly interested in the history of the Vikings. We know that these people left a lasting legacy on our language, landscape and place-names. But did they leave any genetic trace in today's population?

To answer this question, we wish to obtain DNA samples from men with old local surnames from the north of England. Men carrying such names are very likely to have inherited them from ancestors who lived in the area only a few generations after the Vikings settled in the region.

To find out how to participate in our study, men should visit our website, where they will find a list of eligible surnames.

While the wording of the press release makes it clear that the focus of the research is to build a picture of the genetic legacy of the Vikings in northern England, as related to surnames, how this was reported in local newspapers was outside our control: headlines included variations on 'Are You a Viking?', 'Do You Have Viking DNA?' and 'Could You Be A Viking?'. Perhaps not surprisingly therefore, the publicity generated by the sampling brings forth numerous unsolicited requests to also be included in the study despite not having one of the surnames of interest. From observation, it appears that individuals see the process as an opportunity for free genetic testing as well as a chance to establish whether or not 'they are a Viking'. Inevitably, as noted by Tutton (2002, 2004) in his research on Orkney, researcher and participant are engaged in something of a reciprocal 'knowledge exchange' here, and it is clear from our surveys that participants



Figure 1. In York, Turi explains the genetic science behind the project. © Maya Vision International.

were motivated by an assumption that they would receive relevant and ‘usable’ information about their ancestry.

At each of the sessions, attendees were given a brief talk on the science behind genetic testing (Figure 1), and the logic behind the hypothesised link between surnames and the Y chromosome before donating a DNA sample via a ‘spit kit’. Participants were also given the opportunity to speak to an onomastic expert (our programme colleague, Jayne Carroll) on the origins of their surname, and were asked to fill out a ‘participant motivation questionnaire’.

Given the logistical need to cover a number of cities in a short period of time, the genetics sampling sessions take on something of the air of a travelling roadshow. There was considerable local media interest in the sessions (Figure 2) and we were also accompanied at times by photographers and crew from a television production company interested in filming the process as a potential segment for a series on the history of Britain. There is, therefore, something of a performative dimension to the sampling sessions, with the sampling itself being one component of a broader genetic/genealogical ‘experience’ for those who attend. The sessions may, therefore, represent something of a ‘safe space’ for those involved to temporarily inhabit a Viking identity. This is not to say that this identification has been created by the act of sampling (although it undoubtedly shapes it), but that the specific context of the sampling sessions may make ‘Viking identity’ more salient. Additionally, the social nature of the event, where up to 50 men are engaged in having their DNA sampled simultaneously, and their very presence presupposes potential Viking ancestry, creates a different dynamic to, for example, individuals donating DNA samples remotely by post.



Figure 2. Turi is interviewed by John Bowness of BBC Cumbria, in Harrogate. © Maya Vision International.

From the demographic data within our questionnaire, it is possible to draw a general pattern in broad strokes of the men who attended the sampling sessions. With some exceptions, by and large, they tended to be in late middle age or elderly (the average age of those who filled out the questionnaire was 59), white, with strong local ties, and with a keen interest in family history and genealogy based around their own surname. In many cases, these ‘surname enthusiasts’ came with a copy of their family tree, and a copy of personal research on the origins of their own surname, which they were eager to have validated.

If the sampling sessions represented a ‘safe space’ where Viking identification could be claimed and discussed, they were also an overwhelmingly male space.² Again, this is something of an artefact of the sampling strategy and the necessary methodological focus on surnames and the Y chromosome. One of the unintended consequences of this focus is that the sessions reflect (and it could be argued, reproduce) socio-historical norms around the paternal line (Nash, 2004, 2011a; Nugent, 2010). While it is stressed within the sampling sessions (Figure 3), and again when individual results are returned to participants, that the paternal line is just one of many ancestral lines, it would be futile to ignore the somewhat mixed messages that this creates among participants, particularly as the performative dimension of the sessions, with its concomitant media interest, would appear to indicate its importance. Attempting to play down any wider significance of the paternal line, while simultaneously engaged in research on Y-chromosome lineages because of their utility in research of this kind, can be a difficult juggling act, and it is clear that this is not always seen as relevant information by participants in their search for a ‘usable past’. For instance, when one participant was told by Turi that they almost certainly would have Scandinavian ancestry somewhere in their family tree, he replied



Figure 3. A participant reviews the details of the study and 'spit-kit' instructions. © Maya Vision International.

'Ah yes, but it's most important that it (Viking-ness) comes down through the male line.' Similarly, when returning the results, the identified Y-chromosome type of the individual is contextualised in terms of geographic distribution patterns. It is explained which Y-chromosome types are found in high frequencies in Scandinavia, and are therefore 'often thought of as signifying Viking ancestry'. This is necessarily different from simply equating a certain Y-chromosome type as unproblematically 'proving' Viking ancestry, but again, such caveats often appear not to be taken by participants as relevant information. Indeed, while the wording of the information returned to participants is currently under revision in an attempt to further emphasise these caveats, it appears from observation as though participants view such caveats as somehow 'spoiling the fun'. Clearly, therefore, as also noted by Tutton (2002, 2004) an unresolved and potentially unresolvable tension exists between the anticipated outcomes of the research on the part of researchers and participants.

The 'participant motivation questionnaire' constitutes, among other things, an initial effort to more systematically investigate previous observations of how participants at the sessions engaged with the topic. It was derived from an earlier questionnaire designed by Turi King and Steve Brown with colleagues in the context of a previous similar study carried out on the Isle of Man. As well as questions about the motivation of participants for taking part in the study, the questionnaire asked participants to indicate their national and local identities, their assumed ancestry, their reasons for believing they have Viking ancestry, their expectations from the DNA results, and their interest in genealogy, genetics and history. A space was also provided for participants to make any additional comments about why they had volunteered and their thoughts about the project. It is from this that many of the anonymised responses below derive.

Participation in Genetic Testing: Preliminary Indications from the Data

Perhaps unsurprisingly, given the setting, the majority of participants indicated their belief in their own Viking ancestry, with surnames being the most regularly invoked evidence to support this. Whether there is a continuum between belief in Viking ancestry and identification with the Vikings is hard to say, although many participants made it clear that their 'Viking-ness' was a strong point of reference for their personal identity. For example, on being asked whether they would be disappointed if the results of the DNA testing did not support their assumption of being of Viking descent, participants responded as follows:

Y2: I have always assumed that I was of Viking descent.

Y4: Just sure feeling I am Viking.

Y35: Disappointed because I identify with the Vikings.

Y42: I am very proud of York and its people and its Norse roots and feel it is my clan.

H3: Wouldn't know where else to look!

H5: I would like to think of having a link with Vikings.

L19: Pleased to be able to confirm Viking ancestry.

What we see here is that identification with the Vikings on the part of some participants appears to be based on little more than affinity. It is a 'feeling' or an 'assumption' that is partly grounded in the felt lack of other competing identifications – 'wouldn't know where else to look'. This feeling, we argue, is what fuels the imaginative search for other forms of knowledge which are treated as evidence for Viking ancestry. This 'evidence' is then woven into personal and collective narratives.

While we intend a fuller exploration of the narrativising of familial and collective pasts in our forthcoming in-depth follow-up study based on qualitative interviews, the 128 responses we received to the questionnaire give some initial indications of the kinds of evidence used to sustain links to the remote past. When asked for their reasons for believing they had Viking ancestry, and given the options 'physical appearance', 'family story', 'gut feeling', 'surname', and 'other', a clear majority indicated 'surname'. Again, this was not unexpected, given the sampling strategy. Since many of the participants had carried out genealogical research on their own surnames, responses such as the following were common:

Y19: Having undertaken a detailed study of the movement of my surname from its formation, I would have been interested in tracing the possible movements of my ancestors previously.

Y33: I would like to know more about my family history linked to the locative nature of my surname.

K6: I am interested to find out more of my history as at school I was told my surname came from the Vikings but was unable to trace it back when I was at school.

K7: Am interested to find my origins as my family name can be traced back to the 1300s in Cumbria.

The appeal made to ‘detail’ in these claims is interesting. In each case an external authority is invoked – being told one’s ‘surname came from the Vikings’, a ‘detailed study’ or the established facts of where the family name can be traced. Yet none of these claims are definitive. Each takes the form of an interpretative puzzle where something is lacking.

Given the level of genealogical research that many participants had carried out, it is interesting to consider the historical work that DNA is called upon to do in either expanding or upholding these narratives in creating a ‘usable past’. In many cases, it seems that DNA results were expected to be the ‘final piece of the puzzle’, by which individuals could support the narrative that they had previously built up from genealogical research, and further extend this narrative back in time, beyond what can be learnt from the historical archives. For example:

Y9: I am writing an account of my life for family and I would like to have a complete picture of origin.

Y17: We have been tracing family trees and have got back quite a long way on some ancestors but are interested in all the aspects of ancestry.

Y37: Very interested in finding out about my ancestors because I can’t seem to go beyond 1700s.

Y39: I have traced my family back to about 1684 with some confidence and wish to leave a thorough and well documented account of our story for my own son and grandson!

H13: Interest in family origins preceding the dates already researched (c.1600).

L19: I am here on behalf of my father. He has an interest in family history, having traced his ancestors back to 1530. The next stop for our origins lies in DNA. We are also both interested in what made Britain.

L36: I volunteered for this project to hopefully obtain confirmation of my heritage. This will enable me to pass this on to my children. I have two daughters and there are no other males left in my immediate family so I wish this information to be passed on.

The above statements suggest that DNA plays the role of a remediated form of archival memory. What is intriguing from the above is the sense of a relatively seamless transition between the different forms of knowledge here: where genealogical archives fail to give a complete picture, DNA evidence is assumed to be in a position to ‘fill in the gaps’, something also noted by Tutton (2004). Genetic testing becomes regarded as a form of ‘truth machine’ (Lynch et al., 2012) which simultaneously confirms previously held narratives, and can provide a higher standard of proof. (Similarly, it was also notable that Turi was asked on a number of occasions whether she would be able to provide some form of ‘certificate of Viking ancestry’). This process, by which ‘DNA takes on the role of archive in a language of kinship’ in a scenario where genealogical archives are absent, has also been noted by Hamilton (2012: 275) in the African-American context. DNA

therefore is constructed as a form of embodied archive, but one which can only be read by experts – following this reading, it exists as external evidence, which can be woven into a now ‘complete’ family narrative, which can be passed on to future generations. The privileged position of fathers, sons and grandsons should also be noted in these statements, alongside the perceived necessity of passing on a written account of one’s genetic heritage, due to being the last male in one’s immediate family. As Nash (2004) has highlighted, the fear of a family line becoming ‘daughtered out’, highlights the patriarchal understandings of kinship within such genealogical discourses.

DNA therefore becomes mediated as not just a genetic link between past and future generations, but an integral part of the narrative by which the individual constructs his own position as regards the continuity between his (male) ancestors and his descendants. The gendered nature of such imagined continuity is more than likely, given the context, linked to the notion of male ‘survival’ associated with patrilineal surnaming practices (cf. Nugent, 2010). The shades of grey involved in the interpretation of the genetic data, whereby the patterns noted are a matter of increasing or decreasing likelihood, as opposed to an absolute confirmation, do not seem to be a factor here.

While DNA testing is framed by the participants as allowing them to reconstruct a narrative of family heritage to exist within the canonical historical narratives of certain population groups, there may be a reciprocal *quid pro quo*, whereby the history of the nation becomes understood through what can be ‘read’ genetically, thus excluding more recent, or more liminal lineages. In terms of mobilising their personal genetic data to construct notions of collective identity, the responses from participants are rather varied, with some participants indicating the firm situating of their identity within local and national identities; for example:

K4: I am very much a Yorkshire man first and English second. While it is interesting, my ancestry will not alter my feelings.

Y42: I feel at this stage of my life I would like to know more about my English Yorkshire roots which I am very proud of.

L11: I believe projects such as this are so so important in giving us some understanding of how, why and when what we know as Britain was formed.

L21: There are so many possible identities in the UK, nice to trace back to one particular invasion and identify with it.

Here national identity is mediated within local identity. Whatever it means to be English/British is found, for these participants, in the values and qualities of their ‘home roots’ (e.g. ‘I am very much a Yorkshire man first and English second’). Curiously, whilst we might expect a personal interest in genetic ancestry to be accompanied by an abstraction or generalisation in the level of self-categories deployed, it seems instead that, for some participants, the discovery of ‘Viking roots’ would be a way of reinforcing the importance of more proximal and concrete identity categories. Being ‘Viking’ is a way of enhancing pride in one’s ‘English Yorkshire roots’.

This raises the interesting question of how these various remediations of the past are held together. Just what image of ‘Viking-ness’ is it that these participants hold such that

it is deemed as cognate with 'Yorkshire-ness'? How does the imagined past become stitched into the local present by way of mediation of genetic ancestry? Furthermore, what form does the narrative of national identity take given that it is constituted from such a complex mosaic of mediated elements?

Summary

The material we have presented here comes from the very early stages of a project, which we hope will ultimately shed some light on the ways that 'applied genetic history' is fast becoming a key vector in contemporary debates about belonging, migration and national identity. Genetic code is, for many of our participants, a form of archival memory that is just opening up. Our initial findings suggest that participants are already receptive to the promises that are being made by companies such as Ancestry.com to 'pick up where the paper trail leaves off'. It is a form of cultural memory which was previously inaccessible and which is felt to offer answers to interpretive puzzles around ancestry. Applied genetic history will, our participants feel, then enable them to push beyond the limits of genealogy into the recesses of the remote past.

Yet at the heart of testing, there is a fundamental paradox. Genetic code is literally embodied, as the process of being tested with a 'spit kit' makes clear. The emphasis which our participants place on 'feeling' as the basis of identification makes sense, since the relation is carried within the composition of one's own body. But the code itself only really exists in a highly mediated state, as a trace that is supported by a weave of technical practices, theoretical assumptions and complex analytic techniques, which in turn exist within the wider 'genetic imaginary' (Franklin, 2000; Stacey, 2010). As we have shown, these remediations create a range of implications for how national and local identity is accounted for by participants. The remote past may well persist in the archival memory carried by the body, as our participants hope it does, but surfacing this past in any meaningful form could not be less straightforward.

We want to conclude with a final observation suggested by Hoskins' (2009a, 2009b) work on digital memory. To speak of genetic code as archival memory is to focus on how personal narratives of identity and belonging can be fashioned from stored biological information. The techniques for making this information mobile constitute a complex assemblage of formal knowledge, whose assumptions and claims are currently being worked out in a contested zone where academic knowledge and commercial exploitation meet and become difficult to disentangle, as the contributors to this special issue describe in different ways. From our perspective, we would note that quite often what draws participants into genetic ancestry testing are claims made by commercial companies on, for example, the geographical distribution of Y chromosomes, based on existing databases, which are often partial and equivocal and heavily remediated through popular media texts. The results of these tests then become part of developing a rapidly communicative memory that is itself remediated through online genealogy websites, social media and evolving family histories. The concern must then be, following Hoskins, that this 'on the fly' reconstruction of personal family histories will lead to the subsuming of archival memory within communicative memory. We can see this beginning to happen in, for example, the debates about phylogeography (Beaumont et al., 2010; Templeton, 2009),

which, as discussed earlier, are beginning to move from the academic to the public sphere. The result may then be a vast increase in the circulation of putative claims about genetic ancestry which become increasingly difficult to evaluate and which feed into narratives of national and local identity that are unmoored from the contents of the archive. Unravelling the applied genetic histories which emerge will require some considerable sociological imagination.

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Notes

1. From February 2013 Ancestry.com has begun to offer DNA tests to its US customers, with the promise that 'AncestryDNA picks up where the paper trail leaves off' – see <http://corporate.ancestry.com/press/press-releases/2013/02/ancestrydna-test-provides-an-affordable-easy-way-to-learn-about-your-past-and-family/>
2. Although it was not uncommon for participants to claim they had come at the prompting of their wife or daughter.

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