



Introduction

Introduction: Transcending the aDNA revolution

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Rather than disempowering archaeologists, the contribution of ancient DNA has in fact been a liberating experience. Controversies that could never have been resolved solely using archaeological methods (or by DNA studies of present-day populations) have now been settled. (Spriggs and Reich, 2019: 634)

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Over the past decade, technological developments known as “next-generation sequencing” have enabled genome-wide analyses of ancient DNA (aDNA) to take place more quickly and cheaply than before. These developments have had important consequences for archaeological knowledge and practice, most notably in the rapidly growing field of archaeogenomics (also referred to as archaeogenetics or paleogenomics).

There is an oft-recited story about the genesis of archaeogenomics, known as “the aDNA revolution” (see for example Kristiansen, 2014; Reich, 2018; Society for American Archaeology (SAA), 2019). Cast in a narrative reminiscent of the Greek myth of Perseus and Andromeda, it mimics the classic tale of a wing-sandaled hero who comes to the rescue of virtue; slays a monster with his magical sword and liberates the virgin from her chains; marries her; overcomes dispute; and ascends the throne as king. The hero and protagonist of “the aDNA revolution” is the geneticist, propelled forward by the sandal-wings of next-generation sequencing. With magic methodologies he (for it is usually a he) slays the monster of bias, liberates archaeology, and reveals the truth about the ancient past. Obstacles in the form of criticism and dispute are overcome when he joins in intimate collaboration with archaeology, and they walk together in triumph towards the future.

We recognize this storyline not only from its origin in Greek mythology, but from widespread 19th-century popular accounts of the emerging science of human evolution (Landau, 1993: 1–3). In her book *Narratives of Human Evolution*, Misia Landau quotes a speech by the legendary British biologist Thomas Henry Huxley to the Royal Academy of Arts in London, in which Huxley pictures science as a monster that threatens art, and the scientist as the hero who comes to the rescue:

[...] I assure you, of my own personal knowledge that if left alone, the creature is a very debonair and gentle monster. As for the Andromeda of art, he has the tenderest respect for that lady, and desires nothing more than to see her happily settled and annually producing a flock of such charming children as those we see about us. (T.H. Huxley, 1883, quoted in Landau, 1993: 2)

Although the role casting is slightly different from that observed in “the aDNA revolution,” there is a striking resemblance in the way science is portrayed as gentle and altruistic towards the arts, wanting nothing but to “see her happily settled” and produce “charming children” with her. We find the baby-making allegory as a central theme in “the aDNA revolution” too, most explicitly perhaps when the prolific Harvard geneticist David Reich says that the ultimate goal for his work is to be “a midwife” to archaeology (e.g. Callaway, 2018: 576; Reich, 2018: 286).

There is, however, a significant contextual difference between “the aDNA revolution” and Huxley’s speech. When Huxley spoke to the Academy, he assumed a marginal position vis-à-vis the scholars of arts and humanities in the audience, who at the time – quite unlike the situation in academia today – represented the most esteemed form of knowledge. With this context in mind, we see that Huxley’s speech had a much more radical edge than we might read into it

today. Misa Landau thus concludes that Huxley's "allegory *prefigures* a modern myth: that science is a more powerful form of knowledge than art and that any intercourse between the two will be initiated by science" (Landau, 1993: 2, our emphasis). In the same vein, "the aDNA revolution" presents natural science as the one that initiates and defines the collaboration, and technology as *primus motor* of successful knowledge production.

The broad breakthrough of "the aDNA revolution" narrative among the research community and its quick uptake by high-profile science journalists (e.g. Callaway, 2018; Gibbons, 2017; Zimmer, 2017) has left little room for genuine critical conversation about the ethical, political, and epistemological consequences of this emerging research field (but for some notable exceptions see Blakey, 2020; Colwell, 2018; Furholt, 2018; Hakenbeck, 2019; Millar and Lambert, 2019; Niklasson, 2014; Sand, 2018). Even texts that raise important concerns and appear to have a critical ambition tend to be reined back to the format and vocabulary of "the aDNA revolution" (e.g. Eisenmann et al., 2018; Frieman and Hofmann, 2019; Prendergast and Sawchuk, 2018, 2019). Descriptions of aDNA research cast in this narrative format typically present problems as obstacles already overcome (Callaway, 2018; Spriggs and Reich, 2019), or as stumbling blocks soon to be overcome by the formulation of best practice or a set of ethical guidelines (e.g. Prendergast and Sawchuk, 2018; Sirak and Sedig, 2019). In nearly every case, a more intimate collaboration between archaeologists and geneticists is presented as the ultimate solution to any problem with aDNA research (e.g. Sirak and Sedig, 2019: 567; Spriggs and Reich, 2019).

If the story of "the aDNA revolution" has undeniably had positive effects on the field of archaeogenomics as a leverage to more research funding and positive media coverage, it can also have intimidating effects. Not only does the story compel a sense of direction and inevitability of the way forward, it also predefines the critic of aDNA research as either a monster or an obstacle on the hero's journey to accomplish his mission. Accordingly, potential critics of aDNA research have been described as unduly negative towards or adversaries of new scientific methodology in general (e.g. Sirak and Sedig, 2019: 562), or as acting out of fear, envy, or anxiety (e.g. Bojs, 2017: 216–217; Callaway, 2018; for a very similar rendering of critics against the use of race in genetics as fearful, see Frank, 2012: 316–317, 322). Hence to criticize aDNA research one has to stand up in the face of this intimidating rhetoric, and accept the position of the allegedly adverse, or anxious. Add to this the overwhelming asymmetry between the two parties – genomics and archaeology – in terms of research funding, academic authority, media visibility, and popular credibility, and it may appear even less appealing to voice a critical query.

Since 2018 we have studied meaning-making practices around aDNA in the multidisciplinary research project *Code, Narrative, History: Making Sense of Ancient DNA in Contemporary Culture*. In our research we have had the privilege to study and discuss the formulations and outcomes of aDNA research with

archaeologists, geneticists, museum curators, journalists, and communicators all over the world. From these studies and conversations we have come to understand that there is much more to the emerging field of aDNA research than is conveyed by the story of “the aDNA revolution.” Quite contrary to that storyline, we find archaeologists and museum curators both knowledgeable and excited about the potentials of this new technology. All the more, their concerns deserve to be taken seriously.

Many testify to clashes between fundamental interests and world views when different actors and institutions come together in archaeogenomics. One recurring issue is the value of human remains: while population geneticists tend to treat ancient human bones as quantifiable samples and data points in a statistics scheme, archaeologists and museum curators see them as remains of a complex being with a life, mind, rights, and relations that extend to descendent communities. Our interlocutors have also pointed to fundamental differences and asymmetries between genetics and archaeology in how academic knowledge is defined, produced, debated, and communicated. On the same note we have often heard that the fast-paced and high-visibility character of genomics tends to overshadow the slower, context-aware and nuanced humanist and social science approach to sensitive and potentially inflammable issues of identity and belonging. Moreover, some have raised concerns over the risks for harmful social and political consequences.

Our observations find backing in a substantial body of literature studying the practises and consequences of other related fields where DNA analysis is used in combination with historical narratives. Two such related fields are the Human Genome Diversity Project (e.g. M’charek, 2005; Reardon, 2005) and the industry for genetic ancestry tests (e.g. Bolnick et al., 2007; Hogan, 2019; Nelson, 2016; TallBear, 2013). Since these fields predate archaeogenomics to some degree, it is now possible to study and reflect upon their long-term consequences on people’s lives, from the formulation of individual identity to state politics (Benjamin, 2015).

We see a pressing need for equally profound critical studies of archaeogenomics, and this special issue is a step towards that end. It is intended to encourage and stimulate genuine critical conversation on the ethical, political, and epistemological premises and consequences of aDNA research.

The article written by Amanda Cortez and colleagues discusses aDNA research from the perspective of Indigenous communities in New Mexico. Referring to Indigenous peoples who have characterized aDNA research as “vampire science,” they remind us that some of the important criticism directed towards the Human Genome Diversity Project decades ago (e.g. M’charek, 2005: 12–14) is just as valid for aDNA research today. Their focus is on the United States, with a detailed analysis of the investigations at Chaco Canyon and the shortcomings of NAGPRA as a legal framework for aDNA research, but their arguments have much wider significance as they unveil the fundamentally complex ethical issues that lie at the heart of archaeogenomics.

Elizabeth Jones and Elsbeth Bösl approach aDNA research from a History of Science perspective. They describe the development of the field in two “hype cycles” with much public interest and high media visibility: the first around PCR technology in the 1990s, and the second around next-generation sequencing in the 2000s. Contamination is key to understanding both hype cycles, in the first as material contamination from other sources of DNA, and in the second as a concern that the outcomes of aDNA research can contaminate the credibility of archaeological research. Both hype cycles, they argue, have encouraged a hunt for sensation where DNA has been put forward as a conclusive form of evidence of human historical identity, which puts a heavy responsibility on geneticists and archaeologists alike.

John Hawks dives deep into the false, but widespread, aDNA-based story that today’s Africans would have no Neanderthal ancestry and would thus be fundamentally different from the rest of humanity. He traces this story back to its origin, investigates how it was spread and contested, and assesses the impact it has had on public discourse. He demonstrates how a science-based story, in this case false, yet with significant social and political impact, is created and maintained among and between scientists, press officers, journalists, and public institutions. A major problem, he argues, is the emphasis on certainty, leaving these stories wanting in nuance and accountability.

Judith Jesch explores the analytical relations between ancient texts and ancient DNA in current research on Viking Age migration and mobility. Deconstructing the arguments of a recently published article on Viking Age population mobility in Europe, she points to some of the epistemological incongruences and analytical friction that occur when a humanist analysis based on ancient texts intersects with a genomic analysis of ancient DNA. Emphasizing issues of representativeness in genomics as well as in ancient text analysis, she calls for the development of new interdisciplinary approaches that can accommodate the complexity of issues of identity and mobility in proto-historical periods like the Viking Age.

Venla Oikkonen presents a conceptual analysis of ancient pathogen genomics as a means of knowledge production. With a theoretical foundation in feminist post-humanities, she discusses the potentials and pitfalls of using pathogen aDNA to understand historical processes from a more-than-human perspective. Her argument revolves around the genomic sequencing of aDNA from bacteria known to cause louse-borne relapsing fever recovered from a 15th-century grave in Oslo, and she points to the analytical benefits of rethinking the historical relations between humans and pathogens in terms of productive material processes and multispecies entanglements.

Together, the articles of this special issue constitute a critical investigation into the current conditions, practices, and consequences of aDNA research. They clearly demonstrate that to be critical is by no means the same as being negative or anxious. What we want is rather to promote serious engagement with the premises and outcomes of aDNA research, in analyses that are not a priori confined to the narrative form of “the aDNA revolution.” Only when we transcend this narrative,

and the mythological register that underpins it, can we see more clearly the benefits and shortcomings of aDNA research.

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