

# Archaeological Theory at the Edge(s)

Edited by Staša Babić and  
Monika Milosavljević



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## ONE STEP FORWARD, TWO STEPS BACK: EGYPTOLOGY AND THE THIRD SCIENCE REVOLUTION

**Abstract:** Ongoing debates on the third science revolution seem to provide a heavy dose of optimism that issues such as identity can now finally be resolved using stable isotope analyses and ancient DNA. Such an understanding of identity falls into the essentialist trap, similar to the one of racial anthropology and culture historical archaeology, and more often than not relies on inherited ideas and concepts that are left unchallenged. This paper discusses the utilization of inherited ideas in combination with novel scientific methods, using the case of the Sea Peoples of the Late Bronze Age as an illustration. The paper also discusses the recent impact of the third science revolution on Egyptology using stable isotope analyses as an example. Showing that someone was a local or an immigrant in a particular community is indeed useful information but it does not provide all of the answers about population dynamics and identity constructs. Finally, the paper argues that not all archaeological communities can meet the central tenets of the third science revolution for reasons of economic inequality and the political environments in which they operate.

**Keywords:** third science revolution, identity, stable isotope analyses, Egyptology

### Introduction

Archaeologists and historians have assigned various identities to past populations ever since the beginning of their respective disciplines (Babić 2008; Jones 1997; Lucy 2005; Matic 2018a; Matic 2020). During the 19th century in the Global North/West, racial anthropology using craniometry was a standard method of racial identification. The scale was used to

assign races to populations of the past based on values taken from various actants (*sensu* Bruno Latour) such as chimpanzees, living humans, skeletal remains of past and modern populations, but also Roman statues, such as Apollo Belvedere (Mihajlović 2011). With the emergence of archaeological cultures as defined sets of material remains (Childe 1929: v-vi), the races identified by anthropologists were associated with cultural expressions and ethnic identities, usually in the form of pottery “styles.” Some archaeologists continue with this practice even today, sometimes even grouping stratigraphically unrelated finds based on assumptions as simple as the following: 2nd millennium BCE Nubian pottery was found in settlement contexts of Tell el-Dab‘a, a site in Egyptian Eastern Delta; people with poorly preserved and supposedly “Negroid” crania were buried at this site; therefore, Nubian pottery belonged to this people, even though it was not found in their burials (Bietak, Dorner and Jánosi 2001; for criticism see Matic 2014; Matic 2018b).

Other archaeologists have abandoned skeletal racial designations but continue to attach them to archaeological cultures. In this process, archaeological cultures became material expressions of peoples or ethnic groups (Childe 1929: v-vi). These ethnic groups were even searched for in written sources describing the populations living on the territories where particular archaeological cultures were identified (see Jones 1997; Lucy 2005 and Matic 2020 with further references for examples and criticism). The problem is that these written sources are often external to the population they describe, and their contents frequently reflect prejudices or world views of outside observers rooted in their own class, gender, and ethnic identities (e.g., ancient Egyptian, Greek, and Roman authors).

This rather short and generalizing overview of approximately two centuries of archaeological thinking on collective identities does not do justice to the numerous critical voices, whether contemporary or later (Babić 2008; Jones 1997). Nowadays, no serious archaeologist would group stratigraphically unrelated data nor assign race to values determined based on measurements of poorly preserved crania. No serious archaeologists would trace population movements based solely on changes in the archaeological record.

Nevertheless, in contemporary archaeology, there seems to be a widespread view that many of the problems outlined above can be resolved using methods broadly grouped under the umbrella term “archaeological science.” These include chemical analyses of materials from which archaeological remains were made (e.g., petrographic analyses of pottery, lead isotope analyses of metal) and chemical analyses of human and animal remains (stable isotopes and DNA analyses), which I will turn to later. Furthermore, many now believe that the gradual accumulation of data

obtained through such analyses can reconstruct the movements of entire populations without referring to archaeological cultures or pots. Since processing such a vast amount of data requires storage and management, advances in computer technology have also been celebrated. Moreover, since the acquisition of such data for various sampling procedures and laboratory analyses is costly, substantial national and international funding schemes such as those supported by the European Research Council (ERC) are required. It has been suggested that all of the above contributed to the so-called “third science revolution” in archaeology, with the preceding two revolutions triggered by advances in geology and zoology, as in the first revolution of the 1850s-1860s, and radiocarbon dating, as in the second revolution of the 1950s-1960s (Kristiansen 2014: 14–15; Kristiansen 2022: 1).

Whereas most archaeologists are celebrating these developments, and with good reason, others have expressed a healthy dose of scepticism regarding premature optimism (various issues are summarized by, among others, Babić 2022; Ion 2019; Jones and Bösl 2021). Some critical voices have also stressed that although archaeologists do not study the distribution of pottery styles to trace population movements anymore, they still label the samples they send for various analyses with terms originating from an entirely different mode of thinking, culture-historical archaeology (Eisenmann et al. 2018; Frieman and Hofmann 2019; Hakenbeck 2019; Ion 2017: 187; Ion 2019: 29). To illustrate this, I will briefly discuss a case in which an outdated Egyptological concept was utilized by non-Egyptologists as a fact that can be further challenged using novel scientific methods.

## Sea Peoples 2.0 and Science Revolution 3.0

In 1855, French Egyptologist Emmanuel de Rougé coined the term “peuple de la mer” (“Sea Peoples”) to describe the figures of enemies represented on the reliefs of the Medinet Habu temple of King Ramesses III (c. 1221–1156 BCE). For de Rougé and his students and successors, such as François Chabas and Gaston Maspero, these Sea Peoples were a population mass that migrated from the Balkans towards the rest of the Eastern Mediterranean, destroying the centres of civilization in Greece (Mycenaean palaces) and Asia Minor (Hittite palaces) before finally reaching Egypt where they were defeated by kings Merenptah (c. 1213–1204 BCE) and Ramesses III. Maspero even called this migratory mass “invading hordes.” The root of this narrative is Balkanisation, a discourse alluding to reversion to the tribal, backward, primitive, and barbarian, combined with the

culture-historical model of mass migrations (see Matic and Franković 2020 with further references and arguments). However, this narrative has been criticized by numerous Egyptologists for decades and was recently confirmed based on the analyses of lists of war spoils arguing that the movements of various Sea People groups were not of the scale of mass migration but rather of small pirate raids, blown out of proportion in ancient Egyptian temple decorum (see Matic 2022 with further references). The historicity of ancient Egyptian texts dealing with the Sea Peoples has also been refuted or, better said, properly contextualised within the royal rhetoric of the late New Kingdom in Egypt (Wüthrich and Matic 2023 with further references). Nevertheless, neither the criticism nor the recent Egyptological research is taken into consideration by colleagues studying prehistoric Europe, who still look for the roots of the so-called Sea Peoples phenomenon.

For example, Wolfgang Kimmig looked for the origin of this phenomenon in the movements of Urnfield culture bearers from central Europe towards, among else, the Balkans and further into the Eastern Mediterranean and across the Levant into Egypt. The same is assumed by archaeologists in the Balkans such as Borivoj Čović and most recently Kristian Kristiansen (see Matic and Franković 2020: 156 with further references). Furthermore, the same connection to the Sea Peoples phenomenon is implied by the project “The Fall of 1200 BC: The Role of Migration and Conflict in Social Stress at the End of the Bronze Age in South-Eastern Europe” (2018–2023) funded by the ERC Consolidator Grant. The official logo of the project is based on a Sea People figure depiction from the Medinet Habu temple, while the project’s description includes a photo of the so-called Naval Battle of Ramesses III depicted on one of the Medinet Habu temple reliefs. The description states that:

“hotly debated ancient tales of migrations are tested for the first time using recent advances in genetic and isotopic methods that can measure human mobility” (<http://www.thefall1200.eu/about.html>).

However, “ancient tales of migrations” is a rather vague reference to texts from different Bronze Age societies describing fundamentally different things in a fundamentally different ideologically framed way. It also remains unclear which kind of migrations are alluded to here: individual, small-scale, or large-scale ones? (cf. Knapp 2021 for a balanced approach to Bronze Age migrations). Last but not the least, it remains unclear which samples will be taken to explore the implicit connection with the outdated 19th-century Egyptological construct of the Sea Peoples. Egyptology, which should be the first discipline to be consulted when framing such

a research subject, is left out of the equation. Based on the project team's expertise (<http://www.thefall1200.eu/team.html#fh5co-tab-feature-vertical7>), one gets the impression that primacy is given to natural sciences, with archaeology or, in this case, Egyptology serving as a handmaiden of natural sciences (cf. Stutz 2022: 46).

This is not to say that the data obtained by “The Fall of 1200 BC” project is not significant, but rather the contrary. The Balkans is one of the regions included in this project since it lacks data acquired using state-of-the-art techniques, not because its local archaeologists lack the necessary knowledge or expertise, but due to its weaker economic power compared to Western European countries. It comes as no surprise that archaeologists in the Balkans are increasingly opening as hosts to economically better-suited colleagues from Western and Central Europe. Such alliances allow them to conduct their work and obtain the results they need but also open the doors to publications in high-impact journals which they can use for climbing up local scientific ladders. In making such alliances, the premises in the background must be considered. To illustrate, one Facebook post of the partner institution of the “The Fall of 1200 BC” project, the National Museum of Pančevo in Serbia, states:

“THE FALL OF 1200 project [...] investigates changes in migrations and conflicts in the time of the famous Trojan War, when proto-urban cultures of central Balkans and many great civilizations in the Aegean and Asia Minor suddenly collapsed. Evidence for these turbulent times and great migrations and conflicts are found even in ancient Egypt where Ramesses III stopped the attacks of the Sea Peoples in 1176 BC” (Facebook page post of the National Museum of Pančevo, author's translation from Serbian).

Here one finds many ghosts of the discipline's past: the Trojan War as a historical event and not a layered narrative reflecting numerous conflicts of the Bronze and Iron Ages, the great migrations, and the heroic deeds of Ramesses III. What is more, reading through the work packages of “The Fall of 1200 BC” project one does not get the impression that anything conducted in the project is in any way related to ancient Egypt or the Sea Peoples (<http://www.thefall1200.eu/workpackages.html#fh5co-tab-feature-vertical4>). The choice of categories and knowledge of their complex research history should at least be as state-of-the-art as the methods and techniques employed.

Since similar examples are abundant, I would like to juxtapose interpretative optimism and scepticism when it comes to the third science revolution in archaeology by using an example of a discipline that has for most of its existence stayed on the margins of serious debates in archaeological method and theory – Egyptology. My goal is to demonstrate that:

1. The existence of novel techniques, methods, and analyses does not necessarily mean that they are available to everyone. The determining factors include not only the successful acquisition of substantial funding but also access to laboratories and staff, or the lack of permission to sample and export samples out of the country from which they originate (e.g., Egypt).
2. The consequences of working under conditions unparalleled to the ones in the Global West impede Egyptologists from other countries from using state-of-the-art methods, where going beyond state-of-the-art is wishful thinking.
3. The introduction of new data obtained from analyses not conducted by archaeologists *stricto sensu* does not in any way remove highly problematic ideas and concepts used as an interpretative background for this newly obtained data. The introductory example of the Sea Peoples was meant to illustrate this point, which will be developed further in the paper.

To demonstrate the three main points listed above I will turn to two case studies of stable isotope analyses originating from modern Egypt and Sudan, the territories of ancient Egypt and Nubia. In conclusion, I will explain why “scientific revolution” is an inappropriate term or model for understanding knowledge production in archaeology.

## Stable isotopes and unstable categories

Strontium, oxygen, and lead isotopes are used in the studies of the provenance of human remains and involve the comparison of isotope ratios in tooth enamel and bone. Whereas human bone is more dynamic, the enamel in teeth is formed in early childhood and undergoes little change. Values in human teeth indicating the place of birth and early childhood that do not match those from bone (place of death) may indicate immigrants (Weiner 2010: 32–5). However, in practice, archaeological studies of stable isotopes face complex problems due to the varieties and specificities of the underlying geology. As for Egypt and Sudan, it has been argued that the Nile River’s complex fluvial regime, the underlying geology of the Nile Valley, and the Nile’s source regions, pose obstacles to stable isotope analyses (Woodward et al. 2015). Another identified problem is the pristine preservation of collagen on some sites in Sudan because of the heat and dry sandy soil (Spencer, Stevens and Binder 2017: 46). Geological research has also pointed to the impact of aeolian sands on the sedimentary composition of the Nile River and its tributaries. This seems to be a major

confounding factor in the strontium signatures of water. Since these signatures are highly variable and depend on climatic conditions, they could significantly alter isotopic values and potentially lead to erroneous conclusions (Woodward et al. 2015). Nevertheless, there are several attempts to analyse stable isotope ratios from Egyptian and Sudanese sites in order to better understand population movements and collective identities.

Ever since the 19th century, archaeologists studying ancient Egypt and Nubia relied on a set of assumptions about the racial supremacy of ancient Egyptians. These assumptions were rooted in the colonial experience of scholars at the time. Much in the tradition of culture-historical archaeology, early 20th-century archaeologists of Egypt and Nubia adopted a diffusionist model according to which the superior ancient Egyptian culture replaced the local Nubian culture, and the locals were simply acculturated (Matić 2018a; Matić 2020; van Pelt 2013). The diffusionist model was challenged by authors drawing theoretical foundations from postcolonial theory and suggesting cultural entanglement as a balanced approach (van Pelt 2013; see also Matić 2023). However, although it challenged the diffusionist model, the novel understanding of identity in Nubia did not take the bioarchaeological data into account. Only a few studies took on this task. It was possible to identify individuals from Thebes in Upper Egypt at the Nubian site of Tombos, a cemetery in Upper Nubia, because strontium at this site probably comes from the soil rather than the Nile water (Buzon, Simonetti and Creaser 2007: 1400). Another study of strontium isotope values from the same cemetery argued that individuals from Egypt can be traced during the New Kingdom (ca. 1550–1070 BCE), but only locals can be traced throughout the first millennium BCE, as well as some immigrants most likely coming from the south (Buzon and Simonetti 2013: 7). The most recent study of strontium isotope ratios of samples from nine individuals from tomb 26 from cemetery SAC 5 on Sai Island in Upper Nubia argues that all of them were locals. The burial, which dates from the 15th to 13th centuries BCE, was discovered as part of an Egyptian-style rock-hewn shaft tomb with a pyramid as a superstructure. It contained two painted wooden coffins, scarabs, faience vessels, pottery vessels, one stone shabti figurine, fragments of funerary masks with inlaid eyes, and gold foil. According to the inscribed finds, the burial belonged to an Overseer of Goldsmiths Khnumose and his unnamed wife (Retzmann et al., 2019). These individuals had an Egyptian burial with Egyptian material culture, and Khnumose had an Egyptian name and titles. However, the authors of this study cautiously avoid labelling these locals more closely, and rightly so. The tomb's use spanning two centuries allows for several alternative scenarios. The buried locals could have been descendants of immigrating Egyptians who settled in Nubia, with their

strontium isotope values being local but their origin being Egyptian. They also could have been descendants of local Nubians who due to various reasons adopted some aspects of Egyptian material culture and identity. The essential point here is that these interpretations must take the temporal component into account. Some five hundred years of New Kingdom Egyptian occupation of Nubia were a dynamic period during which people moved around and even came as deportees from far-away lands such as Anatolia and the Near East (Langer 2021). Stable isotope analyses are a useful and important method, but other evidence, such as written sources and the equifinality of the archaeological record, must always be considered. The second-case study demonstrates the same.

The most recent study of strontium isotopes ratios from human tooth enamel was conducted on 75 individuals from three different cemeteries at Tell el-Dab'a, ancient Avaris, capital of the Hyksos kingdom in the eastern Delta during the Second Intermediate Period, ca. 1650–1550 BCE (Stantis et al. 2020). The Hyksos were the ruling class of foreign descent who nevertheless used the titles and iconography of Egyptian rulers, even appropriating some Egyptian epithets for foreign rulers. Most of the Hyksos kings even had foreign, North-West Semitic names (Roberts 2013). The study by Stantis et al. (2020) included 75 individuals, out of which 67 come from area A/II, seven from area F/I, and one from area A/I of a site which at the time spanned 260ha. Approximately 1000 tombs have been excavated thus far, making the study sample unrepresentative of the population of Avaris as a whole. In another study, Stantis et al. expanded their research by analysing oxygen ( $\delta^{18}\text{O}$ ) and carbon ( $\delta^{13}\text{C}_{\text{carb}}$ ) stable isotopes from the carbonate portion of tooth enamel ( $n = 75$ ), as well as performing collagen ( $\delta^{13}\text{C}_{\text{coll}}$ ,  $\delta^{15}\text{N}$ ) analysis of dentine and bone ( $n = 31$ ). In this second study, almost all of the samples except for one (area A/I) came from the cemetery in area A/II. Altogether, samples from only 10 burials were taken, seven from stratum F of the 13th Dynasty (ca. 1800–1650 BCE), out of which three were burials of attendants, one from stratum E/1, and two from stratum D/3 of the 15th Dynasty, ca. 1650–1550 BCE (Stantis et al. 2021). It should also be noted that the authors report on their earlier results in quite an interesting manner. They state that:

“Previous research on Tell el-Dab'a individuals using  $^{87}\text{Sr}/^{86}\text{Sr}$  analysis of tooth enamel highlighted that the site has always been a cosmopolitan hub of movement, with more than half of all individuals (40/75 or 53%) originating from outside the Nile Delta” (Stantis et al. 2021).

Out of these 75 individuals, 36 were from pre-Hyksos rule contexts and 35 from Hyksos rule contexts. The results revealed that more than half of them spent their lives outside of the Nile Delta, displaying a wide range of



values, and that there were more immigrants in the pre-Hyksos period, with more non-local women than men. However, it was not possible to pinpoint the origin of the non-locals (Stantis et al., 2020). Although at the beginning of the paper Stantis et al. stress that they will use the term Hyksos to refer to the ruling class only, at the end of the study they state that:

“in combination with previous archaeological evidence, this research supports the concept that the Hyksos were not an invading force occupying this city and the upper Nile Delta, but an internal group of people who gained power in a system with which they were already familiar” (Stantis et al., 2020).

This is indeed possible and has already been suggested by several authors (Forstner-Müller and Müller 2006 with further references). However, although useful, the results of stable isotope analyses from Tell el-Dab<sup>a</sup> samples struggle with the categories used to label the studied populations. The use of the label Hyksos is simply erroneous. Although many Egyptologists falsely use the label Hyksos for the entire population of Eastern Delta, Lower Egypt, and even Middle Egypt during the Second Intermediate Period, ancient Egyptians and the Hyksos rulers themselves never did this. The term is a Greek rendering of the ancient Egyptian title *ḥꜥ3.w ḥ3s.wt*, meaning “rulers of the foreign lands.” It was adopted by rulers of the 15th Dynasty who reigned from their capital in Avaris or modern Tell el-Dab<sup>a</sup> (Candelora 2017). Egyptologists have argued in favour of their foreign origin based on some of their names. Namely, all except one had North-West Semitic names. Does this mean that they came from the Levant? Not necessarily. Does this mean that their parents, one or both, came from the Levant? Possibly, but also not necessarily. Does this mean that their grandparents, one or both came from the Levant? Again, possibly but not necessarily. Since there are no known burials of the 15th Dynasty rulers, we are unable to sample their physical remains and conduct ancient DNA analyses or analyses of stable isotopes. We should not forget that the written sources and the archaeological record do indicate that people from the Levant came to Eastern Delta during the 12th Dynasty. Some of them even lived in Tell el-Dab<sup>a</sup>. Whether or not they or their descendants kept their identity and for how long is a question we cannot answer based on the available data. The Hyksos kings could very well be descendants of these people who came already during the Middle Kingdom. These descendants may not have even identified as Levantine at all but rather as local, whatever that meant in relation to the rest of Egypt at that time. There is therefore no pottery or any other material culture of the Hyksos as an ethnic group that spread over a vast territory. The Hyksos ruled over a population that was surely multi-ethnic and included people of Levantine

origin. The rivals of the Hyksos in Abydos and Thebes also ruled over a multi-ethnic population. The political situation, the demographic makeup of the land, and collective identities were far more complex than simple dichotomies (Ilin-Tomich 2016). The concluding remark of the stable isotopes study of individuals from Tell el-Dab<sup>a</sup> is that:

“this research supports the theory that the Hyksos rulers were not from a unified place of origin, but Western Asiatics whose ancestors moved into Egypt during the Middle Kingdom, lived there for centuries, and then rose to rule the north of Egypt.” (Stantis et al. 2020).

However, this research did not include a single sample taken from a burial of a Hyksos, a ruler of Egypt's 15th Dynasty! Earlier in the study, the authors acknowledged that although some examined individuals were indeed non-locals, their places of origin were not clear. In the conclusion of the second published study, the authors say:

“Focusing on the isotopic profiles of noted individuals within the assemblage, we see both locals and non-locals being buried in elite Asiatic style. This is suggestive of burial customs continuing as practice in Egyptian-born Asiatics” (Stantis et al. 2021).

The first problem with this claim is the use of the adjective Asiatic, which continues to be used in Egyptology despite substantial opposition. The individuals in question are labelled as Asiatic because of the non-Egyptian burial customs found in Tell el-Dab<sup>a</sup>, which have the closest similarities to those found in the Levant. The second problem is that they pick just one of the many possible interpretations of their data. Namely, even if both locals and non-locals were buried in elite Asiatic style (with equids, weaponry, and attendants), this still does not mean that all non-locals were from the Levant. Indeed, in both studies the authors admit that they can only show that the non-locals are not from the Nile Delta. The third problem is that locals buried according to Levantine or Levantine-inspired customs are interpreted as Egyptian-born Asiatics, without questioning the epistemological validity of these categories in such a cultural context. Why is it so hard to imagine that a person of local Egyptian descent adopted Levantine burial customs due to their presence at the site? It seems that the authors rely on a set of dichotomies, locals vs. non-local, understood as Egyptian vs. Asiatic. Given the long history of Egyptian-Levantine interaction in the region of Eastern Delta, perhaps one should consider a much more complex picture. People of Levantine descent may have inhabited the Delta since prehistory. Some of them may have stayed for several generations, becoming Egyptian and leaving their descendants with local isotopic values. Later in Egyptian history, more people of Le-

vantine origin may have arrived to the Eastern Delta. They could have found their home in Tell el-Dab'a among locals of Egyptian or Levantine descent. Already, the question of what it means to be local or non-local becomes much more complex. Another problem must be added to the equation. What if the particular elite burial customs (with equids, weaponry, and attendants) of some analysed individuals have less to do with ethnic identity and more to do with social status? In this case, why would we exclude the possibility that locals started expressing their status in a Levantine manner without necessarily becoming non-Egyptians?

Another interesting observation can be made. Namely, both the stable isotope analyses of skeletal remains from the island of Sai and Tell el-Dab'a have been conducted as part of broader projects supported by the ERC. In the case of the former, the study was conducted by Julia Budka and her associates as part of "Across Borders: Settlement Patterns in Egypt and Nubia in the 2nd Millennium BC" (ERC Starting Grant). In the case of the latter, the study was conducted by Manfred Bietak and his associates as part of the project "Enigma of the Hyksos" (ERC Advanced Grant). Other mentioned studies were not financially supported by the ERC. In fact, a survey of the ERC project database conducted for the purpose of this paper showed that out of altogether 10 projects broadly dealing with ancient Egypt during the pharaonic period, six deal with textual sources solely. Out of the remaining four that are more archaeologically oriented, two actually deal with ancient Egyptian and Nubian communities in modern-day Sudan. One explicitly addresses the question of the identity of the Hyksos, although as seen above, the term is used more broadly than it should be in this project. The rest of the project deals with the Egyptian Eastern Desert. Therefore, it seems that archaeologists researching ancient Egypt have mostly either been unsuccessful obtaining ERC grants or have not even attempted to obtain them. Colleagues from countries that are not part of the ERC funding landscape, including Egypt and Sudan, are excluded from applying due to eligibility requirements. Moreover, as shown in the introduction, some outdated Egyptological narratives are taken for granted in non-Egyptological ERC-funded projects heavily relying on archaeometry.

The way forward is to conduct analyses that ask more theoretically informed research questions. For example, it has been argued that interdisciplinary archaeologies relying on natural sciences simplify and narrow down how archaeology is practiced, resulting in certain research topics such as rituals and religious beliefs, identity and personhood, social institutions, agency, etc., being ignored (Ribeiro and Ion 2022: 27). We have observed the same in some of the previously discussed Egyptological case

studies. Multidisciplinary data, especially coming from “hard” sciences, is rarely successfully integrated with historical and cultural contexts (Ion 2017: 179). More often than not, so-called interdisciplinary teams do not deliberate on whether or not their concepts are mutually agreeable (Sørensen 2022: 54). Another problem is that of sampling, as already pointed out in other archaeological fields (Ion 2017: 187), given that the sample size is often very small, as in the case studies previously discussed. Consequently, we are left with “hard” data and “soft” interpretations.

## Conclusion

The case of Egyptology, a discipline that seems to be on the margins of discussions about the so-called third science revolution, demonstrates that:

1. The so-called third science revolution is largely a phenomenon emerging in the Global West/North. This is a consequence of economic prosperity (Ribeiro and Ion 2022: 27; cf. Sørensen 2022: 54). State-of-the-art laboratories and scientific personnel that are needed to conduct the celebrated stable isotope and DNA analyses are located in the Global West/North. This is also evident from the statistics of the Horizon 2020 funding programme, which shows that the UK, Germany, and France received 40% out of 60 billion euros in funds available. Countries such as Poland, Slovakia, Bulgaria, and Romania were among the least successful applicants (Schiermeier 2020). Archaeological communities outside of Global Northern/Western geopolitical and academic environments are less affected by the third science revolution and its tenets. Egyptology is one such marginal community because:

- a) There are no state-of-the-art laboratories and scientific personnel for conducting third science revolution-related analyses in Egypt and Sudan. The only facility for radiocarbon analyses and petrographic studies of pottery is found at the IFAO-Institut français d'archéologie orientale, where it was founded in 2006 to allow for <sup>14</sup>C dating in Egypt (Quiles, Kamal, Fatah and Mounir 2017). Both Egypt and Sudan are developing countries. The former has shown some development in this direction, for example by establishing Scientific Laboratories at the NMEC-National Museum of Egyptian Civilization (<https://nmec.gov.eg/scientific-laboratories/>) which opened in 2017. However, these facilities are not open to everyone and have yet to be evaluated for international standards.

Sudan's situation is much worse since there are no comparable facilities, and civil war broke out in Khartoum again in spring 2023, after the initial outbreak in late winter 2019.

- b) Samples cannot be taken outside of Egypt (Jurman 2022). It is therefore not surprising that most of the known studies of ancient DNA from Egypt are based on human remains outside Egypt, namely remains curated in European museums. Moreover, due to the same reason, it is not surprising that the few known stable isotope studies related to ancient Egypt were actually conducted on samples from Sudan, which were analysed in European laboratories.
- c) Due to a lack of access to numerous methods and techniques, Egyptologists can hardly meet the request of large funding institutions, such as the ERC, to go beyond state-of-the-art. For us to go beyond, we first need to get there. Whereas our colleagues in other fields are debating on the third science revolution, archaeologists in Egypt are still struggling with the second scientific revolution in archaeology (*sensu* Kristiansen 2014: 15). Unfortunately, due to the reasons stated above, Egyptology is still far from reaching state-of-the-art of the second and third science revolutions. Exceptions are the aforementioned studies based on samples taken from European museums or archaeological sites in Sudan where the exportation of samples is not an issue. Indeed, two of these studies of stable isotope analyses were conducted within ERC-funded projects, one on material from a European museum and the other on material sampled in Sudan, with exceptions that prove the point made here.

2. The introduction of stable isotopes and ancient DNA analyses in Egyptology is not a guarantee of interdisciplinarity or objectivity (*cf.* Ion 2017). As other archaeological communities have also noticed (Ribeiro and Ion 2022: 26), some Egyptologists consider natural sciences more objective and reliable. However, examples discussed in this paper have demonstrated that none of these studies can be put in an archaeological context without a thorough understanding of other data obtained from, for example, textual sources, visual representations, or material culture in the broadest sense, not to mention a theoretically informed approach to various forms of identities, including but not being limited to ethnic identity.

The ever-growing enthusiasm for so many tools and methods, often labelled as “interdisciplinary,” does not make clear the fundamental question that such research is trying to answer (Babić 2022: 89; Ion 2017: 180). Furthermore, access to state-of-the-art methods and facilities is economically and politically conditioned (Jurman 2022), as is consequently the

move beyond state-of-the-art. Some fields, such as Egyptology, are unable to make such moves. This means that the term “scientific revolution” is not appropriate to describe recent tendencies in archaeological science and archaeology in general. If it does not concern us all, it is not a successful revolution; if we use new “hard” data to repeat the mistakes of outdated and disputed “soft” interpretations, we are not revolutionary at all.

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Since archaeological interpretation is still based primarily upon “common sense” or “accumulated knowledge,” rather than theoretically grounded premises, it is hard to overestimate the importance of the topics raised in this volume. It represents an important contribution to the current debate on the role of archaeological theory in the interdisciplinary context of research into the origins of humanity and culture and shows the direction that contemporary archaeology should take.

Rajna Šošić-Klindžić

The collection *Archaeological Theory at the Edge(s)* is truly at the cutting edge of 21st-century archaeological theory. The authors cover the vast scope of the most relevant epistemological issues in current archaeology but mainly challenge the worn-out cliché of archaeology as a dusty, colonial-born, antiquarian hobby. On the contrary, they convince that archaeology is vitally and virtually necessary for everyone today. Contributions in this volume restore the faith in the value of archaeology as a humanistic discipline, but also as a critical social action, nowadays when the World is once again faced with “the sinister lights of perverted science” (to paraphrase Churchill).

Aleksandar Palavestra

