Theme Issue

Interdisciplinary Contentions in Archaeology

Edited by Artur Ribeiro and Alexandra Ion

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Interdisciplinary Contentions in Archaeology: An Introduction

Artur Ribeiro

Institute for Prehistoric and Protohistoric Archaeology, Christian-Albrechts-Universität zu Kiel, Leibnizstraße 3, 24118 Kiel, Germany, aribeiro@sfb1266.uni-kiel.de

Alexandra Ion

Francisc I. Rainer Institute of Anthropology, Calea 13 Septembrie, no. 13, Bucharest, Romania, alexandraion.archae@gmail.com

Abstract

It is rare to engage with archaeology nowadays without stumbling upon references to inter-, multi-, cross-, and transdisciplinary research. It seems that any archaeological project that wishes to be successful must engage somehow with disciplines other than archaeology. However, a closer look into interdisciplinary archaeology and its cognates is not as straightforward as it first appears. The aim of this introduction is to outline the context of interdisciplinarity in archaeology and introduce the several topics discussed in the papers composing this current theme issue.

Keywords

Interdisciplinarity, methods, discipline, science, research

Zusammenfassung

Wenn man sich heutzutage mit Archäologie beschäftigt, stolpert man bald über Verweise auf inter-, multi-, und transdisziplinäre Forschung. Es scheint, dass jedes archäologische Projekt mit anderen Disziplinen zusammenarbeiten muss. Allerdings zeigt ein genauerer Blick in die interdisziplinär angelegte Archäologie und verwandte Disziplinen, dass diese Ansicht zu einfach ist. Ziel dieser Einführung ist es, den Kontext der Interdisziplinarität in der Archäologie zu skizzieren und die verschiedenen Themen vorzustellen, die in den Beiträgen des vorliegenden Themenheftes diskutiert werden.

Schlagwörter

Interdisziplinarität, Methoden, Disziplin, Naturwissenschaft, Forschung

Interdisciplinary Archaeology as Ideology

In their book *Evidential Reasoning in Archaeology*, Alison Wylie and Robert Chapman (2016: 15) observe that there is an "epistemic anxiety" inherent to archaeological reasoning, a fear that our knowledge about the past is fragmentary and/or not grounded in objective evidence. To mitigate this assumed problem, archaeologists are expanding their epistemic and methodological apparatus moving into other disciplines or getting involved in collaborations. This has happened through what has been called "interdisciplinary" and its variants "multidisciplinary", "pluridisciplinary", and "transdisciplinary" research. These terms are used in all facets of archaeology, but especially in the context of large projects and the archaeological sciences. Interdisciplinarity and its cognates have become very prominent in archaeology in the last decades, especially in light of what Kristian Kristiansen has called the "Third Science Revolution" (2014).

Although interdisciplinarity can manifest in a wide variety of ways, the way in which it operates in the "Third Science Revolution" is by combining and analysing data through methods derived from different disciplines. The application of scientific techniques from genetic studies on data recovered archaeologically is a classic case of interdisciplinary research. The establishment of correlations between environmental archives and historical records is another good example of interdisciplinary research.

When we think of interdisciplinary archaeology as the straightforward process of applying methods and techniques from a diverse range of disciplines, it is safe to say that archaeology has always been interdisciplinary; archaeology has always been dependent on techniques and methods of other disciplines (Díaz-Andreu and Coltofean-Arizancu 2021). Naturally, if all of archaeology is interdisciplinary to some extent, when the term "interdisciplinary" is used today, to what does it actually refer to? Take the example of the European Association of Archaeologists annual conference of 2020, where at least 20 out of 160 session titles contained the word "interdisciplinary" or a variant thereof. How is the research promoted in these sessions different from the rest of archaeological practice? What most of these references to interdisciplinarity signal is something more than just combining different disciplinary practices. As Liv Nilsson Stutz has pointed out, interdisciplinary research in archaeology follows a rather formulaic logic by combining ideas, methods, and techniques of the natural sciences with those of the human sciences; in this combination, the natural sciences have the upper hand as they are today considered the more objective and reliable source of knowledge (Nilsson Stutz 2017: 51). At face value, interdisciplinary archaeology might seem just another way of conducting archaeological practice, but interdisciplinary practice is much more than that: it is a distinct historical and social product. As Kristiansen (2014: 12–13) points out, a good part of the interdisciplinary archaeology conducted during the "Third Science Revolution" is a result of developments outside of archaeology, such as in DNA sequencing and the creation of the European Research Council, but this does not diminish the agency of those archaeologists who have actively sought and pursued genetic research and large-scale funding. But as the papers in this special issue discuss, interdisciplinary archaeology is more than simply a combination of methods and techniques from different disciplines, it is an ideology.

The historical, social, and theoretical context of interdisciplinary archaeology has flown largely under the radar; to many scholars, interdisciplinary archaeology is simply something that is practiced. This contrasts with the processual programme of the 1960s and 1970s, to which a lot of the scientific interdisciplinary archaeology of today is compared (Sørensen 2017; Ribeiro 2019). Whereas processual archaeology had distinct underlying theoretical and methodological premises (e.g., Binford 1965; Clarke 1973), often linked to functionalism, systems-theory, the deductive-nomological approach, the hypothetico-deductive approach, or cultural evolutionary theory, to name only a few, the interdisciplinary archaeology of today forms a similar set of ideas and practices but lacks much of the theoretical background of processual archaeology. The lack of theoretical background literature does not mean that interdisciplinary archaeology is just a form of *praxis*, devoid of any theoretical or political clout. Much on the contrary, interdisciplinary archaeology is steeped in theoretical and political consequences.

As has been pointed out by one the most prominent scholars currently studying interdisciplinarity, Julie Thompson Klein, interdisciplinarity is inherently meaningless (2005: 63). We assume that what Klein is saying is that interdisciplinarity is not really anything in and of itself, but rather something that scientific practitioners shape and dictate through their actions (see also Sørensen this issue). What is of interest to us is how archaeologists have shaped the practices that today can be qualified as "interdisciplinary".

More Is Less

More than just a combination of different ideas and methods, the interdisciplinary archaeology of today is heavily data-centric, and it refers to the methods of data retrieval, their analysis, and ultimately, their display in publications. Thus, while interdisciplinarity might have different meanings according to different archaeologists, it is most often evoked when a*ddressing the use of scientific techniques to obtain and analyse archaeological data*. In practice, interdisciplinarity is most explicit in large-scale funding, large-scale projects, where teams are composed of specialists of very specific techniques and methods. Isotope, data modelling and aDNA are currently the most popular specializations in archaeological research today. The data studied through isotope or through scientific modelling must nevertheless be archaeological – in this sense, the role of archaeology is that of retrieving data that is then studied through scientific methods. The classic case of this type of research is aDNA research, such as the first genomic histories of Europe (e.g., Haak et al. 2015). This type of research is interdisciplinary insofar as the material under analysis through DNA methods is recovered archaeologically. However, more often than not, the field archaeologists who have ceded the data have little say in their interpretation. The comparison of different archaeological proxies is also a common way of conducting interdisciplinary research, where different forms of data serve as a stand-in for what was happening in the past, for example radiocarbon dates as a proxies for settlement intensity, foraminifera as a proxy for past climate, and diverse pollens as proxy for past diet strategies. In this type of research, the central aim is consilience, that is to say, the combination of data obtained through different disciplines in order to strengthen an argument.

Both the study of ancient DNA material and the modelling of proxies have their advantages and disadvantages. The advantage of this type of research is that through large-scale funding, it becomes possible to obtain a much wider picture of the conditions of life in the past. Whereas archaeologists who rely exclusively on the direct and readily available data provided by excavation are limited to knowing and understanding what that excavation evinces, the interdisciplinary archaeology of today can also provide additional information concerning farming practices in the past across entire regions, the climatic history over hundreds of years, the intensity of occupation of a certain region during thousands of years, or very accurate and detailed chronologies of occupation, to name only a few. This type of research, in turn, has opened up archaeology to wider disciplinary networks, making it common for archaeologists to grace the pages of very high-impact factor journals, and in the process, access even larger sources of funding.

The disadvantage of this type of interdisciplinary research has been discussed quite comprehensively (Ion 2017; Sørensen 2017; Ribeiro 2019) but it bears reminding what some of these are. First, since most of interdisciplinary archaeology is explicitly scientific, that is to say, reliant on advanced scientific techniques and equipment, it becomes clear that interdisciplinarity is only truly available to those countries and institutions that have the economic power to build high-quality labs and train people to use the equipment required. Not only do richer economies have easier access to equipment and experts, they also have more capital to expend on research. Thus, it comes as little surprising that interdisciplinary archaeological projects are more prevalent in richer economies, such as Northern Europe or the the USA, while virtually absent everywhere else. According to a paper by Quirin Schiermeier in *Nature* (2020), in the last Horizon 2020, a large-scale funding programme for research initiatives, out of the €60 billion funds, 40% were shared by “the EU’s three biggest economies: Germany, France and the United Kingdom”, whereas “Poland, Slovakia, Bulgaria and Romania were among the least successful participants, securing a combined total of just over €1 billion”.

The second disadvantage is epistemological: while postprocessual archaeology did, in fact, create diverse mutually exclusive ways of understanding the past (see Kristiansen 2004), the interdisciplinarity practices of today are doing the exact opposite. They are reducing archaeological interpretation to two or three oversimplified epistemologies. Take the study of proxies as an example: archaeological proxies are only possible when elements that are quantifiable are available because proxies have to be represented numerically. Thus, aspects of the archaeological past that cannot be quantified have been ignored by most interdisciplinary archaeology, aspects such as ritual and religious beliefs, identity and personhood, social institutions, agency, etc.

For some scholars, the advantages outweigh the disadvantages: interdisciplinarity has granted archaeology resources, experts, and popularity. For other scholars, the disadvantages outweigh the advantages, in the sense that if we proceed in conducting interdisciplinary archaeology as it is understood today, we will be sacrificing

the countless ways we can practice archaeology. That is the irony of interdisciplinary archaeology; it simplifies and narrows down how archaeology is practiced. In order for archaeology to accommodate the many scientific disciplines that contribute to it, archaeology has to gradually eliminate those elements that the natural sciences do not make use of.

The New Status Quo or the New Buzzword?

Rather than truly identifying the connection of archaeology with other disciplines, both natural science and humanistic, "interdisciplinary" archaeology and its cognates seem to work as a buzzword that identifies the type of archaeological research that is scientific, expensive, and fast (see Cunningham and MacEachern 2016). Some critiques and suggestions about how to proceed with interdisciplinary research have already been put forward. However, archaeologists have only barely scraped the surface when it comes to discussing the theoretical, political, and historical implications of interdisciplinarity.

The papers included in this special issue are a result of a session on interdisciplinarity organized by the authors at the 2020 EAA annual conference. What we are aiming for with these papers is more than just critique of the current *status quo* in archaeology: we want to find ways in which archaeology could improve its inter-, multi-, cross- and transdisciplinary practices. To start off, Alexandra Ion discusses the idea that not all data is translatable from one discipline to another, and that many disciplines have different ontological perceptions of their data. Instead of the transfer of data between different disciplines, it might make more sense to recognize interdisciplinarity as a "trading zone", a flexible context where new knowledge can be produced. Liv Nilsson Stutz approaches the concept of interdisciplinarity in light of the "Third Science Revolution" in archaeology, pointing out that this way of engaging with archaeology ultimately marginalizes the humanities, which in turn could have very long-lasting and detrimental effects on the discipline. Nilsson Stutz describes how the neoliberal university has developed an obsession with output and productivity, which are threatening a truly rich and engaged form of practicing archaeology. In his paper, Tim Flohr Sørensen contends that interdisciplinary research should actually be highlighting the radical differences in terms of ontologies, epistemologies, research designs, and definitions of various disciplinary contexts. Sørensen relies on postmodern eclecticism to highlight how this approach allows for the perception of the multiplicity of epistemologies when engaging with archaeology. In her paper, Torill Christine Lindstrøm points out that interdisciplinarity is perhaps best recognized as a continuum or a spectrum, where in one end of the continuum, disciplines are very connected, and towards the other end, the disciplines are very disconnected. She argues that what we qualify as "interdisciplinary research" in archaeology fall somewhere between the ends of this continuum. Lindstrøm also points out that the different methods that archaeology could make use of are more complementary than we assume at first, and that they can be "mixed" with archaeological practices fairly easily. Daniël van Helden points out that many of the issues surrounding interdisciplinarity in archaeology concern communication. At the base of cooperative practices there is the real issue of cultural differences, of concepts having vastly different meanings depending on the disciplinary context. Van Helden emphasizes the importance of those who translate between disciplines. Finally, Artur Ribeiro outlines the epistemic limitations of interdisciplinary practice. Instead of interdisciplinarity, he suggests for archaeology the methodological anarchism of Paul Feyerabend, which would provide archaeology a more flexible and transgressive mindset towards research.

In general, all of these papers aim at establishing more flexible, equitable, and richer ways of pursuing archaeology. The idea is not to argue that interdisciplinarity in or for archaeology is something either good or bad, but to expand our ways of understanding the past, all through multiple disciplines and forms of knowledge. Additionally, what is more important is the attitude inspired by these papers. Rather than just accepting the way things are or to fully embrace our own ideas, we argue for an archaeology that accepts the attitude that things can be improved.

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Bibliography

Binford, Lewis R. 1965. Archaeological Systematics and the Study of Culture Process. *American Antiquity* 31(2): 203–210.

Clarke, David. 1973. Archaeology: the Loss of Innocence. *Antiquity* 47(185): 6–18.

Cunningham, Jerimy J. and Scott MacEachern. 2016. Ethnoarchaeology as Slow Science. *World Archaeology* 48(5): 628–641.

Díaz-Andreu, Margarita and Laura Coltofean-Arizancu. 2021. Interdisciplinarity in Archaeology – A Historical Introduction. In Margarita Díaz-Andreu and Laura Coltofean-Arizancu, eds.: *Interdisciplinarity and Archaeology. Scientific Interactions in Nineteenth- and Twentieth-Century Archaeology*, pp. 1–21. Oxford and Philadelphia: Oxbow Books.

Haak, Wolfgang, Iosif Lazaridis, Nick Patterson, Nadin Rohland, Swapan Mallick et al. 2015. Massive Migration from the Steppe Was a Source for Indo-European Languages in Europe. *Nature* 522(7555): 207–211.

Ion, Alexandra. 2017. How Interdisciplinary Is Interdisciplinarity? Revisiting the Impact of aDNA Research for the Archaeology of Human Remains. *Current Swedish Archaeology* 25: 177–198.

Klein, Julie Thompson. 2005. *Humanities, Culture, and Interdisciplinarity: The Changing American Academy*. Albany, NY: State University of New York Press.

Kristiansen, Kristian. 2004. Genes versus Agents. A Discussion of the Widening Theoretical Gap in Archaeology. *Archaeological Dialogues* 11(2): 77–99.

Kristiansen, Kristian. 2014. Towards a New Paradigm: The Third Science Revolution and its Possible Consequences in Archaeology. *Current Swedish Archaeology* 22: 11–34.

Nilsson Stutz, Liv. 2018. A Future for Archaeology: In Defense of an Intellectually Engaged, Collaborative and Confident Archaeology. *Norwegian Archaeological Review* 51(1–2): 48–56.

Ribeiro, Artur. 2019. Science, Data, and Case-Studies under the Third Science Revolution: Some Theoretical Considerations. *Current Swedish Archaeology* 27: 115–132.

Schiermeier, Quirin. 2020. Horizon 2020 by the Numbers: How €60 billion Was Divided Up Among Europe's Scientists. *Nature*. DOI: 10.1038/d41586-020-03598-2.

Sørensen, Tim Flohr. 2017. The Two Cultures and a World Apart: Archaeology and Science at a New Crossroads. *Norwegian Archaeological Review* 50(2): 101–115.

Wylie, Alison and Robert Chapman. 2016. *Evidential Reasoning in Archaeology*. London and New York: Bloomsbury.

Boundary Identities: Rethinking Interdisciplinarity in Archaeology

Alexandra Ion

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Boundary Identities: Rethinking Interdisciplinarity in Archaeology

Alexandra Ion

Francisc I. Rainer Institute of Anthropology, Calea 13 Septembrie, no. 13, Bucharest, Romania,
alexandraion.archae@gmail.com

Abstract

In this paper I focus on the way in which identity is framed in the context of multi-disciplinary work and explore this concept alongside that of interdisciplinarity. The reason for doing so is that many multidisciplinary studies claim that they are interdisciplinary, which they are not. But interdisciplinarity remains a desideratum. When trying to combine different datasets, there are several challenges inherent in the fact that the data are very different in nature: (1) each discipline might have its own ontological reading of the studied object, and (2) the scale the data operates on differs. Thus, instead of viewing interdisciplinarity as a framework that can integrate different strands of data, a "meta-model" that can be applied across cases, I propose that the solution is to see interdisciplinarity in looser terms as the creation of "trading zones," to use Peter Galison's concept. As an example, I will focus on the use of DNA data alongside other kinds of data when trying to reconstruct past identities.

Keywords

Identity, aDNA, archaeology, interdisciplinarity, trading zone

Zusammenfassung

Dieser Beitrag konzentriert sich auf die Art und Weise, wie Identität im Kontext multidisziplinärer Arbeit gestaltet wird, und dieses Konzept wird zusammen mit der Interdisziplinarität untersucht. Der Grund dafür ist, dass viele multidisziplinäre Studien behaupten, dass sie interdisziplinär seien, obwohl dies nicht der Fall ist. Dennoch bleibt Interdisziplinarität ein Desiderat. Bei dem Versuch, verschiedene Datensätze zu kombinieren, ergeben sich mehrere Herausforderungen aus der Tatsache, dass die Daten sehr unterschiedlicher Natur sind: (1) jede Disziplin könnte ihre eigene ontologische Lesart des untersuchten Objekts haben; (2) der Maßstab, auf dem die Daten wirken, ist unterschiedlich. Anstatt Interdisziplinarität als einen Rahmen zu betrachten, der verschiedene Datenstränge integrieren kann, als ein „Meta-Modell", das fallübergreifend angewandt werden kann, schlage ich vor, dass die Lösung darin besteht, Interdisziplinarität in einem weiteren Sinne als die Schaffung von „trading zones" zu sehen, um das Konzept von Peter Galison zu verwenden. Als Beispiel konzentriere ich mich auf die Verwendung von DNA-Daten zusammen mit anderen Datenarten, wenn es darum geht, vergangene Identitäten zu rekonstruieren.

Schlagwörter

Identität, aDNA, Archäologie, Interdisziplinarität, *trading zone*

Introduction

In a recent paper Joanna Brück (2021) analyses the relationship between identity and ancient DNA narratives. While researchers have already critiqued the use of genetic data to reconstruct cultural or ethnic identities (see Hofmann 2015; Heyd 2017; Furholt 2019), Brück focuses on the role of these data for the reconstruction of prehistoric kinship systems. By using anthropological insights, she points to the fact that kinship can take many forms around the world, which need not be grounded in biological relatedness. Her argument is valid, but I think we can take it further: how can we incorporate different strands of data in order to imagine past identities?

In this paper I would like to focus on the way in which identity is framed in the context of multi-disciplinary work, and explore this concept alongside that of interdisciplinarity. Without delving too much into details, as there is already a consistent body of literature on this (see Klein 2010, but also Jacobs and Frickel 2009), I take as a point of departure Julie Klein's distinction between multidisciplinarity – "the juxtaposition of disciplines. It is essentially additive" (Klein 1990: 56) – and interdisciplinarity, which is supposed to be an integration of various datasets from different disciplines. In archaeology we mostly see multidisciplinary studies, although interdisciplinarity remains a desideratum (see also Ion 2017).

How can we make different datasets work together? Should we even attempt to do so? I propose that the solution is to see interdisciplinarity in looser terms as the creation of "trading zones," to use Peter Galison's concept. I take as two premises the fact that science works best when it is "disunified" (Galison 1999) and that each discipline – archaeology, genetics, isotope studies, cultural anthropology – brings their own ontological commitment to the table. If we want to obtain a complex, nuanced interpretation of past identities we can employ the metaphor of trading zones:

> "in the highly local context of the trading zone, despite the differences in classification, significance, and standards of demonstration, the two groups can collaborate. They can come to a consensus about the procedure of exchange, about the mechanisms to determine when the goods are 'equal' to one another. They can even both understand that the continuation of exchange is a prerequisite to the survival of the larger culture of which they are part." (Galison 1999: 146)

Group Identities in Archaeology

In the ancient DNA papers that Brück refers to, we see different kinds of data brought together to answer the question "who were people X whose remains were discovered at site Y?" The interpretations offered in the papers tie individual skeletons to a group. This group can be: (a) a genetic population – individuals bearing haplogroup X; (b) a cultural population – Starcevo-Cris / LBK / Gumelnita individuals; or (c) kin / a family. New methods that can contribute to creating an individual's profile – genetics or isotopic studies (what food someone ate, the water they drank, where they were from) – have now been added to the toolkit from which archaeologists can choose when interpreting past identities.

As an example, in a 2015 article by Montserrat Hervella and colleagues, several individuals discovered at the Neolithic site of Cârcea in Romania were selected for sampling. Along with others from the sites of Gura Baciului and Negrileşti, these comprised the "Early Neolithic" sample. Then they were grouped in

> "four European haplogroups (H, HV, J and T1a) (Table 2). The haplogroup H is the most frequent in the present-day European populations and the haplogroups J and T1 are suggested to be as markers of the Neolithic diffusion from Near East [5]." (Hervella et al. 2015)

Cultural identities are drawn based on material cultural similarities, while kin relations can now be based on genetic data, corroborated with proximity. For example, at Pietrele-Gorgana, a Late Neolithic-Eneolithic site in Romania dated between 5200–4250 BC (Hansen 2015), in one of the areas (surface F) among the debris of a burnt dwelling were found the remains of nine individuals. A subsequent DNA analysis revealed that they were biologically related (Wahl 2008, 2010). The interpretation then was that these were part of a family "caught by fire and killed under the debris" (Hansen and Toderas 2007: 13).

However, bringing together genetic data and cultural readings has only exposed the cracks in the theoretical toolkit when it comes to imagining identities in archaeology. At least in the beginning, most of the genetics and isotope papers employed a cultural archaeology approach to identity (Heyd 2017). This model has deep roots in the history of the discipline. In the old days of the cultural-historical paradigm, the observable patterns in material culture were grouped in clusters identified with "cultures," and it was assumed that archaeologists dealt with races, types, and ethnicities. When these ethnicities came into contact with each other, they would transmit cultural elements through diffusion and acculturation. This would have been seen as a historical reconstruction, and in this way the patterns in the data were explained. Later on, processualist authors answered the question of who past peoples were by focusing on societies functioning as systems in which certain cultural expressions played a role in terms of functional adaptation or symbolic representation of the social persona. Post-processualist research critiqued the idea of clear-cut boundaries, and brought forth the idea of constructed and performed identities. As a consequence, certain topics (migrations, change on a large scale) fell out of general interest, while the focus moved to the individual or small scale (see Trigger 1989 for an in-depth discussion of all these interpretative models and Barrett 2021 for a more recent review).

But now, with genetic or isotopic data, the interest in migrations alongside the access to large sets of individual profiles from across the continent again bring the question of identity to the fore. The challenge I see is how we frame collective identities in these narratives, what kind of imagined communities do we end up with, and what are the relationships between them (see also Ion 2020 for a discussion of prehistoric materials)?

Identity can mean many things – your sex, your gender, if you have blue eyes or dark eyes, your skin color, whose child you are, what family you belong to, or what ethnicity or religion you subscribe to. Some are physical characteristics, others are performed. There is also a new set of literature focusing on relational identities (Fowler 2016; Crellin and Harris 2020; Brück 2021). Each of these elements can place you in a "group." Through time your identity might change and shift. Genetic analysis, osteology, cultural anthropology, isotope studies, and so on each have their own ontological view ascribed to a person's identity. So how can we make these different datasets work together?

I take two examples where the authors propose successful models and which share the same approach: a multi-factor analysis. The first is a paper by Claudio Cavazzuti and colleagues (2019) on "Flows of people in villages and large centres in Bronze Age Italy through strontium and oxygen isotopes." Here they used one kind of data to calibrate the rest. The team brings together geology, isotopes, funerary data, space/distance, and social identities in order to interpret mobility and dietary patterns in three prehistoric communities. The way this works is by reflecting on each factor through the lens of the others. For example, the concept of local is calibrated by looking at (1) space in km, (2) space at a human scale – space is divided between close proximity/more than a day's walk, (3) cultural markers of identity – funerary customs, and (4) diet. In turn, diet and isotope signatures are linked to spatial distribution maps on a wide area (50 km) and to cultural readings of these data:

> "Theoretically, an incidence of 'exotic' food might also have an impact on isotopic ratios. It seems unlikely, though, that Bronze Age communities in Northern Italy traded in staple food, considering the high production capacity reached by intensive agriculture [11,111]. More plausibly, in this historical phase, strontium isotope ratios reflect the movement of people and not of the vast majority of the ordinarily consumed food." (Cavazzuti et al. 2019: 44)

Another example is by Martin Furholt (2019), where different parameters work in parallel and create a continuum. Furholt uses a polythetic approach inspired by David Clarke to provide a more refined interpretation of DNA data, archaeological data, and the migration grand narratives, applied to the case of 3rd millennium European materials. As Furholt rightly highlights, social phenomena cannot be treated as being homogenous and a coherent unit. Instead, in Furholt's (2019: 1) words, "A unit would thus be defined by a frequent but variable co-occurrence of a set of traits present in its individuals, not excluding their occurrence in other units." For this, he breaks down different cultural traits, such as type of burial, position of the body, orientation, gender, types of material culture, distribution map of archaeological traits, and distribution map of genetic traits. All of these are then analysed through the lens of "social integration" strategies and mechanisms of change (Furholt 2019: 10).

More recently there have been other attempts to shift between scales of analysis and types of data which offer refined arguments (Gregoricka 2021; Novak 2022; Yasur-Landau 2022).

Towards Interdisciplinarity?

Both of these examples are viable options when trying to move towards an interdisciplinary approach, one that in a fruitful way can use the multiple strands of evidence available. But there might be two main challenges inherent in the fact that the data are very different in nature: (1) each discipline might have its own ontological reading of the studied object; (2) the scale the data operates on differs. For these reasons, when different disciplines meet on the same territory, either tensions or misunderstandings might arise (examples of this can be found in the article on terminology by Eisenmann et al. 2018). In the cases of genetic analysis, osteology, cultural anthropology, isotope studies, etc., each has its own ontological view ascribed to "a person's identity."

In a paper published in 2017 in the *Current Swedish Archaeology* journal, I wrote:

> "It is often taken for granted that interdisciplinarity is valuable for archaeology – but why should it be? [..] concerns are bound to appear given that interdisciplinarity is not a process of spontaneous generation (see Klein 1990:116) resulting from putting together archaeologists, geneticists and others. Rather, this should be understood as a synthetic process, in which 'individuals must work to overcome problems created by differences in disciplinary language and world-view' (Klein 1990:188). Surprisingly though, it seems that precisely this complex process of negotiation and of finding a 'meta-language' is almost absent at present." (Ion 2017: 177, 189)

At the time, several things were taking place simultaneously: (1) technical and methodological advances in archaeology and the related disciplines (genetics, isotope studies), which were bringing in a wealth of new data; (2) a resurgence of the interest in grand narratives (especially in large-scale migrations); (3) a power play between the disciplines regarding which one draws "the best" picture of humanity's past (see Ion 2017, 2020). In particular, I was interested in the use of aDNA data in archaeology and its challenges. The main point of contention was the way in which different datasets were combined in an overarching narrative, and the fact that this integration rarely led to a meaningful narrative about the past.

Two years later, the question of how we should tackle multiple strands of data in archaeology is more relevant than ever. But we have also seen more refined approaches being introduced (e.g., Cavazzuti et al. 2019; Furholt 2019, 2021; Manninen et al. 2021). Similarly, critical discourses have added valuable observations to the topic (Frieman and Hofmann 2019; Crellin and Harris 2020; Brück 2021; Jones and Bösl 2021). Looking back, I think that the initial concerns I had about interdisciplinarity in archaeology need a more nuanced phrasing and that collaborations are possible if we rethink what we expect from interdisciplinarity.

In current academic discourses there is a trend toward fetishizing interdisciplinarity, both in jobs and grant applications. But as Robert Frodeman writes in his introduction to *The Oxford Handbook of Interdisciplinarity*:

> "'Interdisciplinarity' should not be treated as a shibboleth or a sign of one's advanced thinking. Neither is it an incantation that will magically solve our problems. Interdisciplinarity is simply a means. But to what end?" (Frodeman 2010: xxxii)

Indeed, what are we trying to achieve with interdisciplinarity in archaeology? Going back to the 2019 article, I was rigidly proposing to view interdisciplinarity as a framework that should integrate different strands of data, a "meta-model" that could be applied across cases – a framework of combining different data sets to support an interpretation. Similar perspectives are discussed in the review by Jerry Jacobs and Scott Frickel, who mention scholars for whom interdisciplinarity is synonymous with integration, which in turn can have different degrees of interconnectedness – low, moderate, and high (Jacobs and Frickel 2009: 45). Instead, it might be more fruitful to focus on understanding the concept either as a complex problem-solving strategy or as a heuristic tool of discovery.

In their critical review of interdisciplinarity, Jacobs and Frickel (2009: 47) observe that, "Whether basic or applied, interdisciplinarity is supposed to integrate knowledge and solve problems that individual disciplines cannot solve alone." But how do we define what a "problem" is? We are living in a world that is marked by the effects of globalization, climate change, the Anthropocene, with complex issues created by the new digital and virtual connections. All these redefine the nature of "problem solving." Consequently, our old concepts, taken in isolation, might not work in a complex and interconnected new world. Hence, we need a language adapted to grasping problem solving in complex and intertwined networks, at the crossroads of multiple temporal and spatial scales.

Following Emma Uprichard and Leila Dawney (2016), I would propose that due to the "mess of reality" we should not even strive for achieving this integration in a universal sense. Instead, we can understand interdisciplinarity as taking place in trading zones, where new objects of inquiry are born: boundary objects.

Uprichard and Dawney convincingly wrote that by trying to integrate datasets we might actually end up with a Frankenstein-like creature:

> "After all, we tend to assume that one method depicts one part or aspect of the object of study and if another method presents a different part or aspect, then the methods have together shown different parts or aspects of the same thing. But what if one method captures the 'ear of the elephant' and another method captures the 'tail of a mouse'? What if mixed methods, very successfully, capture multiple aspects of multiple parts that are entangled together instead of revealing some (singular) 'thing' as 'more' whole?" (Uprichard and Dawney 2016: 22)

Instead, we might rethink interdisciplinarity and see it as a point of convergence, where interpretation and speculation meet strands of datasets and empirical objects and where boundary objects are born. But how can we achieve this? Philosopher of science Galison (1999) compared scientific collaborations to encounters between different anthropological cultures. Exchanges can take place in trading zones, similarly to how anthropological cultures manage to agree on rules to exchange goods or ideas (1999: 138). By coming together, different disciplines can work towards rethinking the object of study.

In order to find ways of thinking about successful collaborations across disciplines, Susan Leigh Star and James Griesemer introduced the concept of boundary objects: "objects which are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites" (1989: 393). But what is interesting about this concept is that it does not require consensus, according to them. Each discipline can retain its own reading of a particular object, but there is room for cooperation and exchange between disciplines: "boundary objects, like marginal people, exist at the intersection of two (or more) disparate social worlds without fully belonging to any of them" (Star and Griesemer 1989: 411). Under the term object one can find people, concepts, material culture objects.

Philosophers of science have written extensively about epistemic confrontations and ways of dealing with ontological differences. Alison Wylie talks about one such epistemic confrontation, which affects the "substance of the science" (Wylie 2015: 196), namely collaboration with indigenous communities. When it comes to contentious issues or relics that involve local or descendant communities, researchers often hold scientific worldviews as being the only legitimate knowledge about the topic in question. In her analysis, Wylie talks about a project involving Champagne and Aishihik First Nations (CAFN), a project meant to analyse the remains of a young man discovered in northern British Columbia in 1999. In this case, different kinds of knowledge and perspectives of the given topic were proposed.

Through her example, she showed how different kinds of knowledge can inform each other and model research agendas. In this case, the existence of different ontological framings of the subject led to the creation of a collaborative practice, a "dynamic pluralism" (Wylie 2015: 196). Contrary to other cases that Wylie labels as "limited cross-fertilisation," where non-archaeological interpretation and knowledge were added on to the scientific text and did not affect the episteme, this was a true "epistemic engagement." By this she means an encounter that affected both parties and led to reflexive engagements on what constitutes expertise and how this might drive or enforce the research agenda. In the particular case she is discussing, DNA tests on human remains belonging to a native community corroborated oral traditions regarding identity ties between inland and coastal communities, and specialists and non-specialists worked together towards a narrative that was meaningful for both parties.

Such epistemic collaborations take many shapes, but they can even lead to a critical rethinking of archaeological practice, as in my own previous experience (Ion 2016). In that case, osteologists were called in to analyse the bones of a bishop killed by the communists in order to turn him into a martyr saint. While for the community in question and the Church his body was a testimony of the sufferings and the choices he had made in virtue of his faith, a lived and experienced body, the osteological report was focused on identifying the signs inscribed on the bones to point out traces of past agencies in the materiality of the body. As a participant, this difference struck me, raising the question of how an osteoarchaeologist might be able to better recognize and express humanity through a "procedure or language that would acknowledge it without seemingly losing what is deemed as scientific objectivity" (Ion 2016: 165).

What both these cases highlight is what happens when there are different ontological understandings of what an object of study stands for (in this case a body), and how collaborative projects can lead to a breaking down of disciplinary boundaries (Wylie 2019).

Another good example is that of the microhistorical paradigm which shows us how differences in scale can be mitigated. The term microhistory refers to a historiographic school of thought that focuses on the seemingly unimportant details, the small scale, like a single event, but through this lens it manages to recover the *Zeitgeist* of a wider context. Among its most famous proponents were Carlo Ginzburg, Giovanni Levi and Natalie Zemon Davis. These authors shared an interest in the discontinuous and heterogeneous, a special attention given to narrative devices and a focus on context (Ginzburg 1993). Microhistorians offered ways of moving between scales of analysis, between local contexts and global issues. At the same time, they manage to ground their narrative in local contexts, avoiding what Lara Putnam (2016, cited in Ghobrial 2019) calls the risk to gloss over the local in favour of connections.

While microhistory has been popular with historians, there are not many attempts in archaeology. However, an echo of their methods is found in agency studies. One example can be found in osteobiographical narratives (e.g., Robb et al. 2019). An example of an attempted biography of an individual comes from a Cambridge medieval cemetery, part of the *After the Plague* project:

> "F958's genetic heritage is completely unremarkable for the region. While higher-resolution scans are ongoing, his mtDNA lineage is H2A, which is extremely common for the British Isles. […] Although the Hospital of St. John may have housed a few paying inmates (corrodians), and a few non-inmates may have been buried in its cemetery, the overwhelming probability is that F958 was an inmate of the hospital. How might he have ended up there? The hospital housed a heterogeneous population, including a mixture of young, chronically ill people and older people who presumably needed shelter due to a combination of age, infirmity, and lack of family support. It may also have contained a few aged and indigent scholars. We have built a picture of F958 as a robust, physically active person who formerly may have pursued a specialized manual craft or trade, and most of his health problems were common in older age. General indicators of decrepitude—particularly tooth loss, back problems evidenced in stooping, and disability—were recognized as signs of advancing age, for instance in visual characterizations of the later "ages of man" […]. It is possible that he became an inmate of the hospital because of age-related inability to work, lack of family networks, and the resulting indigence rather than because of any specific medical problem. There is no indication of what caused F958's death. […] As a chosen recipient of generous institutional charity in a sea of the urban needy, he must have been seen as deserving and conventionally religious. (This selection, incidentally, gives us some guarantee that his sex and the gender ascribed to him coincided conventionally; it is unlikely that a charitable religious institution would have admitted someone not conforming to gender norms.)" (Robb et al. 2019: 26)

By bringing together data in a story with some sort of temporal dimension, with causes and consequences, and with a link between the particular and the general cultural and social context, the reader is left with the feeling of a better-integrated narrative with a meaningful story. This structure allows for the bringing in of different strands of data and weaving them together into a coherent story. The result is also more than the sum of its parts.

Boundary Objects, DNA and Archaeology

In the previous sections we saw strategies for successful integration of multiple data obtained from archaeological contexts. A human skeleton can become such a boundary object. A tell can be a boundary object. Other examples of boundary objects can be "an assemblage" or "a dwelling," as are concepts such as identity, migration, or time. Each discipline can bring its data and propose a certain reading of each of these contexts. Then, instead of defining interdisciplinarity in narrow terms of providing better-supported interpretations to the questions we already have, we should see interdisciplinarity as tying the lines of data together to generate new perspectives, possible connections, and speculative outcomes. Only when the evidence at hand transforms our concepts and categories and takes us towards finding alternative interpretation might we say we are moving towards interdisciplinarity. This requires crossing our conventional boundaries between objects and between disciplines.

For example, a more fine-grained look at the archaeological evidence from Pietrele paints a more complex story than "a family caught by fire and killed under the debris" (Hansen and Toderas 2007: 13). Genetic data can reveal biological kinship between individuals but can say little about its cultural interpretation or about why those

individuals ended up deposited in the dwelling (together). One way forward is to look at the relationship between the bodies and the construction they are part of and to rethink what "tells" or "burnt dwellings" are. Thus, an alternative interpretation that I have suggested elsewhere (Ion 2020) was that what we have here is a group of individuals, a burnt dwelling, a tell, and a series of fragmentation practices linking material culture and human remains. Each of which could only be interpreted in relation to the other. We know that not all remains are present, with "a striking lack of cranial and leg bones (harder to destroy), not all human remains display heat marks from the presumed fire, some bones were found outside the dwelling, and a chisel made of a human bone found among the remains" (Ion 2020: 364). This suggests intentional selection and deposition of material. At the same time, numerous studies have associated the intentional burning of dwellings with the "ritualized killings" of houses, which are sealed afterwards.

If we look around this context, we find at Pietrele numerous depositions of body parts in "odd" contexts (to a modern eye). One example is a pit on the margins of the tell (dated 4610–4530 BC), L273, which was interpreted as a "mass grave" (Hansen et al. 2012). Here archaeologists found five individuals in "poor health," four of whom were females. One individual showed signs of physical disability. It is not clear from the report if all bodies were complete, but it seems that at least some of them were. At first glance, it looked as if the bones had been placed in a heap. Being layered on top of one another and next to a large deposit of mussel shells might suggest a different kind of ritualized killing – individuals denied the usual funerary rites and instead being "thrown away" on the margins of the tell (boundary). The bending backwards of one of the individuals (the lower legs were discovered first, under them were his thighs, with the individual resting on his stomach – Hansen et al. 2012) might also suggest, based on ethnographic analogies, that it could be an action taken to make sure the individual will not come back.

If we take all these elements together, they start to paint a picture at Pietrele of practices of "unmaking of personhood" (Ion 2020: 364) and the transitioning of people to the status of ancestors, or, on the contrary, to cancelling their memory. More importantly, the human bodies become part of mixed assemblages in a world where there are fluid boundaries between the domestic and the funerary area: a dwelling can become a ritual context through the deposition of human remains and then burning down, followed by the deposition of other material culture. As we have more data, we can unravel more of the threads of the story, going out into the landscape and also deeper into the history of the Pietrele community, each thread opening new questions and avenues of research.

In this case, the concept of identity can be approached from multiple angles: DNA evidence can be used to help shape the biography of the individuals, but to this there is an added layer of cultural readings of those identities, followed by the translation of identities in death and the afterworld.

Final Thoughts

We live in a complex world in which we have come to understand and appreciate the interconnectedness of things, animals, plants, and humans. While social theory and philosophical inquiry have offered us several concepts that can help us grasp these connections, relations, and networks, our methodological toolkit is still lacking when it comes to interpreting past contexts. We find ourselves oscillating between the local and the global, the thing and its context, the assemblage and its network. With the advancement of science, new data come to light, adding new pieces to our interpretation of the past. However, the way in which we combine these various pieces is still a matter of reflection. In this text I proposed that instead of finding ways to fit different datasets which might never fit together, we should accept scientific pluralism. Instead of focusing on the datasets, to rethink the objects we study and place them at the crossroads of these various disciplines. To explore the potential of trading zones and boundary objects as multi-dimensional objects of study that open several venues of research at the same time. Someone's identity is multi-layered and it acquires characteristics depending on the context where they perform. Therefore, framing past identities follows a similar logic and invites us to construct a multi-layered narrative. There is no single path to achieve this, but there are already thought-provoking models available that can inspire us to make different datasets to work together in a meaningful way.

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Bibliography

Barrett, John. 2021. *Archaeology and Its Discontents. Why Archaeology Matters*. London and New York: Routledge.

Brück, Joanna 2021. Ancient DNA, Kinship and Relational Identities in Bronze Age Britain. *Antiquity* 95(379): 228–237. DOI: 10.15184/aqy.2020.216.

Cavazzuti, Claudio, Robin Skeates, Andrew R. Millard, Geoffrey Nowell, Joanne Peterkin et al. 2019. Flows of People in Villages and Large Centres in Bronze Age Italy through Strontium and Oxygen Isotopes. *PLOS ONE* 14(1): e.0209693.

Crellin, Rachel J. and Oliver J. T. Harris. 2020. Beyond Binaries: Interrogating Ancient DNA. A*rchaeological Dialogues* 27(1): 37–56.

Eisenmann, Stefanie, Eszter Bánffy, Peter van Dommelen, Kerstin P. Hofmann, Joseph Maran et al. 2018. Reconciling Material Cultures in Archaeology with Genetic Data: The Nomenclature of Clusters Emerging from Archaeogenomic Analysis. *Scientific Reports* 8: Art. 13003.

Fowler, Chris. 2016. Relational Personhood Revisited. *Cambridge Archaeological Journal* 26(3): 397–412. DOI: 10.1017/S0959774316000172.

Frieman, Catherine. J. and Daniela Hofmann 2019. Present Pasts in the Archaeology of Genetics, Identity, and Migration in Europe: A Critical Essay. *World Archaeology* 51(4): 528–545, DOI: 10.1080/00438243.2019.1627907.

Frodeman, Robert. 2010. Introduction. In Robert Frodeman, Julie Thompson Klein and Carl Mitcham, eds. 2012. *The Oxford Handbook of Interdisciplinarity*, pp. xxix–xxxix. Oxford: Oxford University Press.

Furholt, Martin. 2019. Re-integrating Archaeology: A Contribution to aDNA Studies and the Migration Discourse on the 3rd Millennium BC in Europe. *Proceedings of the Prehistoric Society* 85: 115–129. DOI: 10.1017/ppr.2019.4.

Furholt, Martin. 2021. Mobility and Social Change: Understanding the European Neolithic Period After the Archaeogenetic Revolution. *Journal of Archaeological Research*. DOI: 10.1007/s10814-020-09153-x.

Galison, Peter. 1999. Trading Zone: Coordinating Action and Belief (1998 Abridgment). In Mario Biagioli, ed.: *The Science Studies Reader*, pp. 137–160. London and New York: Routledge.

Ghobrial, John-Paul A. 2019. Introduction: Seeing the World Like a Microhistorian. *Past & Present* 242(14): 1–22. DOI: 10.1093/pastj/gtz046.

Ginzburg, Carlo. 1993. Microhistory: Two or Three Things That I Know about It. *Critical Inquiry* 20(1): 10–35. DOI: 10.2307/1343946.

Gregoricka, Lesley A. 2021. Moving Forward: A Bioarchaeology of Mobility and Migration. *Journal of Archaeological Research* 29: 581–635. DOI: 10.1007/s10814-020-09155-9.

Hansen, Svend. 2015. Pietrele – A Lakeside Settlement, 5200–4250 BC. In Svend Hansen, Pál Raczky, Alexandra Anders and Agathe Reingruber, eds.: *Neolithic and Copper Age between the Carpathians and the Aegean Sea. Chronologies and Technologies from the 6th to 4th Millennium BC. International Workshop Budapest 2012*. Archäologie in Eurasien 31, pp. 273–293. Bonn: Habelt.

Hansen, Svend and Meda Toderas. 2007. Pietrele. A Chalcolithic Settlement at the Lower Danube. In Svend Hansen, ed.: *Pietrele "Gorgana". O asezare din epoca cuprului la 60 de ani de cercetari*, pp. 2–21. Giurgiu: Muzeul Judetean Teohari Antonescu.

Hansen, Svend, Meda Toderas, Agathe Reingruber, Jürgen Wunderlich, Norbert Benecke et al. 2012. Pietrele an der Unteren Donau. Bericht über die Ausgrabungen und geomorphologischen Untersuchungen im Sommer 2011. *Eurasia Antiqua* 18: 1–68.

Hervella, Montserrat, Mihai Rotea, Neskuts Izagirre, Mihai Constantinescu, Santos Alonso et al. 2015. Ancient DNA from South-East Europe Reveals Different Events during Early and Middle Neolithic Influencing the European Genetic Heritage. *PLOS One* 10(6): Art. e0128810.

Heyd, Volker. 2017. Kossinna's Smile. *Antiquity* 91(356): 348–359.

Hofmann, Daniela. 2015. What Have Genetics Ever Done for Us? The Implications of aDNA Data for Interpreting Identity in Early Neolithic Central Europe. *European Journal of Archaeology* 18(3): 454–476.

Ion, Alexandra. 2016. The Body of the Martyr: Between an Archival Exercise and the Recovery of his Suffering. The Need for a Recovery of Humanity in Osteoarchaeology. *Archaeological Dialogues* 23(2): 158–174.

Ion, Alexandra. 2017. How Interdisciplinary is Interdisciplinarity? Revisiting the Impact of aDNA Research for the Archaeology of Human Remains. *Current Swedish Archaeology* 25: 177–198.

Ion, Alexandra 2020. Why Keep the Old Dead Around: Bringing Together Theory and Method in the Study of Human Remains from Balkan (E)Neolithic Settlements. *Documenta Praehistorica* 47: 348–372.

Jacobs, Jerry and Scott Frickel. 2009. Interdisciplinarity: A Critical Assessment. *Annual Review of Sociology* 35: 43–65.

Jones, Elizabeth D. and Elsbeth Bösl. 2021. Ancient Human DNA: A History of Hype (Then and Now). *Journal of Social Archaeology* 21(2): 236–255. DOI: 10.1177/1469605321990115.

Klein, Julie T. 1990. *Interdisciplinarity*. Detroit: Wayne State University Press.

Klein, Julie T. 2010. A Taxonomy of Interdisciplinarity. In Robert Frodeman, Julie Thompson Klein and Carl Mitcham, eds.: *The Oxford Handbook of Interdisciplinarity*, pp. 15–30. Oxford: Oxford University Press.

Manninen, Mikael A., Hege Damlien, Jan Ingolf Kleppe, Kjel Knutsson, Anton Murashkin et al. 2021. First Encounters in the North: Cultural Diversity and Gene Flow in Early Mesolithic Scandinavia. *Antiquity* 95(380): 310–328. DOI: 10.15184/aqy.2020.252.

Novak, Shannon A. 2022. Sketchbook Archaeology: Bodies Multiple and the Archives They Create. *Journal of Social Archaeology* 22(2): 212–232. DOI: 10.1177/14696053221102235.

Putnam, Lara. 2016. The Transnational and the Text-Searchable: Digitized Sources and the Shadows They Cast. *American Historical Review* 121(2): 377.

Robb, John, Sarah A. Inskip, Craig Cessford, Jenna Dittmar, Toomas Kivisild et al. 2019. Osteobiography: The History of the Body as Real Bottom-Line History. *Bioarchaeology International* 3(1): 16–31. DOI: 10.5744/bi.2019.1006.

Star, Susan Leigh and James R. Griesemer. 1989. Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907–39. *Social Studies of Science* 19(3): 387–420.

Trigger, Bruce. 1989. *A History of Archaeological Thought*. Cambridge: Cambridge University Press.

Uprichard, Emma and Liela Dawney. 2016. Data Diffraction: Challenging Data Integration in Mixed Methods Research. *Journal of Mixed Methods Research* 13(1): 19–32. DOI: 10.1177/1558689816674650.

Wahl, Joachim. 2008. Die menschlichen Skelettreste – Die „Großfamilie“ aus dem verbrannten Haus in Fläche F und weitere Artefakte aus Menschenknochen. *Eurasia Antiqua* 14: 80–93.

Wahl, Joachim. 2010. Ein Teilskelett mit Brandspuren und ein ungewöhnliches Knochenartefakt – die menschlichen Skelettreste aus der Grabung 2008. *Eurasia Antiqua* 16: 79–91.

Wylie, Alison. 2015. A Plurality of Pluralisms: Collaborative Practice in Archaeology. In Flavia Padovani, Alan Richardson and Jonathan Y. Tsou, eds.: *Objectivity in Science. New Perspectives from Science and Technology Studies*, pp. 189–210. Cham: Springer Verlag.

Wylie, Alison. 2019. Crossing a Threshold: Collaborative Archaeology in Global Dialogue. *Archaeologies* 15: 570–587. DOI: 10.1007/s11759-019-09385-4.

Yasur-Landau, Assaf 2022. A Harbor Scene. Reassessing Mobility in the Bronze Age Eastern Mediterranean Following the Archaeological Science Revolution. In Megan Daniels, ed.: *Homo Migrans. Modeling Mobility and Migration in Human History*, pp. 147–161. New York: State University of New York Press.

Rewards, Prestige, and Power: Interdisciplinary Archaeology in the Era of the Neoliberal University

Liv Nilsson Stutz

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Rewards, Prestige, and Power: Interdisciplinary Archaeology in the Era of the Neoliberal University

Liv Nilsson Stutz

Linnaeus University, Department of Cultural Sciences, 351 95 Växjö, Sweden, liv.nilssonstutz@lnu.se

Abstract

Archaeology has always been situated in a borderland between disciplines. However, in recent years a vigorous debate about the relationships between the humanities and the natural sciences has emerged within the field, warning that with the "Third Science Revolution" in archaeology, the important perspectives provided by the humanities are being marginalised, and that this can have long-lasting and detrimental effects on the discipline. This article critically examines the debate and situates it in the context of the development of the neoliberal university and its impact on research and intellectual work more broadly and identifies the underlying ideologies of ever-increasing research output and quantification as the real threat to an intellectually rich and engaged archaeology, not the natural sciences.

Keywords

Epistemologies, paradigms, power, Third Science Revolution, neoliberal universities

Zusammenfassung

Die Archäologie befindet sich seit jeher in einem interdisziplinären Grenzbereich. In den vergangenen Jahren kam es jedoch innerhalb des Fachs zu einer heftigen Debatte über die Beziehungen zwischen den Geistes- und den Naturwissenschaften. Dabei wird davor gewarnt, dass mit der ‚*Third Science Revolution*' in der Archäologie wichtige geisteswissenschaftlichen Perspektiven marginalisiert werden, wodurch das Fach nachhaltige Schäden nehmen könne. Dieser Artikel nimmt eine kritische Untersuchung der Debatte vor und stellt sie in den Kontext der Entwicklung der neoliberalen Universität und ihrer Auswirkungen auf die Forschung und intellektuelle Arbeit per se. So identifiziert er nicht etwa die Naturwissenschaften als Bedrohung für eine intellektuell vielfältige und engagierte Archäologie, sondern die zugrundeliegenden Ideologien des ständig steigenden Forschungsoutputs und der Quantifizierung.

Schlagwörter

Erkenntnistheorien, Paradigmen, Macht, *Third Science Revolution*, neoliberale Universitäten

Introduction: We Have Never Been Monodisciplinary

Addressing interdisciplinarity in archaeology is like taking on its very soul. Throughout its history, archaeology has developed its own methods and built up a unique approach to human history based on the analysis and contextualisation of material culture, but this work has always been situated in a borderland between disciplines. A survey of research papers published in the Swedish archaeology journal *Fornvännen*, conducted by Kerstin Lidén, shows that in Sweden, the use of scientific methods in archaeology dates back to its 18th century beginnings (Lidén 2006). In another paper Christopher Prescott declares that, while archaeology has a strong identity, it is "inherently a borrower discipline" (Prescott 2013: 42), underscoring its openness in integrating theories and methods from other fields. This position between disciplines becomes obvious when we look at how archaeology is categorised within university structures. Depending on the academic culture in different countries, archaeology as a subject

can be part of the humanities, natural sciences, or social sciences. Sometimes this diversity can be found within individual national systems, reflecting different research traditions, and sometimes they can even be found within a single university, reflecting different specialisations within the field itself. It is thus clear that archaeology is not, and never has been, monodisciplinary. It has grown out of and thrived in the fertile soils between disciplines. That being said, with the recent emergence of the "Third Science Revolution" in archaeology, the balance of scientific collaborations has shifted and caused a new debate. Critique has been launched in particular against the work of successful and controversial researchers from other disciplines in the natural sciences, such as David Reich (2018), who from the vantage point of their own disciplines (in this case, genetics) have encroached on the territory of archaeology to tell their story about prehistoric migration, often, according to their critics, without carefully weighing or acknowledging the archaeological knowledge built up over decades of research. It is therefore important to question what lies beneath the surface of this current debate on interdisciplinarity in archaeology, and why it seems to be such a point of contention.

When we discuss collaborations across disciplinary boundaries it is useful to identify the different forms they may take, in order to identify what kinds of collaborations we are seeing and what our expectations are for the field going forward. Building on Marilyn Stember (1991) and Bernard C. Choi and Anita W. Pak (2006), I have outlined these definitions elsewhere (Nilsson Stutz 2018), but to situate this discussion here, I provide a short recapitulation.

The most basic form for disciplinary collaboration is *multidisciplinarity*. The term refers to a model where different disciplines each provide their own perspective and bring their disciplinary expertise to bear on an issue while at the same time staying within their respective boundaries. In archaeology, an example of this type of research would be traditional collaborations with osteologists or palynologists, who add their specialised analysis, often provided in a separate chapter or appendix to a site report or publication, and where the archaeologist is in charge of bringing it all together in a final interpretation. This type of collaboration was common in archaeology in the second half of the 20th century.

Multidisciplinarity is increasingly replaced by *interdisciplinarity*, which refers to a higher degree of integration of perspectives and expertise, where links between disciplines are analysed, synthesised, and harmonised into a "coordinated and coherent whole" (Choi and Pak 2006: 359). Through this kind of collaboration, the interdependent parts of knowledge are brought together, considering different scales of connectedness, resulting in an integrated approach. This kind of higher-level interdisciplinarity characterises most archaeological collaborations today and can be exemplified by the characteristic close cooperation between different specialists, bringing their perspectives into the research design of an excavation project from its conception through to interpretation. The increasing number of co-authored articles in archaeology in the past decades is a clear indication of a shift toward actual interdisciplinarity as a norm for the field.

Finally, *transdisciplinarity* can be considered as an even more integrated level of connectedness, creating an intellectual framework beyond the disciplinary perspectives. This can be exemplified by scholars who, already in their own scholarship, draw on a range of disciplines and allow them to mutually inform one another, or who work with methods developed in one discipline and apply them in another (for example, when ethnography is applied in archaeology). The distinction between interdisciplinarity and transdisciplinarity is somewhat unclear. The distinction has been criticized on the basis that in the end, they both remove "the disciplinary impasses where these block the development of problems and the corresponding responses of research. Interdisciplinarity is in fact transdisciplinary" (Mittelstrass 2001: 497). However, Jürgen Mittelstrass (2001) distinguishes transdisciplinarity by stressing its lasting effects:

> "While scientific co-operation means in general a readiness to co-operation in research, and thus interdisciplinarity in this sense means a concrete co-operation for some definite period, transdisciplinarity means that such co-operation results in a lasting and systematic order that alters the disciplinary order itself." (Mittelstrass 2001: 497)

From an epistemological point of view, this form of collaborative research is easier to conceptualise, as long as every contributor still relies on a specific disciplinary foundation. However, it can become more challenging for a single scholar incorporating this type of scholarship in their work, trying to convey an integrated but still-complex whole. Here, the disciplinary boundaries eventually become difficult to define, as they blend and feed into each other to a point of redefinition or destabilisation. Paradoxically, while we allegedly celebrate the idea of work across disciplines, this kind of transdisciplinarity is not always rewarded, as the researcher may be questioned as

to where their actual expertise resides. Are you an archaeologist? A biological anthropologist? A cultural anthropologist? A philosopher? Or what? Here we start to sense that there may be invisible limits within the definitions of disciplines that resist further expansion outside of the disciplinary box. As I explore the role of power in this dynamic below, I will return to this observation.

Finally, for many, transdisciplinarity also includes a component of incorporating collaborations and knowledge systems that transcend the boundaries of the academy itself to engage other stakeholders in order to try to affect change in society (e.g. Mittelstrass 2001; Nicolescu 2002; Pohl and Hirsch Hadorn 2007; contributions in Hirsch Hadorn et al. 2008; Zierhofer and Burger 2007; Østreng 2010). This dimension is becoming increasingly important to consider in the contemporary political and academic landscape which emphasizes different forms of engagement outside of the university, through activist and applied scholarship. In archaeology we see emerging scholarship relating to ecology, preservation, and sustainability (Isendahl and Stump 2019), sustainable communities (collaborative archaeology), or that address social problems (Zimmerman et al. 2010; Kiddey and Schofield 2011; De León 2015; Hamilakis 2017).

Mittelstrass (2001) stresses that transdisciplinarity is a *practical research principle* and not primarily a theoretical position. He points out that this is an integrating concept that resolves methodological isolation without constructing a "unified" interpretative or explanatory matrix. It makes sense that disciplines exist, since they provide clear organisational and epistemological structures for inquiry, training, and communication; but this setting can also contribute to stagnation. Transdisciplinarity can help existing disciplines deal with such impasses. Usually, these new forms of collaboration do not lead to old disciplines dying and new ones forming. Rather, transdisciplinarity can revitalise the disciplines involved. However, the impact may also be transformative. In anthropology and archaeology, we can see how a bio-cultural perspective for an understanding of humanity crosses disciplinary boundaries in a way that can arguably be viewed as a new explanatory matrix. We can also ask, is transdisciplinary scholarship limited to its immediate "usefulness" in proposing concrete solutions to targeted challenges (climate change, erosion, health outcomes, etc.), or can we claim transdisciplinarity also for intellectual, artistic, and exploratory work? We will return to this below.

Given our history with interdisciplinarity, it is easy to imagine that archaeology should be leading the movement. But when we examine the history of archaeology as a discipline, we notice that the different forms of collaboration and their level of integration have not been consistently improving, but rather have fluctuated over time. It could be argued that archaeology started out as an interdisciplinary endeavour, and over the course of the 20th century became increasingly multidisciplinary as specialisation in research in general drove us into narrower categories of research and inquiry. But, as mentioned above, the multidisciplinary model has its limitations, and we are currently working towards a breaking-down of those barriers, to integrate a more complete and complex perspective in our research questions. As archaeology has moved from multidisciplinarity to interdisciplinarity, the field has shifted. This shift is due to a series of factors that are all related and that all affect the power relationships in the field:

1. a shift toward the natural science disciplines that have a longer tradition of collaborative research practices and that fit well the interdisciplinary model of work. They have also experienced a rapid development of methods that are well adapted to archaeological source materials;

2. a so-called "crisis of the humanities" in a general cultural debate, involving a questioning of the value of research traditions since the impact of postmodernism. These traditions are concerned with the boundary between the acknowledgement of the subjectivity of interpretation and a distancing from hyperrelativism;

3. the development of the neoliberal university, which, through reward systems based on quantification following structures adapted to the natural sciences, stimulates the STEM fields at the expense of other disciplines, especially the humanities.

Taken together, all these interrelated developments – intellectual, political, and economic – have led to a shift in power and prestige within archaeology which has increasingly shaped itself according to a model of the natural sciences in the past two decades.

To better understand what the current debates about interdisciplinary work in archaeology are really about and to allow us to formulate a way forward, this article takes a multipronged approach. By analysing the debate, it examines the positioning and relationships forged by the disciplinary theoretical developments over the past several decades. It then places these debates within a broader context of contemporary political structures. Finally, and using the different concepts for collaboration, it proposes a way to rethink interdisciplinarity in (and through) archaeology in a manner that explicitly challenges the current hegemonic structures.

Pendulums and Wrecking Balls: The Dynamics of Archaeological Debates

As already stated, archaeology has never been monodisciplinary. On the contrary, by drawing on and finding inspiration in other disciplines, archaeologists have developed a large theoretical and methodological toolbox. This dynamic becomes especially clear in an analysis of the internal theoretical debates that have moved archaeology in different directions, often tearing it apart at the centre, while forging relationships with other disciplines through theoretical and methodological interdisciplinary partnerships. This tension has brought strength to archaeology and prepared us for scientific and intellectual collaboration. It has also contributed to internal conflicts, including what Robert Chapman and Alison Wylie recently called "theory wars" (Wylie and Chapman 2016: 7). When reviewing the literature on interdisciplinarity in archaeology from the last decades it is clear that there is a power struggle brewing below the surface. The conflict is often framed by the dichotomy set up by Charles Percy Snow in his lecture on *The Two Cultures and the Scientific Revolution* (Snow 1959; e.g., Prescott 2013; Sørensen 2017a; Ribeiro 2019). Snow critically examined the gap between the humanities and the natural sciences, caused by a lack of shared references and general culture – the result of an elitist educational system that traditionally had overrewarded the humanities at the expense of the natural sciences. The essay proposed an interesting point of departure to discuss the "theory wars" in archaeology, especially since it included a consideration for shifting dynamics of value and status, of ideas about usefulness, and of the concept of literacy across disciplines (cf. Nilsson Stutz 2016).

Epistemological developments of scientific knowledge are often likened to the movement of a pendulum, where the movement back and forth between different paradigms and perspectives moves the field forward. In the second half of the 20th century, these pendulum movements can be tracked in archaeological theory through the relationship of processual and post-processual archaeologies that in different ways built on and complemented each other. At the same time, they were perceived as epistemological polar opposites. Processual archaeology emerged as a reaction against a culture historically-oriented archaeology in the 1960s (Trigger 1989) and embraced modelling and analytical tools from cultural anthropology, computer sciences, and natural sciences. In the 1980s, a reaction developed in the form of the post-processual paradigm. The term is problematic in that it contains a broad range of different theoretical directions, united by what it is *not*, i.e., processualism, rather than by what it is (a broad range of theoretical frameworks loosely building on the insights of postmodernism). In the course of this shift, archaeology (re)turned to the humanities in the 1980s, opening itself to history and philosophy but also to social theory for inspiration and epistemological partnerships, while it simultaneously, and in the spirit of the pendulum, turned its back on the natural sciences. In the years that followed, the oscillation gained in amplitude. Artur Ribeiro (2016) has pointed out that the amplitude of this movement may have been considerably greater in the UK and parts of Scandinavia, where post-processualism had a firmer foothold than in other parts of Europe and the United States. This reminds us that these movements are not everywhere identical, and it may also give us a clue as to why a considerable amount of ink is spilled on the current debate in Scandinavian archaeology journals, while the return of the pendulum toward the natural sciences causes less of a stir elsewhere.

Indeed, following the physical law of pendulums, the pattern was bound to repeat itself – and it just did – with a backlash, a movement in the opposite direction with the "Third Science Revolution" (Kristiansen 2014), which took hold at the beginning of the 21st century. It has been driven by methodological advances in a range of laboratory sciences applied to archaeology, including DNA analysis, isotope analysis, etc. This return to the natural sciences is fuelled by a range of methodological advances, but it also coincides with the so-called "crisis of the humanities." After a golden age in the 19th and 20th centuries, the humanities started to face a crisis often associated with the postmodern critique. It is paradoxical but somehow has become legitimate to claim that the theoretical movement that broke up the unilinear metanarratives in favour of multivocality, postcolonial perspectives, and cultural

relativism made the humanities *less* relevant to understand the contemporary world. At the heart of the critique lies the discomfort with the destabilisation of objectivity, and it has constituted a very successful attack on the humanities in general. In the end, a few years into the new millennium, this critique finally left a lasting imprint on archaeology, pushing it toward the "harder sciences." Now, finally, archaeology – long thought of as a humanist discipline – can produce what is perceived to be more scientific and objective results, and it appears to be a relief to many.

It is interesting to note that, with the Third Science Revolution, the changes in archaeological attitudes were not limited to views on the natural sciences. The theoretical swing could be traced to a deeper dissatisfaction with the efficacy of the postprocessual paradigm. The social theory of the 1990s was often framed in linguistic terms of meaning and significance, with Ian Hodder's *Reading the Past* as a case in point (Hodder 2003). While initially enriching archaeological interpretation, bringing it into a more mature theoretical academic discussion, it often failed to deliver a good fit between theory and sources. At the turn of the new millennium there was a growing awareness that the dominating linguistic frameworks involving ascribed meaning were less effective than theories exploring practice and materiality to understand human prehistory (Nilsson Stutz 2008). This lack of satisfaction with the connection between theoretical models and the archaeological sources as well as the need for empirical grounding have developed further within archaeological theory over the past 15 years. As a consequence, we have recently seen a broader turn toward the material world, resulting in approaches such as symmetrical archaeology (Webmoor 2007; Witmore 2007; Olsen 2010; Olsen and Witmore 2015; Edgeworth 2016) and toward post-humanist perspectives, Actor-Network-Theory (ANT), and Object-Oriented Ontologies (OOO), all breaking away from a humanocentrist processing of the world (e.g. Morton 2017). However, these turns toward materiality have stayed mostly out of the fray of debates regarding interdisciplinarity, probably because its most successful proponents remain identified as "theorists".

Dissatisfaction drives change, but there are different ways to go about it. When looking at the debate surrounding the "Third Science Revolution" in archaeology, there seems to be a common view that we are dealing with a pendulum that has the tendency to be deployed as a wrecking ball (cf. Sørensen 2017b), tearing down everything in its path. However, as we move forward into an interdisciplinary future, I propose another strategy. On closer inspection we note that below the surface of grandstanding in archaeological theory and current archaeological debates, there is a lot of work just happening. To illustrate the effects of this, I propose that we instead use the 1851 experiment of Léon Foucault with his pendulum as a metaphor, where the movement back and forth is complemented by a gradual rotation moving sideways to fill the plane of oscillation. The movement of this pendulum between perspectives gradually fills in the blanks of our knowledge in a manner that stresses circularity over polarity. Thinking back to the development of archaeological theory, this would mean that we have room in our models to keep some of the knowledge we have acquired along the way as we move with the pendulum, and we can acknowledge that we keep coming back to questions, models, and tools we have used before. Instead of destructively crashing into them, we can pick them up and let them ride along with us. A similar argument has been proposed by Ribeiro who has criticized what he calls the fetishization of "newness" in archaeological theory, questioning the notion that archaeology should be in need of paradigmatic change. Instead, he recommends "a culture which prioritizes the quality of archaeological theories regardless of whether they are new or old" (Ribeiro 2016: 146). I could not agree more.

The Current Debate: Revisiting the Two Cultures

Since the turn of the millennium, we have seen first a gradual and now an increasingly sharp return to empiricism, materiality, and, perhaps most important for our discussions here, toward the natural sciences. Different forms of collaboration between laboratory sciences and archaeology have gained in strength and importance, and this has without a doubt yielded important and interesting results and insights enriching archaeology. This so-called "Third Science Revolution" in archaeology is embedded within the development of laboratory-based sampling and methods of analysis, along with big-data mining and hypothesis-driven research design – all core practices in the natural sciences. It certainly constitutes a return to the material dimension of archaeology, with – in an important respect – a widening of the epistemological scope to include more scientific theory. It also relies unavoidably on interdisciplinarity. While this development has found enthusiasm within the field (e.g., Kristiansen 2017), it has

also been vigorously criticized (see below). Before we go any further, we must first ask: are the archaeological sciences useful? If the answer is yes, which I believe it is, our next question must be why there is so much debate about them. Is it really about the science?

The answer to the second question is both yes and no. It appears that, beyond the new data and information, the turn of the field has had deeper impacts on archaeological knowledge production than can be analysed in epistemological terms alone. But in addition to that, and as will be developed below, the debate is also conditioned by political factors impacting university structures and research practices that affect *all* research and where we could identify a common adversary. These layers are all interconnected, but for the sake of clarity I will present them separately.

Epistemological Hierarchies

The first critique has to do with epistemological hierarchies, respect, and flow of ideas within the interdisciplinary model. As the "Third Science Revolution" has taken hold, it should not be surprising that theoretical archaeological reflection has increasingly involved critique. Yet, most of the critique raised in the current debate does not question whether we should be doing archaeological science per se. Note that this is quite different from the postprocessual critique of processual archaeology. Now nobody seriously doubts the value of the data, and everybody agrees that it must be interpreted. It is here, though, that critics point to an insufficiency, a failure to engage substantially with an archaeology informed by the humanities, resulting in a lack of nuance and theoretical depth in interpretations (Sørensen 2017a; Ion 2019; Ribeiro 2019). The valuable synchronisation between methods, theory, and data is lost, and the archaeologist often struggles to get the point across that, with the publication of laboratory results, there all too often remains a lack of problematisation. This critique has especially focused on the interpretations of ancient DNA analyses in explaining prehistoric migrations (i.e., Frieman and Hofmann 2019; Furholt 2019; Ion 2019). Because the methodological developments are so exciting, with great amounts of new data extracted, there is a real risk at the moment that the methodological development overshadows the theoretical work. If we are not cautious, we run the risk of producing a range of data points that are not sufficiently framed by a contextual understanding of past processes (for example, of migrations in the past), of biological or genetic processes, or a deeper understanding of human experience.

This lack of engagement with the humanities side of archaeology is not only a matter of adding colour to the interpretations. The stakes are higher than that. The allure of objective truth that can come with scientific laboratory results has both disciplinary and political consequences. Åsa Larsson (2013) reminds us that all research is and should be a process toward increasingly better insights but that it is never a finalised stable interpretation. When it works, science proceeds by correcting itself, but that does not mean that it is ever reaching a definitive end. If we are to combine science and archaeology, Larsson argues, then we should be scientific about it. She uses radiocarbon dating and the molecular clock as examples where scientific model methodologies have been adjusted after archaeology and palaeontology provided a well-warranted critical response (Larsson 2013: 31). There are also dangers that extend beyond the research field itself. Elisabeth Niklasson points out the risk (and in particular, the political risk) in a false sense of security provided by seemingly objective data. It is not enough, she argues, to simply "add critics and stir" once the interpretation is out there. Since knowledge is produced at a deeper level, that critical mindset must be inherent in the research process. We need to understand that ideology is intrinsic to archaeological knowledge production, not merely "an infiltrator" (Niklasson 2014: 60).

So why do these problems occur at the interpretative level? Some of the challenges may emerge from the problem with academic specialisation. The more we specialise, the more our value as partners in interdisciplinarity increases. But interdisciplinarity does not only require specialisation. It also requires a broad understanding of the complex issues we are tackling. The intersections of perspectives from different epistemologies enrich our understanding, perhaps especially of humanity, interconnected across multiple scales with our material surroundings, wrapped up in a complex, deep, biocultural history. Despite this compelling potential for interdisciplinarity, archaeology often lacks experience in real interdisciplinary work. If we critically examine its oft-celebrated role, we do not always encounter inspirational examples. Despite the lip service given to interdisciplinarity in the 1980s and 1990s, it often appeared as if archaeology – the so called "handmaiden of history" – had found a handmaiden all of her own in the natural sciences, one that should just "do the work and not ask too many questions." Within

the postprocessual paradigm, the natural sciences were not infrequently demoted to deliver data to be interpreted by "archaeological theory." The collaborations often appear to have been multidisciplinary in nature, rather than providing environments for collaboration and mutual learning, sometimes even resulting in the hostile attitudes described by Kerstin Lidén and Gunilla Eriksson (2013) as a "filter" preventing exchange and dialogue. Today, as the natural sciences have regained ascendant status in archaeology and postprocessual perspectives have lost their hegemonic position in the field, archaeology risks bypassing the opportunity to build true collaborative relationships. What we seem to witness is a rather weak relationship between parties who compete over both data and interpretation, rather than build them in collaboration (as noted above, this is especially clear in the often-public debates about ancient DNA research and prehistoric migration). Unfortunately, this means that instead of being in a position of harnessing the true potential of transformative transdisciplinary and collaborative work on equal terms, we often simply see a shift in the positions of power. This is definitively holding us back, but Tim Flohr Sørensen (2017a: 111) has warned that it may also have a longer-lasting impact on the field. If collaboration is replaced by a state where scientific methods are incorporated to a point of marginalising central tenets within the humanities, archaeology may become perhaps permanently transformed at a deeper level.

The Research Process

This deeper transformative effect, touched upon by Sørensen, relates to a less-discussed dimension of the epistemological shift toward the natural sciences, and I argue that it goes beyond the lack of depth in interpretation. This dynamic affects the research process itself. How we formulate research questions, and what kind of answers we value, differs between the natural sciences and the humanities. The natural science approach to building knowledge is crafted around the principle of hypothesis testing. In the 1960s, processual archaeology turned to this approach. It had clear benefits, but it also led archaeology down a path that prevented it from exploring research questions that were not suited for hypothesis testing. Broad and challenging themes emerged with new, important, and exciting questions in the turn to postprocessual archaeology. Foci included ideology, belief systems, values, emotion, ritual, experiences, and so on. While notable exceptions exist, with the "Third Science Revolution" we now see all too often a return to the lower steps of Christopher C. F. Hawkes' *Ladder of Inference* (1954), with more limited inquiry into these dimensions of human life in favour of questions that can be tested and answered with more certainty. Another possible direction is the move toward a "macroarchaeology" that captures long-term changes, perhaps more accurately, but at the expense of the scale of human lived experience (e.g., Perreault 2019).

This shift does not only affect what questions we ask, but also, increasingly, what kind of knowledge and results we value. It is possible that what we are seeing is a culture clash between different traditions of research. In the natural sciences there is value in adding a small piece to the bigger puzzle in order to provide data and results that can later be examined and retested. Here, even a rather modest insight is valuable to share, in order to be re-examined, complemented, or questioned. This is a sound approach to the collective and cumulative creation of knowledge, but it has not always translated well to a discipline such as archaeology, which often seeks to create grand narratives even after just excavating a single posthole. The result is that when scientific data are published in archaeology, they tend to become extrapolated to fit our expectations of a great story, and even if the data are simply not there, we allow the application of scientific methods to convince us that there really is a "there" there.

An example of this is the recent study of projectile points associated with big-game hunting from the 9000-year-old graves of two women in the Andean highlands (Haas et al. 2020). Due to poor bone preservation, the assessment of the biological sex was made using proteomic analysis of sexually dimorphic amelogenin peptides in the tooth enamel. This result, representing an exciting contribution by a novel archaeological science application of a new methodology, clearly associated two women with projectile points and inspired an interpretation of them as potential big-game hunters, a hypothesis that challenges preconceived ideas about the gender division of labour in Holocene hunter-gatherer societies. To test whether or not this would have been a more common association, the team carried out a comparative review of Late Pleistocene/Early Holocene burials in the Americas. Out of 429 individuals from 107 sites, 27 sexed individuals from 18 sites were associated with big-game hunting tools, and of these, eleven were identified as female. However, only three of these eleven are considered strong associations, in that they present a good stratigraphic association with the tools, are securely sexed, and directly dated by radiocarbon on bone collagen. Of these three, two are infants and were not hunters *per se*, leaving but one adult female who may potentially have hunted big game using the tools placed in her grave. Despite all the reservations presented

by the authors in the article, they still conclude that their findings indicate non-gendered labour practices in which women were big-game hunters. Here, the leap between the data and the interpretation is huge, and it is reasonable to ask if this study would have been published in a highly regarded interdisciplinary scientific journal had it not been for the scientific methods it deployed. The will to make this leap in the interpretation might of course be explained by the enthusiasm of the researchers and the desire to problematise gender stereotypes in archaeology, but it may also be explained by a culture that drives us to break through the media filter and collect accolades that translate in the reward systems of the current state of the academy (this will be discussed in more detail below). A more remarkable example of hypothesis testing is the evaluation of the possibility to fabricate and use knives made from frozen human feces (Eren et al. 2019). While these two studies have very little else in common, what they both demonstrate, on different points along a spectrum, is the favouring of scientific protocol and hypothesis testing without taking into consideration aspects such as the symbolic use of artefacts in narrative, myth, and ritual, aspects that, without a doubt, are more difficult to test, but that nevertheless provide important insights into the human past we study.

Stuck on Two Cultures

This takes us to a final observation that regards both the debate itself and how it frames interdisciplinarity. When analysing the debate, it becomes clear that it is situated within an unreflected, narrow understanding of what interdisciplinarity in archaeology is and can be, limiting it to a formulaic dyadic concept of the Two Cultures the humanities and the natural sciences. This unproblematised assumption – in the debate, but also to a large extent within our practices – results in a maintenance of the disciplinary divisions, engages them in a power relationship and an epistemological hierarchy, and most regrettably, cuts off the important influx of ideas from other disciplines that we should include more actively, in particular from the social sciences. From an American perspective, where archaeology is a part of anthropology, itself defined as a social science, this is entirely inexplicable. While there is an emerging push in archaeology to collaborate with the art world, psychology, etc., these initiatives are more often than not seen as exciting if somewhat experimental personal projects, or as creative theoretical insights, rather than for what they are: serious transdisciplinary projects. Going forward, archaeology must break free from limiting our understanding of research collaborations to the definitions of the Two Cultures. We must look to forge new partnerships with the social sciences, but also with the creative fields of art, theatre, literature, and music.

Reward Systems, Prestige and Power

The shift away from the humanities (allegedly in crisis) and toward the natural sciences in archaeology was prompted by exciting new methodological developments, but it was also framed by the emergence of the neoliberal university with its focus on competition, productivity, output, entrepreneurship, profit, and "usefulness" (Shear and Brin Hyatt 2015; Heatherington and Zerilli 2016). This includes "growing symbolic and financial privileges accorded to STEM fields (science, technology, engineering, and mathematics)," at the expense of fields perceived as less relevant or marginal – the arts, humanities, and social sciences (Heatherington and Zerilli 2016: 44; see also Shore and Wright 2016).

> "In the new university, what 'counts' are those things that can be 'counted', quantified and translated as financial returns to the institution. As one Danish minister summed it up, the aim is to speed up the translation of research from 'idea to invoice'." (Shore and Wright 2016: 48)

The productive value of the academy is no longer measured in intellectual work and inspiring arguments and thoughts, but rather in immediately measurable outcomes, for example, effects in society or a breakthrough in media where the framing of the results often is more central than its contents. The pressures on academic institutions are pushed down to individual researchers, who see their value measured in grants, publications, and citation indices, all of which are rigged to favour the natural sciences. All the structures that frame our scholarly work – including granting agencies, publication businesses, and public interest – reward this development and continue to reproduce it. The result is that archaeology today, while still situated in the fertile soils of epistemological diversity between disciplines, is caught in a system that, through an intricate quantification mechanism including impact factors, citation indices and grant funding structures, pushes it toward the natural sciences and does so at a time when archaeological science is experiencing methodological breakthroughs that make this strategy very

palatable. These processes within our field have remarkably tangible effects on the deeper level of the archaeological knowledge production chain, driven by the career games we all are forced to play, and that are highly structured by the cultural values permeated by publication and grant politics. Today, the big grants and many of the most prestigious journals will be rewarding research anchored in the natural sciences (see also Larsson 2013: 30; Ion 2017: 185; Ribeiro 2019: 116). These powerful structures also have a negative impact on experimental and untested research ideas that do not fit into the mould already shaped by disciplinary traditions. To be sure, how individual researchers respond to these pressures depends on their personal ethics, interests, and needs. But individuals' decisions can have very diverging benefits and costs to respective scholars' careers. It is easier to step away from these pressures once one's career and income are secured.

The same processes are at work in the relationships between researchers, scientific publications, and general media outlets. While many academics may claim that they do not care about media attention (some may even find it problematic and challenging), university structures and many leading science publishers operate with a media strategy that aims at breaking through what Larsson terms the media filter. This strategy to break through resides in what Larsson calls *the innate paradox of combining science with archaeology*:

> "It is the *former* that warrants a study being published in prestige science journals and which gives its conclusions gravitas. But it is the *latter* that generates the 'human interest' angle which will allow it to be publicised heavily by the editors and to be picked up by journalists in public media." (Larsson 2013: 29)

It should not come as a surprise to anybody, then, that it is the archaeology that is increasingly dotted by better funded subdisciplines that simultaneously provide access to the most prestigious journals with the highest impact factors and with a media strategy that facilitates the breaking through of the media filter, that gets the most attention (for a more in-depth study of the phenomenon of the scientific economy of attention, see Franck 2002; van Krieken 2019). When sitting down with one's institution's communications or public relations office, one may well face the question: Why should the readers of the *New York Times* care about your research? It may be easier to give a well-received answer if you provide a grand narrative about large-scale migrations or conflicts, or if you can make broad statements about gendered labour in the past, than if you want to problematise and nuance the implications of your research.

What Is at Stake, and Where Do We Go Next?

After reviewing the debate, we can conclude that while the discussion at times might be heated, nobody argues that the natural sciences have no place in archaeology. What we are debating relates more to the ways in which the current "Third Science Revolution" in archaeology tends to shift the positions of power in the relationship, favouring the natural sciences at the expense of the humanities. While this state of affairs might be a product of recent "theory wars," it is more likely linked to a lack of mutual understanding or literacy across disciplines. However, whether it is the theory wars, academic specialisation, or both, they continue to contribute to ideological discourse that distracts us from the underlying structures giving power to the natural sciences. Given that it is valuable to fight back against unnuanced and sometimes wrong or theoretically retrograde – grand narratives, we need to ask ourselves who the real adversary is. The problem we are really struggling with here is not the growing importance of natural science in archaeology, but rather the rise of the neoliberal university. It is the systemic mechanisms that reward and value different forms of research differently that should be targeted, not individual fields or researchers.

So, where do we go from here? If we return to the understanding that archaeology resides in the borderlands between disciplines, we must be creative and knowledgeable enough to build an archaeology that continues to grow and flourish in those interdisciplinary interstices. Viewed in this light, it becomes clear that the internal problems which have to do with the relationships within the archaeological research community can be solved. We can become more literate across disciplines (Nilsson Stutz 2016). Sørensen cautions us not to underestimate the challenge we are facing, stating that it "is not resolved merely by becoming more conversant with the nature of research across the disciplines, as suggested by Snow. Rather, we need to consider the potential that a question, an observation, an object, a fact, are not synonymous concepts in science and in the humanities" (Sørensen 2017a: 108). Achieving the level of literacy that allows us to translate these meanings will require both

effort (see also Lidén and Eriksson 2013) and an overhaul of our education and training of future archaeologists (Prescott 2013: 43). In the meantime, we can all work on removing our filters (Lidén and Eriksson 2013: 18), practice civil discourse, and develop a curiosity for that other side across "the two cultures," be less prestigious, and learn how to collaborate – or choose not to, when the questions we want to pursue are better solved through other processes. These steps are necessary in order for us to deeply understand the different perspectives well enough to develop the potential for transdisciplinary work, both within our own research and in our collaborations.

But to resist the forces placed on us by the neoliberal university, we need to do more than offer goodwill to colleagues across the Two Cultures divide. To try to change the system may be a big, long-term task. We can begin by resisting it where we can. To resist the system will require those of us who are lucky enough to have a secure career to make choices that go against the neoliberal priorities: resist the pressure to maximise output, prioritise readership and fit over quantified prestige when choosing where to publish, build and sustain supportive research communities that explore new and unsupported research ideas, resist the pressures to adapt entrepreneurial goals to projects, and insist on and articulate the value of the humanities and the social sciences. We also need to actively rethink what a new transdisciplinary archaeology might look like. Can we claim the term beyond the usefulness impacts formulated within a neoliberal mindset and apply it to intellectual, artistic, and exploratory work? Maybe it is in this kind of collaboration, when expanded beyond the narrow frame of the Two Cultures to embrace the social sciences, the arts and even activism, where archaeology can have an impact, make a contribution to intellectual debates and be a part of meaningful social change beyond the academy, and truly engage with emerging discourses – including those that call for us to tear down the walls of the academy itself that will matter in the long run.

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Bibliography

Choi, Bernard C. and Anita W. Pak. 2006. Multidisciplinarity, Interdisciplinarity and Transdisciplinarity in Health Research, Services, Education and Policy: 1. Definitions, Objectives, and Evidence of Effectiveness. *Clinical Invest Medica* 29(6): 351–364.

De León, Jason. 2015. *The Land of Open Graves. Living and Dying on the Migrant Trail*. Oakland: University of California Press.

Edgeworth, Matthew. 2016. Grounded Objects. Archaeology and Speculative Realism. *Archaeological Dialogues* 23(1): 93–113.

Eren, Metin I., Michelle R. Bebber, James D. Norris, Alyssa Perrone et al. 2019. Experimental Replication Shows Knives Manufactured from Frozen Human Feces Do not Work. *Journal of Archaeological Science: Reports* 27: Art. 102002.

Franck, Georg. 2002. The Scientific Economy of Attention: A Novel Approach to the Collective Rationale of Science. *Scientometrics* 55(1), 3–26.

Frieman, Catherine, J. and Daniela Hofmann, 2019. Present Pasts in the Archaeology of Genetics, Identity, and Migration in Europe: A Critical Essay. *World Archaeology* 51(4): 528–545.

Furholt, Martin. 2019. De-contaminating the aDNA – Archaeology Dialogue on Mobility and Migration Discussing the Culture-Historical Legacy. *Current Swedish Archaeology* 27: 53–68.

Haas, Randall, James Watson, Tammy Buonasera, John Southon, Jennifer C. Chen et al. 2020. Female Hunters of the Early Americas. *Science Advances* 6(45): Art. eabd0310.

Hamilakis, Yannis, ed. 2017. *The New Nomadic Age. Archaeologies of Forced and Undocumented Migration*. Sheffield: Equinox.

Hawkes, C. F. Christopher. 1954. Archaeological Theory and Method: Some Suggestions from the Old World. *American Anthropologist* 56: 155–168.

Heatherington, Tracey and Filippo, M. Zerilli. 2016. Introduction. *Anuac* 5(1): 42–45.

Hirsch Hadorn, Gertrude, Holger Hoffmann-Riem, Susette Biber-Klemm, Walter Grossenbacher-Mansuy, Dominique Joye et al., eds. 2008. *Handbook of Transdisciplinary Research*. Cham: Springer.

Hodder, Ian. 2003. *Reading the Past. Current Approaches to Interpretation in Archaeology*. Cambridge: Cambridge University Press.

Ion, Alexandra. 2017. How Interdisciplinary Is Interdisciplinarity? Revisiting the Impact of aDNA Research for the Archaeology of Human Remains. *Current Swedish Archaeology* 25: 177–198.

Ion, Alexandra. 2019. Who Are We as Historical Beings? Shaping Identities in Light of the Archaeogenetics 'Revolution.' *Current Swedish Archaeology* 27, 11–36.

Isendahl, Christian and Daryl Stump, eds. 2019. *The Oxford Handbook of Historical Ecology and Applied Archaeology*. Oxford: Oxford University Press.

Kiddey, Rachael and John Schofield. 2011. Embrace the Margins: Adventures in Archaeology and Homelessness. *Public Archaeology* 10(1): 4–22.

Kristiansen, Kristian. 2014. Toward a New Paradigm: The Third Science Revolution and Its Possible Consequences in Archaeology. *Current Swedish Archaeology* 22: 11–34.

Kristiansen, Kristian. 2017. The Nature of Archaeological Knowledge and Its Ontological Turns. *Norwegian Archaeological Review* 50(2): 120–123.

Larsson, Åsa. 2013. Science and Prehistory. Are We Mature Enough to Handle It? *Current Swedish Archaeology* 21: 27–33.

Lidén, Kerstin. 2006. Naturvetenskap i Fornvännen. *Fornvännen* 101: 95–105.

Lidén, Kerstin and Gunilla Eriksson. 2013. Archaeology vs. Archaeological Science: Do We Have a Case? *Current Swedish Archaeology* 21: 11–20.

Mittelstrass, Jürgen. 2001. On Transdisciplinarity. Science and the Future of Mankind. *Pontifical Academy of Sciences, Scripta Varia* 99: 495–500.

Nicolescu, Basarab. 2002. *Manifesto of Transdisciplinarity*. New York: State University of New York Press.

Niklasson, Elisabeth. 2014. Shutting the Stable Door After the Horse Has Bolted. Critical Thinking and the Third Science Revolution. *Current Swedish Archaeology* 22: 57–63.

Nilsson Stutz, Liv. 2008. Capturing Mortuary Ritual: An Attempt to Harmonize Archaeological Method and Theory. In Lars Fogelin, ed.: *Religion, Archaeology, and the Material World*, pp. 159–178. Carbondale IL: Southern Illinois University of Carbondale.

Nilsson Stutz, Liv. 2016. Building Bridges Between Burial Archaeology and the Archaeology of Death. *Current Swedish Archaeology* 24: 13–35.

Nilsson Stutz, Liv. 2018. A Future for Archaeology: In Defense of an Intellectually Engaged, Collaborative and Confident Archaeology. *Norwegian Archaeological Review* 51(1–2): 48–56.

Morton, Timothy. 2017. *Humankind. Solidarity with Nonhuman People*. London: Verso.

Olsen, Bjørnar. 2010. *In Defence of Things. Archaeology and the Ontology of Objects*. Lanham, MD: Altamira Press.

Olsen, Bjørnar and Christopher Witmore. 2015. Archaeology, Symmetry and the Ontology of Things. A Response to Critics. *Archaeological Dialogues* 22(2): 187–197.

Østreng, Willy. 2010. *Science Without Boundaries: Interdisciplinarity in Research, Society, and Politics*. Lanham, MD: University Press of America.

Perreault, Charles. 2019. *The Quality of the Archaeological Record*. Chicago: University of Chicago Press.

Pohl, Christian and Gertrude Hirsch Hadorn. 2007. *Principles for Designing Transdisciplinary Research*. München: Oekom.

Prescott, Christopher. 2013. Archaeology vs. Science. Or Taking Knowledge-Based Communication Seriously? *Current Swedish Archaeology* 21: 39–44.

Reich, David. 2018. *Who We Are and How We Got Here. Ancient DNA and the New Science of the Human Past*. Oxford: Oxford University Press.

Ribeiro, Artur. 2016. Archaeology Will Be Just Fine. *Archaeological Dialogues* 23(2): 146–151.

Ribeiro, Artur. 2019. Science, Data, and Case-Studies under the Third Science Revolution: Some Theoretical Considerations. *Current Swedish Archaeology* 27: 115–132.

Shear, Boone W. and Susan Brin Hyatt. 2015. Introduction: Higher Education, Engaged Anthropology and Hegemonic Struggle. In Susan Brin Hyatt, Boone W. Shear and Susan Wright, eds.: *Learning under Neoliberalism: Ethnographies of Governance in Higher Education*, pp. 1–29. New York and Oxford: Berghahn.

Shore, Cris and Susan Wright. 2016. Neoliberalisation and the "Death of the Public University". *Anuac* 5(1): 46–50.

Sørensen, Tim Flohr. 2017a. The Two Cultures and a World Apart: Archaeology and Science at a New Crossroads. *Norwegian Archaeological Review* 50(2): 101–115.

Sørensen, Tim Flohr. 2017b. Archaeological Paradigms: Pendulum or Wrecking Ball? *Norwegian Archaeological Review* 50(2): 130–134.

Stember, Marilyn. 1991. Advancing the Social Sciences Through the Interdisciplinary Enterprise. *The Social Science Journal* 28(1): 1–14.

Snow, Charles Percy. 1959. *The Two Cultures and the Scientific Revolution*. Cambridge: Cambridge University Press.

Trigger, Bruce. 1989. *A History of Archaeological Thought*. Cambridge: Cambridge University Press.

van Krieken, Robert. 2019. Georg Franck's 'The Economy of Attention': Mental Capitalism and the Struggle for Attention. *Journal of Sociology* 55(1): 3–7.

Webmoor, Timothy. 2007. 'What About One More Turn After the Social' in Archaeological Reasoning? Taking Things Seriously. *World Archaeology* 39: 563–578.

Witmore, Christopher L. 2007. Symmetrical Archaeology. Excerpts of a Manifesto. *World Archaeology* 39: 546–562.

Wylie, Alison and Robert Chapman. 2016. *Evidential Reasoning in Archaeology*. London: Bloomsbury.

Zierhofer, Wolfgang and Paul Burger. 2007. Disentangling Transdisciplinarity: An Analysis of Knowledge Integration in Problem-Oriented Research. *Science Studies* 20(1): 51–74.

Zimmerman, Larry J., Courtney Singleton and Jessica Welch. 2010. Activism and Creating a Translational Archaeology of Homelessness. *World Archaeology* 42(3): 443–454.

Twisted into Form:
Eclecticism and Epistemological Dissonance as a Framework for Interdisciplinarity

Tim Flohr Sørensen

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Twisted into Form:
Eclecticism and Epistemological Dissonance as a Framework for Interdisciplinarity

Tim Flohr Sørensen

University of Copenhagen, The Saxo Institute, Karen Blixens Plads 8, 2300 København S, Denmark

Abstract

With interdisciplinarity increasingly being emphasised as an unquestionable asset in archaeology and prioritised amongst research funding institutions and university strategists, it may be worthwhile exploring the nature of collaborative research: What are the political mechanisms of interdisciplinary research and how does epistemic dissonance affect collaborative efforts? In this article, I contend that truly interdisciplinary research should be capable of emphasising the sometimes radical differences between disciplinary research designs, ontologies, epistemologies, and definitions of knowledge. To this end, I pursue atmosphere as an example of a phenomenon that can, or should, be studied in a way that attends to epistemic differences, since atmosphere has different implications in different disciplinary settings. I will favour postmodern eclecticism – however *altmodisch* and unoriginal it may seem in the 2020s – as my methodical approach to atmosphere, since it lends itself to a messy and noisy multiplicity of epistemologies and research designs doing justice to the cross-disciplinary concept of atmosphere. The strength of eclecticism is its lack of consistency and stringency, and its capacity for sustaining epistemic dissonance instead of concealing it.

Keywords

Interdisciplinarity, discipline, conceptual dissonance, eclecticism, postmodernism, atmosphere

Zusammenfassung

Da Interdisziplinarität in der Archäologie zunehmend als ein unbestreitbarer Gewinn hervorgehoben und von Förderinstitutionen und Hochschulstrateg*innen geschätzt wird, lohnt es sich, diese kooperative Forschung näher zu betrachten: Was sind die politischen Mechanismen interdisziplinärer Forschung und wie wirken sich epistemische Dissonanzen auf kooperative Ansätze aus? In diesem Beitrag behaupte ich, dass eine wirklich interdisziplinäre Forschung in der Lage sein sollte, die zuweilen radikalen Unterschiede zwischen den Forschungsdesigns, Ontologien, Epistemologien und Definitionen von Wissen verschiedener Disziplinen herauszustellen. Dafür betrachte ich Atmosphäre als Beispiel für ein Phänomen, das auf eine Art erforscht werden kann, ja sollte, die die epistemischen Differenzen berücksichtigt, da Atmosphäre in verschiedenen Disziplinen unterschiedliche Bedeutungen aufweist. Als methodischen Ansatz nutze ich den postmodernen Eklektizismus – wie altmodisch und wenig originell es in den 2020er Jahren auch erscheinen mag –, da er sich für eine chaotische und unklare Vielzahl von Epistemologien und Forschungsdesigns eignet und auch dem fachübergreifenden Konzept von Atmosphäre gerecht wird. Die Stärken des Eklektizismus sind das Fehlen von Konsistenz und Stringenz sowie seine Fähigkeit, die epistemische Dissonanz aufrechtzuerhalten, anstatt sie zu verbergen.

Schlagwörter

Interdisziplinarität, Disziplin, konzeptuelle Dissonanz, Eklektizismus, Postmodernismus, Atmosphäre

Introduction

In this article, I want to argue for a postmodern ethos in the face of the current proliferation of archaeological interdisciplinarity. While often appreciated as an unquestionably benevolent or a necessary progression of archaeology, even raised above criticism, I contend that interdisciplinary relations are subject to a number of understated, perhaps even disregarded, challenges. These predicaments are rarely made explicit in publications of an interdisciplinary nature, but I hold it to be relatively uncontroversial to observe that collaborative efforts are liable to include imbalanced authority and power relations, unevenly distributed research funding, assimilation of academic agendas, standards and methods, and a levelling of epistemological differences. In this article, I focus on the latter: the fact that much interdisciplinary collaboration levels or shrouds the actual epistemological differences and possible conceptual discrepancies that may not be entirely reconcilable, but nevertheless are nested in the encounter between specialists with different epistemic traditions and ways of reasoning. When confronted with such challenges, I suggest that the interdisciplinary setting offers the opportunity to conduct a critical exploration of the concepts that are central to the collaboration. In fact, this charting of conceptual dissonance may even be argued to be *the* constituent qualifier for sound interdisciplinarity and therefore mandatory in order to ensure central epistemological concepts are not taken for granted or assumed to be identical while in fact being different.

Interdisciplinarity can be defined in a variety of ways, and while others have made thorough analyses and outlines of various types of interdisciplinarity (e.g. Huutoniemi et al. 2010; Hodder 2015; Klein 2017; Mazzocchi 2019; Kerr 2020; Díaz-Andreu and Coltofean-Arizancu 2021), a rigid distinction between “interdisciplinary”, “cross-disciplinary”, “multidisciplinary” and “trans-disciplinary” relations and collaboration is not pertinent to my argument in this article. A discussion of these terms is indeed relevant, yet here, I simply refer to “interdisciplinary” in the widest meaning of relations between disciplines. These relations may issue forth as formal collaboration in collective projects, as informal exchanges, or as individual scholars adopting or exploring concepts from other disciplines, including fields that may be described as non-disciplinary or queer-disciplinary.

My aim is not to argue that central epistemological concepts should be aligned or conform to a standardised, shared language, but instead that actual differences may be unavoidable and therefore should be made explicit in interdisciplinary relations. Specialists from different disciplines may not always be able to agree on the understanding of concepts or employ a homonymous vocabulary. I suggest this epistemic and conceptual discrepancy can be the generator of new knowledge rather than its obstacle, moving interdisciplinarity “from simple borrowings and methodological thickening to theoretical enrichment” (Klein 1996: 153), thereby foregrounding “the problem of how meaning is produced, maintained, and deconstructed” (Klein 1996: 153). Following on from this, I believe that interdisciplinary activities – whether between specialists from different disciplines or one researcher bringing together material, theory or methods from different disciplines – should at the very least include a deliberation as to whether research must rest on mutually agreeable concepts or whether the dissonance between these concepts are part of the interdisciplinary engagement, exchange, and enrichment. Thus, I promote the view that attending to – and welcoming – epistemological and conceptual dissonance offers archaeology the opportunity to advance its interdisciplinary strengths: whereas standardisations of concepts and a shared language may make collaboration more expedient or efficient, I argue that academic efforts mature and grow when sustaining, publishing, and taking seriously epistemic fractures and frictions.

In this article, I want to explore the potential theoretical enrichment achieved through the juxtaposition of epistemological differences, which I hold to be compulsory in any interdisciplinary collaboration. My argument is that good old-fashioned postmodernism has something to offer in this context: the eclectic attitude characterising postmodernism has the potential for complementing interdisciplinary regimentation and uniformity by highlighting epistemological discrepancies. I will begin by briefly introducing what I take from postmodernism and its eclecticism, then discuss interdisciplinarity and epistemology, before turning towards atmosphere as an example of a concept in need of an itinerant and eclectic epistemology.

Making the Floor Slippery

Invoking postmodernism, some might respond that this is a tried, tested, and discarded mode of thinking or an unimaginative blast from the past. While I happily relinquish all aspirations to being innovative, I want to be clear that I do not see postmodernism as a unified package of ideas serving as a solution or remedy in its own right.

I doubt postmodernism can even be anything in its own right, least of all a solution. Nor am I looking for a return to postmodernism as an "ideo-praxis" (Bintliff 2011; see also Bintliff 1991; Knapp 1996) or a model through which everything may be processed. Quite the contrary: postmodernism does not qualify as a fixed and applicable "package" or "paradigm" (Engelstad 1991: 504–505; Hodder 1989: 65), because that goes against the very notion of eclecticism and multivocality, which I consider some of the defining traits of the postmodern attitude (see also Hodder 1985; Tilley 1993; Fahlander 2012, 2014). Thus, postmodernism defies the ideal of originality, purity, and consistency, being distinguished instead by "fragmentation, impurity of form, depthlessness, indeterminacy, intertextuality, plurism, eclecticism and a return to the vernacular" (Poynor 2003: 12). As a consequence, the "postmodern object problematizes meaning, offers multiple points of access and makes itself as open as possible to interpretation" (Poynor 2003: 12; also Huyssen 1984).

In this capacity, postmodernism has been portrayed as the end of meta-narratives and grand unifying, homogeneous, objective truths (Lyotard 1984: xxiv; Harvey 1989: 9). Terry Eagleton argues that postmodernists see these modernist truths as a fetishisation of totality, which in effect becomes a way of legitimising these very truths themselves. The consequence of the postmodernist demise of such truths, he states, is that "[s]cience and philosophy must jettison their grandiose metaphysical claims and view themselves more modestly as just another set of narratives" (Eagleton 1987: 194). While this is a call for plurality and multivocality, Eagleton maintains that it is at the same time an invitation to destabilising any common ground, allowing all discourses to become interchangeable but also untranslatable. This criticism, which has also been rehearsed in the archaeological literature, implies that postmodernism is only capable of deconstructing truths, interpretations and conclusions, showing there is no inherent meaning or substance, leading to crippling radical relativity and cultural fragmentation, or plain "intellectual nihilism" (Trigger 1995: 231).

Unless resulting in cultural paralysis, this condition has been claimed to accept all narratives as equal. Richard Dawkins thus contends the whole point of postmodernism is that "anything goes, there is no absolute truth, anything written has the same status as anything else, and no point of view is privileged" (Dawkins 1998: 142). In a similar vein, Eagleton argues that history, in a radical postmodern perspective, becomes a "sheer undecidable text, awaiting the artful orderings of some theorist's randomly selected tale" (Eagleton 1996: 105; see also Hornborg 2006: 27–28). Indeed, it is possible to find such extremes represented amongst some postmodernist writers, and the "anything goes" allegation is of course particularly incisive. However, I contend that it may be mistaken to assume that the end of meta-narratives and unifying truths necessarily results in the unconditional acceptance of *any* statement and in having to consider all propositions and interpretations equally valid. Rather, the cessation of absolute knowledge[1] and grand narratives are, as I see it, more likely to confront us with an even more radical question: "Does *anything* go?"

This question can either be answered by resignation or exploration: either by throwing up one's arms and giving in or by exploring the limits of the possible through conceptual experimentation and empirical speculation. Opting for the latter, I proceed by taking my inspiration from postmodernism in design and architecture. First described as "the new post-modern anti-rationalism" (Pevsner 1961: 236), these fields have been marked by experimenting with forms, colours, surfaces, and expressions typically adhering to different established and distinguishable styles but brought together in one object or a constellation of objects in irrational, paradoxical, or counterintuitive ways. The diversity of styles is often explicit and their origins partially recognisable, reshaped in new appearances, such as columns of classical antiquity being made from steel, wood, or cast plastic in bright colour schemes. While the Renaissance may be said to rediscover the columns of classical antiquity, copying and gently rephrasing them, postmodernist eclecticism takes a leap from the very concept of "column", stimulating the question what we might expect from columns and their use, exploring new potentials. This is achieved through an eclectic approach, meaning postmodern architecture and design become "a juncture where nearly anything is possible" (Jencks 1977: 46). Yet importantly, this hinges on "an eclecticism that goes beyond the pleasant mixing of recent styles – a *radical eclecticism*" (Jencks 1977: 46).

1 It is of course debatable whether the notion of "absolute knowledge" is applicable to archaeology. Given the nature of the archaeological – everywhere and always characterised by absences, fragmentation, vagueness, and occasional tracelessness – we might even consider the idea of archaeological "absolute knowledge" quite absurd.

With its furniture design, the Memphis group, forming around Italian designer Ettore Sottsass, can be said to epitomise such a radical eclecticism within the postmodern attitude. Memphis brought together bright colours, an unusual combination of materials, such as plastic laminate, textile, and steel, and irregular, asymmetrical furniture arrangements, challenging the idea that the primary concerns of furniture design are function and comfort. More than that, by putting different design idioms together through juxtaposition and translation, Memphis made historical references fluid and migratory, and the group sought to rethink conventional understandings of past stylistic idioms, forms of expression, and design concepts (Horn 1986; Radice 1993; Poynor 2003). According to Michele de Lucchi, one of the founders of the Memphis group, "Memphis wants to make the floor slippery. It will be difficult to keep your balance" (de Lucchi quoted in Radice 1985: 10 [my translation]). Tellingly, a critic has described Memphis as "a riot of color and materials that often overwhelmed a piece's original intent, a shotgun wedding between Bauhaus and Fisher-Price" (Pellegrin 2012). Accordingly, Memphis may be stylistically recognisable, while at the same time producing a counterintuitive, perhaps even iconoclastic combination of expressions and references. Otherwise well-defined concepts – function, comfort, taste, beauty, harmony – become displaced, fragment, and merge in new – perhaps freakish – ways. The frames of reference and expectations to central concepts are necessarily also reorganised in the process.

Similarly, I hold an eclectic attitude to interdisciplinary relations to be valuable for questioning concepts in archaeological collaboration and for destabilising epistemological authority amongst the disciplines coming together. In this operation, conceptual eclecticism is pivotal, and I want to emphasise the explicit work on concepts and conceptual understanding as being indispensable, because otherwise, interdisciplinary work risks a watering down of conceptual awareness and critique.

Consider, for instance, how studies of origins, migration, and identity increasingly have been subject to interdisciplinary research strategies over the past decade or so, combining archaeological and linguistic evidence with a host of data from various disciplines in the natural sciences. Such research is undeniably valuable and has – with remarkable speed – brought new results to the table. However, these results are usually published as the synthesis of the product of the collaborative efforts, congesting the various contributions in one homogeneous conclusion. Yet, what happens when empirical observations or the construction of data from different disciplines in the collaboration do not add up? What are the consequences of data sets operating in incomparable or incompatible ways? As Marc Vander Linden asks:

> "How are we to account for this disjuncture between archaeologists' doubts and the apparent certainties of geneticists? Either material culture and genes – and languages for that matter – behave in such alien ways that the interdisciplinary dialogue has to be restricted to those rare cases where all signals match each other; or, as argued here, alternative hypotheses have to be sought by all disciplines." (Vander Linden 2016: 724)

To some extent, this is a challenge in terms of methods and ways of bringing together empirical work, yet disciplinary discrepancies may also present more fundamental, conceptual, and epistemological dilemmas. In this context, it is not enough to merely observe that differences exist, making space for a "relative autonomy between scientific and humanistic research frameworks", where "both sides employ their own theoretical and methodological standards, some are shared, some not" (Kristiansen 2017: 122–123). If interdisciplinary collaboration implies working on a "common ground", it must also involve a consideration of how this ground is constructed and defined.

In the recent expansion of interdisciplinary archaeological studies of migration, it is, for instance, curious to see how "origins" and "identity" have been framed largely with reference to very particular parameters: geographical descent or aDNA profiles (e.g. Frei et al. 2015, 2017; Reiter and Frei 2015; Kristiansen et al. 2017; Furholt 2019; see also Hofmann 2015; Wilhelmson 2017; Frieman and Hofmann 2019; Crellin and Harris 2020). Hence, studying origins and identity may from one perspective make sense by pointing to the geographical place of descent of an individual and the person's genetic profile. Yet, in another perspective, origins and identity are only meaningful with reference to personhood, the sense of belonging, self-identification, performativity, and ongoing processes of negotiating social relations. The notions of origins and identity may thus spell out differently amongst the disciplines involved in these studies, yet the conceptual ground seems to build on an implicit consensus about these terms. While "sharing a common language" (Lidén 2017) and agreeing on the terms used in a collaboration may help getting the job done, it also runs the risk of Procrustean standardisation if genuinely disparate concepts are forceably pushed into a uniform mould.

To sum up, interdisciplinarity is not simply something to be picked randomly from the shelves in the super-market, added to the plate, making for an orderly and neat dish. Nor should eclectic interdisciplinarity be seen as competing with perceived truths, trying to replace existing meta-narratives with new ones. My argument is instead that by increasing awareness of conceptual dissonance and incompatibilities, interdisciplinary collaboration will have to slow down, question its conceptual foundation, becoming humbler by sustaining and publishing differences amongst the partners in the collaboration.

The Powers of Interdisciplinarity

To some archaeologists, debating – let alone questioning – "interdisciplinarity" may seem odd or even passé (for a discussion, see, e.g., Nilsson Stutz 2018: 49). Some might say archaeology depends so fundamentally on interdisciplinary collaboration that it is part of archaeology's DNA; that archaeology emerged as a discipline in the 19th century by forming and advancing interdisciplinary relations, drawing on biology, geology, and anthropology in order to become an academic discipline and not just a form of antiquarianism (see Sørensen 2017 for discussion and further references). Pushing this stance further, it may be argued that archaeology *itself* is interdisciplinary and that external relations are not enough in archaeology; in this perspective, archaeology can only form as a discipline, and realise its potential for knowledge, by integrating biology, geology, and anthropology: essentially, archaeology "depends on all the other sciences" (Watson 1990: 688).

There is no denying that archaeology has always drawn on methods, data, and insights from other disciplines. Several scholars have mapped such relations elsewhere, emphasising different qualities in disciplinary transfers, ranging from considering them helpful to archaeology to seeing them as indispensable. A similar kind of praise of interdisciplinary relations is widely expressed by research funding bodies (Ion 2017: 178; Kerr 2020), and by and large, interdisciplinarity seems to be an indisputable quality in its own right. In announcements of calls for applications, we frequently see how the funding agencies encourage or require proposed projects to be interdisciplinary or to apply interdisciplinary approaches (Sørensen 2019b: 97–98). Yet only rarely do these calls bother stating explicitly the qualities of or necessity for interdisciplinarity. Perhaps even more curiously, the nature of interdisciplinarity is left unspecified in such calls, i.e. what counts as an interdisciplinary embrace as opposed to disciplinary silo mentality. Altogether, it seems, what interdisciplinarity is and what it is good for must be understood implicitly. Yet, is interdisciplinarity understood at all, we might ask, or simply taken for granted?

By extension, we might wonder where the widespread enthusiasm for interdisciplinarity comes from, asking: what is the *justification* of interdisciplinarity? In some segments of archaeology, concepts and ideas from anthropology, philosophy, and critical theory have been treated as magic wands that might recast the scope and identity of the discipline. Other segments have galvanised methods and data from the natural sciences, almost as a Messianic resurrection to answer all archaeological prayers once and for all. I do not dispute the practical usefulness of applying methods from disciplines outside of archaeology to explore the archaeological record, nor do I question the relevance of importing data or theoretical perspectives to assist the production of archaeological knowledge. Rather, my query is the wholesale, uncritical celebration of interdisciplinarity in its own right, but even more so the ensuing careless attitude to the epistemological impact of interdisciplinarity. In short, I question not the usefulness of disciplinary interaction and exchange, but I am curious about how the traffic between disciplines affects understandings of crucial disciplinary concepts.

In her tracing of the origins of the concept of interdisciplinarity, philologist Roberta Frank (1988) stipulates, perhaps teasingly, that its connotations are pleasant and comfortable. Interdisciplinarity, she says, suggests openness, inclusiveness, and democracy as opposed to reservation, narrow-mindedness, and stubborn territoriality. She writes:

> "Unlike its nearest rivals – borderlands, interdepartmental, cooperative, coordinated – 'interdisciplinary' has something to please everyone. Its base, *discipline*, is hoary and antiseptic; its prefix, *inter*, is hairy and friendly. Unlike fields, with their mud, cows, and corn, the Latinate *discipline* comes encased in stainless steel: it suggests something rigorous, aggressive, hazardous to master; *Inter* hints that knowledge is a warm, mutually developing, consultative thing." (Frank 1988: 100)

The question remains what we want interdisciplinarity to *do* for us, but also – more fundamentally – what it *is*. In their introduction to this special issue, Alexandra Ion and Artur Ribeiro ask whether interdisciplinarity has become the new buzzword and whether it is devoid of an inherent meaning, quoting Julie Thompson Klein (2005). Interestingly, Klein herself asks what we should expect of interdisciplinarity and its different forms, implying there is no unified or stable notion of interdisciplinarity. She contends that the scope of interdisciplinary relations is a decisive factor, distinguishing between "narrow interdisciplinarity" and "broad interdisciplinarity". Klein argues,

> "'Narrow interdisciplinarity' occurs between disciplines with compatible methods, paradigms, and epistemologies, such as history and literature. It has a different dynamic than 'broad interdisciplinarity' between disciplines with little or no compatibility, such as sciences and humanities." (Klein 2005: 63)

Accordingly, we should expect disciplinary proximity and distance in research collaboration to have some bearing on the ways in which research questions are conceived and phrased. The more intimately the disciplines border on one another, the easier the transfer of knowledge, methods, and theoretical concerns. The wider the distance, the greater the potential discord and friction.

Is Interdisciplinarity the New Discipline?

In this light, I believe it is paramount to ask what happens to the potential differences between the epistemological frameworks of the disciplines in this collaborative process, especially in the context of Klein's "broad interdisciplinarity". Do differences become negotiated, negated or neglected? Does one epistemology eclipse another? I hold it to be quite uncontroversial to claim that interdisciplinary relations affect disciplinary orientations, and the implication is, of course, that interdisciplinarity is not merely a pleasant, innocent expansion of or addition to existing disciplinary territory. Interdisciplinarity is part of the formation of what "knowledge", "facts", "data", "results", "progress" or "relevance" might mean within various disciplines, what such concepts represent and how they are constructed politically. Consider, for instance, the impact of the scientific research design upon archaeology in the wake of New Archaeology; or consider the ways in which hermeneutics, phenomenology, and feminist epistemologies affected archaeology with the rise of post-processualism. Today, some segments of archaeology never dispute the notion that research must be based on hypotheses and a rigid research design, foregrounding testable analyses upon quantitative data described as objectively as possible. Meanwhile, others would never dream of questioning the idea that knowledge is fluid and culturally contingent, and that "data" will always be the product of subjective interpretation.

Such disparate agendas are subject to waxing and waning cycles of prominence in the struggle for dominating the mainstream of archaeological thinking. It seems to me that this revolves not simply around what is considered worthwhile or legitimate within archaeology itself but perhaps more so about what role extra-disciplinary agendas play in the formation of archaeological disciplinarity. As Ion has argued, these years there seems to be an increasing leaning in archaeology "towards the natural and hard sciences, as a way of grounding the discipline, and of delivering measurable and seemingly objective facts" (Ion 2017: 179; also Sørensen 2017). Furthermore, she observes that archaeology is experiencing a shift from one attitude to another in terms of disciplinary relations, transforming the role and power of components deriving from the natural sciences. Hence, "DNA, isotopes etc. are not merely an annex of the text, but bring/model the kind of questions asked" (Ion 2017: 190). In turn, she contends, "establishing genetic lineages, dispersal models, or diets are not mere means to an end, but they become the main topic of the analysis" (Ion 2017: 190). In other words, illusions of an egalitarian, balanced, and mutually respectful attitude to disciplinary differences must fade, as interdisciplinarity reveals itself to be steeped in the politics of research priorities, negotiations of authority, and confrontations between disparate epistemologies. In itself, there is perhaps nothing surprising, perhaps not even anything wrong, in having to negotiate authority and power in the interdisciplinary relations. However, what Ion implies is that archaeology is facing a silent, understated shift not only in terms of what topics and themes are prioritised, but even more so with regards to the conceptual and methodological frames of reference that come to dominate interdisciplinary relations and define archaeological epistemology.

This deeply affects how research questions are phrased, what research questions are considered relevant, even possible, and what research designs should be applied in the interdisciplinary collaboration. As historian, Joe Moran, phrases it:

> "The term 'discipline' has two principal modern usages: it refers to a particular branch of learning or body of knowledge, and to the maintenance of order and control […]. 'Discipline' in this context suggested a particular kind of moral training aimed at teaching proper conduct, order and self-control. In fact, the very notion of the term as a recognized mode of learning implies the establishment of hierarchy and the operation of power." (Moran 2010: 2)

In light of Frank's, Klein's, and Moran's definitions of "discipline" and "disciplinarity", it may be suggested that the encounter between different disciplines will inevitably have to refer to a preferred order and prevailing discourse in the disciplinary collaboration. Furthermore, the encounter will be subject to the negotiation of the dominant notion of knowledge and epistemic regimes of power. We might idealise, or wish for, harmonious and balanced relations in the production of knowledge in the disciplinary encounter, yet research collaboration is not necessarily as egalitarian as we might hope. Rather, interdisciplinary collaboration is affected by – sometimes even defined by – political and economic discourse, authority, institutional priorities, identity politics, publication platforms, bibliometrics and citation strategy, academic networks, and the loyalties emerging and breaking down in the competition for research funding, jobs, and scholarly recognition.

I am well aware that some might get the impression that I want to purify archaeology, cleanse it of any disciplinary impurities or crossbreeding. This is not my intention. What I propose is that interdisciplinary work can indeed be worthwhile, yet it is paramount that the hegemonies and hierarchies of interdisciplinary relations are made explicit. Above all, I contend that methodological dissonance and tensions should be foregrounded and made transparent in order to avoid epistemological regimentation and a depoliticisation of interdisciplinary knowledge production. One way to sustain such tensions is by paying attention to the differences marking notions of knowledge, data, research results, relevance, and research designs, and by publishing these differences.

Yet, perhaps most centrally, concepts and conceptual frameworks might be a space for increasing the attention to disciplinary dissonance, because the terms we use may sound similar, while sometimes they are in fact used in abysmally different ways. Importantly, this should not compel us to streamline concepts, sanitise them, and make sure one particular definition is made canonical. Quite the opposite. My point in arguing for an eclectic approach to interdisciplinarity is that conceptual differences should be emphasised, made explicit, and scrutinised in confrontations that do not necessarily add up or may not always be resolved. I contend that the interdisciplinary encounter should not merely result in the sum of its parts, but instead lead to interdisciplinary tensions and frictions that make us ask salient epistemological questions of the concepts in use, even when this results in the realisation of irreconcilable differences.

Thin as Air? Atmosphere as an Eclectic, Archaeological Concept

Instead of offering a case study exemplifying my points, I would like to briefly reflect on some of my experience with interdisciplinary collaborative efforts over the past 15 years or so, focusing on the mechanisms of interaction and the conceptual frictions associated with this work. In the mid-2000s, when collaborating with an anthropologist on an article on light and luminosity, I gradually began focusing on the role of atmosphere in the shaping of social relations and the perception of the built environment. While our discussions were cutting across disciplinary boundaries, our article primarily related to contemporary contexts through an ethnographic perspective on atmosphere, studying it through subjective experiences, such as "cosiness", "intimacy", "homeliness", or "hospitality" (eventually published as Bille and Sørensen 2007). However, meanwhile, I was also studying South Scandinavian monumental passage graves built during the Middle Neolithic (their construction conventionally dated to 3300–3100 BCE). Their internal darkness is one of the defining features of these tombs, and I grew interested in carrying out a phenomenological study of how we might try to appreciate the role and effects of this darkness on Neolithic perceptions and use of the tombs.

At the time, I was struggling to translate the notion of atmosphere from the anthropological setting to an archaeological framework, although I had already co-authored an archaeological study drawing on the notion of

atmosphere (Harris and Sørensen 2010). So when co-organising, first, an interdisciplinary local workshop (at Aarhus University, 2010) and, subsequently, an interdisciplinary international conference (at Aarhus University, 2012) on atmosphere, my own contributions to these events did not revolve around Neolithic monuments but concerned contemporary Danish churches (later developed into Bille and Sørensen 2022; Sørensen 2019a). The two events were organised by myself and three anthropologists (Mikkel Bille, Peter Bjerregaard, and Anne-Line Dalsgaard), attended by a host of other anthropologists, in addition to art historians, aesthetic theorists, linguists, cultural geographers, artists, sociologists, philosophers, heritage researchers, political scientists, and architects – but very few archaeologists. In light of this disciplinary gathering of scholars, I began doubting that I would be capable of demonstrating convincingly that archaeology in its more traditional, prehistoric sense would be able to adopt, let alone apply, the concept of atmosphere.

Since the notion of atmosphere has a pedigree outside of archaeology, the challenge would not simply be to convince non-archaeologists of its applicability for the discipline or for archaeology's capacity to add to the understanding of atmosphere more broadly. The challenge was just as much about finding methods for importing atmosphere into archaeology. On a different occasion, I had been confronted not only with doubt but the plain rejection of the notion that archaeology and atmosphere might be combined. At a departmental seminar at another institution, an archaeological colleague, who initially assumed my paper on atmosphere would concern meteorological data from the past, told me there is no evidence for past atmospheres in the archaeological record. So much for interdisciplinarity, you might say. The concept of atmosphere may indeed seem alien to certain notions of what the archaeological might mean, and it may also contradict a key concept within the discipline: evidence. Hence, we may intuitively assume there is no way to turn atmosphere into an archaeological "object". However, if atmosphere is as crucial to social relations, experiences of human and non-human spaces, and the perception of things as many philosophers, sociologists, cultural geographers, and anthropologists maintain, then archaeology cannot turn a blind eye on this phenomenon, since this would simply result in a dehumanisation of the past.

In this perspective, it is interesting to observe how the concept of atmosphere has had an itinerant career, travelling from one disciplinary framework to others: setting out in meteorology and moving across architecture, philosophy, cultural geography to anthropology, until I – successfully or not – attempted its diffusion into archaeology. Etymologically, "atmosphere" describes the layer of gases surrounding a planet (Henckmann 2007: 48), and it has been adopted colloquially as a figure describing the air in a particular place and as a metaphor for the mood or ambience of a social setting. In many respects, there seems to be something slippery and poorly defined about atmosphere and how to understand it, conceptually as well as empirically (Bille et al. 2015; Bille 2019; Bille and Simonsen 2021). Philosophically, it has been described as "mood" or "attunement" by Martin Heidegger (1962 [1927]: 134), as "tempered space" in Otto Bollnow's vocabulary (1963: 230), as "tinctured" or "tuned"' spaces following Gernot Böhme (1993: 121), or as that which "moves the felt body" according to Hermann Schmitz (2011: 257).

Following Böhme, the properties of atmosphere are captured at the intersection of the objective and the subjective and just as importantly issuing forth as a cross-over of the material and the immaterial. Böhme thus argues, in an oft-stated quote:

> "Atmospheres are indeterminate above all as regards their ontological status. We are not sure whether we should attribute them to the objects or environments from which they proceed or to the subjects who experience them. We are also unsure where they are. They seem to fill the space with a certain tone or feeling like a haze." (Böhme 1993: 114)

In this perspective, atmospheres are indeed subjective experiences, which is what I have described elsewhere as the "clause of subjectivity" (Sørensen 2015). When Böhme for instance states explicitly, "without the sentient subject, [atmospheres] are nothing" (Böhme 2013: 3), the consequence is that it becomes impossible for archaeology or any historical discipline to study atmosphere. Hence, one has to be exposed to atmosphere in and through one's own presence in order for that atmospheric experience to be susceptible and empirical. Contemporary archaeology excluded, the archaeological record does not include live subjects or subjective memory, and without these elements, according to Böhme, atmosphere disappears. In this philosophical perspective, atmosphere does not lend itself to becoming an archaeological research topic. So while a host of other topics that were previously considered "immaterial" or outside the reach of the archaeology eventually were included amongst mainstream archaeological themes – e.g. identity, social and political organisation, religion and ritual, power, emotion, and cognition – atmosphere might be pushing it too far.

Atmosphere Beyond Subjective Experience

After a while, I became discontent with Böhme's position, since the "clause of subjectivity" means archaeologists must throw up their arms and ignore a basic human mode of interaction with the surroundings. Needless to say, archaeology's conditions for studying atmosphere will forever be different from those of philosophy, just like cultural geographers, anthropologists, and literary scholars study atmosphere in different ways. Following on from this, the concept of atmosphere will change accordingly: all concepts need to be translated and transformed in order to make sense in new disciplinary contexts. The translation is not direct and straightforward, but takes detours, distorts the "original" concept, and includes perspectives that might be unexpected and queer. For there to be an archaeological study of atmosphere, it needs to include or produce a material dimension – something that generates a friction in space. Here, I am not thinking so much about the production of material evidence, as if atmosphere needs to result in a footprint or a fossil; by "friction" I simply mean a resonance in bodies and material spaces that may become subject to interpretation.

Consider for instance how human geographer Derek McCormack describes atmosphere as "something distributed yet palpable, a quality of environmental immersion that registers in and through sensing bodies whilst also remaining diffuse, in the air, ethereal" (McCormack 2008: 413). Speaking of the palpable, of environment, and of sensing bodies – instead of subjectivity – highlights the material dimension, yet without constituting an archaeological roadmap to atmosphere. Anthropologist Bille is even more adamant in focusing on the material dimension, when he states that the "notion of atmosphere captures the contemporaneity of personal attunement, material culture and sensuous mediations" (Bille 2015: 58). He is critical of approaches that ignore "how atmospheres are dynamic, manipulated, culturally experienced and continually evaluated in people's lives, for instance through negotiating power, gender roles and a sense of community" (Bille 2015: 57). He argues that the dynamics of such negotiations are inherently material and are unworkable without a material dimension. Bille emphasises how "technologies are increasingly shaping our experience of spaces and thus offer new potentials for orchestrating the atmospheric engagement with the world" (Bille 2015: 57). This echoes philosopher Peter Sloterdijk's prediction that atmosphere – in the widest sense of the word – will depend increasingly on technology:

> "The future era will be climate-technical, and as such technologically oriented. It will be increasingly seen that societies are artificial from the ground up. The air that, together and separately, we breathe can no longer be presupposed. Everything must be produced technically, and the metaphorical atmosphere as much as the physical atmosphere." (Sloterdijk 2011: 245)

Moving closer from these approaches towards an archaeological concept of atmosphere, what is important is the consistent presence of a material element, whether as a "co-presence" of subject and object (Böhme 1993), or what philosopher Tonino Griffero terms "quasi-things" within a "pathic aesthetics" (Griffero 2018: 75), or in the form of the palpability and bodiness outlined by McCormack, or the technological negotiations and productions argued in Bille and Sloterdijk.

Still, for there to be a workable archaeological concept of atmosphere, it needs to be more specific about these materialities and about its methodological approach. To begin with, we need to accept that an *archaeological* concept of atmosphere cannot depend on a living human subject, capable of verbalising the experience of atmosphere in writing or oral statements. Accordingly, an archaeological concept of atmosphere is entirely irreconcilable with Böhme's philosophy of atmosphere, yet it still draws on central tenets from his work. Yet in an archaeological perspective, the absence of an explicit subject should, I contend, not be perceived as a loss or deficiency, but as an opening for an emphasis on other aspects of atmosphere. This means I have to gather an array of fragments of arguments and concepts in order to explore the possibility for an archaeological concept of atmosphere. I stress this cannot proceed as picking and choosing at random what is appealing or in vogue, nor is it an opportune embrace of disciplinary concepts as per "anything goes". Rather, through a morphological approach (following Pétursdóttir and Olsen 2018), I have been interested in exploring whether an archaeological concept of atmosphere is possible at all. My approach to archaeological atmosphere therefore combines elements from other disciplines' conceptualisation of the phenomenon, reconfiguring them in a different form.

Primarily, this twisting of atmosphere revolves around de-centring the subjective element, focusing more on the material environment than cognitive processes. This implies that I focus on architecture and infrastructure in order to reconstruct possible bodily movements, physically as well as affectively. Such a reconstruction inevitably

depends on a relatively intact three-dimensional architectural setting, which is why I have explored Middle Neolithic monumental, stone-built passage graves for this purpose. These tombs are in many cases well-preserved and entail an architectural form staging a strong and non-negotiable choreography. However, this does not allow me to make statements about the particular perceptions of atmosphere in these settings; I cannot speak of "cosiness" or "uncanniness", but I can reconstruct movement patterns, infer bodily interactions and sensations, and I can reflect on emergent forms and ecstasies of things, and on materially-affective frictions between body and environment. These are the terms I use to frame an archaeological concept of atmosphere beyond subjective experience (for the applied study, see Sørensen 2015, 2016; see also Harris and Sørensen 2010).

Conclusion, For Now

Obviously, for atmosphere to make sense as an archaeological topic, it has to undergo a transition in conceptual terms. Atmosphere refers to a conceptual pedigree in meteorology, anthropology, and philosophy, but in archaeology it cannot be confined to this background; rather archaeology has to reconfigure it, perhaps distorting or mangling the original content of the concept. It is precisely the idea of an "original content" of concepts that I see as problematic in the academic generation of workable conceptual frameworks, when the borrowing of ideas and approaches are criticised for not being loyal to the original source or context (see also Lucas 2015; Pétursdóttir and Olsen 2018; Sørensen 2019b). Instead, I suggest that our concepts need to remain open to change and reconfiguration in the exchange between disciplinary operations instead of fossilising as robust and lasting definitions. While postmodern eclecticism has been criticised for merely playing with clichés in an ironic fabrication of shallow pastiche figures, I maintain that conceptual transformation must be well-argued and well-defined, yet without being purified or having to subscribe to authoritarian or dogmatic "original content". Citations are important in the definition of concepts, but with reference to eclecticism, citations must constitute a melange of borrowings, impurities, and selections that are meaningful in the particular context of a new disciplinary setting.

The banal conclusion is that "atmosphere" is not the same thing in archaeology as in philosophy, cultural geography, or anthropology, nor is it categorically or clinically dissociated from this pedigree. As a concept, atmosphere cannot be adopted as a ready-made package in one discipline and transferred to another; the transit to archaeology entails a different rendering of its properties and emphases, perhaps staging what some might describe as a conceptual freak show. In this postmodern eclecticism, there can be no loyalty to "original" concepts, meanings, or definitions. Thereby, the conceptual transfer allows for the combination of different elements from various disciplines and traditions, making the concept less monolithic and more ambiguous; the archaeological concept of atmosphere proposed in this article is thus by no means canonical or timeless.

Historically, atmosphere is itself a concept transferred between disciplines. At its core, it is a translated concept, travelling from one epistemological framework to another, yet also travelling from being a physical phenomenon to a metaphor and further to describing a phenomenological experience at the intersection of subject and object, perhaps even transcending this dichotomy. Atmosphere is thus an example that interdisciplinarity implies an instability of concepts and an inherent dissonance. Studying atmosphere in meteorology is different from studying it in philosophy, which in turn is different from its use in archaeology. This does not mean that other disciplinary uses of concepts disappear or become redundant. Rather, conceptual diversity is budding in the process, which increases the epistemological instability across disciplines. The transfer across disciplinary frameworks indicate to me that the concept must be destabilised and adapted to particular uses and needs, whereby it becomes difficult to refer back to a zealous understanding of a "core meaning" or "original content" as the canonical and true signification of the term. Interdisciplinarity, thus, should make things more difficult, less harmonious, engender the questioning of methods, knowledge, results, research designs, concepts, and stage a doubting of any idealised common language, undermining consensus, efficiency, and regimentation.

Similar arguments could be made for other concepts adopted in archaeology, and here I only want to point to some of those I have been working with myself, such as the above-mentioned concept "identity", but also "movement", "phenomenology", "assemblage", "affect", "emotion", "memory", "objects", "agency", or even the very term "archaeology". These concepts have all been subject to redirections and reformulations in order to make sense in the encounter between their uses in archaeology and other disciplines. The conceptual transition across disciplinary settings is not a neutral transfer but altogether carries with it mixtures of transfer, loss, change, and redirection

of meaning. As should be clear, I hold postmodern eclecticism to be an inspirational framework for destabilising the authority of past meanings and significance in order to rethink concepts and make them useful in new contexts.

Emphasising the non-neutrality of eclecticism, however, pertains not simply to the meaning of concepts but also to their potential political consequences. Postmodernism in its most extreme form has been criticised on various grounds, for instance by Jean-François Lyotard (1984: 76), who describes consumerist eclecticism as "the zero degree of contemporary culture". However, while Lyotard – justifiably – sees this as a retirement into ironic distancing, aesthetic ignorance, and political irresponsibility, Ihab Hassan (1983) emphasises instead the postmodern as an "age of indeterminacy", and, as a consequence, as a powerful call for political awareness and accountability. He argues the postmodern is

> "[c]ompounded of subtendencies that the following words evoke: heterodoxy, pluralism, eclecticism, randomness, revolt, deformation. The latter alone subsumes a dozen current terms of unmaking: decreation, disintegration, decon-struction, decenterment, displacement, difference, discontinuity, disjunction, disappearance, decomposition, de-definition, demystification, detotalization, delegitimation – let alone more technical and rhetorical terms, such as chiasmus, lapsus, schism, hiatus, diremption, suture, transumption, idiolect, heteromorph, and so on. Through all these signs moves a vast will to unmaking, affecting the body politic, the body cognitive, the erotic body, the psyche of each individual-affecting, in short, the entire realm of human discourse in the West. We may indeed call that tendency *indeterminacies*, thus recognizing its plural character, which reopens or revokes familiar modes of thought and being." (Hassan 1983: 9)

In short, indeterminacies form a frame of reference for questioning perceived truths and concepts taken for granted. This adds to the understanding of postmodernism as an "incredulity towards metanarratives" (Lyotard 1984: xxiv), and in particular towards the political authority nested in grand narratives reproduced uncritically.

While some might see indeterminacy as compromising epistemic and scholarly integrity, coherence, and clarity, I hold postmodern dissonance to be unavoidable and even desirable in the context of interdisciplinary exchange. The way to cope with the cacophony of conceptual understandings is to mine them unashamedly, pick and choose that which is useful to one's own end, and make the most of it. This is what I hold to be the force of postmodern eclecticism. To be clear, the part of postmodern thinking I seek to avoid is the one confined to citing historic icons and tropes; the tendency to be historicising, nostalgic, and restorative, pointing back in time to older, canonised or immediately recognisable cultural forms (see also Hodder 1990). Following Klein's view on interdisciplinarity, it may be stipulated that eclecticism has no inherent meaning. Hence, the part of postmodernism I find worthwhile is precisely the non-discriminating, wildly speculative, and experimental eclecticism that tries out uses and combinations of the old for the sake of curiosity and creativity; not in order to honour past icons or to be loyal to their "original content", but to see what might happen when they become twisted into new forms. The purpose of interdisciplinarity is thus to disrupt and destabilise: interdisciplinarity *has* to make the floor slippery. It must be difficult to keep your balance.

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Bibliography

Bille, Mikkel. 2015. Lighting up Cosy Atmospheres in Denmark. *Emotion, Space and Society* 15: 56–63.

Bille, Mikkel. 2019. *Homely Atmospheres and Lighting Technologies in Denmark: Living with Light*. London: Bloomsbury.

Bille, Mikkel, Peter Bjerregaard and Tim Flohr Sørensen. 2015. Staging Atmospheres: Materiality, Culture, and the Texture of the In-between. *Emotion, Space and Society* 15: 31–38.

Bille, Mikkel and Kirsten Simonsen. 2021. Atmospheric Practices: On Affecting and Being Affected. *Space and Culture* 24(2): 295–309.

Bille, Mikkel and Tim Flohr Sørensen. 2007. An Anthropology of Luminosity: The Agency of Light. *Journal of Material Culture* 12(3): 263–284.

Bille, Mikkel and Tim Flohr Sørensen. 2022. In Visible Presence: The Role of Light in Shaping Religious Atmospheres. In Costas Papadopoulos and Holley Moyes, eds.: *The Oxford Handbook of Light in Archaeology*, pp. 303–324. Oxford: Oxford University Press.

Bintliff, John. 1991. Post-modernism, Rhetoric and Scholasticism at TAG: the Current State of British Archaeological Theory. *Antiquity* 65(247): 274–278.

Bintliff, John. 2011. The Death of Archaeological Theory? In John Bintliff and Mark Pearce, eds.: *The Death of Archaeological Theory?*, pp. 7–22. Oxford: Oxbow Books.

Böhme, Gernot. 1993. Atmosphere as the Fundamental Concept of a New Aesthetics. *Thesis Eleven* 36: 113–126. David Roberts, transl.

Böhme, Gernot. 2013. The Art of the Stage Set as a Paradigm for an Aesthetics of Atmosphere. *Ambiances*. DOI: 10.4000/ambiances.315.

Bollnow, Otto Friedrich. 1963. *Mensch und Raum*. Stuttgart: Kohlhammer.

Crellin, Rachel J. and Oliver J. T. Harris. 2020. Beyond Binaries. Interrogating Ancient DNA. *Archaeological Dialogues* 27(1): 37–56.

Dawkins, Richard. 1998. Postmodernism Disrobed. *Nature* 394(6689): 141–143.

Díaz-Andreu, Margarita and Laura Coltofean-Arizancu. 2021. Interdisciplinarity in Archaeology: A Historical Introduction. In Laura Coltofean-Arizancu and Margarita Díaz-Andreu, eds.: *Interdisciplinarity and Archaeology: Scientific Interactions in Nineteenth- and Twentieth Century Archaeology*, pp. 1–21. Oxford: Oxbow Books.

Eagleton, Terry. 1987. Awakening from Modernity. *Times Literary Supplement* (February 20): 194.

Eagleton, Terry. 1996. *The Illusions of Postmodernity*. Oxford: Blackwell.

Engelstad, Ericka. 1991. Images of Power and Contradiction: Feminist Theory and Post-processual Archaeology. *Antiquity* 65(248): 502–514.

Fahlander, Fredrik. 2012. Are We There Yet? Archaeology and the Postmodern in the New Millennium. *Current Swedish Archaeology* 20: 109–129.

Fahlander, Fredrik. 2014. Postmodern Archaeologies. In Andrew Gardner, Mark Lake and Ulrike Sommer, eds.: *The Oxford Handbook of Archaeological Theory*. Oxford: Oxford University Press. DOI: 10.1093/oxfordhb/9780199567942.013.014.

Frank, Roberta. 1988. ‘Interdisciplinary’: The First Half-Century. In Eric Gerald Stanley and T. F. Hoad, eds.: *Words: For Robert Burchfield’s Sixty-fifth Birthday*, pp. 91–101. Woodbridge: Boydall & Brewer.

Frei, Karin Margarita, Ulla Mannering, Kristian Kristiansen, Morten E. Allentoft, Andrew S. Wilson et al. 2015. Tracing the Dynamic Life Story of a Bronze Age Female. *Scientific Reports* 5: Art. 10431.

Frei, Karin Margarita, Chiara Villa, Marie Louise Jørkov, Morten E. Allentoft, Flemming Kaul et al. 2017. A Matter of Months: High Precision Migration Chronology of a Bronze Age Female. *PLOS ONE* 12(6): Art. e0178834.

Frieman, Catherine J. and Daniela Hofmann. 2019. Present Pasts in the Archaeology of Genetics, Identity, and Migration in Europe: A Critical Essay. *World Archaeology* 51(4): 528–545.

Furholt, Martin. 2019. Re-integrating Archaeology: A Contribution to aDNA Studies and the Migration Discourse on the 3rd Millennium BC in Europe. *Proceedings of the Prehistoric Society* 85: 115–129.

Griffero, Tonino. 2018. Something More: Atmospheres and Pathic Aesthetics. In Tonino Griffero and Giampiero Moretti, eds.: *Atmosphere/Atmospheres: Testing a New Paradigm*, pp. 75–89. Milan: Mimesis International.

Harris, Oliver J. T. and Tim Flohr Sørensen. 2010. Rethinking Emotion and Material Culture. *Archaeological Dialogues* 17(2): 145–163.

Harvey, David. 1989. *The Condition of Postmodernity*. Oxford: Blackwell.

Hassan, Ihab. 1983. Desire and Dissent in the Postmodern Age. *The Kenyon Review* 5(1): 1–18.

Heidegger, Martin. 1962 [1927]. *Being and Time*. New York: Harper and Row. John Macquarrie and Edward Robinson, transl.

Henckmann, Wolfhart. 2007. Atmosphäre, Stimmung, Gefühl. In Rainer Goetz and Stefan Graupner, eds.: *Atmosphäre(n): Interdisziplinäre Annäherungen an einen unscharfen Begriff*, pp. 45–84. München: Kopäd.

Hodder, Ian. 1985. Postprocessual Archaeology. *Advances in Archaeological Method and Theory* 8: 1–26.

Hodder, Ian. 1989. Post-modernism, Post-structuralism and Post-processual Archaeology. In Ian Hodder, ed.: *The Meanings of Things: Material Culture and Symbolic Expression*, pp. 64–78. London: Unwin Hyman.

Hodder, Ian. 1990. Archaeology and the Post-Modern. *Anthropology Today* 6(5): 13–15.

Hodder, Ian. 2015. Assembling Science at Çatalhöyük: Interdisciplinarity in Theory and Practice. In Ian Hodder and Arkadiusz Marciniak, eds.: *Assembling Çatalhöyük*, pp. 7–12. London: Routledge.

Hofmann, Daniela. 2015. What Have Genetics Ever Done for Us? The Implications of aDNA Data for Interpreting Identity in Early Neolithic Central Europe. *European Journal of Archaeology* 18(3): 454–476.

Horn, Richard. 1986. *Memphis: Objects, Furniture and Patterns*. New York: Simon & Schuster.

Hornborg, Alf. 2006. Animism, Fetishism, and Objectivism as Strategies for Knowing (or Not Knowing) the World. *Ethnos* 71(1): 21–32.

Huutoniemi, Katri, Julie Thompson Klein, Henrik Bruun and Janne Hukkinen. 2010. Analyzing Interdisciplinarity: Typology and Indicators. *Research Policy* 39(1): 79–88.

Huyssen, Andreas. 1984. Mapping the Postmodern. *New German Critique* (33): 5–52.

Ion, Alexandra. 2017. How Interdisciplinary is Interdisciplinarity? Revisiting the Impact of aDNA Research for the Archaeology of Human Remains. *Current Swedish Archaeology* 25: 177–198.

Jencks, Charles. 1977. Isozaki and Radical Eclecticism. *Architectural Design* 47(1): 42–48.

Kerr, Sarah. 2020. The Future of Archaeology, Interdisciplinarity and Global Challenges. *Antiquity*, 94(377): 1337–1348.

Klein, Julie Thompson. 1996. *Crossing Boundaries: Knowledge, Disciplinarities, and Interdisciplinarities*. Charlottesville: University Press of Virginia.

Klein, Julie Thompson. 2005. *Humanities, Culture, and Interdisciplinarity: The Changing American Academy*. Albany: State University of New York Press.

Klein, Julie Thompson. 2017. Typologies of Interdisciplinarity: The Boundary Work of Definition. In Robert Frodeman, ed.: *The Oxford Handbook of Interdisciplinarity*, pp. 21–34. 2nd ed. Oxford: Oxford University Press.

Knapp, Arthur Bernard. 1996. Archaeology Without Gravity: Postmodernism and the Past. *Journal of Archaeological Method and Theory* 3(2): 127–158.

Kristiansen, Kristian. 2017. The Nature of Archaeological Knowledge and Its Ontological Turns. *Norwegian Archaeological Review* 50(2): 120–123.

Kristiansen, Kristian, Morten E. Allentoft, Karin M. Frei, Rune Iversen, Niels N. Johannsen et al. 2017. Re-theorising Mobility and the Formation of Culture and Language among the Corded Ware Culture in Europe. *Antiquity* 91(356): 334–347.

Lidén, Kerstin. 2017. A Common Language is the Basis for Sound Collaboration. *Norwegian Archaeological Review* 50(2): 124–126.

Lucas, Gavin. 2015. The Mobility of Theory. *Current Swedish Archaeology* 23: 13–32.

Lyotard, Jean-François. 1984. *The Postmodern Condition: A Report on Knowledge*. Manchester: Manchester University Press. Geoff Bennington and Brian Massumi, transl.

Mazzocchi, Fulvio. 2019. Scientific Research Across and Beyond Disciplines. *EMBO reports* 20(6): Art. e47682.

McCormack, Derek P. 2008. Engineering Affective Atmospheres on the Moving Geographies of the 1897 Andrée Expedition. *Cultural Geographies* 15(4): 413–430.

Moran, Joe. 2010. *Interdisciplinarity*. 2nd ed. London: Routledge.

Nilsson Stutz, Liv. 2018. A Future for Archaeology: In Defense of an Intellectually Engaged, Collaborative and Confident Archaeology. *Norwegian Archaeological Review* 51(1–2): 48–56.

Pellegrin, Bertrand. 2012. Collectors Give ’80s Postmodernist Design 2nd Look. *SFGATE*, 15.1.2012. https://www.sfgate.com/homeandgarden/article/Collectors-give-80s-postmodernist-design-2nd-look-2517937.php. Viewed: 11.7.2022.

Pétursdóttir, Þóra and Bjørnar Olsen. 2018. Theory Adrift: The Matter of Archaeological Theorizing. *Journal of Social Archaeology* 18(1): 97–117.

Pevsner, Nikolaus. 1961. Modern Architecture and the Historian, Or the Return of Historicism. *Journal of the Royal Institute of British Architects* 68(6): 230–240.

Poynor, Rick. 2003. *No More Rules: Graphic Design and Postmodernism*. New Haven, CT: Yale University Press.

Radice, Barbara. 1985. Tendenser i 1980’ernes dekorationskunst – Memphis. *Louisiana revy* 25(3): 10–15. Uffe Harder, transl.

Radice, Barbara. 1993. *Ettore Sottsass: A Critical Biography*. London: Thames & Hudson. Rodney Stringer transl.

Reiter, Samantha Scott and Karin M. Frei. 2015. Migration and Identity at the Early Bronze Age Cemetery of Jelsovce, Southwest Slovakia: The Strontium Evidence. In Paulina Suchowska-Ducke, Samantha Scott Reiter and Helle Vandkilde, eds.: *Forging Identity: The Mobility of Culture in Bronze Age Europe: Volume 1*, pp. 121–130. Oxford: BAR.

Schmitz, Hermann. 2011. Emotions Outside the Box – the New Phenomenology of Feeling and Corporeality. *Phenomenology and the Cognitive Sciences* 10(2): 247–259. Rudolf Owen Müllan, transl.

Sloterdijk, Peter. 2011. *Neither Sun nor Death*. Los Angeles: Semiotext(e). Steve Corcoran transl.

Sørensen, Tim Flohr. 2015. More Than a Feeling: Towards an Archaeology of Atmosphere. *Emotion, Space and Society* 15: 64–73.

Sørensen, Tim Flohr. 2016. In Praise of Vagueness: Uncertainty, Ambiguity and Archaeological Methodology. *Journal of Archaeological Method and Theory* 23(2): 741–763.

Sørensen, Tim Flohr. 2017. The Two Cultures and a World Apart: Archaeology and Science at a New Crossroads. *Norwegian Archaeological Review* 50(2): 101–115.

Sørensen, Tim Flohr. 2019a. At se det usynlige – kirkerum og jættestuer i et komparativt lys. In Lars Holten and Henriette Lyngstrøm, eds.: *Farverige vikinger – studier i teknologi og kultur*, pp. 23–34. Lejre: Sagnlandet Lejre.

Sørensen, Tim Flohr. 2019b. The Triviality of the New: Innovation and Impact in Archaeology and Beyond. *Current Swedish Archaeology* 26: 93–117.

Tilley, Christopher. 1993. Introduction: Interpretation and a Poetics of the Past. In Christopher Tilley, ed.: *Interpretative Archaeologies*, pp. 1–27. Oxford: Berg.

Trigger, Bruce G. 1995. Archaeology and the Integrated Circus. *Critique of Anthropology* 15(4): 319–335.

Vander Linden, Marc. 2016. Population History in Third-millennium-BC Europe: Assessing the Contribution of Genetics. *World Archaeology* 48(5): 714–728.

Watson, Richard A. 1990. Ozymandias, King of Kings: Postprocessual Radical Archaeology as Critique. *American Antiquity* 55(4): 673–689.

Wilhelmson, Helene. 2017. *Perspectives from a Human-centred Archaeology: Iron Age People and Society on Öland*. Lund: Lund University.

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Torill Christine Lindstrøm

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Multi-, Cross-, Inter-, Transdisciplinarity – Fact or Fiction? Does Archaeology Need a Hand Blender?

Torill Christine Lindstrøm

SapienCE, Centre for Early Sapiens Behaviour, CoE, Department of Archaeology, History, Cultural Studies and Religion, Faculty of Humanities & Department of Psychosocial Science, Faculty of Psychology (both University of Bergen, Norway), Torill.Lindstrom@uib.no

Abstract

The concepts multidisciplinarity, interdisciplinarity (crossdisciplinarity), and transdisciplinarity are defined, and examples are given. Whether interdisciplinarity is a novel development, a "new buzzword", or a "new *status quo*" is discussed. The examples contrast ideals versus realities, and also show what obstacles interdisciplinary research may meet, particularly regarding publication. Interdisciplinarity is described as a continuum with minimum and maximum ends. Examples of archaeological research, from both ends of this continuum, are offered. It is claimed that, in other sciences (specifically, medicine and psychology), "interdisciplinarity" is neither a buzzword nor a new concept and research strategy. It is, rather, "business as usual", and "*status quo*", and actually, is the case also in much archaeological research. The backdrop for the conflicts regarding interdisciplinary research is described as deriving from conflicts within philosophy of science. Yet, new positive and promising theoretical developments exist, along with new corresponding methodological developments. The conclusion is that various fields, theoretical positions, and methodologies need not compete, but may complement each other in problem-focused research.

Keywords

Interdisciplinarity, transdisciplinarity, theory of science, methodology, complementarity, problem-focused research

Zusammenfassung

Die Konzepte Multidisziplinarität, Interdisziplinarität (Cross-Disziplinarität) und Transdisziplinarität werden definiert und an Beispielen erläutert. Hierbei wird diskutiert, inwieweit Interdisziplinarität eine neuartige Entwicklung, ein „neues Schlagwort" oder ein „neuer Status quo" ist. Beispielhaft sollen idealtypische Vorstellungen mit tatsächlichen Anwendungen verglichen und damit aufgezeigt werden, auf welche Hindernisse interdisziplinäre Forschung stoßen kann, vor allem bei der Veröffentlichung. Interdisziplinarität wird als Kontinuum mit unterschiedlichen graduellen Ausprägungen beschrieben. Beispiele aus der archäologischen Forschung sollen die Extreme dieses Kontinuums illustrieren. Es wird argumentiert, dass in anderen Wissenschaften (insbesondere der Medizin und Psychologie) Interdisziplinarität weder ein Modewort noch ein neues Konzept oder eine neue Forschungsstrategie ist. Interdisziplinarität stellt eher *Business as usual* und den *Status quo* dar; und dies gilt tatsächlich auch in vielen Fällen für die archäologische Forschung. Konflikte, die in der interdisziplinären Forschung aufkommen, resultieren aus konfligierenden wissenschaftstheoretischen Positionen. Es werden neue positive und vielversprechende theoretische Entwicklungen sowie neue entsprechende methodologische Entwicklungen skizziert. Schlussendlich müssen verschiedene Forschungsbereiche, theoretische Positionen und Methoden nicht miteinander konkurrieren, sondern können sich gegenseitig in einer problemorienterten Forschung ergänzen.

Schlagwörter

Interdisziplinarität, Transdisziplinarität, Wissenschaftstheorie, Methodologie, Komplementarität, problemorientierte Forschung

New Buzzwords

In their EAA session in 2020, Artur Ribeiro and Alexandra Ion asked an important question in their presentation titled: "Archaeology and Interdisciplinarity: The New Status Quo or the New Buzzword?" In this paper, my aim is to explore, explain, and hopefully answer this question. The direction of the paper is as follows: I will take you on a "guided tour" starting with defining multi-, inter-, cross-, and trans-disciplinarity; give examples of different kinds of interdisciplinary research; describe it as a continuum; point to difficulties in mixing disciplines; give the background for this situation from the perspective of theory of science; and after this explorative and descriptive "tour", finally, I will suggest methodological solutions, and conclude that: Research should be problem-focused and thus demands interdisciplinarity, – and: yes, archaeology does need some kind of "mix *master*" – a tough hand-blender!

Among the EAA 2020 presentations a substantial number used one of these terms: multidisciplinary, interdisciplinary (crossdisciplinary), and transdisciplinary. These terms, I think, do qualify to be called "new buzzwords". They are frequently used in lofty speeches, such as at the opening of conferences and congresses. You find these buzzwords in research applications and university programs. Like magic formulae they help to elicit research permissions, project approvals, and financial resources.

Yet, it is often unclear what precisely is meant by them. These buzzwords are vague, a bit void of precise meaning. The terms are often used interchangeably, but they do mean slightly different things. *Multidisciplinarity draws on knowledge from different disciplines but stays within their boundaries*. A typical example is an edited book on a particular phenomenon, site, or finding, with chapters written by experts in different fields. An instance of this is a book about the largest highland plateau in Northern Europe, Hardangervidda, located in Norway. The book, *Hardangervidda* (Nyquist 1979), gives detailed and comprehensive descriptions and explanations about Hardangervidda's geology, archaeology, history, botany, zoology, cultural history, climate, etc. Yet, this information is presented in separate chapters, written by experts in the respective fields, with only moderately overlapping themes.

In contrast, *interdisciplinarity endeavours to analyse, synthesize and harmonize links between disciplines into a coordinated and coherent whole, with the various fields giving complimentary insights*. Usually, two or three fields are combined in a single paper or chapter. An instance of this is a paper about a Palaeolithic bird figurine from the Lingjing site in China, where archaeology collaborated with geology and chemistry in order to find out how the figurine was made and *how old* it was (Li et al. 2020). Yet, the analysis stopped there. No experts on symbols and religion were drawn in to explain the symbolic significance of birds, which could have contributed to explain *why* somebody had made a figurine of a bird. The analysis focused on *how* and ignored *why*. If history of religion had been added to the interdisciplinary collaboration, then also the why-question could have been addressed. Unfortunately, in much interdisciplinary archaeological research, there seems to be an "unwritten rule" regarding what disciplines are "permitted" to be combined. This may be due to what combinations are accepted to be presented and published in the, often rather field-specific, journals.

Going a step further, *transdisciplinarity is complementary, and even aspires to go beyond inter-disciplinarity. It crosses and combines many, often quite unrelated, disciplinary boundaries to create a holistic approach*. It focuses on problems that require crossing the boundaries between disciplines. An example is when the disciplines of psychology, acoustics, geology, and religion were combined and integrated to suggest an explanation for the use of sound, and in particular the use of sound phenomena within caves as a psychologically effectful element in initiatory religious ceremonies (Lindstrøm and Zubrow 2014). This merging, mingling, and mixing of fields is close to what Tim Ingold calls going from "complementarity to obviation". Ingold holds the position that we should strive for a collapsing of artificial boundaries between disciplines that should have never existed in the first place (Ingold 2001).

The New Status Quo? Ideals Versus Reality

A hand blender is an electric tool used in the kitchen to cut, mash and blend. If you put in different ingredients, and let them be mixed, cut, and blended long enough, you will not be able to identify the original ingredients

afterwards. They are completely blended into a uniform mass. Now, the question arises: how much do we want various disciplines to be mixed and blended? What are, or how are, the minimum and maximum ends of the continuum, or spectrum, of interdisciplinarity? In the following I will mostly use the term "interdisciplinarity" (also covering transdisciplinarity) since interdisciplinarity is the term used in Ribeiro and Ion's title in their introductory. Is it easy or difficult to work interdisciplinarily? What obstacles may we encounter? I will give three examples of difficulties in interdisciplinary research – illustrating ideals versus reality, facts versus fiction.

I am a researcher at SapienCE, Centre for Early Sapiens Behaviour, CoE, at the Faculty of Humanities at the University of Bergen in Norway. We are a team consisting of archaeologists, psychologists, anthropologists, geologists, zoologists, botanists, oceanographers, climate experts, psycho-neurologists, and more. Our area of research is on the tip of South Africa, close to the sea, with the locations of Blombos Cave, Klipdrift Shelter, Klasies River, and Pinnacle Point Cave; and we primarily deal with the timespan of 100,000–65,000 years BP. The findings are quite astonishing. Some of the most impressive findings are: shell-beads, beautiful bifacial points, engraved ochre, engraved ostrich eggshells, and even a kind of simple hashtag-like drawing in ochre on a stone, and an ochre grinding and processing toolkit (d'Errico et al. 2005; Henshilwood 2007, 2014; Henshilwood et al. 2009). In particular, the engraved ochre and the drawing have received considerable international attention. They are interpreted as, and presented to the media as, proof of very early human higher cognitive functions.

It is obvious that these artefacts cannot be interpreted by archaeologists alone. In order to know what a "cognitive function" or a "higher cognitive function" is, and what brain regions are involved, psychologists, neurologists, and neuropsychologists are needed. In order to explain the bifacial points, which are quite overworked for the function of spearheads for hunting or fighting, explain the perforated shell-beads that must have been threaded on strings, and explain the use of ochre, anthropologists and psychologists are needed. They can suggest reasons why these artefacts exist, basing their suggestions on analogies from other cultures and on typical human behaviours. Therefore, a neuropsychologist, a psychologist, and an anthropologist are part of the SapienCE team.

SapienCE is also dependent on climate experts, geologists, zoologists, botanists, and oceanographers to be able to establish the variations in sea level, climate, wildlife, plant resources, and precipitation during those ca 40,000 years. Their research is necessary in order to fully understand the contexts for the lives of those people who lived there on the tip of South Africa 100,000–65,000 years ago. So, in this project interdisciplinarity is a must. Yet, we struggle a bit with combining information across the fields, as each field is complex and intricate. A greater problem is that journals are mainly interested in publishing articles that are strictly field-specific. That is a challenge! There are not many truly interdisciplinary journals, and those that intend to be, have difficulties finding reviewers that can evaluate interdisciplinary manuscripts. It is my impression that many of our publications until now are kept safely within each of the disciplines' boundaries, a "*status quo*". Yet, in SapienCE we actively collaborate by sharing data and having weekly seminars in order to overcome the obstacles. Hopefully, our ideals will not clash with reality. We are still toiling with this.

An example where interdisciplinary ideals completely clashed with reality was the destiny of a thesis, submitted to another institution, (the names of the institution and the author are kept confidential). The thesis' theme was from classical antiquity, and included history, social history, art, religion, gender issues, neurology, and psychology among its integrated disciplines. It had the word "interdisciplinary" in the title. However, the committee that evaluated it consisted of classical archaeologists only. They turned the thesis down. In their opinion, too many disciplines were involved, and purely classical themes were too little represented. One could say they demanded a conservative "business as usual" and a very strict old style disciplinary "*status quo*". The thesis was rejected. It has not been re-submitted.

A third example of disciplinary narrowness is a manuscript that was submitted to an archaeological journal (name of journal and author is kept confidential). A particular group of Bronze Age paintings, were analysed with methods from psychology and kinetics, and the findings were discussed in relation to that particular Bronze Age society. The reviewers concluded that they found this combination of disciplines very interesting and promising, but still too unorthodox and unusual for the journal, so the manuscript was rejected. Another case of conservative "*status quo*".

What Are the Minimum and Maximum on the Continuum of Interdisciplinarity?

The three examples above indicate situations of conservative and non-innovative *status quo*, and not even "a *new* *status quo*". Only certain disciplines are accepted to collaborate, "those that we are used to", seems to be the rule. New radical interdisciplinary endeavours clash with old conservative obstacles. But fortunately, radical interdisciplinarity is not always countered and met with doubt, resistance, or outright rejection within archaeology. It is sometimes accepted and promoted. And, for comparison, in other fields, despite varying levels of opposition, interdisciplinarity has already been "mainstream" and "business as usual" for many years.

There is an important aspect to interdisciplinarity to consider: One can define it as a continuum with minimum and maximum ends (although not finite endpoints). At the minimum end, the disciplines are already related and connected; at the maximum end, the disciplines have been unrelated and unconnected, but are now used in combination to solve problems that require their combination. I will give some examples.

In a paper within classical studies, the combination of these fields: classical archaeology, classical history, and classical philology, is called "interdisciplinary research" (Østergaard and Schwartz, in press). They state that this is a controversial combination, and that this interdisciplinary combination of fields may have difficulties regarding concepts, taxonomy, and epistemology. However, to me, the combination and interdependency of these fields is rather obvious, and not particularly new or revolutionary. This kind of interdisciplinarity is close to the *minimum* end of the interdisciplinarity continuum because the cooperating disciplines are very close to each other conceptually and epistemologically. Perhaps it qualifies as a "new *status quo*".

In contrast, close to the maximum end of the interdisciplinarity continuum are the following five examples: As early as in 2001, an article was successfully published in which archaeology, history, history of religion, perception psychology, and cognitive psychology were used in combination to analyse how Migration Period animal art, particularly on large gilded brooches, may have been perceived and interpreted by people, and strategically used by the power-elite (Lindstrøm and Kristoffersen 2001). In a similar vein, psychology of perception and neuropsychology were used in an article analysing the concept of *poikilia* as one of several forms of aesthetics in the Greek archaic and classical mind and culture. It shows that *poikilia* was not only a form of philosophical aesthetics, but also referred to psychological states, mythical themes, and even had social consequences (Grand-Clément, in press). A third example: By combining archaeological findings with climate studies, human migration in the Late Pleistocene is found to have been climate dependent (Timmermann and Friedrich 2016). A fourth example is a paper on the digestive and nutritional benefits of cooking tubers (a thickened underground part of a stem or rhizome, a root) – a practice which started in the Palaeolithic. Botany, archaeology, physics, chemistry, and nutrition science were used in the analyses to find out when and why human beings started to and continued to cook their food. This is a habit not shared with other animals. The cooked proteins are easier to digest and must have contributed substantially to the development of the human brain (Wadley et al. 2020). Finally, the fifth example shows that classical archaeology, often regarded as the most conservative field within archaeology, can be enriched by contributions from other fields; yet it may be significant and typical that the report was not published in an archaeological journal, but in a medical journal: An investigation on human faeces from Pompeii which showed that intestinal parasites, as well as other parasites, were a major health problem. It was connected with the popularity of the Roman baths, and with the cosmopolitical contacts between people living in the large Roman empire. This investigation required the interdisciplinary combining of parasitology, medicine, palaeo-parasitology, palaeopathology, zoology, ancient texts, classical history, and classical archaeology (Tanga et al. 2022). In all these five examples scientific fields that are seldom seen together are combined, and these works are close to the *maximum* end of the interdisciplinary continuum. Interestingly, there were no signs of problems regarding theories of science, ontology or epistemology. The collaboration and combination were simply *problem-focused*. In these works, "interdisciplinarity" is a solid and successful reality, irrespective of "fashion", and is certainly not just a buzzword!

Fields other than archaeology already have rather long traditions of interdisciplinary research, both on the minimum and the maximum ends. Medicine, pathophysiology, haematology, and neurology can be combined and called "interdisciplinary research". Yet, as they are all within the discipline of medicine, the combination is on the minimum end of the continuum. In contrast, on medicine's maximum interdisciplinary end, we can find physicians, psychologists, and anthropologists collaborating against HIV. Psychology, like medicine, is inter-

disciplinary by tradition; collaboration with psychiatry and pedagogy is on the minimum end, whereas psychology's combinations with various medical fields (in particular neurology and endocrinology), nursing, and anthropology are collaborations that are on the maximum end of the interdisciplinary continuum. In both medicine and psychology "interdisciplinarity" is neither a buzzword nor a new concept and research strategy. It is rather "business as usual", and "*status quo*". The research is *problem-focused*, in the sense that research methods and theories are not constrained to those that are characteristic and traditional of one field or science, but open to include whatever is required to solve the problem in question.

Buzzwords Meet Philosophy and Theory of Science

The difference between multidisciplinarity and the buzzwords (inter-, cross-, and transdisciplinarity), and the difficulties encountered in realizing interdisciplinarity in research, often relate to the theoretical and conceptual controversies of processualism versus post-processualism in archaeology, paralleling positivism and empiricism versus cultural constructivism and cultural relativism in psychology, in humanistic sciences, and in the social sciences. Processualism and positivism tend to prefer only "hard science"-interdisciplinarity, whereas post-processualism and cultural constructivism favours "soft-science"-interdisciplinarity. This situation is sometimes explained as an incompatibility between the humanities and the natural sciences regarding ontology, epistemology, and methodology – and the contrasts and conflicts between "hard" versus "soft" sciences in general.

Science[1] deals with phenomena that are profoundly divergent and extremely multifaceted. Science regarding humans and human phenomena can be said to have different positions on a continuum ranging from natural laws on one end to cultural relativism on the other. All points on the continuum are intricately interrelated. There is hardly a single human phenomenon that does not have both "natural" and "cultural" aspects.[2] For instance, research on and theories about caries in odontology, includes the physical structure and form of human teeth on the natural, human universal side, and dietary customs and symbolic functions of food on the cultural social constructivist side. Similarly, research on understanding the design and development of Roman amphitheatres, is based on universal natural laws about weight and physical properties of stones relevant for architectural constructions, and the Roman customs of amusement and ideas of religious sacrifice and punishment on the socio-cultural constructivist side. Both natural and cultural perspectives are relevant and necessary for research on dental health and Roman amphitheatres respectively, as both perspectives provide legitimate and relevant data. As Winnie-the-Pooh would say: "*Utrumque*!" ("I'll have both").[3]

"Utrumque!"

The combination of knowledge, perspectives, theories and methodologies from different fields, is irresistibly fascinating. My position is that of Winnie-the-Pooh: "*Utrumque*!" Science should not be restricted by theoretical, methodological, or ideological boundaries. Still, many post-processualists and social constructivists would claim that the two paradigms, processualism and post-processualism (in archaeology), positivism and social constructivism (in the social sciences, humaniora, and psychology) respectively, are conceptually and logically incompatible due to differences in epistemological perspectives, and therefore, a mixing of disciplines is like trying to mix oil and water – ingredients that will not blend, despite a good hand blender.

Yet, there has been a move towards a theoretical union of the divergent positions within archaeology as well. Cognitive-processual archaeology and cognitive archaeology can be suggested as examples for the combination of the two

1 I use the term "science" as synonym for *Wissenschaft* (German) and *vitenskap/vetenskap/videnskab* (Norwegian, Swedish, Danish), as a generic term for all scientific endeavours, encompassing the natural, the humanities, and the social sciences.

2 Despite the outdatedness of the nature versus culture discussion, both lay and learned still tend to use the distinction "nature" versus "culture". Therefore, these terms, and the division they represent, will be used to some extent.

3 "'Utrumque' diceret…." ("'Both' he said…."). Winnie-the-Pooh answered this when he was asked whether he wanted honey or milk with his bread. From the Latin version "Winnie Ille Pu" from the book Winnie-the-Pooh (Milne 1960: 18).

approaches in archaeological studies of the human mind (Renfrew et al. 1993; Fagan 1997). The term "the Synergy Approach", indicating a synergy between processual and post-processual approaches, is suggested by Christine S. VanPool and Todd L. VanPool (1999: 48). They claim that both approaches can contribute to scientific developments in archaeology through "a synergy in which the two programs working together can create a rich and robust understanding of the archaeological record by prompting archaeologists to ask a broader range of questions and to employ a greater number of analytic strategies" (VanPool and VanPool 1999: 48). In the same year, the Middle-Ground Position where archaeological fieldwork was positioned as including both subjective and objective components was suggested by Ian Hodder (1999: 52), who earlier had promoted pure post-processualism. Along this line, but different from post-processualism, one may perhaps include Symmetrical Archaeology (Olsen 2010; Olsen et al. 2003; Witmore 2007a, 2007b), and Materiality Studies (Hodder 2011; Malafouris 2013; Knappett 2014). Emerging from somewhat different lines of thought, unifying positions have been proposed within biology and anthropology as well, with the most radical probably being the Developmental Systems Theory in biology (Oyama et al. 2003) and the interdisciplinary Biosocial Obviation Approach of Ingold (2001: 255–279).

These integrative positions resemble the perspectives in archaeology proposed by Alison Wylie (1994, 2000) and by Robert W. Preucel and Alexander A. Bauer (2001: 93). Wylie (1994) points out that archaeological interpretation may benefit from using multiple independent kinds of evidence and independent analytic techniques. This is a pragmatic, eclectic, multi-methodical attitude resembling the Mixed-Method paradigm in medicine, psychology, and social sciences (Teddlie and Tashakkori 2003a, 2003b). Wylie proposed an even more comprehensive meta-perspective by referring to Ian Hacking (1996) and his claim that all research may have unity on a metaphysical level and, regarding ontology, have a practical unity regarding aims and methods of science, and finally, on a logical level, have a unity regarding principles of scientific reasoning, but not necessarily have unity on a theoretical level. Similarly, Preucel and Bauer have advocated a scientific "unity at the level of logical reasoning (meta-pragmatic level) and disunity at the level of interpretative theory" (2001: 93).

All these approaches and positions have in common that they transcend theoretical, ontological, and epistemological boundaries. One could claim that such a multi-methodical, multi-theoretical position which can be described as pragmatic, eclectic, and "bricolage" has, in various ways, already long been proposed and employed in archaeology (Clarke 1979; Bintliff 2006: xix, 2011: 18–21; Bintliff and Pearce 2011a, 2011b; Pluciennik 2011: 33, 44). Pressing practical problems on excavation sites, or having to interpret unexpected findings, have always demanded pragmatic practical solutions and intellectual inventive flexibility. It has also been argued that this pragmatic "bricolage" eclecticism is *the* new theoretical paradigm in archaeology (Pearce 2011: 84–87).[4] Instead of being paradigmatically monolithic, it is multiverse (Tosi and Pearce 1997) by employing multiple methods and models fitting the investigated *problem* more than defending a particular theoretical *position* (Pearce 2011: 85).

Compete or Complete?

"Paradigm shifts", or at least *conflicts* regarding the philosophy of science, have been, and still prevail, in archaeology. Structuralism versus post-structuralism is an old conflict, but still vibrant. The Third Scientific Revolution, with its natural scientific technologies and methods, is often presented as both a new contribution and a challenge to archaeology. But the combination of natural science and archaeology is already "mainstream" and "*status quo*" in archaeology, as Ribeiro points out (Ribeiro 2022, this volume).

A central discussion, originating in post-modernism's influences on philosophy of science, has been connected to the question of whether science can ever be reasonably *objective*; and following this, to what degree, with what consequences, and in what respect science is *subjective*. This discussion concerns both theory and data, as they are closely interconnected. The traditional view, that data create theories (induction), or that theories guide data collecting (deduction), has been challenged by the idea that data collecting is often "invisibly" guided by undefined or subconscious theoretical or personal viewpoints, an idea that was first proposed within the concept of

4 By "bricolage" *sensu* Lévi-Strauss (1966: 16–22), Pearce (2011: 85) means that one puts together various elements from relevant theories and methodologies in order to fit the problem or phenomenon being investigated.

the "sociology of knowledge" (Durkheim 1954 [1912]). Such viewpoints include values that are embedded within the scientific process without being explicitly formulated or questioned, or unconsciously embedded in the mind of the scientist.

Another ardent discussion centres on research methodology, the advantages and disadvantages of quantitative versus qualitative research. This discussion is particularly focused on whether it is relevant to employ numerical, *quantitative data* and statistical analyses for human mental phenomena that are soft and intangible; and whether *qualitative data* can have reliability and validity and thus can be generalized (have external validity).

Another conflict centres on questions concerning the existence of human universals: whether certain psychological characteristics, behavioural tendencies and social patterns are typical for humans as a species. This question is relevant for the discussion of whether it is possible to make comparisons and analogies between, or generalize findings from, one socio-cultural-historical context to another.[5]

Today, not only the question of whether human beings are primarily to be understood by their nature *or* their culture,[6] but also their "nature and culture", the adding of culture on a natural substratum, are regarded as outdated (at least in medicine, genetics/epigenetics and psychology). The position now is that nature and culture interact and co-evolve in subtle, intricate, and almost indivisible and indistinguishable ways (Midgley 1995; Bandura 1977, 2005, 2006; Buss 2001; Ingold 2001; Berry et al. 2002). Therefore, the behaviour of individuals and groups must always be understood as "action-in-a-context", as individuals, groups and their contexts are to a considerable extent inseparable (Craig 2003).

Furthermore, Ludwig Wittgenstein's ideals of "complementary discourses" (Wittgenstein 2009 [1953]) and of using the right and relevant tools for each particular problem are increasingly winning ground. This attitude is essential in all problem-focused research. Without losing the methodological rigour of processualism, ideas from post-processualism have gained general scientific recognition, and become mainstream (VanPool and VanPool 1999). They have influenced modern archaeology by broadening and refining its range of observation, sharpening the awareness of subjectivity in the process of interpretation, and by making a focus on "context" a *sine qua non* both within archaeological studies, and in the practices and uses of archaeology. There is now a refreshing recognition of qualitative aspects in even the most hard-core positivist quantitative research circles, and an awareness of subjectivity and contextual biases in all kinds of research, quantitative as well as qualitative. Skirmishes still occur, but now seldom regarding the legitimacy of the different positions *as* scientific positions and methodological standpoints, but rather concerning the *relevance* and the potential *ethical consequences* of the different theoretical positions and methodologies for the particular topic being studied.

Hopefully, interdisciplinarity will, from being a buzzword, become realized, and continue to emerge and develop within all branches and fields of archaeology. It is now increasingly recognized that integrative perspectives really enhance research by providing different points of view, different kinds of and levels of information, different methods, different sets of data, and different ways of integrating and interpreting this information, both analytically and theoretically. More varied and different perspectives are increasingly acknowledged as relevant for different research topics and questions, and different research questions are acknowledged as requiring broader methodological approaches. This integration of disciplines also makes new research questions possible to pursue: The fields expand! Also, combinations of methods such as *Methodological Triangulation* and *Mixed Method Research* (Teddlie and Tashakkori 2003a, 2003b; Johnson and Onwuegbuzie 2004) are increasingly acknowledged as

5 This conflict regarding cross-cultural generalizations, in the intersection between archaeology and psychology, was particularly pinpointed by Hodder (1986: 30–32) in his criticism of Colin Renfrew's view of archaeological research regarding the human "mind". Renfrew promotes a position which bridges a natural science-derived and a historically relative point of view. In contrast, Hodder claims that each culture has its own cognitive processes, that Renfrew's position is internally contradictory, and concludes, "It is no longer possible to have a universal natural science theory and method which will allow secure inference and prediction from one historical context to another." (Hodder 1986: 32). Hodder here seems to confuse the term "cognitive processes" with the contents and products of these processes. The products of cognitive processes are culturally determined and influenced. "Cognitive processes" is a psychological construct referring to the cognitive functions of the brain, the human cognitive "share-ware", regardless of content and culture. (Humans even share many cognitive processes with other species.) Whether one learns computer use or bird trapping is culturally determined, but the learning processes (such as model learning and operant conditioning) are the same, and universal.

6 The "nature versus culture" conflict is also termed the "nature versus nurture" conflict.

creating more intriguing research designs and results. Different perspectives and methodologies evidently do not have to *compete*. On the contrary, they may *complete* our understanding of complex phenomena.

Problems? – Oh Yes!

Yet, there may be obvious problems and obstacles to good interdisciplinarity. First and foremost, researchers from various fields may be reluctant to move outside their "comfort zone", for various reasons. To spend one's time and funding on interdisciplinary projects may be hazardous in relation to job demands. "Publish or perish" is a constant threat. Secondly, it can be difficult to understand the scientific concepts and language of other fields. Communication and co-writing can be difficult. The solution is that one needs to study, read up on, and communicate with the disciplines that one collaborates with. There is no short-cut. One must simply expand one's perspectives and knowledge. (My team in SapienCE has frequent seminars, sometimes over several days, in order to enhance communication and understanding). A third problem is that journals may be very discipline-specific and can be reluctant, or simply unwilling, to publish interdisciplinary papers. As we review papers, we have here a great responsibility. We must dare to promote and recommend interdisciplinary papers. All that being said, I will add, from my own experience, that to engage in collaboration with other fields is not only demanding and challenging, but also very rewarding, mind-expanding, fascinating, and simply fun!

Does Archaeology Need a Hand Blender?

Frankly, in my opinion, archaeology is by its very nature interdisciplinary – perhaps *the* most interdisciplinary of all scientific disciplines. Archaeology is, and always has been, dependent on other disciplines to thrive and develop. And it develops further in that direction. A few examples will suffice. In collaboration with medicine, we find out what nutrition prehistoric people had, and what diseases and injuries they suffered. With geology (including tephrochronology) we study how ancient volcanic eruptions happened and what effects they had on human cultures (prehistoric as well as historical); and we can explain why certain stones were preferred for making stone tools. With acoustics we can unravel why certain areas in caves have decorations and signs of cultic behaviours. With zoology and botany we study the natural environment of prehistoric people, their diet, their agriculture and livestock, as well as reconstruct ancient gardens. With linguistics we study migrations and cultural diffusion. With history of religion we interpret ancient sacred locations, buildings, and objects. With psychology we outline what mental and social effects rituals produced. With history of art we date locations and cultural influences. With anthropology and ethnography we make analogue interpretations regarding family life and social organization from house structure to dwelling distributions. With chemistry we identify ancient colour pigments, discover how they were made and what their sources were, and reveal that classical, Greek and Roman, sculptures were polychrome. With numismatics we identify persons of power as well as trade routes, and date sites. With a DNA analysis we examine interbreeding of prehistoric peoples. With history, science of literature, and linguistics we decipher information from ancient texts. With climatology, oceanography, and glaciology we estimate sea levels, atmospheric conditions, and climate in ancient times, the natural contexts surrounding ancient peoples. And this list could go on and on and on.

The hand blender is my chosen metaphor for interdisciplinarity (the term used here to include inter-, cross-, and transdisciplinarity). As I described in the beginning, a hand blender can blend ingredients until their original identity is unrecognizable. That may be an overshot. I do not advocate disciplinary blending until unrecognition. After all, each researcher must take responsibility for the interpretations he or she makes. Yet, I think that the boundaries between the disciplines are still much too rigid. Unfortunately, scientific journals contribute to this situation by requiring field-specific contributions. Yet, archaeology, perhaps more than any other discipline, is by its very nature, an interdisciplinary science. And, as also other sciences do nowadays, archaeology should continue to expand and develop in that direction.

Conclusion

Yet, tensions in interdisciplinarity are obvious. A hand blender has sharp knives. Interdisciplinarity can be challenging, discouraging, demanding, perhaps even destructive. Posturing fights over theoretical issues can be lethal to progress, but can also spur it. Archaeology needs research that is inspirational and inventive. I believe that *a firm focus on the problem to be solved* is a key to reduce the interdisciplinary tensions and provide new inspiration. Problem-focused research will demand "postmodern eclecticism" as proposed by Tim Flohr Sørensen (2022, this volume) and "methodological anarchism" as proposed by Ribeiro (2022, this volume). An expansive, flexible, and pluralistic interdisciplinarity, in various forms, is what can lead archaeology beyond cyclopic single-theoretical and mono-methodological petrifying positions. Yes, archaeology does need a hand blender!

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Bibliography

Bandura, Albert. 1977. Self-efficacy: Toward a Unifying Theory of Behavioural Change. *Psychological Review* 84(2): 191–215.

Bandura, Albert. 2005. *On Self-efficacy*. Lecture. Given at The Psychological Faculty, University of Bergen. Bergen, Norway, July, 17.

Bandura, Albert. 2006: Toward a Psychology of Human Agency. *Perspectives on Psychological Science* 1: 164–180.

Berry, John W., Ype H. Poortinga, Marshall H. Segall and Pierre R. Dasen. 2002. *Cross-cultural Psychology. Research and Applications*. Cambridge: Cambridge University Press.

Bintliff, John. 2006. Introduction. In John Bintliff, Timothy K. Earle and Christopher S. Peebles, eds.: *A Companion to Archaeology*, pp. xvii–xxiv. Oxford: Blackwell Publishing.

Bintliff, John. 2011. The Death of Archaeological Theory? In John Bintliff and Mark Pearce, eds.: *The Death of Archaeological Theory?*, pp. 7–22. Oxford: Oxbow Books.

Buss, David M. 2001. Human Nature and Culture: An Evolutionary Psychological Perspective. *Journal of Personality* 69(6): 155–178.

Clarke, David L. 1979. *Analytical Archaeologist: Collected Papers*. London: Methuen Publishing.

Craig, Anita P. 2003. Culture and the Individual. *Theory & Psychology* 13(5): 629–650.

d'Errico, Francesco, Christopher Henshilwood, Marian Vanhaerend and Karen van Niekerk. 2005. *Nassarius Kraussianus* Shell Beads from Blombos Cave: Evidence for Symbolic Behaviour in the Middle Stone Age. *Journal of Human Evolution* 48(1): 3–24. DOI: 10.1016/j.jhevol.2004.09.002.

Durkheim, Émile. 1954 [1912]. *The Elementary Forms of the Religious Life*. London, New York: Allen & Unwin, Macmillan.

Fagan, Brian M. 1997. *Archaeology. A Brief Introduction*. New York: The Lindbriar Corporation.

Grand-Clément, Adeline. In press. Poikilia, Geometry and Living Patterns in the Greek Archaic and Classical Mind. In Ellen Harlizius-Klück, Giovanni Fanfani, Alex McLean and Annapurda Mamidipudi, eds.: *Homo Textor. Weaving as Technical Mode of Existence*. München: Deutsches Museum Verlag.

Hacking, Ian. 1996. The Disunities of Science. In Peter Galison and David J. Stump, eds.: *The Disunity of Science: Boundaries, Contexts, and Power*, pp. 37–74. Stanford: Stanford University Press.

Henshilwood, Christopher Stuart. 2007. Fully Symbolic Sapiens Behaviour: Innovation in the Middle Stone Age at Blombos Cave, South Africa. In Paul Mellars, Katie Boyle, Ofer Bar-Yosef and Chris Stringer, eds.: *Rethinking the Human Revolution: New Behavioural and Biological Perspectives on the Origins and Dispersal of Modern Humans*, pp. 123–132. Cambridge: University of Cambridge Press.

Henshilwood, Christopher Stuart. 2014. *Origins of Symbolic Behaviour*. In McGraw-Hill Yearbook of Science & Technology. New York: McGraw-Hill.

Henshilwood, Christopher Stuart, Francesco d'Errico and Ian Watts. 2009. Engraved Ochres from the Middle Stone Age Levels at Blombos Cave, South Africa. *Journal of Human Evolution* 57: 27–47. DOI: 10.1016/j.jhevol.2009.01.005.

Hodder, Ian. 1986. *Reading the Past*. Cambridge: Cambridge University Press.

Hodder, Ian. 1999. *The Archaeological Process. An Introduction*. London: Blackwell Publishing.

Hodder, Ian. 2011. Human-Thing Entanglement: Towards an Integrated Archaeological Perspective. *Journal of the Royal Anthropological Institute* 17(1): 154–177.

Ingold, Timothy. 2001. From Complementarity to Obviation: On Dissolving the Boundaries Between Social and Biological Anthropology, Archaeology, and Psychology. In Russell D. Gray, Paul E. Griffiths and Susan Oyama, eds.: *Cycles of Contingency: Developmental Systems and Evolution*, pp. 255–279. Cambridge, MA: MIT Press.

Johnson, Burke and Anthony J. Onwuegbuzie, 2004. Mixed Methods Research: A Research Paradigm Whose Time Has Come. *Educational Researcher* 33(7): 14–26.

Knappett, Carl. 2014. Materiality in Archaeological Theory. In Claire Smith, ed.: *Encyclopedia of Global Archaeology*, pp. 4700–4708. New York: Springer Publishers.

Lévi-Strauss, Claude. 1966. *The Savage Mind*. London: Weidenfield and Nicholson.

Li, Zhanyang, Luc Doyon, Hui Fang, Ronan Ledevin, Alain Queffelec et al. 2020. A Paleolithic Bird Figurine from the Lingjing Site, Henan, China. *PLoS ONE*, 15(6): Art. e0233370. DOI: 10.1371/journal.pone.0233370.

Lindstrøm, Torill Christine and Siv Kristoffersen. 2001. "Figure It Out!" Psychological Perspectives on Perception of Migration Period Animal Art. N*orwegian Archaeological Review* 34: 65–84.

Lindstrøm, Torill Christine and Ezra Zubrow. 2014. Fear and Amazement. In Linda C. Eneix, ed.: *Archaeoacoustics: The Archaeology of Sound. Publication of Proceedings from the 2014 Conference in Malta*, pp. 255–264. Mayakka: OTS Foundation.

Malafouris, Lambros. 2013. *How Things Shape the Mind: A Theory of Material Engagement*. Cambridge, MA: MIT Press.

Midgley, Mary. 1995. *Beast and Man. The Roots of Human Nature*. London: Routledge.

Milne, Alan Alexander. 1960. *Winnie the Pooh*. London: Methuen.

Nyquist, Finn P., ed. 1979. *Hardangervidda*. Oslo: Grøndahl & Søn Forlag.

Olsen, Bjørnar. 2010. *In Defence of Things: Archaeology and the Ontology of Objects*. Lanham: AltaMira Press.

Olsen, Bjørnar, Michael Shanks and Christopher L. Witmore. 2003. *Innocence Regained? Or, Is There a New Consensus in Archaeology? An Alternative Case for Bold Thinking*. Paper Presented at the Meeting of The Archaeology Centre Workshop, Stanford University, CA.

Oyama, Susan, Paul E. Griffiths and Russel D. Gray, eds. 2003. *Cycles of Contingency: Developmental Systems and Evolution*. Cambridge, MA: MIT Press.

Østergaard, Jan Stubbe and Adam Schwartz. In press. Late Archaic/Early Classical Greek Relief with Two Hoplites. *Jahrbuch des Deutschen Archäologischen Instituts*.

Pearce, Mark. 2011. Have Rumours of the "Death of Theory" Been Exaggerated? In John Bintliff and Mark Pearce, eds.: *The Death of Archaeological Theory?*, pp. 80–87. Oxford: Oxbow Books.

Pluciennik, Mark. 2011. Theory, Fashion, Culture. In John Bintliff and Mark Pearce, eds.: *The Death of Archaeological Theory?*, pp. 7–22. Oxford: Oxbow Books.

Preucel, Robert. W. and Alexander A. Bauer. 2001. Archaeological Pragmatics. *Norwegian Archaeological Review* 34(2): 85–96.

Renfrew, Colin, Christopher S. Peebles, Ian Hodder, Barbara Bender, Kent V. Flannery et al. 1993. What Is Cognitive Archaeology? *Cambridge Archaeological Journal* 3: 247–270.

Ribeiro, Artur. 2022. Methodological Anarchism Against Interdisciplinary Archaeology. In Artur Ribeiro and Alexandra Ion, eds.: Interdisciplinary Contentions in Archaeology. *Forum Kritische Archäologie* 11: 93–105 (this volume).

Sørensen, Tim Flohr. 2022. Twisted into Form: Eclecticism and Epistemological Dissonance as a Framework for Interdisciplinarity. In Artur Ribeiro and Alexandra Ion, eds.: Interdisciplinary Contentions in Archaeology. *Forum Kritische Archäologie* 11 (this volume).

Tanga, Carmen, Marta Remigio and Joan Viciano. 2022. Transmission of Zoonotic Diseases in the Daily Life of Ancient Pompeii and Herculaneum (79 CE, Italy): A Review of Animal-Human-Environment Interactions Through Biological, Historical and Archaeological Sources. *Animals* 12(2): 213. DOI: 10.3390/ani12020213.

Teddlie, Charles and Abbas Tashakkori. 2003a. *Handbook of Mixed Methods in Social and Behavioural Research*. Thousand Oaks: Sage Publications.

Teddlie, Charles and Abbas Tashakkori. 2003b. Major Issues and Controversies in the Use of Mixed Methods in the Social and Behavioural Sciences. In Charles Teddlie and Abbas Tashakkori, eds.: *Handbook of Mixed Methods in Social and Behavioural Research*, pp. 3–50. Thousand Oaks: Sage Publications.

Timmermann, Axel and Tobias Friedrich. 2016. Late Pleistocene Climate Drivers of Early Human Migration. *Nature* 538: 92–95.

Tosi, Maurizio and Mark Pearce. 1998. Introduction. From the Atlantic to the Urals and Beyond: The Many Dimensions of Archaeology. In Mark Pearce and Maurizio Tosi, eds.: *Papers from the E.A.A. Third Annual Meeting at Ravenna 1997: Volume 1, Pre- and Protohistory*. B.A.R. International Series 717, pp. V. Oxford: Archaeopress.

VanPool, Christine. S. and Todd L. VanPool. 1999. The Scientific Nature of Postprocessualism. *American Antiquity* 64(1): 33–53.

Wadley, Lyn, Lucinda Blackwell, Francesco d'Errico and Christine Sievers. 2020. Cooked Starchy Rhizomes in Africa 170 Thousand Years Ago. *Science* 367(6473): 87–91.

Witmore, Christopher L. 2007a. *Multiple Fields and Archaeological Practice: Modernist Divides and Hermeneutics: Bypassing Interpretation for Mediation*. http://traumwerk.stanford.edu:3455/multiplefields/1046. Viewed: 3.10.2009.

Witmore, Christopher. 2007b. Symmetrical Archaeology: Excerpts of a Manifesto. *World Archaeology* 39(4): 546–562.

Wittgenstein, Ludwig. 2009 [1953]. *Philosophical Investigations*. Oxford: Wiley-Blackwell.

Wylie, Alison. 1994. On “Capturing Facts Alive in the Past” (or Present): Response to Fotiadis and to Little. *American Antiquity* 59(3): 556–560.

Wylie, Alison. 2000. Questions of Evidence, Legitimacy, and the (Dis)Union of Science. *American Antiquity* 65(2): 227–237.

Let’s Talk About It: The Importance of Communication and Translation in Interdisciplinary Cooperation

Daniël P. van Helden

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Let's Talk About It: The Importance of Communication and Translation in Interdisciplinary Cooperation

Daniël P. van Helden

University of Leicester, University Road, Leicester, LE17RH, United Kingdom, dpvh2@leicester.ac.uk

Abstract

Archaeology is very interdisciplinary in its orientation. Therefore, it presents a good case study for thinking about interdisciplinary cooperation. Most, if not all, problems with interdisciplinary cooperation ultimately reduce to problems of communication. An important part of these is due to cultural differences between academic disciplines. Real cultural differences underlie disciplinary divides, and these shape the ways people communicate. Such cultural differences can cause serious (and difficult to detect) communication problems. With careful attention to communication that is sensitive to disciplinary cultural differences, a lot of problems that are practical in nature but are fundamental to effective cooperative research can be mitigated. The importance of translators in interdisciplinary research teams is highlighted. Archaeology can use its slowly growing experience with intercultural communication to enhance its interdisciplinary effectiveness. In order to reap such benefits, it is important that attention is paid to training and employing people with a broad interdisciplinary basis, so that there are people equipped to fill the important role of translator.

Keywords

Interdisciplinary research, communication, translators

Zusammenfassung

Archäologie ist ausgesprochen interdisziplinär ausgerichtet. Daher ist das Fach ein gutes Beispiel, um über interdisziplinäre Zusammenarbeit nachzudenken. Die meisten, wenn nicht alle Probleme interdisziplinärer Zusammenarbeit lassen sich letztlich auf Kommunikationsprobleme zurückführen. Ein wichtiger Teil davon ist auf die kulturellen Unterschiede zwischen den akademischen Disziplinen zurückzuführen. Den disziplinären Differenzen liegen reale kulturelle Unterschiede zugrunde, und diese prägen die Art und Weise, wie Menschen kommunizieren. Solche Unterschiede können ernsthafte (und schwer zu erkennende) Kommunikationsprobleme verursachen. Durch eine sorgfältige Kommunikation, die den kulturellen Differenzen zwischen den Disziplinen Rechnung trägt, können viele praktische Probleme entschärft werden, die für eine wirksame kooperative Forschung von grund-legender Bedeutung sind. Die Bedeutung des Übersetzens in interdisziplinären Forschungsteams wird hervor-gehoben. Die Archäologie kann ihre langsam zunehmenden Erfahrungen mit interkultureller Kommunikation nutzen, um ihre interdisziplinäre Effektivität zu steigern. Um diese Vorteile zu nutzen, ist es wichtig, auf Ausbildung und Beschäftigung von Personen mit einer breiten interdisziplinären Basis zu achten, damit in Teams die wichtige Rolle des Übersetzens ausgefüllt werden kann.

Schlagwörter

Interdisziplinäre Forschung, Kommunikation, Übersetzer*innen

Introduction

In this article I argue that explicit attention to communication patterns can be very beneficial in cooperative research across disciplinary boundaries. In particular, the role of disciplinary translators merits special attention. My argument comes with all the baggage of an author who is a white male archaeologist, trained in humanities departments in western European universities, but with a sciences training from secondary education. In line with the personal inspiration of the content, I have opted not to write this paper solely in traditional authoritative depersonalised language. The argument should stand and be judged on its own merits, not on what is in effect a rhetorical trick.

Due to my background, the focus of this paper is on archaeology. Because of archaeology's "magpie" approach to its object of study, however, combining as many disciplines as it can (cf. Kristiansen 2009; Sinclair 2016), the disciplinary question of how to integrate new approaches within archaeology presents a microcosm of larger interdisciplinary movements within the academy (Wallerstein 2003; Klein 2005). So, while the specifics are concerned with archaeology, the wider implications could benefit interdisciplinary collaboration outside archaeology.

The current special issue is a result of recent developments within archaeology. With the advent of new scientific techniques, old debates have seen a resurgence and older theories have seemingly received a new lease on life. These new strands of research necessitate composite teams made up of specialists from separate and sometimes quite different (sub-)disciplines. Increasingly, interdisciplinarity is also stressed as a requirement for grant success (Ion 2017: 178; Kerr 2020). At the same time, is this a new phenomenon hitting archaeology? As noted, archaeology has always been a magpie. Concerns about communication between different subdisciplines have been voiced throughout archaeology's history (Hawkes 1968; Pluciennik 2011; Sinclair 2016; see also Venclová 2007). In this sense, this recent wave might not be a new buzzword, but something that archaeology has considerable experience with. We can harness this and archaeology's slowly growing experience of intercultural communication (cf. Colley 2002; Levy 2007) to tackle the internal archaeological issue of communication between subdisciplines, but also provide inspiration for interdisciplinarity outside of archaeology (cf. Erickson 2011; Blouet 2019).

What Is Interdisciplinarity?

I do not believe that interdisciplinary knowledge is of an inherently different nature to knowledge gathered within a single discipline. Rather, the human quest for knowledge is a single rope made of different disciplinary strands (cf. Graff 2015: 1–19). In this metaphor, where one discipline ends and another one starts is largely irrelevant, as the strands are twisted in the rope-laying process. Different disciplines have different methods, rationales and truth criteria, certainly, so the metaphor should not be taken too far. I will argue below that there are very real (cultural) differences underlying disciplinary divisions, but the knowledge gained within different disciplines is not of a radically different order, although care should be taken when translating it between disciplinary languages.

Reflection on interdisciplinarity is largely the result of practical difficulties encountered in carrying out interdisciplinary research; questions such as where to report results in a publishing landscape that is organised along disciplinary lines or how to make sure that interdisciplinary research is more than mere juxtaposition of disciplinary results (cf. Birnbaum et al. 2017: 12–13, 23; although see Klein 2005). This does not mean that difficulties encountered are not real, but I contend that these are largely practical, rather than epistemological. Because of this, my focus will be on practical observations and suggestions to guide our thinking about, and improve our execution of, communication in interdisciplinary research. As my focus is on communication, there will not be space to address the political dimensions of interdisciplinarity (cf. Lotrecchiano and Hess 2019), important though they are. Furthermore, because of this comparatively practical focus, I will not delve into the differences between the various ways in which researchers from different disciplines can work together (interdisciplinarity, multidisciplinarity, transdisciplinarity; see Wagner et al. 2011). Here, I will use the term interdisciplinarity to contain all the instances where people from different disciplinary backgrounds cooperate towards a common research goal.

The idea of interdisciplinarity rests on the academic "given" of different disciplines that complement each other. This is not to say that this is the only route through which interdisciplinary collaborations are forged, but if disciplines did not exist, or if they offered nothing to outsiders, there would be no point in calling such research interdisciplinary. This means that questioning interdisciplinarity can proceed in two directions. We can examine the legitimacy of dividing the human quest for knowledge and understanding, or we can probe the complementarity of the resulting disciplines. The latter path only really makes sense if we accept a very reified version of an affirmative answer to the former question. Only if we suppose that the boundaries between disciplines are natural and very rigid, and we assume that anyone's choice to pursue a given discipline is final and absolute, can we even entertain the possibility of suggesting that different disciplines have nothing to offer to each other. Any more nuance to this position forces us to accept that if there are legitimate differences between disciplines, there is at least something that separate disciplines have to offer one another. The question of whether this interest is sufficient to warrant cooperation between disciplines quickly reduces to a practical evaluation of the individual merits of a given research question.

Fundamentally, academic disciplines as we know them today (certainly in the West) exist for practical reasons. The endeavour of human understanding has progressed so far and into such detail that it has become less and less feasible for any individual to keep abreast of all the developments within one's own discipline, let alone those in many others (cf. Collini 1998). The epithet "the last person to know everything" has been awarded to several people in history, but they share at least one very important quality: they are all dead and have been for a long time. It is simply impossible for a finite individual to master more than a few academic specialisms. As the cutting edge of knowledge production is pushed ever outwards, an ever more specialised foundation is needed for those who wish to contribute to the endeavour. To provide and maintain this foundation, the disciplines as we know them formed more or less organically as divisions of the whole. In this practical sense, the current disciplinary divisions are certainly legitimate.

Differences in Disciplinary Culture

In describing the process of separation as "organic" I do not wish to imply that the resulting disciplines are "natural" or that the current divisions are the only possible ones. There are many different ways in which the process of knowledge gathering and creation could have been subdivided. The appeal of interdisciplinary research points to this fact. This is research that apparently does not sit comfortably in the current subdivision. The fact that positions of academic boundaries have arbitrary qualities does not mean, however, that the division is essentially random. Apart from political pressures that steered development during the growth of the university system (Wallerstein 2003), there are broad, real differences underlying "superficial" disciplinary divisions. While these do not determine where dividing lines between disciplines will be situated, they do influence the ultimate disciplinary map by suggesting natural allies or cognate disciplines, which are closer together to each other than to others.

I would argue that these very real differences in the approaches of the various branches of the academy can best be characterised as *cultural* differences. The division between the natural sciences and the humanities is the most obvious and the most debated division. How these two branches differ in object of study, truth criteria, or application of method has been debated since at least the 19th century (Collini 1998; Critchley 2001; Gould 2003) and so need not be covered here. The important differences are often found not so much in easily observable things such as the knowledge of basic principles that C. P. Snow decried in *Two Cultures* (Snow 1959; cf. Collini 1998). Snow's argument was that scientists and those trained in the humanities had too little common ground for meaningful communication. While some of this lack of common knowledge is perhaps true, I do not think that this is ultimately as large an impediment to day-to-day communication as a lack of common phraseology or disciplinary culture. Hans-Georg Gadamer (1990) argues that the characterising difference between the *Naturwissenschaften* and the *Kulturwissenschaften* is the difference between truth and method. The sciences turn to specified replicable methods to guide their search for knowledge, whereas the object of study for the humanities does not conform to the prerequisites of scientific method. Gadamer suggests that the natural sciences and the humanities actually use different types of induction. Natural scientific induction relies on the researcher's own reason, whereas cultural scientific induction is more instinctive, involving a certain tact, memory, and a feeling for when to allow authority to speak (Gadamer 1990: 11). Both sides think in different ways. Gadamer concludes that these are psychological

differences. I would characterise them as cultural differences, because they involve different values (e.g. in the value placed on replicable experimentation) and cultural elements such as language differences (see below). These are important differences, though they should not be overstated as some Kuhnian incommensurability (Kuhn 1962), nor as clear-cut binary divisions as in Snow's *Two Cultures* (Snow 1998 [1963], though compare later editions of the book). Broad cultural differences exist, but their ways are not wholly exclusive, nor do they map neatly onto disciplinary divisions. None of these ways of thinking is more natural, all are cultural, and intercultural communication is possible. As with any cultural group, though, members need to be taught the proper ways to think, behave, and speak.

Disciplinary Cultural Socialisation

In schools and universities, where humans are disciplined into their respective fields, training sows the seeds of these cultural differences. Students need to learn disciplinary vocabulary and jargon and how to use them. New words and meanings are learned in a relatively straightforward manner, but they are used in culturally specific ways. Where vocabulary is exclusive to the discipline, this does not pose a problem beyond the need to learn new terms. Sometimes, though, disciplines use general terms in discipline-specific ways. The meaning of a term may be different from one discipline to another. For example, in the sciences the word "error" has a specific technical meaning, whereas for many archaeologists it means that someone has done something wrong. Unawareness of such differences can lead to mutual non-comprehension. On the Arch-I-Scan project[1], a collaboration between archaeologists and mathematicians, we archaeologists failed to communicate to the mathematicians that when we were talking about "whole" vessels, we meant vessels from which a complete profile could be extracted. The mathematicians, under the (quite reasonable) assumption that "whole" meant undamaged, were not adequately prepared for what they were faced with. Here, the miscommunication was very obvious, but there are many situations in which it will not be so obvious and miscommunications that linger beneath the surface have a much greater potential for misaligning expectations within interdisciplinary collaborations.

Beside differences in vocabulary, there is the potential for speech patterns to be different between disciplines. Arguments are constructed differently because of subtly distinct truth criteria, and I have had the experience that even certain types of humour can be discipline specific. Because such communication patterns are not directly linked to subject matter, it is very easy for practitioners to see them as natural or universal, whereas they are actually discipline specific, leading to greater potential for confusion when interacting with people from outside one's discipline.

Disciplinary socialisation can also result in different ways of thinking and approaching questions. By and large, (natural) science education revolves around finding the correct answer. This is done through applying the right method for the problem at hand and following it through correctly. In fact, evaluation is largely focussed on this application of the correct method, rather than on the answer itself: "Show your way of working!". The correct answer achieved by the wrong method is not seen as a correct answer, since it was acquired by chance.

In the humanities, by contrast, students are taught to give good answers. "Correct" is much more difficult to define in these disciplines, and as such a good answer means a well-argued one that is not blatantly untrue. Here we also see the need to show one's way of working: single-word answers are unlikely to score high marks in humanities exam papers, but the reason for this is slightly different. Humanities teachers are not looking for the correct application of method. They are looking for a demonstration of reasoning and marshalling evidence in support of the thesis or argument. For various reasons, there are certainly incorrect, inadequate, or wrong processes of thought, but not narrowly defined correct ones.

Of course, archaeology is a poor example of this characterisation, since it amalgamates influences from so many different traditions into a single discipline. There are those with degrees in the sciences and in the arts, all equally archaeologists. There is a wide and venerable body of literature on this topic (e.g. Hawkes 1968; Coudart 2006; Criado-Boado 2016). Often, however, collaboration between different branches of archaeology encounters similar

1 https://le.ac.uk/archaeology/research/new-approaches-to-the-material-world/arch-i-scan. Viewed: 18.8.2022.

issues of communication that I will discuss below. So while archaeology cannot be neatly mapped onto the caricature sketched above, I would argue that the latter is still relevant for archaeology when the two broad fields of sciences and humanities interact, either internally in exchanges between different subdisciplines or externally in interdisciplinary cooperation.

The differences in training between the sciences and the humanities can lead to different dispositions to problem solving. I have no evidence beyond the anecdotal to back this up, but it might be that people who have followed a science training are primed to look for a general solution first, because it is in the general that problems should be solved. Starting by working through a concrete problem by hand is in some ways an admission of failure to find an elegant general solution out of which the answer to the concrete problem emerges. By contrast, those disciplined in the humanities see it as unavoidable to first work painstakingly through all the specific sources to describe and understand a specific case and then distil a general answer from that. As a result, they may have fewer objections to starting with legwork.

Similarly, there may be different attitudes to quantification. Those socialised in quantitative disciplines may be more inclined to work with quantitative ball-park figures, homing in on an accurate number through iteration, whereas more qualitatively minded researchers are often very reticent to quantify ideas, because they feel that this suggests spurious accuracy or certitude. For example, date ranges for Gaulish *terra sigillata* are often (though not exclusively) expressed in terms of reigns of Roman emperors rather than as numerical dates (e.g. Webster 1996). When pressed to explicate what such ranges mean, pottery experts I have talked to have often been very resistant to put numbers to their date ranges. Conversely, quantitatively minded researchers may find non-numerical data difficult to integrate into their models (Vander Linden and Saqalli 2019). It can be very tempting to exclude such qualitative data from a formal model, or to accord it less importance in the research, to the detriment of the overall conclusions but also severely hampering cooperation within research teams. Differences in disciplinary culture can have deleterious effects on cooperation when they are explicitly observed (see Grey 2012: 151–153 for the example of friction between linguists and mathematicians at Bletchley Park), but when they pass under the radar, the effects may be much more pernicious. I will argue that explicit attention and sensitivity to disciplinary cultural differences can significantly reduce such risks.

The Necessity of Communication

It is in cooperation that the main added benefit of interdisciplinarity lies. While I will argue below that most problems of interdisciplinarity reduce to problems of communication, the foundation of success is ultimately humans joining hands to solve a problem by working together. This goes further than each person supplying their part. In the most successful collaborations, all participants are willing to go beyond their own boundaries to approach their collaborators as fellow humans. This is because true understanding is found in meaningful conversation, where participants actively try to relate to one another over the subject of the conversation (Gadamer 1990: 183–184). In trying to understand the other, one attempts to see how they got to their point, even trying to strengthen their argument to fully grasp their position. This is not accomplished by relinquishing one's own point of view, losing oneself in the other's position as it were, but rather in endeavouring to reconcile perspectives in a "fusion of horizons" (Gadamer 1990: 297, 305–312). In their chapter in a volume about archaeological computational modelling (an interdisciplinary endeavour *par excellence*), Mehdi Saqalli and colleagues (2019) stress the importance of sacrifice to the success of an interdisciplinary project. When all partners in the collaboration are willing to sacrifice some disciplinary specificity, the resulting model can be better overall. Rather than optimise the process for disciplinary standards, the whole can be more than the sum of its parts. The same applies to non-modelling interdisciplinary collaborations. Often, these do end up as little more than the juxtaposition of disciplinary results, often even published separately, but if all sides are willing to compromise, the whole can transcend this.

The importance of conversation to understanding highlights the crucial role that communication plays in interdisciplinary collaboration (cf. Lotrecchiano and Hess 2019: 183). While it will not solve all issues, communication's importance in the success of interdisciplinarity cannot be overstated. Certainly, this is because of the positive, constructive aspects of communication in bringing humans together in pursuit of a greater good, but also because most, if not all, problems of interdisciplinarity ultimately reduce to a range of problems of communication. Gunther

Tress and colleagues (2006: 467; cf. Spanner 2001) list some of the major barriers to interdisciplinary research:

> "spatial distance separating research teams, additional time needed for integration, difficulties in leadership and personal chemistry, lack of common terminology, different academic traditions, different methodologies, incompatible power hierarchies between disciplines, unsuitable organizational infrastructure and the current merit system. These studies also all mention difficulties in publishing from integrative research projects." (Tress et al. 2006: 467)

All these barriers are variations of communication problems, with the possible exception of organisational structure and the merit system (although the main way in which organisational structure impedes interdisciplinary research is by hampering effective communication). The differences in disciplinary culture described above, both in language and in practical approaches, are only problematic where they lead to misunderstandings or to a lack of communication. We need to be aware of the differences in order to address them, and often they only become apparent if some misunderstanding arose because of them, but the best way of detecting and mitigating them is open (and, ideally, face-to-face) communication.

Of course, in (interdisciplinary) teams differences of disciplinary culture are added to the cultural diversity that exists in the group of people. Academic teams are often comprised of people from different countries, with all the cultural baggage that entails. Add to this that many of these people will be communicating in what is not their first language and the (cultural) Babel that can ensue is obvious. Here, again, the only solution is more (culturally sensitive) communication.

Disciplinary jargon is, of course, another obvious issue of interdisciplinary research. It is also an overtly communication problem. The words we use to express ourselves may not be shared between project partners and need to be explained. The same holds when one partner in the collaboration does not understand the process or results of another partner. This simply reduces to not (yet) having spent enough time explaining it. Of course, not everyone in the collaboration can be an expert in all aspects of the project – that is the whole premise of interdisciplinary research – but it pays to bring people up to speed with at least the basics of the process and reasoning that go into the disciplinary input, even if only to avoid misunderstandings and misrepresentations.

Different expectations are a further problem that is ultimately a communication issue, for example, around funding. While funding is increasingly advertised as prioritising interdisciplinary research, this does not mean that interdisciplinary projects are more successful in securing it (Bromham et al. 2016). Funding may come with requirements with which some members of the research team may be unfamiliar. When we are talking about collaboration between different subdisciplines of archaeology, these problems might not be as pressing (though science-oriented archaeology often gets funded from different sources than humanities-oriented archaeology), but the wider the interdisciplinary scope of a project is, the more likely it is that certain partners in the collaboration are unfamiliar with the expectations of the funding body. Even then, it is a relatively minor issue, which can be easily dealt with, but it is one that flags the importance of communication at every stage of an interdisciplinary project, from the very inception to the final crossing of t's.

This leads to a related, but less easily resolved, problem: that of where to publish the results of interdisciplinary research. Even though interdisciplinary research is being promoted by funding bodies, publication outlets are by and large still organised along disciplinary lines. This means that it can be difficult to judge where results of interdisciplinary collaboration can and should be published (Tress et al. 2006), because it is harder to identify a suitable outlet, or because editors may (be perceived to) feel that it falls outside the scope of their journal. This need not be because of overt territorialism. Within one's discipline, one often has a feeling for which publication outlets are most prestigious. Especially if the earlier exhortation of sacrifice is adhered to, interdisciplinary research can be harder to publish, because concessions may have been made to disciplinary specificity for the common goal. The overall results of the work may be better, but that may not be reflected in the evaluation along disciplinary lines.

Additionally, academic positions are also organised along these same lines and applicants are judged on disciplinary (publication) criteria (cf. Graff 2015: 1–2). At least there is a strong perception that this is the case (see Anderson et al. 2007). Even if in reality other things (also) get taken into account (Nosek et al. 2012: 621–622), the perception of a premium on disciplinary publications can be enough to potentially make interdisciplinary publications less valuable to the careers of members of interdisciplinary teams, since they would not carry the same weight as work published in traditional disciplinary journals. The extent to which advancement in the profession is

tied to high-impact journal publications can also act as a barrier to interdisciplinary collaboration, since this work fits less comfortably in a disciplinary publishing landscape. For the same reason, the establishment of journals dedicated to interdisciplinary work is only going to be a partial solution, since, until these carry the same prestige as discipline-specific ones, it is going to be safer to publish in disciplinary outlets. In a context of precarious contracts, careers, and livelihoods, this can feed a process whereby partners in the collaboration prefer to publish the results of their specific work package separately, hampering interdisciplinary projects' success (cf. Giner-Sorolla 2012 for a similar argument regarding questionable methodological practices). The problem of communicating interdisciplinary results (to disciplinary audiences) can therefore seriously impede interdisciplinary research efforts. Of course, problems of precarity are unlikely to be resolved with solutions directed at the "narrow" issue of interdisciplinary research. Wider, institutional changes are needed, such as widening the publication bottleneck, using broader hiring criteria, and providing more secure (or at least less extremely precarious) employment opportunities in academia. While desirable, such discussions fall outside the scope of this paper.

Communicating Better

So far, I have argued that real cultural differences exist between disciplines and that these get added to the cultural spectrum of bringing together an international group of scholars when working on interdisciplinary projects. I also maintain that most problems of interdisciplinarity ultimately reduce to communications problems. The only solution to communication problems is more (and better) communication (cf. Laneri 2002; Watkins 2006; Harding 2007; Holtorf 2007 for similar approaches to specifically archaeological versions of this problem). The most important practical improvement to interdisciplinary cooperation lies in more and better intercultural communication. Within archaeology there is growing expertise, or at least experience, with intercultural communication (Martindale and Lyons 2014). This has been driven primarily by increasingly sensitive engagement with indigenous groups by archaeologists and the emergence of indigenous archaeology as an explicit mode of practicing archaeology (Ferris 2003; Smith and Wobst 2005a; Zimmerman 2005; Atalay 2006; Watkins 2006; Levy 2007; although see these very same publications, and compare Hamilakis 2016: 679 for how easily and often archaeology still gets this wrong). We should learn from this experience in our approach to interdisciplinary cooperation.

The analogy should not be seen as a perfect mapping of work with descendant communities onto interdisciplinary academic work. Of course, the scale of cultural differences and sensibilities is vastly different. The distress involved (largely borne by indigenous people) in their intercultural interactions with archaeologists is on a completely different scale to the inconvenience in which interdisciplinary miscommunication can result. It can, however, be enlightening to consider a more extreme case so that problems and the relevance of potential solutions are clearer. Since the 1970s archaeologists, most prolifically in North America, started to pay increasing attention to archaeology's relation to indigenous groups (Ferris 2003; Levy 2007). Cultural sensitivities of such groups, and the ways in which archaeological practices offended them, became more apparent to archaeologists. Not all were (or are) wholly sympathetic to indigenous groups' claims to what they consider to be their ancestors, as became clear in debates surrounding NAGPRA legislation (e.g. Meighan 1992). The 2000s saw an increase in attention to archaeological ethics (e.g. Tarlow 2001; 2006), in which the treatment of descendant communities was accorded a prominent position (see the editorial statement of the *Journal of Social Archaeology* 2001; contributions to Smith and Wobst 2005b). This movement fed into, and was driven by, a desire to create archaeological practices that were inclusive of, rather than in opposition to, descendant communities (Lyons and Supernant 2020). By attempting to collaborate to mutual benefit and devising methodologies that actively take cultural differences into account, both academics and indigenous groups can end up better for the process (Kovach 2009).

One of the most important lessons of this more thoughtful engagement with descendant communities was humility (Colwell-Chanthaphonh and Ferguson 2004; Zimmerman 2005; Hoffman 2020). Unsurprisingly, indigenous communities did not appreciate outsiders (descendants of their colonisers) coming to them to tell them what their past was like, contradicting their own narratives of their place in the universe. Being humble, not according yourself more importance than you should (when working with people who know more than you do, your importance should probably be lessened), can go a long way to establishing trust, although the process takes time and effort. Extrapolating to this article's concern for interdisciplinarity, it is worth noting that this central

value of humility resonates with Saqalli and colleagues' (2019) emphasis on self-sacrifice in interdisciplinary cooperation, discussed above.

In exploring how to ethically engage with indigenous and descendant communities, it quickly became apparent that there were culturally different ways of communicating, which were hampering communication (Watkins 2006). Archaeologists (a largely white, middle-class group) often use rather direct, explicit speech patterns, whereas members of culturally different groups are often much more comfortable with less direct, more implicit forms of speaking (cf. Elliott et al. 1999). Written contracts may also trigger very different responses depending on whether or not groups have a history of broken treaties or other reasons to mistrust officialdom (Zimmerman 2005).

Of course, archaeologists were not the only ones, nor even close to the first, to notice the differences in communication styles between minority groups and those of European descent. In wider society, the same issue was identified and acted upon. In America, publications such as the Peace Corps' *Culture Matters* (1997) and the *Toolkit for Cross-Cultural Collaboration* (Elliott et al. 1999) identified intercultural communication as a major area of potential enhancement and suggested ways of improving skills in this direction. Archaeologists wisely looked to this wider expertise to improve their own practice (Watkins 2006; see Atalay 2007 for archaeological applicability of more sensitive ways of working outside the context of working with indigenous groups). As almost all problems of interdisciplinary collaboration reduce to problems of (intercultural) communication, the utility of such tools will be obvious. I will focus on the *Toolkit for Cross-Cultural Collaboration*, as the way the authors phrased their recommendations resonates with my argument in this article, but the message is not unique to this document. Again, the cultural differences underlying interdisciplinary misunderstanding are clearly much smaller than those discussed in the report. As such, the adaptations and accommodations perhaps need not be as fundamental as some of those identified in the toolkit, but using them to shape our ideas can be very beneficial.

In the *Toolkit for Cross-Cultural Collaboration*, the authors identify unawareness of culturally different ways of communicating as one of the biggest barriers to sensitive and successful intercultural collaboration. Such unawareness is understandable in the sense that everybody is enculturated within their own group to be familiar with that group's speech patterns. It is only too easy for these to become so self-evident as to be considered part of human nature. In an American context, Candia Elliott and colleagues note that such latent assumptions can lead to problems where representatives of officialdom (who are statistically more likely to be of European descent) take their own speech patterns to be normal and others' deviations from this norm, rather than realising that theirs is but one ethnic variation in the mix, albeit the dominant one. Members of other minority groups may feel disrespected because they themselves are not familiar with the culturally particular speech pattern and what the underlying intent is.

In our example of interdisciplinary cooperation, it is not automatically the case that there is a normative difference between the various disciplinary cultures, although recognising the distinctions in disciplinary culture will still take effort. We potentially start higher up on Elliott and colleagues' (1999) "stages of intercultural sensitivity", possibly making the necessary adjustment process less complicated. Because our disciplinary cultural differences do not correlate necessarily with a disparity in privilege or power, we have a better starting point.

Elliott and colleagues emphasise that it is not outwardly visible markers of cultural diversity that are the key ones that inhibit collaboration. Rather, it is the underlying goals, values, and communication styles that "cause cultural differences to be misinterpreted as personal violations of trust or respect" (Elliott et al. 1999). It is such more subtle differences that I highlighted earlier as the important disciplinary cultural differences to bear in mind in interdisciplinary cooperation. The *Toolkit for Cross-Cultural Collaboration* further stresses that the cultural competence that forms that basis for truly successful cooperation is not "something we pick up, with time, by working with persons who are different from ourselves" (1999, cf. Lyall et al. 2013: 67 for a similar argument in the context of interdisciplinary collaboration); it requires prolonged, conscious effort. Just being exposed to difference does not automatically lead to better or more culturally sensitive communication. It is possible that such exposure can lead to accommodation, finding a modus vivendi, but this is not the same as understanding. Understanding forges deeper relations which enable more than simple coexistence. Such understanding is important in the building of trust, which is an invaluable component in the process by which an interdisciplinary project can achieve a whole that is greater than the sum of its parts.

Translators

In light of this required effort, it can be useful to select liaisons, not to offload responsibility onto single individuals or to have them act as representatives to speak for a group, but to facilitate smooth communication. In the context in which it was written, the toolkit suggests that liaisons can play an important role as go-betweens between officials (or the system) and minority groups. Liaisons should not necessarily act as representatives to speak for the group but act as go-betweens to facilitate communications between groups of people (Elliott et al. 1999). Of course, they need to be sufficiently versed in both cultures to successfully fulfil this role (cf. Allen and Phillips 2010: 18–19 for similar remarks regarding mutual understanding between archaeologists and indigenous communities). In a sense, they need to be cultural translators. Even though the original context is rather different than the academic context under discussion, I think this concept of the cultural translator is a good model for improving interdisciplinary communication and cooperation. Interdisciplinary research teams are not often so large as to require representatives to speak for subgroups. In this sense, appointing a separate individual to fulfil this role will not be necessary. This does not mean, however, that the idea is not useful for smaller teams. Employing someone who is versed in different disciplinary cultures (ideally, of course, those represented in the project) and who can translate between them can significantly benefit an interdisciplinary project. As a central figure who intensively communicates with the different subgroups while keeping an eye out for potential misunderstandings, they are better positioned to spot where one party interprets something differently to how another intended it, catching miscommunication early. Furthermore, because of a translator's familiarity with disciplinary cultural backgrounds present in the team and (ideally) the idiosyncrasies of different subgroups, they are also in a position to rephrase communication so as to have a better chance of being understood in the intended way.

This translating need not be someone's only task within a project team. For this reason, there is merit in considering translators in an early stage in a project (cf. Lyall et al. 2013). When putting a team together, it might be a good idea to discuss who will play the role of translator (see Gibson et al. 2019 for wider communications and career concerns in interdisciplinary project design). If new people need to be hired, it is worth contemplating having representatives of all disciplinary subgroups on the committee and paying explicit attention to this translator role in the hiring process. Of course, the translator needs to possess certain qualities, such as affinity and experience with a range of the disciplinary backgrounds in the team. Ideally, this affinity would date back to their education, as it is in this stage that disciplinary cultural attitudes are inculcated and such things may be more difficult to pick up through simple exposure (see above). We might use this point to argue for a broad educational basis for students, where they experience a broader range of disciplines than is common in western European universities. At least candidates who have received an education in more than one discipline have a leg up when it comes to being interdisciplinary translators.

Since I have argued that most, if not all, problems of interdisciplinarity reduce to communications problems and that the only solution to problems of communication is more communication, the potential role for translators is obvious (see Ng and Litzenberg 2019 for an argument for an analogous role in integrating interdisciplinary research in departments). This role is not one of a scapegoat onto which the communications problems can be offloaded, but a guiding one: helping project members engage in open, sensitive communication. This is especially so since more communication is the *sine qua non* of solving problems of interdisciplinary communication, but it is not a case that more of the same is a sufficient condition for solving communications problems. It is the better, more streamlined, (disciplinary) culturally sensitive communication that translators offer that, in my opinion, hold most promise for practical improvements in interdisciplinary collaboration.

Conclusions

In this article I have argued that most problems of interdisciplinarity reduce to communication problems. While some of these problems are systemic and, to a degree, built into the framework of academia, many of them are quite practical in nature and can be addressed or at least mitigated with sensitive attention to underlying disciplinary cultural differences. Especially the role of translators of interdisciplinary culture is very promising in addressing the practical communications difficulties that interdisciplinary teams are likely to encounter. Though technically not an act of interdisciplinary research in itself, such translation has the potential to contribute

significantly to the success of interdisciplinary research efforts. Throughout this article, I have abstracted from archaeology to academia more generally, as the points are more easily illustrated using more general examples. Archaeology, however, can be seen as a microcosm of the wider interdisciplinary landscape. Therefore, the problems and solutions in general are also present and applicable in archaeology. In intercultural communication, archaeology has considerable experience, and this experience puts us in a good place to treat disciplinary cultural differences sensitively and appoint successful translators. As a discipline, archaeology might be uniquely well placed to successfully negotiate the difficulties that come with interdisciplinary cooperation.

In the end, of course, I do not offer a silver bullet. Simply having translators is not going to solve all problems, or even all the ones that I have identified above. Interdisciplinary collaboration will still require hard labour from all parties, including the translators, although the latter's presence has the potential to smoothen the process. Furthermore, the problem of publishing the results of interdisciplinary research will not be remedied by the mere presence of translators. I am convinced, however, that a broader (inter)disciplinary mindset is advantageous to most research teams as well as outside academia. Our times call for more sensitive attention to cultural differences whatever their source, and paying explicit attention to such differences in the training of students will help the human pursuit of knowledge, whether or not these students end up in academia.

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Bibliography

Allen, Harry and Caroline Phillips. 2010. Maintaining the Dialogue: Archaeology, Cultural Heritage and Indigenous Communities. In Caroline Phillips and Harry Allen, eds.: *Bridging the Divide: Indigenous Communities and Archaeology into the 21st Century*, pp. 17–48. Walnut Creek, CA: Left Coast Press.

Anderson, Melissa S., Emily A. Ronning, Raymond de Vries and Brian C. Martinson. 2007. The Perverse Effects of Competition on Scientists' Work and Relationships. *Science and Engineering Ethics* 13: 437–461. DOI: 10.1007/s11948-007-9042-5.

Atalay, Sonya L. 2006. Indigenous Archaeology as Decolonizing Practice. *American Indian Quarterly* 30(3/4): 280–310. DOI: 10.1353/aiq.2006.0015.

Atalay, Sonya L. 2007. Global Application of Indigenous Archaeology: Community Based Participatory Research in Turkey. *Archaeologies: Journal of the World Archaeological Congress* 3(3): 249–270. DOI: 10.1007/s11759-007-9026-8.

Birnbaum, Bogdan I., Philippe Keraudren, Tobias Storm and Theodoros Vavikis. 2017. *Integration of Social Sciences and Humanities in Horizon 2020: Participants, Budget and Disciplines: 2nd Monitoring Report on SSH-Flagged Projects Funded in 2015 under the Societal Challenges and Industrial Leadership*. Brussels: European Union.

Blouet, Helen. 2019. Teaching Interdisciplinary Archaeology: Our Students as Our Future Agents of Change. *Advances in Archaeological Practice* 8(1): 15–24. DOI: 10.1017/aap.2019.41.

Bromham, Lindell, Russell Dinnage and Xia Hua. 2016. Interdisciplinary Research has Consistently Lower Funding Success. *Nature* 534: 684–687. DOI: 10.1038/nature18315.

Colley, Sarah. 2002. *Uncovering Australia: Archaeology, Indigenous People and the Public*. Crows Nest: Allen & Unwin.

Collini, Stefan. 1998. Introduction. In: C. P. Snow *The Two Cultures* (Canto edition), pp. vii–lxxiii. Cambridge: Cambridge University Press.

Colwell-Chanthaphonh, Chip and T. J. Ferguson. 2004. Virtue Ethics and the Practice of History: Native Americans and Archaeologists along the San Pedro Valley of Arizona. *Journal of Social Archaeology* 4(1): 5–27. DOI: 10.1177/1469605304039848.

Coudart, Anick. 2006. Is Archaeology a Science, an Art or a Collection of Individual Experiments…? *Archaeological Dialogues* 13(2): 132–138. DOI: 10.1017/S1380203806222086.

Criado-Boado, Felipe. 2016. Tangled between Paradigms in the Neo-Baroque Era. *Archaeological Dialogues* 23(2): 152–158. DOI: 10.1017/S1380203816000192

Critchley, Simon. 2001. *Continental Philosophy: A Very Short Introduction*. Oxford: Oxford University Press.

Elliott, Candia, R. Jerry Adams and Suganya Sockalingam. 1999. *Toolkit for Cross-Cultural Collaboration*. https://www.awesomelibrary.org/multiculturaltoolkit.html. Viewed: 20.1.2021.

Erickson, Amanda. 2011. Outreach and Education in Archaeology. *AP: Online Journal in Public Archaeology* 1: 45–54.

Ferris, Neal. 2003. Between Colonial and Indigenous Archaeologies: Legal and Extra-legal Ownership of the Archaeological Past in North America. *Canadian Journal of Archaeology / Journal Canadien d'Archéologie* 27(2): 154–190.

Gadamer, Hans-Georg. 1990. *Wahrheit und Methode: Grundzüge einer philosophischen Hermeneutik*. 6th ed. Tübingen: J. C. B. Mohr (Paul Siebeck).

Gibson, Chis, Tamantha Stutchbury, Victoria Ikutegbe and Nicole Michielin. 2019. Challenge-led Interdisciplinary Research in Practice: Program Design, Early Career Research, and a Dialogic Approach to Building Unlikely Collaborations. *Research Evaluation* 28(1): 51–62. DOI: 10.1093/reseval/rvy039.

Giner-Sorolla, Roger. 2012. Science or Art? How Aesthetic Standards Grease the Way Through the Publication Bottleneck but Undermine Science. *Perspectives on Psychological Science* 7(6): 562–571. DOI: 10.1177/1745691612457576.

Gould, Stephen J. 2003. *The Hedgehog, the Fox, and the Magister's Pox: Mending the Gap between Science and the Humanities*. London: Jonathan Cape.

Graff, Harvey J. 2015. *Undisciplining Knowledge: Interdisciplinarity in the Twentieth Century*. Baltimore: Johns Hopkins University Press.

Grey, Christopher. 2012. *Decoding Organization: Bletchley Park, Codebreaking and Organization Studies*. Cambridge: Cambridge University Press.

Hamilakis, Yannis. 2016. Decolonial Archaeologies: From Ethnoarchaeology to Archaeological Ethnography. *World Archaeology* 48(5): 678–682. DOI: 10.1080/00438243.2016.1209783.

Harding, Anthony. 2007. Communication in Archaeology. *European Journal of Archaeology* 10(2–3): 119–133. DOI: 10.1177/1461957108095980.

Hawkes, Jacquetta. 1968. The Proper Study of Mankind. *Antiquity* 42(168): 255–262. DOI: 10.1017/S0003598X00034451.

Hoffman, Tanja. 2020. "We Ask Only That You Come to Us with an Open Heart and an Open Mind". In Kisha Supernant, Jane E. Baxter, Natasha Lyons and Sonya Atalay, eds.: *Archaeologies of the Heart*, pp. 59–68. Cham: Springer.

Holtorf, Cornelius. 2007. Can You Hear Me at the Back? Archaeology, Communication and Society. *European Journal of Archaeology* 10(2–3): 149–165. DOI: 10.1177/1461957108095982.

Ion, Alexandra. 2017. How Interdisciplinary Is Interdisciplinarity? Revisiting the Impact of aDNA Research for the Archaeology of Human Remains. *Current Swedish Archaeology* 25: 177–198.

Journal of Social Archaeology. 2001. Editorial Statement. *Journal of Social Archaeology* 1(1): 5–12. DOI: 10.1177/146960530100100101.

Kerr, Sarah. 2020. The Future of Archaeology, Interdisciplinarity and Global Challenges. *Antiquity* 94(377): 1337–1348. DOI: 10.15184/aqy.2020.138.

Klein, Julie Thompson. 2005. *Humanities, Culture, and Interdisciplinarity*. Albany: State University of New York Press.

Kovach, Margaret. 2009. *Indigenous Methodologies: Characteristics, Conversations and Contexts*. Toronto: University of Toronto Press.

Kristiansen, Kristian. 2009. The Discipline of Archaeology. In Chris Gosden, Barry Cunliffe und Rosemary A. Joyce, eds.: *The Oxford Handbook of Archaeology*, pp. 3–46. Oxford: Oxford University Press.

Kuhn, Thomas. 1962. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.

Laneri, Nicola. 2002. Crossing Boundaries: Some Thoughts about Communication in Archaeology. *Archaeological Dialogues* 9(2): 90–97. DOI: 10.1017/S1380203800002130.

Levy, Janet E. 2007. Archaeology, Communication, and Multiple Stakeholders: From the Other Side of the Big Pond. *European Journal of Archaeology* 10(2–3): 167–184. DOI: 10.1177/1461957108095983.

Lotrecchiano, Gaetano R. and Andi Hess. 2019. The Impact of Julie Thompson Klein's Interdisciplinarity: An Ethnographic Journey. *Issues in Interdisciplinary Studies* 37(2): 169–192.

Lyall, Catherine, Ann Bruce, Wendy Marsden and Laura Meagher. 2013. The Role of Funding Agencies in Creating Interdisciplinary Knowledge. *Science and Public Policy* 40: 62–71. DOI: 10.1093/scipol/scs121.

Lyons, Natasha and Kisha Supernant. 2020. Introduction to an Archaeology of the Heart. In Kisha Supernant, Jane E. Baxter, Natasha Lyons and Sonya Atalay, eds.: *Archaeologies of the Heart*, pp. 1–22. Cham: Springer.

Martindale, Andrew and Natasha Lyons. 2014. Community-Oriented Archaeology. *Canadian Journal of Archaeology / Journal Canadien d'Archéologie* 38(2): 425–433.

Meighan, Clement W. 1992. Some Scholars' Views on Reburial. *American Antiquity* 57: 704–710. DOI: 10.1017/S0002731600054810.

Ng, Desmond and Kerry Litzenberg. 2019. Overcoming Disciplinary Divides in Higher Education: The Case of Agricultural Economics. *Palgrave Communications* 5: 26. DOI: 10.1057/s41599-019-0235-8.

Nosek, Brian A., Jeffrey R. Spies and Matt Motyl. 2012. Scientific Utopia: II. Restructuring Incentives and Practices to Promote Truth Over Publishability. *Perspectives on Psychological Science* 7(6): 615–631. DOI: 10.1177/1745691612459058.

Peace Corps. 1997. *Culture Matters: The Peace Corps Cross-Cultural Workbook*. Washington, D.C.: U.S. Government Printing Office.

Pluciennik, Mark. 2011. Theory, Fashion, Culture. In: John Bintliff and Mark Pearce, eds.: The Death of Archaeological Theory?, pp. 31–47. Oxford: Oxbow.

Saqalli, Mehdi, Melio Saenz, Mahamadou Belem, Laurent Lespez and Samuel Thiriot. 2019. O Tempora O Mores: Building an Epistemological Procedure for Modeling the Socio-anthropological Factors of Rural Neolithic Socio-ecological Systems: Stakes, Choices, Hypotheses, and Constraints. In Mehdi Saqalli and Marc Vander Linden, eds.: *Integrating Qualitative and Social Science Factors in Archaeological Modelling*, pp. 15–54. Cham: Springer.

Sinclair, Anthony. 2016. The Intellectual Base of Archaeological Research 2004-2013: A Visualisation and Analysis of its Disciplinary Links, Networks of Authors and Conceptual Language. *Internet Archaeology* 42. DOI: 10.11141/ia.42.8.

Smith, Claire and H. Martin Wobst. 2005a. Decolonizing Archaeological Theory and Practice. In Claire Smith and H. Martin Wobst, eds.: *Indigenous Archaeologies: Decolonizing Theory and Practice*, pp. 4–14. London: Routledge.

Smith, Claire and H. Martin Wobst, eds. 2005b. *Indigenous Archaeologies: Decolonizing Theory and Practice*. London: Routledge.

Snow, C. P. 1959. *The Two Cultures and the Scientific Revolution*. Cambridge: Cambridge University Press.

Snow, C. P. 1998 [1963]. The Two Cultures: A Second Look (1963). In C. P. Snow *The Two Cultures* (Canto edition). Cambridge: Cambridge University Press.

Spanner, Dan. 2001. Border Crossings: Understanding the Cultural and Informational Dilemmas of Interdisciplinary Scholars. *Journal of Academic Librarianship* 27(5): 352–360.

Tarlow, Sarah. 2001. Decoding Ethics. *Public Archaeology* 1: 245–259.

Tarlow, Sarah. 2006. Archaeological Ethics and the People of the Past. In C. Scarre and G. Scarre, eds.: *The Ethics of Archaeology: Philosophical Perspectives on Archaeological Practice*, pp. 199–218. Cambridge: Cambridge University Press.

Tress, Gunther, Bärbel Tress and Gary Fry. 2006. Publishing Integrative Landscape Research: Analysis of Editorial Policies of Peer-Reviewed Journals. *Environmental Science & Policy* 9: 466–475. DOI: 10.1016/j.envsci.2006.03.004.

Venclová, Natalie. 2007. Communication Within Archaeology: Do We Understand Each Other? *European Journal of Archaeology* (2–3): 207–222. DOI: 10.1177/1461957108095985.

Vander Linden, Marc and Mehdi Saqalli. 2019. Introducing Qualitative and Social Science Factors in Archaeological Modelling: Necessity and Relevance. In Mehdi Saqalli and Marc Vander Linden, eds.: *Integrating Qualitative and Social Science Factors in Archaeological Modelling*, pp. 1–14. Cham: Springer.

Wagner, Caroline S., J. David Roessner, Kamau Bobb, Julie Thompson Klein, Kevin W. Boyack et al. 2011. Approaches to Understanding and Measuring Interdisciplinary Scientific Research (IDR): A Review of the Literature. *Journal of Informetrics* 165: pp. 14–26. DOI: 10.1016/j.joi.2010.06.004.

Wallerstein, Immanuel. 2003. Anthropology, Sociology, and Other Dubious Disciplines. *Current Anthropology* 44(4): 453–465. DOI: 10.1086/375868.

Watkins, Joe E. 2006. Communicating Archaeology: Words to the Wise. *Journal of Social Archaeology* 6(1): 100–118. DOI: 10.1177/1469605306060569.

Webster, Peter. 1996. *Roman Samian Pottery in Britain*. York: CBA.

Zimmerman, Larry J. 2005. First, Be Humble: Working with Indigenous Peoples and Other Descendant Communities. In Claire Smith and H. Martin Wobst, eds.: *Indigenous Archaeologies: Decolonizing Theory and Practice*, pp. 284–296. London: Routledge.

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Artur Ribeiro

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Methodological Anarchism Against Interdisciplinary Archaeology

Artur Ribeiro

University of Kiel, Leibnizstraße 3, R138, 24118 Kiel, Germany, aribeiro@sfb1266.uni-kiel.de

Abstract

While interdisciplinarity has definitely enriched archaeological research, especially in light of what has been called the "Third Science Revolution," little has changed in terms of epistemology and methodology in archaeology. In fact, what counts as interdisciplinary research in archaeology nowadays is usually the application of natural science techniques to data that have been recovered archaeologically. Nevertheless, this form of archaeological research has become the gold standard, monopolising funding at various scales.

Interdisciplinarity at its most basic simply means the collaboration between different disciplines. If this is true, one should ask why the term "interdisciplinary" is usually reserved for the combination of archaeology and the natural sciences, rather than the vast panoply of collaborative efforts in archaeology, such as those between art and archaeology or philosophy and archaeology? The aim of this paper is to argue that current interdisciplinary research is theoretically impoverished and non-transgressive. In fact, current interdisciplinary research relies on very basic methods and premises, oftentimes relying only on C14 dates or bone material recovered by standard archaeological methods.

Rather than interdisciplinary research, it might make sense to think in terms of methodological anarchism. As the name indicates, methodological anarchism focuses more on methodologies than disciplines, giving priority to the different ways that the archaeological past can be explained. Rather than following strict formulas, as some interdisciplinary research tends to do, methodological anarchism advocates flexibility and choice of the methods that provide multi-faceted understandings of past reality.

Keywords

Interdisciplinarity, methodology, pluralism, flexibility, anarchism

Zusammenfassung

Während Interdisziplinarität die archäologische Forschung zweifellos bereichert hat, insbesondere im Lichte dessen, was als ‚*Third Science Revolution*' bezeichnet wird, hat sich in Bezug auf die Erkenntnistheorie und Methodologie in der Archäologie wenig geändert. In der Tat reduziert sich das, was heute als interdisziplinäre Forschung in der Archäologie gilt, in der Regel auf die Anwendung naturwissenschaftlicher Techniken bei der Analyse archäologisch gewonnene Daten. Diese Form der archäologischen Forschung ist zum Goldstandard geworden und monopolisiert die Finanzierung archäologischer Forschungsprojekte auf verschiedenen Ebenen.

Interdisziplinarität bedeutet im Grunde genommen nichts anderes als die Zusammenarbeit zwischen verschiedenen Disziplinen. Wenn dies zutrifft, stellt sich die Frage, warum der Begriff ‚interdisziplinär' in der Regel für die Kombination von Archäologie und Naturwissenschaften reserviert ist und nicht für die breite Palette von Kooperationen von Archäologie und zum Beispiel der Kunst oder der Philosophie? Die derzeitige interdisziplinäre Forschung ist theoretisch verarmt und überschreitet keine Grenzen. Tatsächlich beruht die derzeitige interdisziplinäre Forschung auf sehr einfachen Methoden und Prämissen und stützt sich oft nur auf die Analyse von C14-Daten oder Knochenmaterial, das mit archäologischen Standardmethoden geborgen wurde.

Anstelle von interdisziplinärer Forschung könnte es sinnvoll sein, in Begriffen des methodologischen Anarchismus zu denken. Wie der Name schon sagt, konzentriert sich der methodologische Anarchismus mehr auf die Methoden als auf die Disziplinen und räumt den verschiedenen Möglichkeiten, die archäologische Vergangenheit zu erklären, Priorität ein. Anstatt strengen Formeln zu folgen, wie es manche interdisziplinäre Forschung zu tun pflegt, befürwortet der methodologische Anarchismus Flexibilität und die Wahl von Methoden, die ein facettenreiches Verständnis der vergangenen Realität ermöglichen.

Schlagwörter

Interdisziplinarität, Methodologie, Pluralismus, Flexibilität, Anarchismus

Is Archaeology Truly Interdisciplinary, or Has It Never Been?

During the 2020 European Association of Archaeologists annual meeting, there were around 160 sessions, and of these, around 30 referred to advances in "interdisciplinary," "cross-disciplinary," "transdisciplinary," or "multi-disciplinary" research. Going through the list of sessions, one cannot but celebrate how far archaeology has come when it comes to interdisciplinary research. However, not much is clear when it comes to what interdisciplinary research actually entails. In a colloquial sense, interdisciplinarity (and its variants) simply means collaboration between disciplines (Jacobs and Frickel 2009), but how and in what ways does this operate in archaeology?

Interdisciplinarity and its variants have been recently discussed in archaeology (Ion 2017; Nilsson Stutz 2018; Díaz-Andreu and Coltofean-Arizancu 2021), and some brief definitions can be put forward. Subscribing to Julie Klein's definitions (2017), Margarita Díaz-Andreu and Laura Coltofean-Arizancu (2021) state that inter-disciplinarity at its most basic means the interaction between two or more disciplines. However, a closer look reveals different types of interdisciplinarity. For instance, there can be shared interdisciplinarity, where a complex problem is tackled by different disciplines, although this does not necessarily entail collaboration; in cooperative interdisciplinarity, problems are tackled together by different disciplines; in methodological interdisciplinarity, the methods and theories of different disciplines are shared to improve quality of results; whereas in theoretical inter-disciplinarity, the conceptual models and epistemologies of different disciplines are expanded in order to create a more seamless form of collaboration across different disciplines (Díaz-Andreu and Coltofean-Arizancu 2021: 3). In addition, one can also differentiate multidisciplinary research, which involves the stacking of disciplines, although these disciplines retain their identity, since their knowledge is consulted but not necessarily integrated. As to pluridisciplinarity, which is quite similar to multidisciplinarity, the disciplines involved tend to have some degree of connection, such as chemistry and physics, thus forming their own knowledge subsystem. Finally, trans-disciplinarity, as the name indicates, transgresses the very notion of discipline, and usually engages in ideas that transcend disciplines, such as Marxist theory or feminist theory, allowing it to address issues that go considerably beyond the boundaries set by disciplines (Díaz-Andreu and Coltofean-Arizancu 2021: 4).

Based on these definitions, it seems safe to say that most archaeology practised today is either inter-, multi-, pluri-, or transdisciplinary. In fact, Díaz-Andreu and Coltofean-Arizancu explain, histories of archaeology tend to treat the discipline in isolation, as if it has not been influenced by many others (2021: 2). If anything, an argument can be made that archaeology is the ultimate interdisciplinary project, since it is historically built up from a diversity of fields, such as ancient history, geology, and anthropology.

But when interdisciplinarity is addressed, sitting through the countless sessions on inter-, multi-, pluri-, and trans-disciplinarity in archaeological conferences reveals that in archaeology interdisciplinarity and its variants denotes a very simple and theoretically bare form of practicing archaeology. I want to start this paper precisely on this note and expose the theoretical poverty of the concept of interdisciplinarity and its variants. As Alexandra Ion contends, archaeology is still far from being a *truly* interdisciplinary science (2017: 193), since it relies on a rather restricted set of methods, even though those methods do originate from different disciplines. Furthermore, at an epistemological level, much of the interdisciplinarity in archaeology is formulaic (Nilsson Stutz 2018: 51), favour-ing very standardised methods, primarily those used in archaeological science. This leads to a very distorted form of interdisciplinarity (Sørensen 2017), one that heavily favours the natural sciences. Of even more concern is the

fact that this type of research has become the gold standard of transgressive and innovative research, the staple of what Kristian Kristiansen (2014) has called the "Third Science Revolution" in archaeology.

The aim of this paper is to challenge the new interdisciplinary status quo. At face value, the interdisciplinary attitude in archaeology today might appear to be open and inclusive to new ideas, but that is not always true; interdisciplinarity in current archaeology tends to be very narrow and oversimplified – it is like having a very large buffet at your disposal yet only choosing the same two dishes all the time, while ignoring every other dish available. In short, it seems that the interdisciplinary status quo in archaeology is reliant on a very basic standard – interdisciplinarity must involve the recovery or processing of data through some scientific means. This is what interdisciplinarity in archaeology seems to boil down to. Bear in mind that this paper does not suggest that one should abandon this type of research; what this paper aims toward is demonstrating that archaeological research can in fact be much more diverse, inclusive, and distinctive. But for us to recognize this, it is necessary to embrace some form of methodological anarchy.

The Theoretical Poverty of Interdisciplinarity in Archaeology

The different forms of interdisciplinarity and its variants discussed by Díaz-Andreu and Coltofean-Arizancu do describe most types of archaeological research with some fidelity, but they also leave some information out. In archaeology, the term interdisciplinarity and its variants express more than just different types of research; they denote a dissociation from previous, perhaps more "conventional" but outdated types of research, such as the simple collection and sampling of archaeological data, which is often described as culture-historical or antiquarian. I use the expression culture history here not in the cultural normative sense that Binford attributes to it (Binford 1965; Lyman and O'Brien 2004), but as the process of recovering data and building formal databases that describe the general patterns of regularities across a period and region (Clarke 1968: 20–23). In the same way, I also use antiquarianism to describe the process of cataloguing and publishing of data.

Systematic surveys, excavation, creation of typologies, and cataloguing are just some of the most basic forms of doing archaeology, and even though many of these practices now engage with advanced technologies and methods (e.g., geomagnetic prospection, GIS), they are not commonly conceived as interdisciplinary research. Oftentimes, the practice of simply recovering, cataloguing, and publishing of this data is derogatorily defined as outdated (Hofmann and Stockhammer 2017). But there is nothing inherently wrong with culture-historical and/or antiquarian research; these remain important practices in archaeology around the world today (Veit 2017). In contrast, a paradigmatic example of multidisciplinary research is ancient population genomic studies (e.g., Haak et al. 2015; Olalde et al. 2018; Olalde et al. 2019); these studies fit the description of multidisciplinary research perfectly, since they combine two distinct disciplines, archaeology and genetics, which rely on vastly different methods. However, a closer look demonstrates that the process of cooperation between these disciplines is remarkably simple: archaeology recovers material, which is then analysed through genetic methods. Bear in mind that from the perspective of each discipline, the work conducted is quite complex: archaeological excavation is not simply digging holes looking for bones, nor is genetics just the simple process of putting bones in a machine and pressing some buttons. It is *the cooperation between the disciplines that is simple*, not the actual work itself. Furthermore, the bones that serve as the basis for genomic studies, were recovered through standard culture-historical/catalogue type of research. In this example, archaeology just does what it has always done, which is recovering data through excavation techniques, with geneticists analysing the data to map a genomic history. While some criticism can be leveled at this type of research (Furholt 2017; Frieman and Hofmann 2019; Hakenbeck 2019), the results are nevertheless spectacular. Genomic data was something that was virtually absent in archaeology until the last decades, and this new information has proven itself valuable to our understanding of the past.

Following a similar path, cumulative probability distributions of calibrated radiocarbon dates have become one of the prime methods for understanding past demography in recent years (Riede 2009; Collard et al. 2010; Williams 2012), as an example of what Kristiansen (2014) has called "Big Data" research and the intersection of scientific approaches and archaeology. In general, the idea behind this method is that the summation of calibrated radiocarbon dates can serve as a proxy for past population dynamics. At face-value, this method is sound and has contributed crucial information to our understanding of population growth and decline, despite some reservations as to its efficacy (Contreras and Meadows 2014). But just like genomic studies, archaeology plays a rather mute role, in that all this method is doing is collating and modelling radiocarbon dates obtained from conventional

archaeological research. Just like genomic studies, there is nothing inherently wrong with this type of study, but it does show a rather simple and formulaic form of multidisciplinary research.

The problems of relying too heavily on this type of interdisciplinary research have been highlighted multiple times (Cunningham and MacEachern 2016; Sørensen 2017; Nilsson Stutz 2018; Ribeiro 2019, 2021a), and we must be careful with the political and economic impact that this research can have when it comes to access to funding (González-Ruibal 2014; Díaz-Andreu and Coltofean-Arizancu 2021: 15; Ribeiro 2021a), but to reiterate, there is nothing inherently wrong with this type of research.

But nevertheless, one should ask why this type of research is considered the standard of interdisciplinarity in archaeology. For example, Doug Bailey's work involving art and archaeology (2017, 2020) or my own work involving archaeology and philosophy (2021b) are not usually considered interdisciplinary, nor do they really fit the epistemological moulds defined by archaeological practices. Despite critique of scientific modes of explanation (Kelley and Hanen 1988; Wylie 1989), archaeology still operates largely through a scientific mentality (Vanpool and Vanpool 1999). The act of adding scientific methods to archaeology, while enriching it, also naturalizes the arbitrariness of this practice, creating a doxic system that is difficult to overcome (Bourdieu 1977: 164). It is not that art or philosophy cannot be added to archaeology, it is more that doing this falls short in terms of the doxic rules concerning what counts as interdisciplinary science.

Ironically, interdisciplinarity is making archaeology less interdisciplinary. Since the 1990s, the field has fragmented into a plurality of mutually exclusive discourses (Kristiansen 2004; Gardner and Cochrane 2011). While it might denote diversity of discourses, this fragmentation is also a reflection of different cliques insulating themselves in their own ivory towers. The biggest of these towers is the one that accommodates archaeological science. This is the paradox of interdisciplinarity; the use of this term allows archaeology to demonstrate that it is going beyond its own boundaries, but at the same time, interdisciplinarity streamlines archaeology into a set of stock methods, such as those involving genetic, isotopic, or dating material (Ion 2017: 193). With advances in technology and science, archaeology can add more methods in the future, but nothing is stopping "interdisciplinarity" from streamlining these methods ever further.

Klein's (2017) definitions of inter-, multi-, pluri-, and transdisciplinary are useful for thinking of research in terms of single tasks, problems, objectives that require more than one discipline, or require transcending the very concept of discipline, problems, and tasks, such as dealing with climate change or global inequality. Underlining this type of thinking is the idea of a single coherent discourse concerning a problem or a certain phenomenon. In archaeology, understanding past dietary strategies, population dynamics, or migratory behaviour are objectives that benefit from the help of natural scientific methods; however, these methods help produce a singular discourse about them.

But what if the aim is not to produce a singular coherent discourse? For example, in the study of migratory behaviour, one could use the data generated by genomic studies in order to gain a general idea of migrations during prehistoric periods in Europe (e.g., Haak et al. 2015; Olalde et al. 2018; Olalde et al. 2019). They present a rather rough picture of migratory patterns, but these can be improved through the development of more advanced migratory models, designed with prehistoric groups in mind (Cameron 2013). The problem is that none of these methods can answer *what migration truly is and what it represented in the past*. What do I mean by this? If a German citizen living in Kiel decides to move 900 km south, they would find themselves somewhere close to Munich. 900 km is a long distance, but nevertheless, the German citizen would not be considered a migrant. If a Portuguese person living in the Algarve, on the other hand, were to move 900 km south, they would find themselves somewhere in Morocco. Both cases are acts of migration, but the qualitative understanding of the migratory act changes depending on what type of boundary one crosses (Van Gennep 1960), which, in our modern day and age, is the national border. Our understanding of migration is shaped by the invention of modern institutions such as the nation state, among many others. Furthermore, modern borders are more than just the lines we see on the map: they also exist, in a way, at airports and embassies. This has an effect on how we conceive political space (Lefebvre 1991: 8) and how these affect identity. When discussing migration, new ecosystems and areas of contact between different communities could have generated new forms of negotiating identity, and if communities merged, this would have required negotiating territory and exogamy rules. At face value, given the lack of state borders in the past, migration should have been institutionally easier, but upon some reflection, the opposite is probably true. While the modern institution of the state creates artificial borders, there is nevertheless a unified understanding of how

borders work and what is necessary to cross them (e.g., visa, passport). Thus, a complicated question arises for prehistorians: how did people in the past define "their own" and "other" territory? This might seem a rather innocuous question, but our whole perspective on migration is dependent on being able to answer it. The lack of an anthropological understanding of migration has led geneticists to use the term "migration" to denote simply population movement rather than an actual cultural phenomenon of passage (Skoglund and Mathieson 2018: 388). I understand the reluctance of geneticists to deal with migration from a cultural standpoint, but if part of their work requires archaeologists, anthropologists, and historians to cede to them material for analysis anyway, why not engage with archaeologists, anthropologists, and historians in order to understand migration in a more nuanced manner?

The discourse generated by a cultural take on migration will, of course, be of a very different sort, and the methods of analysis in order to gain this perspective will require a different scientific perspective. To quote Tim Flohr Sørensen, "[a]rchaeology may have a particular need for admitting to and owning up to its inevitably uncertain epistemology" (2019: 104). While the archaeological sciences do produce what might seem a more established, objective, and authoritative form of discourse, a conjectural discourse (Ginzburg 2012) could also enrich our understanding of the past. But in order to do this, we must go beyond the way interdisciplinary research is commonly practiced in archaeology.

From Methodological Pluralism to Methodological Anarchism

Immanuel Wallerstein defines disciplines as social constructs whose origins can be found in the historical systems in which they were conceived; additionally, disciplines are institutions with complex material forms, such as university buildings and titles of journals (Wallerstein 2003: 453). Ultimately, while there are crucial differences between disciplines, these differences are also somewhat arbitrary. Following Pierre Bourdieu (1977), it can be said that the boundaries of disciplines create subconscious dispositions, generating behaviours that only exist because the boundaries create them. The archaeologist who wishes to engage in art or philosophy stumbles upon difficulties, not because it is impossible for an archaeologist to be an artist or a philosopher, but because disciplines have established domain-specific areas in which a scholar is expected to become specialised. But not too long ago, it was common to find thinkers transgressing disciplinary boundaries and excelling in multiple areas: Cornelius Castoriadis was a Greek-French scholar born in 1922, who was a very influential voice in philosophy, psychoanalysis, and economics; similarly, Kojin Karatani, has excelled in economics, literary criticism, and philosophy. Karatani in particular engages with all three disciplines at the same time. His book *History and Repetition* (2012) is an engagement with Marx's idea that history repeats itself, in a period when the world had reached the controversially proclaimed "end of history" (Fukuyama 1992). Rather than the end, Karatani argues that history undergoes a process of repetition, which he recognized in Japan's economic and political history and which he analysed through Japanese literature, such as the work of Kenzaburo Oe and Haruki Murakami. What Karatani performs is not interdisciplinary research; it is research that is methodologically fluid and flexible. It is difficult to tell, based on his writings, whether he is intentionally aware that he is transgressing disciplines at all, but either way, his work generates a discourse that is unique. In the process, Karatani opens up new ways of looking at the world that has been popularised in a wide array of fields, most of which he never specialised in, such as geography, architecture, and politics.

While Karatani has had a fascinating and successful career, at no point am I suggesting that archaeologists should mimic his scholarship; his work is of a more reflective nature and his methods and ideas would not translate well into archaeology.[1] What we can and should mimic in archaeology is the spirit that guided his career. Unlike Karatani's discourse, which is primarily conceptual, archaeological discourse aims to answer questions about past (and to an extent, present) societies. With this in mind, we must think of the various discourses that fulfil this need. For the sake of discussion, we can think of multiple discourses in different ways, and here we can start from the more moderate methodological pluralism of Georg von Wright (1971), moving on to the work of Michael

1 However, Karatani's critical reading of Marx through Kant and vice versa in *Transcritique* (2003) and his discussion of Marx's modes of production in terms of exchange in *The Structure of World History* (2014) have crucial repercussions on our understanding of exchange in anarchist economies.

Oakeshott (2015 [1933]), and from there to the more radical methodological anarchism of Paul Feyerabend (2015 [1975]).

Picking up the distinction between explanation (*Erklärung*) and understanding (*Verstehen*), von Wright argues that the disciplines that provide these two types of scientific discourse cannot be collapsed into one another. As he states, the sciences dedicated to explanations, most notably the natural sciences, operate according to a causal logic, and in spite of the variety of how causal explanations are expressed in the sciences, von Wright demonstrates that the teleological form of explanation, that is to say, an explanation based on the *purpose of behaviours*, is not reducible to causes. This was also mentioned by Charles Taylor, when he pointed out that causal explanations of behaviour were very limited, as none of them could provide an understanding as to why humans and animals behave in certain ways (1964). Unlike causal forms of explanation, which tend to be primarily reductionist (Rosenberg 2001), teleological explanations rely on understanding the context of intentional action. That is why disciplines such as history and anthropology often employ teleological explanations, since these disciplines aim to uncover the context in which the behaviour of past humans occurs (Ribeiro 2018, 2019). Alva Noë provides a great example: you cannot understand money or dancing by putting banknotes under a microscope or observing the muscles of dancers (Noë 2009).

In archaeology, the streamlined interdisciplinary approaches tend to operate exclusively with causal explanation, making them extremely limited in understanding topics such as past value systems or ritual behaviours. These two topics are still best understood via approaches such as Marxist theory (e.g., Karatani 2014), theories of value (Graeber 2001), and anthropology of ritual (Bell 1992, 1997), to name just a few. Once again, engaging with these theories in archaeology is not usually considered interdisciplinary research.

Much like Droysen, Dilthey, and Weber, the arguments by von Wright are a renunciation of positivism and neopositivism and the idea that science could be reduced to a single methodology, and it is with this spirit that von Wright argued for the distinction between explanation and understanding. But at a different level, it could be suggested that knowledge, both lay and scientific, can go beyond the methodologies of explanation and understanding. Michael Oakeshott, for instance, suggests that our experience of the world can be recognized as three distinct modes (2015 [1933]). While similar to von Wright's differentiation of scientific explanation and understanding, Oakeshott goes beyond it by differentiating a scientific, a practical, and a historical mode. The scientific mode of experience requires abandoning the world of perception and presupposing the existence of an external and objective world (2015: 131–132). By resorting to the legacy of Descartes, Oakeshott states that central to science is the universality of the scientific method, which is what allows for a communicable form of experience (2015: 135). Oakeshott also highlights that a large part of the communicable experience involved in science is of a quantitative type (2015: 135–136). This is also an argument made by Quentin Meillassoux, noting that the quantitative properties of reality are the only ones that exist outside human perception (i.e., non-correlated to human thought) and, by extension, can be considered scientifically valid (Meillassoux 2008). In archaeology, many of the interdisciplinary approaches mentioned above follow exactly this presupposition (Ribeiro 2019, 2021b). But Oakeshott also describes a practical mode of experiencing reality, and this mode has some overlap with the discussion on teleology (i.e., purpose) described by von Wright. As Oakeshott states, practice is about volition, intuition, feelings, and opinions (2015: 197), which ultimately guide the action of people. Practices are learned and accumulate as the life experience of people. One could also argue that to an extent practices are ultimately ethical in character (Ribeiro 2022). Many of the ideas about practical experience in Oakeshott have been discussed in archaeology through agency and practice theory (Bourdieu 1977; Giddens 1984; Lave and Wenger 1991; Schatzki 1996; Wenger 1998), which has formed a set of discourses that are less easily accommodated by the more scientific one of archaeological science (see Kristiansen 2004; Stanton 2004; Arkush 2011; Moro Abadía 2017). Finally, Oakeshott also describes a historical mode that deals with the course of successive events. Now, successive events are not merely the temporal accumulation of causes and effects, nor is history the pure description of accidental happenings in chronological order; historical discourse is above all its own form of explanation, but one that requires no external cause (Oakeshott 2015: 102, 108). What does he mean by this? Unlike scientific explanations and theories (such as Marxist theory or the theory of structuration), history does not rely on general causes in order to explain; rather, history provides descriptions of action that are so detailed and coherent that additional explanation becomes unnecessary (Oakeshott 2015: 109). Vincent Descombes (2001), also writing on this topic, has described a similar idea, stating that there is an intelligibility to historical composition. For every comprehensible episode in a historical description, one must assume certain events to have happened that led to the episode.

For instance, if a person remembers going for a swim, it must be assumed that the person did in fact go for a swim in the past (Descombes 2001: 182–183).

Oakeshott's tripartite system of modes of experience was published almost one hundred years ago and many of his ideas, while sensible at the time, have been expanded and some even superseded. The idea, of course, is not to accept the three modes of experience as law, but rather to view these modes in light of our current discussion. In archaeology, the different discourses can be elegantly adapted to how archaeology operates, as a discipline that addresses the past through scientific methods, through the study of past practices, and through a historical perspective. At this point, we can debate whether this is not just inter-, multi-, pluri-, and transdisciplinarity in disguise. Not necessarily; while interdisciplinarity and its variants are discipline-focused, Oakeshott's modes of experience are about different types of knowledge regardless of the disciplines that produce them. Archaeology could, for instance, address a topic such as migration according to the three modes without necessarily relying on different disciplines, although the knowledge produced by different disciplines would nevertheless be helpful. Similarly, in certain types of research you can have de facto interdisciplinarity while relying on a single mode. For example, socio-environmental studies of past societies often rely on historical documentation, but this documentation is only useful when reduced to proxies that can be compared to environmental data (e.g., Kaniewski et al. 2012). In cases such as these, the aim is *consilience*, that is to say, different disciplines providing independent lines of evidence in support of or against a single hypothesis. While this is de facto interdisciplinary research, the mode of experience is exclusively of a scientific kind.

Finally, of crucial importance to our discussion is Paul Feyerabend's *Against Method* (2010 [1975]). At its most extreme, *Against Method* is considered a direct critique of the idea that there is such a thing as a scientific method, but the arguments contained within the book are considerably more moderate than one would expect. Feyerabend produces two arguments of interest to us: the first one serves as the main case-study of the book, which focuses on Galileo's heliocentric model. According to Feyerabend, most of the methodological standards of what qualifies as accurate and objective science were not followed by Galileo when he conceived the heliocentric cosmology. In fact, had he followed what in the twentieth century is considered correct methodological standards of science, Galileo would have never been able to conceive the heliocentric model. As Feyerabend notes, this model depended on several ad hoc connections and observations that have no scientific validity but that were very helpful to Galileo at the time (Feyerabend 2010: 116). If anything, the genius of Galileo resides not in the fact that he followed strict scientific procedures, but on the contrary, it was precisely by recognizing the limits of science and having a humorous, elegant, and flexible attitude to science that allowed Galileo to be successful (Feyerabend 2010: 121).

The second argument that is of interest to us is that science is at its best when it is anarchic, or to use the expression by Feyerabend, "anything goes" (2010: 12). In a similar vein to von Wright, this is an argument against the monistic view of science that was popularised by neopositivism during the first half of the twentieth century. But there is an important aspect about Feyerabend's critique of positivism, namely the circular reasoning involved in how scientific procedures are justified. As Feyerabend explains, to state that a method or procedure can be dismissed because it is non-scientific involves a dogma, since it is scientists themselves who decide what counts as scientific or non-scientific (2010: xx). Following the same reasoning, archaeologists could argue that Bailey's (2017, 2020) work with art and archaeology is neither interdisciplinary nor is it archaeological at all and dismiss it as some sort of pseudo-science or pseudo-archaeology. The moral lesson from *Against Method* is that conducting science in a prescribed manner and producing successful results cannot be a justification of why we should continue to follow the same standards and procedures. What might work in one scenario might not work in another. Furthermore, completely contrasting methodologies can produce wildly different discourses yet still be considered successful; ultimately, there is no way to gauge which "success" is better.

Now, the three thinkers discussed above, George von Wright, Michael Oakeshott, and Paul Feyerabend were neither archaeologists nor were they writing in the twenty-first century, so their work must be viewed according to our times and contexts. To an extent, all three thinkers are against the idea of a monistic science or way of obtaining knowledge in general, and interdisciplinarity in archaeology is to a large extent still primarily an epistemologically monistic enterprise.

Of the three thinkers, Feyerabend's methodological anarchism is particularly interesting to our discussion on

interdisciplinarity, but some caveats must be outlined, namely concerning the relation between Feyerabend and anarchism. The first edition of *Against Method*, published in 1975, was subtitled *Outlines of an Anarchistic* Theory of Knowledge*. Yes, the subtitle had a footnote that explained Feyerabend's conception of anarchism, which was removed from the 1988 and following editions (Hacking 2010: xiii). The reason why this subtitle and footnote existed was because the book was dedicated to Imre Lakatos, who was good friends with Feyerabend, and who had motivated him to write the book. Unfortunately, Lakatos died in 1974, the year before *Against Method* was published. Politically, Lakatos believed that Feyerabend was an anarchist. There is some truth to this, since Feyerabend did sympathise with anarchism. However, as Feyerabend explained in a letter to Lakatos in 1972, he uses the term anarchism in its more general rather than in a political sense; as a political movement, anarchism followed precepts that he was not really ready to accept (Hacking 2010: xiv). Feyerabend believed that a much better term to describe both his intellectual and political stance is Dadaism. As an art movement of the early twentieth century, the idea of Dadaism is that anything could be art, as long as the artist expresses it as such; what was important to Feyerabend was not convention but the opposite: taking convention considerably less seriously.

Anarchist Epistemology

Feyerabend's dialogue with Lakatos shows serious concerns about the student revolt of 1968, namely the violence it involved (Motterlini 1999), so his disavowal of anarchism is not necessarily surprising. Nonetheless, his ideas are somewhat reflected by a new set of notions that have become popular in archaeology: anarchist theory. In general terms, anarchist theory has been applied to the interpretation of social structures of past and present societies (Angelbeck and Grier 2012; Angelbeck 2016; Sanger 2017), in that it recognizes that many societies followed more collaborative and non-authoritarian forms of governing than those that fill standard narratives of world history. This started with pioneering work based on the idea of heterarchy (Crumley 1995; DeMarrais 2013), which similarly recognized more flexible forms of power distribution. Additionally, some literature on anarchist theory in archaeology has also recognized the importance of anarchism from a methodological standpoint (Morgan 2015; Henry et al. 2017; Angelbeck et al. 2018; Flexner and Gonzalez-Tennant 2018). From this standpoint, anarchist theory advocates the subversion of conventional centres of power and authoritarianism in archaeology, which would affect how archaeologists behave in excavation teams and how archaeology integrates descendent communities in our research (Angelbeck et al. 2018: 1). Traditionally, anarchism is thought of in terms of chaos, but this is not exactly what anarchists in archaeology promote; the underlying idea in anarchist theory is that centralized authority is not necessarily a good position to adopt, especially for professions such as archaeology. Anarchist theory also argues against unnecessary bureaucracy and rules; as David Graeber has argued, liberalism has created a paradox, in that the more you try to fight government interference in social life, the more red tape and interference is generated (2015: 9). Anarchist theory also recommends moving beyond mainstream forms of archaeological education and publication, by embracing ideas from the punk movement, such as disavowing authoritarianism and engaging in do-it-yourself projects, such as zines (informal, self-published magazines) (Morgan 2015: 123–124).

Overall, I subscribe to this attitude, but we should also discuss anarchism in terms of knowledge production in archaeology. The work of von Wright, Oakeshott, and Feyerabend denotes the idea that there is no method of obtaining knowledge that is superior to others, only different forms of knowledge that are subject to their own internal criteria. In epistemological terms, this means that justification and truth are not subject to a singular authority.

Rather than focusing too much on the integration and collaboration between disciplines, perhaps we should also focus in interdisciplinary research on different epistemological standards. Epistemology deals with the scope, nature, and origin of knowledge and ultimately what it means to say something is true or false. To a large extent, the notion of truth is still very much understood as scientific truth, even though there are multiple ways to arrive at truth in different disciplines and even outside the university context (e.g., law).

Conclusion

One of the inspirations for this article was investigative journalism, which I took the time to read while under lockdown during the onset of the Covid-19 pandemic. I was particularly impressed by the books *Catch and Kill* by Ronan Farrow (2019) and *Bad Blood* by John Carreyrou (2020). The first book deals with the investigation of Harvey Weinstein and the structure that he built to protect himself from lawsuits and prosecution, the second with the abuses of a Silicon Valley startup called Theranos, which promised to revolutionise the medical engineering industry. Besides the fascinating stories they tell, what struck me about both books was the jarring methods both Farrow and Carreyrou followed in order to attain the truth. Unlike archaeology, investigative journalism follows considerably more flexible standards. This is not to say that there are no rules in investigative journalism, because very strict rules do exist, especially given the nature of the accusations made by both Farrow and Carreyrou against the individuals and institutions they were investigating. But the objective of both was to get to the truth about those whom they were investigating. This type of truth, however, is not a scientific one, but nonetheless it is a truth that is as objective as scientific truth. The difference is not that investigative journalism arrives at a less valid form of truth than science, but that science tends to aim towards a more general truth, one that is transferable and can be tested or verified by more scientists.

The question we can now pose is what archaeology would look like if it followed the epistemic standards of investigative journalism? Would it still qualify as interdisciplinary? Ultimately, in archaeology we can define two tendencies in interdisciplinary research – the most prevalent one is the product of the "Third Science Revolution", that is, a streamlined form of research where natural scientific techniques are used to attain consilience. The other tendency favours the subversion of the subconscious authoritarianism of archaeological research and promotes the loosening of methodological shackles. Naturally, I cannot suggest any specific path of research, as that would contradict the anarchic spirit I commend in this paper. However, there are interesting paths that I personally would like to see explored in more depth, such as the use of literary techniques in archaeological writing, what we can learn from film theory in order to show and explain the past, or how archaeologists, besides being scientists, can also become detectives. The clues to conducting a methodologically anarchic archaeology have already been introduced (e.g., Morgan 2015; Ion 2017; Angelbeck et al. 2018; Crossland 2019; Sørensen 2019), and there is so much more we can discuss. It is now up to archaeology as a whole to decide whether to continue even further along the path of methodological streamlining or expand it to heights never before achieved.

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Bibliography

Angelbeck, Bill. 2016. The Balance of Autonomy and Alliance in Anarchic Societies: The Organization of Defences in the Coast Salish Past. *World Archaeology* 48(1): 51–69.

Angelbeck, Bill, Lewis Borck and Matt Sanger. 2018. Anarchist Theory and Archaeology. In Claire Smith, ed.: *Encyclopedia of Global Archaeology*. Cham: Springer International Publishing.

Angelbeck, Bill and Colin Grier. 2012. Anarchism and the Archaeology of Anarchic Societies: Resistance to Centralization in the Coast Salish Region of the Pacific Northwest Coast. *Current Anthropology* 53(5): 547–587.

Arkush, Elizabeth. 2011. Explaining the Past in 2010. *American Anthropologist* 113(2): 200–212.

Bailey, Douglass W. 2017. Art/Archaeology: What Value Artistic-Archaeological Collaboration. *Journal of Contemporary Archaeology* 4(2): 246–256.

Bailey, Douglass W. 2020. Art/Archaeology: The Ineligible Project. In Douglass Bailey, Sara Navarro and Álvaro Moreira, eds.: *Ineligible: A Disruption of Artefacts and Artistic Practice*, pp. 10–25. Santo Tirso: International Museum of Contemporary Sculpture.

Bell, Catherine M. 1992. *Ritual Theory, Ritual Practice*. Oxford and New York: Oxford University Press.

Bell, Catherine M. 1997. *Ritual: Perspectives and Dimensions*. Oxford and New York: Oxford University Press.

Binford, Lewis R. 1965. Archaeological Systematics and the Study of Culture Process. *American Antiquity* 31(2): 203–210.

Bourdieu, Pierre. 1977. *Outline of a Theory of Practice*. Cambridge and New York: Cambridge University Press.

Cameron, Catherine M. 2013. How People Moved among Ancient Societies: Broadening the View. *American Anthropologist* 115(2): 218–231.

Carreyrou, John. 2020. *Bad Blood: Secrets and Lies in a Silicon Valley Startup*. New York: Vintage.

Clarke, David L. 2015 [1968]. *Analytical Archaeology*. London and New York: Routledge.

Collard, Mark, Kevan Edinborough, Stephen Shennan and Mark Thomas. 2010. Radiocarbon Evidence Indicates That Migrants Introduced Farming to Britain. *Journal of Archaeological Science* 37(4): 866–870.

Contreras, Daniel A. and John Meadows. 2014. Summed Radiocarbon Calibrations as a Population Proxy: A Critical Evaluation Using a Realistic Simulation Approach. *Journal of Archaeological Science* 52: 591–608.

Crossland, Zoe. 2009. Of Clues and Signs: The Dead Body and Its Evidential Traces. *American Anthropologist* 111(1): 69–80.

Crumley, Carole L. 1995. Heterarchy and the Analysis of Complex Societies. *Archeological Papers of the American Anthropological Association* 6(1): 1–5.

Cunningham, Jerimy J. and Scott MacEachern. 2016. Ethnoarchaeology as Slow Science. *World Archaeology* 48(5): 628–641.

DeMarrais, Elizabeth. 2013. Understanding Heterarchy: Crafting and Social Projects in Pre-Hispanic Northwest Argentina. *Cambridge Archaeological Journal* 23(3): 345–362.

Descombes, Vincent. 2001. *The Mind's Provisions: A Critique of Cognitivism*. Princeton, NJ and Oxford: Princeton University Press.

Díaz-Andreu, Margarita and Laura Coltofean-Arizancu. 2021. Interdisciplinarity in Archaeology – A Historical Introduction. In Margarita Díaz-Andreu and Laura Coltofean-Arizancu, eds.: *Interdisciplinarity and Archaeology Scientific Interactions in Nineteenth- And Twentieth-Century Archaeology*, pp. 1–21. Oxford & Philadelphia: Oxbow Books.

Farrow, Ronan. 2019. Catch and Kill: *Lies, Spies, and a Conspiracy to Protect Predators*. New York: Little, Brown and Company.

Feyerabend, Paul. 2010 [1975]. *Against Method*. 4th ed. London and New York: Verso.

Flexner, James L. and Edward Gonzalez-Tennant. 2018. Anarchy and Archaeology. *Journal of Contemporary Archaeology* 5(2): 213–219.

Frieman, Catherine J. and Daniela Hofmann. 2019. Present Pasts in the Archaeology of Genetics, Identity, and Migration in Europe: A Critical Essay. *World Archaeology* 51(4): 528–545.

Fukuyama, Francis. 1992. *The End of History and the Last Man*. New York: Free Press

Furholt, Martin. 2018. Massive Migrations? The Impact of Recent aDNA Studies on our View of Third Millennium Europe. *European Journal of Archaeology* 21(2): 159–191

Gardner, Andrew and Ethan Cochrane. 2011. Evolutionary and Interpretive Archaeologies: A Dialogue. In Ethan Cochrane and Andrew Gardner, eds.: *Evolutionary and Interpretive Archaeologies*, pp.11–29. Walnut Creek, CA: Left Coast Press.

Giddens, Anthony. 1984. *The Constitution of Society: Outline of the Theory of Structuration*. Cambridge: Polity.

Ginzburg, Carlo. 2012. *Threads and Traces: True False Fictive*. Berkeley: University of California Press.

González-Ruibal, Alfredo. 2014. Archaeological Revolution(s). *Current Swedish Archaeology* 22: 41–45.

Graeber, David. 2001. *Toward an Anthropological Theory of Value: The False Coin of Our Own Dreams*. New York and Basingstoke: Palgrave.

Graeber, David. 2015. *The Utopia of Rules: On Technology, Stupidity, and the Secret Joys of Bureaucracy*. New York: Melville House.

Haak, Wolfgang, Iosif Lazaridis, Nick Patterson, Nadin Rohland, Swapan Mallick et al. 2015. Massive Migration from the Steppe Was a Source for Indo-European Languages in Europe. *Nature* 522(7555): 207–211.

Hacking, Ian. 2010 [1975]. Introduction to the Fourth Edition. In Paul Feyerabend: *Against Method*, pp. vii–xvi. 4th ed. London and New York: Verso.

Hakenbeck, Susanne E. 2019. Genetics, Archaeology and the Far Right: An Unholy Trinity. *World Archaeology* 51(4): 517–527.

Henry, Edward R., Bill Angelbeck and Uzma Z. Rizvi. 2017. Against Typology: A Critical Approach to Archaeological Order. *The SAA Archaeological Record* 17(1): 28–32.

Hofmann, Kerstin P. and Philipp W. Stockhammer. 2017. Beyond Antiquarianism. A Review of Current Theoretical Issues in German-Speaking Prehistoric Archaeology. *Archaeological Dialogues* 24(1): 1–25.

Ion, Alexandra. 2017. How Interdisciplinary Is Interdisciplinarity? Revisiting the Impact of aDNA Research for the Archaeology of Human Remains. *Current Swedish Archaeology* 25: 177–198.

Jacobs, Jerry A. and Scott Frickel. 2009. Interdisciplinarity: A Critical Assessment. *Annual Review of Sociology* 35(1): 43–65.

Kaniewski, David, Elise Van Campo and Harvey Weiss. 2012. Drought Is a Recurring Challenge in the Middle East. *Proceedings of the National Academy of Sciences* 109(10): 3862–3867.

Karatani, Kōjin. 2003. *Transcritique: On Kant and Marx*. Cambridge, MA and London: MIT Press.

Karatani, Kōjin. 2012. *History and Repetition*. New York: Columbia University Press.

Karatani, Kōjin. 2014. *The Structure of World History: From Modes of Production to Modes of Exchange*. Durham, NC and London: Duke University Press.

Kelley, Jane H. and Marsha P. Hanen. 1988. *Archaeology and the Methodology of Science*. Albuquerque, NM: University of New Mexico Press.

Klein, Julie T. 2017. Typologies of Interdisciplinarity: The Boundary Work of Definition. In Robert Frodeman, Julie T. Klein and Carl Mitcham, eds.: *The Oxford Handbook of Interdisciplinarity*, pp. 21–34. 2nd ed. Oxford: Oxford University Press.

Kristiansen, Kristian. 2004. Genes versus Agents. A Discussion of the Widening Theoretical Gap in Archaeology. *Archaeological Dialogues* 11(2): 77–99.

Kristiansen, Kristian. 2014. Towards a New Paradigm: The Third Science Revolution and Its Possible Consequences in Archaeology. *Current Swedish Archaeology* 22: 11–34.

Lave, Jean and Etienne Wenger. 1991. *Situated Learning: Legitimate Peripheral Participationy*. Cambridge and New York: Cambridge University Press.

Lefebvre, Henri. 1991. *The Production of Space*. Oxford: Basil Blackwell.

Lyman, R. Lee and Michael J. O'Brien. 2004. A History of Normative Theory in Americanist Archaeology. *Journal of Archaeological Method and Theory* 11(4): 369–396.

Morgan, Colleen. 2015. Punk, DIY, and Anarchy in Archaeological Thought and Practice. *Online Journal in Public Archaeology* 5: 123–146.

Moro Abadía, Oscar. 2017. Bridging the Gap in Archaeological Theory: An Alternative Account of Scientific 'Progress' in Archaeology. *World Archaeology* 49(2): 271–280.

Motterlini, Matteo. 1999. *For and Against Method*. Chicago and London: The University of Chicago Press.

Nilsson Stutz, Liv. 2018. A Future for Archaeology: In Defense of an Intellectually Engaged, Collaborative and Confident Archaeology. *Norwegian Archaeological Review* 51(1–2): 48–56.

Noë, Alva. 2009. *Out of Our Heads: Why You Are Not Your Brain, and Other Lessons From the Biology of Consciousness*. New York: Hill and Wang.

Oakeshott, Michael. 2015 [1933]. *Experience and Its Modes*. Cambridge: Cambridge University Press.

Olalde, Iñigo, Selina Brace, Morten E. Allentoft, Ian Armit, Kristian Kristiansen et al. 2018. The Beaker Phenomenon and the Genomic Transformation of Northwest Europe. *Nature* 555: 190–196.

Olalde, Iñigo, Swapan Mallick, Nick Patterson, Nadin Rohland, Vanessa Villalba-Mouco et al. 2019. The Genomic History of the Iberian Peninsula Over the Past 8000 Years. *Science* 363(6432): 1230–1234.

Ribeiro, Artur. 2018. Death of the Passive Subject: Intentional Action and Narrative Explanation in Archaeological Studies. *History of the Human Sciences* 31(3): 105–121.

Ribeiro, Artur. 2019. Science, Data, and Case-Studies under the Third Science Revolution: Some Theoretical Considerations. *Current Swedish Archaeology* 27: 115–132.

Ribeiro, Artur. 2021a. The Attitude Towards Science in the Changing Panorama of Archaeological Science. *Trabalhos de Antropologia e Etnologia* 61: 353–371.

Ribeiro, Artur. 2021b. Vagueness, Identity, and the Dangers of a General Metaphysics in Archaeology. *Open Philosophy* 4(1): 20–35.

Ribeiro, Artur. 2022. *Archaeology and Intentionality: Understanding Ethics and Freedom in Past and Present Societies*. London and New York: Routledge.

Riede, Felix. 2009. Climate and Demography in Early Prehistory: Using Calibrated 14C Dates as Population Proxies. *Human Biology* 81(2–3): Art. 309e337.

Rosenberg, Alex. 2001. Reductionism in a Historical Science. *Philosophy of Science* 68(2): 135–163.

Sanger, Matthew C. 2017. Anarchic Theory and the Study of Hunter-Gatherers. *The SAA Archaeological Record* 17(1): 39–44.

Schatzki, Theodore R. 1996. *Social Practices: A Wittgensteinian Approach to Human Activity and the Social*. Cambridge: Cambridge University Press.

Skoglund, Pontus, and Iain Mathieson. 2018. Ancient Genomics of Modern Humans: The First Decade. *Annual Review of Genomics and Human Genetics* 19(1): 381–404.

Sørensen, Tim Flohr. 2017. The Two Cultures and a World Apart: Archaeology and Science at a New Crossroads. *Norwegian Archaeological Review* 50(2): 101–115.

Sørensen, Tim Flohr. 2019. The Triviality of the New: Innovation and Impact in Archaeology and Beyond. *Current Swedish Archaeology* 26: 93–117.

Stanton, Travis W. 2004. Concepts of Determinism and Free Will in Archaeology. *Anales de Antropología* 38(1): 29–83.

Taylor, Charles. 1964. *The Explanation of Behaviour*. London: Routledge and Kegan Paul.

Trigger, Bruce G. 1996. *A History of Archaeological Thought*. 2nd ed. Cambridge: Cambridge University Press.

Van Gennep, Arnold. 1960. *Rites of Passage*. Chicago, University of Chicago Press.

VanPool, Christine S. and Todd L. VanPool. 1999. The Scientific Nature of Postprocessualism. *American Antiquity* 64(1): 33–53.

Veit, Ulrich. 2017. Farewell to Antiquarianism. A New 'Grand Narrative' for German-Speaking Prehistoric Archaeology? *Archaeological Dialogues* 24(1): 25–29.

Von Wright, George H. 1971. E*xplanation and Understanding*. London: Routledge and Kegan Paul.

Wallerstein, Immanuel. 2003. Anthropology, Sociology, and Other Dubious Disciplines. *Current Anthropology* 44(4): 453–465.

Wenger, Etienne. 1998. *Communities of Practice: Learning, Meaning, and Identity*. Cambridge and New York: Cambridge University Press.

Williams, Alan N. 2012. The Use of Summed Radiocarbon Probability Distributions in Archaeology: A Review of Methods. *Journal of Archaeological Science* 39(3): 578–589.

Wylie, Alison. 1989. Matters of Fact and Matters of Interest. In Stephen Shennan, ed.: *Archaeological Approaches to Cultural Identity*, pp. 94–109. London and New York: Routledge.