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D'HISTOIRE ANCIENNE
ET D'ARCHÉOLOGIE

TOME 72 – 2021

1–4

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GENETICS AND ARCHAEOLOGY: HOW INTERDISCIPLINARY PRACTICES LEAD TO THE RACIALIZATION OF ANCESTRY

GHEORGHE ALEXANDRU NICULESCU*

Abstract: The use of results produced by other disciplines, now very popular, especially among archaeologists, does not automatically lead to knowledge better than what was already existing in each of the disciplines involved, especially because only particular research traditions participate, not the whole disciplines. One case of cooperation between geneticists and archaeologists, by no means an isolated one, focused on placing a few individuals in an ethnic landscape, ignores the best understandings of ethnic phenomena existing in their disciplines and shows that the common ground necessary for any interdisciplinary pursuit is taken from politicized common knowledge. Such cooperation provides answers to old questions, instead of generating new ways of producing and examining evidence.

Keywords: Romania, Dobruja, Middle Ages, ethnic phenomena, scientific knowledge, interdisciplinarity

INTERDISCIPLINARITY

Interdisciplinarity seems today the best way to do scientific research. This is not happening because the researchers have suddenly become aware of the limitations of their disciplines. There is no time in their history when they did not borrow from each other and change what they have borrowed.

This is something new and comes from the funding agencies of the states and of the European Union, of other public or private institutions, which appear to know more about research than those doing it, something that justifies their guiding role. This knowledge does not come from sociologists of scientific knowledge or philosophers¹, but is embraced by some of them, ready to offer justifications for current policies and reluctant to defend disciplinary thinking, although the most important scientific achievements we enjoy today were made by researchers working in the disciplines, not in the recently imagined interdisciplinary teams.

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¹ See Callataÿ 2006, p. 7: “il n’est pas certain qu’ils aient lu Karl Popper ou Thomas Kuhn...”. See also at p. 6: “Les pouvoirs subsidants ... aiment l’interdisciplinarité. Les projets transversaux ... sont fortement encouragés. ... L’argent, nervus belli, ne s’obtient que par le montage de grosses équipes”. François de Callataÿ opposes the specialization requirements of the disciplines to the current political imagining of scientific work and comments: “[p]as de plus large interdisciplinarité que l’enfance!” (p. 7).

Offering more money than they would get from their usual, disciplinary, work to researchers from several disciplines willing to join their abilities in order to get it does not automatically generate valuable knowledge and encourages the creation of *Beutegmeinschaften*², frequently with short lives³, sometimes made longer by successive attempts to get funding, in a system that works against what we know about the production of scientific knowledge:

“Common sense dictates that if you want to maximize scientific creativity, you find some bright people, give them the resources they need to pursue whatever idea comes into their heads, and then leave them alone for a while. Most will probably turn up nothing, but one or two may well discover something completely unexpected. If you want to minimize the possibility of unexpected breakthroughs, tell those same people they will receive no resources at all unless they spend the bulk of their time competing against each other to convince you they already know what they are going to discover”⁴.

In order to evaluate interdisciplinary practices, we need to know what scientific research is and what the collaboration between researchers trained in different disciplines might bring to it. Bypassing the huge discussion on such matters, in which pluralism is gaining ground⁵, it can be argued that scientific research creates the possibility of changing what we think, that it must use constructed scientific objects, avoiding the pre-constructed ones existing in politicized common knowledge⁶, and that interdisciplinary collaboration should lead to re-evaluations of disciplinary theories and practices and to scientific objects that are different from those previously produced by each discipline.

Interdisciplinary collaboration activates the views of the participating researchers on the nature of what they do and on how it compares to other kinds of research. This could lead to confrontations because many researchers tend to believe that what they do is best, but in some traditions of archaeological research, such as that which is dominant in Romania, no problems come from this, because all the parts involved believe that archaeology is inferior to physics, chemistry and biology, a view shared with many other research traditions.

This situation invites us to compare disciplinary attitudes, to see whether other disciplines expect from interdisciplinarity a major transformation, something similar to what many archaeologists expect.

² Lenzen 2020. Guido Berndt (2011) uses this notion, which could be translated with “predatory group”, to designate Gothic warrior bands.

³ The main point made by the Slow Science Movement is that valuing competition and the capacity to meet the short deadlines usually imposed reduces the quality of the research. See Gosselain 2011, p. 135, on the usefulness of allocating more time to research projects (“Une telle attitude ne favorise évidemment pas la course au ranking ou à la carrière académique. Mais elle apporte une récompense bien plus essentielle : la possibilité de tirer plaisir et fierté de son travail”) and Stengers 2018.

⁴ Graeber 2015, p. 135. See also Gosselain 2011, p. 133. David Graeber’s last remark brings to mind the predicament of nationalist knowledge, described by Zygmunt Bauman (1992, p. 684–685), which grows by discovering what was known before the research started.

⁵ See, e.g., Kellert, Longino, Waters 2006; Dupré 2015.

⁶ Bourdieu, Chamboredon, Passeron 2005, p. 55–80.

If we look at what physicists think, we see that they usually place interdisciplinary projects in the domain of applied physics or in that of interdisciplinary physics⁷. No major transformation of the discipline is expected to come from other disciplines. Only a wider range of applications, which will increase the importance of physics, eventually including the possibility that by thinking on what the collaborators are expecting from them, some physicists might come to new ideas, but these are not authoritative worldviews coming from elsewhere, not even borrowings: they are what physicists might come up with after being confronted with the particulars of the application. Physicists do not expect from other disciplines to give answers to their questions, only to come with different ones, which might help them think in new ways.

Looking for what political scientists think about interdisciplinarity, I was in for a big surprise, because my limited knowledge of what they do was based on what I could learn from superficial contacts with the recent local tradition of research from Romania, a combination of mediocre political history, obsolete political philosophy and locally fashionable ideologies. I did not expect from political scientists an analysis like that made in a paper published in 2006 by Michael Moran, who was a professor of government at the University of Manchester. Moran does not notice any epistemic impact of interdisciplinarity on political science and sees it mainly as a strategy adopted by the managers of scientific knowledge against the power of the disciplinary elites and against the autonomy of the disciplines, but also as one adopted by newcomers, who think they have better chances of getting ahead by circumventing the established ways of thinking. He mentions human geography and anthropology as “disobedient children of empire”⁸, as disciplines that have lost their cultural legitimation and embrace interdisciplinarity as a salvage boat. This might be relevant for archaeology: its importance for the education of dominant groups and the implicit legitimation of their power is no longer worth mentioning and the narratives developed in accordance with national ideologies bring now to the discipline much less political support than before.

I am unable to summarize what social scientists think about interdisciplinarity, but, working on my main research theme, the archaeology of ethnic phenomena, I noticed that what archaeologists write about ethnic phenomena not only does not appear as a revolution for those anthropologists and sociologists who think time depth is important. It is simply irrelevant. I do not know any reviews written by sociologists or anthropologists to the more than 20 volumes written by archaeologists on ethnic phenomena and I have never encountered any of their ideas in what social scientists write about them⁹.

⁷ Hansen 2014, p. 1: “Physics has spilled over its boundaries... Physics that focuses on problems outside its traditional boundaries belongs almost by definition to interdisciplinary physics”.

⁸ Moran 2006, p. 80.

⁹ I am less informed about the reactions to historical work. I can mention only a review made by the sociologist George C. Homans (1963) to the well-known book by Reinhard Wenskus (1961).

In contrast, interdisciplinarity is viewed by many archaeologists as the main source of progress, if not a “scientific revolution of archaeological knowledge¹⁰. This might evoke what processual archaeologists did during the 1960s–1980s, when they adopted and integrated research devices designed by other disciplines, starting with philosophical theories about scientific research and statistical methods, but what we have now is different, as we can see in the cooperation with the geneticists. Processual archaeologists aimed at a comprehensive transformation of the discipline through the introduction of new ways of thinking, able to generate new research questions. Now, many archaeologists want answers to their existing questions, generated by old, disciplinary, ways of thinking, the most important one being the determination of group identities for people known mostly or exclusively by the study of material remains. Such expectations are echoed by David Reich, a prominent geneticist, who states that ancient DNA analyses have “surpassed the traditional toolkit of archaeology . . . in what it can reveal of changes in human populations in the deep past”¹¹.

Despite the variety of positions existing in the disciplines, the very notion of interdisciplinarity and most of the discussions about it imply that whole disciplines participate in common projects and that the collaborators represent their disciplines, although those involved in interdisciplinary projects come from various areas of their disciplinary fields, and there is no research in which all the discipline is present. Researchers use only some ways of thinking, not everything that is available in their disciplines. Archaeologists, for instance, may regard some research as irrelevant because it uses obsolete theories and methods, or even declare non-archaeological what seems to them too far from what the discipline is and should remain¹².

Claims of universality, which seem to be “a matter of who can afford to ignore whom”¹³, are frequent, but all research is local. It is done by groups of people who are in constant contact, sometimes working in the same institution, sometimes in institutions far apart, but participating in networks that function as translocal places. Therefore, an investigation of interdisciplinarity should start not with an examination of the disciplines involved, because much of what they do can be absent from

¹⁰ Kristiansen 2014, p. 24. See Gockumen, Frachetti 2020, p. 278: “There are reasons to think that ancient genomics is the most exciting development in archaeology in the last few decades, one that will reshape our understanding of the human past and, by proxy, the concepts of ethnicities, cultural complexes, and human nature.”

¹¹ Reich 2018a, p. xx. However, David Reich wants to “put the ball back into the court of archaeologists to explain the nature and effects of those migrations” (p. 201). Horsburgh 2018, p. 657, comments on these conflicting views.

¹² Fifteen years ago, during a meeting of the scientific council of our institute, a research theme focused on gender was qualified by several participants as “non-archaeological”, but finally accepted as a legitimate research direction.

¹³ Nygård, Strang 2017, p. 55. A distinction could be made here between metropolitan self-reliance and peripheral arrogance, frequently generated by the condition of being dependent on foreign sources of knowledge and local institutions which tend to acclaim status more than they do research.

interdisciplinary projects, but with the particular traditions of research. In them, we can find theories that belong to the disciplines, but also theories and tacit knowledge which come from the local environment, especially from the political field.

Local traditions of research do not produce identical researchers. So, whenever possible, it is worth getting down to the positions the researchers have in them, examining how these influence the dispositions to engage in interdisciplinary research, and inquiring whether such dispositions are conservative or disruptive.

The individual efforts of the researchers are at the origin of scientific progress and it is interesting to note that most funding agencies see as interdisciplinarity only the cooperation of researchers coming from different disciplines¹⁴, as I learned during my activity as an evaluator for one of the projects supported by the European Science Foundation. A decent project was rejected because all the principal investigators were archaeologists. I pointed out that the project, which relied on research done in many disciplines, from chemistry to Homeric philology, was interdisciplinary, but this did not convince the majority of the evaluation panel.

A common perception of what group identities might be, allowing geneticists and archaeologists to articulate what they know in a fruitful cooperation, is crucial, but it cannot be found in either of the disciplines involved.

In archaeology, several understandings of ethnicity are at work and the differences between some of them are substantial¹⁵. Among the geneticists, there is a widespread acceptance of Richard Lewontin's position¹⁶, who did not find any

¹⁴ See Callataÿ 2006, p. 8: "Il y a comme un paradoxe aujourd'hui à promouvoir l'interdisciplinarité des groupes tout en contrariant celle des individus".

¹⁵ See the contrast between the archaeological understandings of ethnic phenomena inspired by Fredrik Barth and other social scientists (e.g., Jones 1997) and the persistence of culture-historical views in the research done by archaeologists who either choose to ignore these understandings or tend to reduce their impact on archaeological research (on this, see Niculescu 2011). See also Halsall 2011 *contra* Kazanski, Périn 2008 and 2009.

¹⁶ Richard Lewontin (1972) "found that around 85 percent of variation in the protein types could be accounted for by variation within populations and 'races' and only 15 percent by variation across them" (Reich 2018a, p. 249); see also Lewontin 1974, p. 156: "the correct proportion of human genetic variation that is within nations or tribes is closer to 95 than to 85 percent". Lewontin's argument is central in two statements issued by prestigious professional organizations (Statement 1996 and Statement 1998: "...most physical variation, about 94%, lies within so-called racial groups...there is greater variation within 'racial' groups than between them". Other statements: Fuentes *et alii* 2019 and Fischer *et alii* 2019. *Contra*: Edwards 2003. Jonathan Marks, a biological anthropologist, argued against his position: "the point of the theory of race was to discover large clusters of people that are principally homogeneous within and heterogeneous between, contrasting groups. Lewontin's analysis shows that such groups do not exist in the human species, and Edwards' critique does not contradict that interpretation" (Marks 2010, p. 270). Lewontin's computation is confirmed by a recent analysis which has determined that 80% of genetic variation between humans is located inside big human groups, such as Europeans and Asians (The 1000 Genomes Project Consortium 2015). See also Haak, Schiffels 2018, p. 313, where the genetic variability between Spaniards and Germans is estimated at less than 0.5% of the variability that exists inside these groups.

biological foundation for racial and national identities¹⁷. However, some of their statements and research practices, even when they do not use words like “race” or “ethnicity”, are interpreted by social scientists as a “re-inscription of race” by the genetics research¹⁸. David Reich’s assertion that “it is simply no longer possible to ignore average genetic differences among ‘races’” is criticized in a text signed by 67 researchers (mostly social scientists), pointing to the “difference between finding genetic differences between individuals and constructing genetic differences across groups by making conscious choices about which types of group matter for your purposes”¹⁹.

After the presentation of an early version of this text, in 2018, at the “Vasile Pârvan” Institute of Archaeology, Alexandra Comşa, who was trained as a physical anthropologist, strongly asserted the existence of biological races and blamed their denial on political correctness. Something similar to her position can be found in a paper written by Werner Kunz, a zoologist with genetics research experience, who claims that scientists should not misuse their authority by supporting ideological or social goals. He agrees with the mainstream view that the genetic differences between humans are very small, but claims that those few differences are enough to allow us to speak about races. He gives the example of German and Dutch cars distinguished by their license plates (number plates)²⁰. This is an illuminating analogy. License plates are designed to indicate the countries in which the cars are registered and have nothing to do with the cars themselves. Phenotypic traits or assemblages of genetic material understood as indicating racial belonging are socially selected and derive their meaning not from what human organisms are, but from what humans think about them. Political pressures leading to a misorientation of research are also mentioned by David Reich²¹.

There is no doubt that political representations and concerns have an impact on scientific research and it is as easy to derive the denial of biological races from political

¹⁷ Reich 2018a, p. 249–250. See also Krause, Trappe 2021, p. 226 (“Nobody carries genes that identify themselves as a ‘pure’ member of a particular ethnic group”), p. 228 (“genetics today is less compatible with race-based thinking than ever before”) and p. 236: “no serious scientist these days would still claim that national, religious, or cultural borders are determined by genetics”. See also Barbujani *et alii* 1997, p. 4518: “The differences among human groups, even very distant ones and no matter whether the groups are defined on a racial or on a geographical basis, represent only a small fraction of the global genetic diversity of our species”.

¹⁸ Abu El-Haj 2007; Duster 2015. Ann Morning (2014) analyses the impact of the return of race in the scientific discourse on the social sciences. From the many examples of the return of biological determinism, see Nofsinger, Shank 2020 (on investment behaviour). Rogers Brubaker (2015) discusses the social consequences of this.

¹⁹ Reich 2018b; Kahn *et alii* 2018. David Reich answered to this (2018c): “Present-day human populations, which often but not always are correlated to today’s “race” categories, have in a number of instances been largely isolated from one another for tens of thousands of years. These long separations have provided adequate opportunity for the frequencies of genetic variations to change”.

²⁰ Kunz 2020.

²¹ Reich 2018b.

correctness as it is to ascribe racist commitments to those who think they are real. But this changes the focus from examining the arguments to the political ascription of those who present them, proposing the unlikely image of true scientists confronted with political ideologists. Both parts in this debate have solid disciplinary affiliations and both have to struggle to keep away from political representations as much as they can, without forgetting that a complete separation from politics is not possible.

Leaving aside what political positions might have had an impact on scientific research, it is worth noting that the vast majority of geneticists, physical anthropologists and biological anthropologists believe that “race” does not have biological support, that racism has produced “races”, not the other way around²². This opinion is now embraced by reputable encyclopedias²³ and mainstream textbooks²⁴.

This assessment targets the most widespread understanding of race, something that divides humanity into groups “based on physical traits regarded as common among people of shared ancestry”²⁵, something comprehensive, with major aptitudinal and behavioural consequences. In other understandings of race, for instance in that already mentioned of Werner Kunz, such differences have limited consequences. When David Reich tries to defend the reality of “race”, he mentions such minor differences, which he thinks should be explored, but insists on declaring that “pure races” do not exist²⁶. However, the whole point about races is that they are imagined as pure. If “pure races” do not exist, races do not exist. Any two genotyped groups could, given the current advanced statistical clustering procedures, yield genetic differences. It would be a mistake to take them for races²⁷.

A general assessment of what interdisciplinary collaborations bring to archaeology is beyond what I can do, so I will present only the case of a collaboration

²² Fischer *et alii* 2019; Gannett 2004.

²³ Smedley, Wade, Takezawa 2020: “Genetic studies in the late 20th century refuted the existence of biogenetically distinct races, and scholars now argue that ‘races’ are cultural interventions reflecting specific attitudes and beliefs that were imposed on different populations in the wake of western European conquests beginning in the 15th century”.

²⁴ See, *e.g.*, Grupe, Harbeck, McGlynn 2015, p. 298: “die Existenz diskreter „Rassen“, die das typologisch geprägte Denken Anfang des vergangenen Jahrhunderts bestimmten, ist heute widerlegt: Eine systematische Einteilung des Menschen kann es aufgrund seiner enormen Vielfalt und vor allem der fließenden Übergänge zwischen seinen Ausprägungen nicht geben“.

²⁵ Merriam-Webster, *s.v.* “race” (<https://www.merriam-webster.com/dictionary/race>; accessed on the 25th of September 2021).

²⁶ Reich 2018a, p. 268: “We now know that nearly every group living today is the product of repeated population mixtures that have occurred over thousands and tens of thousands of years. Mixing is in human nature, and no one population is – or could be – ‘pure’”. See also Krause 2016 (“Der Europäer ist auch genetisch ein Potpourri“) and Krause, Trappe 2021, p. 226: “Nobody carries genes that identify themselves as a ‘pure’ member of a particular ethnic group”.

²⁷ Kahn *et alii* 2018. See also Boas 1943, p. 163: “...there are no characteristics known to us that would allow us to claim that individual characteristics are determined by traits common to the whole group. However we select groups of man, we do not find pure races such as we raise in domestication of animals and cultivation of plants or in experimental series”.

materialized in a paper titled “Maternal DNA lineages at the gate of Europe in the 10th century AD”, which I think it is not an isolated one.

EIGHT MITOCHONDRIAL HAPLOTYPES FROM CAPIDAVA

The paper begins with providing a historical context, in which Dobruja is described as a territory “under the periodic domination and influence of distinct powerful state entities (Byzantine Empire, Kievan Rus’ and Bulgarians), being an important migration node between Asia and several parts of Europe” and Capidava as a fortress functioning from the 2nd²⁸ to the 11th century²⁹, “a gate of access for migratory populations towards Western Europe” and as being dominated “in the 10th century, in the context of continuous conflicts between the Byzantine Empire, the Kievan Rus’ and the proto-Bulgarians, by each of them”. The “imprints on the local genetic structure” of these “political and associated demographic events”³⁰ are the target of the research.

The main goals of the genetic research are “to determine the genetic architecture of maternal lineages in a medieval population from Capidava, Dobruja, Romania, and also to evaluate the relationships to other medieval and modern populations from Europe and Asia”. The authors assume that “medieval mtDNA information can be knitted together with archaeological and historical data to provide a better understanding of the impact of *local events* (italics added) on the genetic structure of larger subsequent populations”, but continue by stating that structure is “the *de facto* result of an original genetic pool modelled by familial relationships and immigrants arriving on different migratory routes, *in different historical periods*” (italics added)³¹. No indication of how the genetic evidence can be used to separate the events dated in the 10th century from those that took place in different historical periods.

Ancient DNA extracted from 10 burials³², discovered outside the walls of the fortress and dated by the archaeologists in the 10th century, constitutes the genetic evidence. No analysis of these burials is provided; only a reference to a paper in which

²⁸ Rusu *et alii* 2018, p. 2: “when the Romans settled and became aware of its strategic importance”; probably, it was the other way around.

²⁹ No mention of its abandonment at the time of the withdrawal of the Byzantine Empire from Dobruja.

³⁰ “The first elements of evidence could be inferred from the archaeological context”. There is no indication about what the archaeologists have inferred, only a reference to Pinter *et alii* 2011, which contains the description of five burials, of which only two had associated finds, some considerations on the burial ritual and analogies for the artefacts, and a hypothesis that makes them contemporary with return of the Byzantine power in Dobruja after 971, although, as the authors state, those five burials are “dificil de atribuit vreunui grup de populație” (p. 392). There is nothing that could indicate that the fortress functioned at the time of the burials and nothing to link Byzantine presence with them.

³¹ Rusu *et alii* 2018, p. 2.

³² The ancient DNA from M. 5 was also examined, but excluded from the analysis because of possible contamination (Rusu *et alii* 2018, p. 7).

the first five of them were published³³ and the information that preliminary reports were published in *Cronica Cercetărilor Arheologice*. No artefacts were discovered in M. 1, 2 and 5, and only a Roman coin in the filling of the M. 9³⁴. However, the authors claim that all the burials are dated in the 10th century, “according to funerary rites, grave goods, and a radiocarbon dating [of M. 4]”³⁵ and that they “were most probably part of a Christian population”. The only trait that would eventually allow the burials with no artefacts to be dated is their west-east orientation, but the authors believe that M. 6, which was found “in the same stratigraphic layer as the others” and has the same orientation, belongs “in the Roman period”, because of the presence of a “stone cist”³⁶.

Ten sequences were retrieved from the control region of the mitochondrial DNA, a region in which aleatory mutations are more frequent, ascribed to eight haplotypes, and assembled in an entity, named “population”³⁷. Haplotype R0a2’3 was found in the genetic material extracted from two burials (M. 3 and M. 4) and haplotype N9a³⁸ in two other burials (M. 9 and M. 11). The adults from these last two burials also share two rare mutations, known from recent individuals from Kyrgyzstan and the Altai Republic, so the authors assume that this is where those two adults came from. The duplicates were eliminated³⁹ and thus, for the purposes of the analysis, the “medieval population from Capidava” is made of 8 haplotypes, not of 10 individuals.

This “medieval population from Capidava” is compared with two reference lots, one with DNA from the Middle Ages (15 data sets, described as “medieval populations”⁴⁰, the other with recent DNA (35 data sets, described as “modern-day Eurasian populations”)⁴¹. The “genetic distances” were computed using Principal

³³ Pinter *et alii* 2011.

³⁴ Dobrinescu *et alii* 2014, p. 37.

³⁵ Rusu *et alii* 2018, p. 3; 880–990 cal. AD (p. 8).

³⁶ Rusu *et alii* 2018, p. 3. A brick cist (“cistă de cărămidă”) in the preliminary report (Dobrinescu *et alii* 2014, p. 36).

³⁷ MtDNA results were obtained in three laboratories.

³⁸ One particular difficulty in understanding this paper is that the authors use both the haplogroup N9a and its branch, the haplogroup N9a9, when speaking about situating the genetic material from the two burials.

³⁹ “In order to avoid overrepresentation of mtDNA lineages due to potential family relationships, duplicate sequences were removed from the subsequent statistical analysis” (Rusu *et alii* 2018, p. 8). This analysis is “population genetic analysis” on p. 6 and “population genetics analysis” in S3 Table. Apparently, there is no difference between statistical and genetic analysis.

⁴⁰ See S5: 15 data sets, described mostly by use of ethnonyms, associated with names of the modern countries in which the remains from which the DNA was extracted were found, and with chronological indications (e.g., “Bulgaria, Medieval Bulgarians, 8th–10th [c.] AD”, “Hungary, Avars, 6th–9th [c.] AD”, “Hungary, Medieval Cumanians, 13th [c.] AD”, “Hungary, Lombards from Hungary: Szólád, 6th [c.] AD”, Poland, Medieval Slavs from Poland: Cedyňa (West Pomerania Province), Ostrów Lednicki (Greater Poland Province), 11th–15th [c.] AD”, etc.)

⁴¹ See S8: 35 data sets, described using the names of the modern countries and, usually, the dominant ethnonym (e.g., “Belarus, Belorussians”, “Bulgaria, Bulgarians”, “Hungary, Hungarians” etc.). An exception: for Romania four data sets are considered, coming from four regions, and including, besides Romanians, Szeklers and Csángós.

Component Analysis, the first two principal components being plotted in a two-dimensional space (p. 10, fig. 2, for the “Medieval Populations” and p. 12, fig. 3, for “present-day populations”). The principal components of the “medieval populations” were also clustered (S2 Fig. Ward type hierarchical clustering of the medieval populations).

The authors claim that the genetic data set they have analysed has a predominantly “Western Eurasian haplogroup composition” and an “Eastern Eurasian component”, *i.e.*, the haplogroup N9a⁴², and that they have “portrayed the genetic structure of the Capidava medieval population, represented by 10 individuals displaying 8 haplotypes”⁴³. This is a misleading statement. If those eight haplotypes are a portrait, it is similar to a caricature, in which the artist chooses what to emphasize – the relevance of genetic data for ethnic identities, for instance – and ignores the rest. The geneticists have analysed only mitochondrial DNA, that is a very small part of each individual genome (there are 16569 base pairs in the mitochondrial genome and approximately 3,000,000,000 base pairs in the whole human genome)⁴⁴.

The statement might be understood as indicating that the people who lived in Capidava in the 10th century are represented by those 10 individuals. That would be a mistake. The ten individuals do not represent the inhabitants of Capidava, they are only a very small part of them. And the individuals are represented by mitochondrial haplotypes only if we choose to do so.

Unfortunately, the authors do not declare that multiple meanings of “population” are used and do not indicate their sources. One could think that the meaning of population might come from population genetics. Mark Stoneking defines “population” as being “a spatial–temporal group of interbreeding individuals who share a common gene pool”⁴⁵. This understanding of population is not present in their paper. First of all, this kind of population is made of individuals, not of haplotypes. For Stoneking, “a population occupies a particular geographic area (the spatial) and does so over a (relatively) long period of time (the temporal)”. No attempts are made in the paper to determine for how long the population from which the haplotypes come has lived in Capidava. Another possibility is that the notion comes from statistics and, therefore, it is irrelevant whether the components are haplogroups or individuals, but in statistics, the population is what the research tries to understand using samples⁴⁶. There are no attempts to use the components of the Capidava population as samples. They are used as configuring a population, which in the analysis becomes a sample to be used for comparisons with other similar samples.

⁴² Rusu *et alii* 2018, p. 8.

⁴³ Rusu *et alii* 2018, p. 1 (abstract).

⁴⁴ [https://www.genome.gov/human-genome-project/Completion-FAQ#:~:text=The%20bases%20are%20adenine%20\(A,nucleus%20of%20all%20our%20cells](https://www.genome.gov/human-genome-project/Completion-FAQ#:~:text=The%20bases%20are%20adenine%20(A,nucleus%20of%20all%20our%20cells).

⁴⁵ Stoneking 2017, p. 27.

⁴⁶ See, *e.g.*, Madsen 2016, p. 180, where the population is “the total set of individuals to be considered” and the sample is “[a] number of individuals in a population, which are selected (at random) to give information about the population” (p. 181).

The confusion between human forms of association and the groups made using genetic material is encouraged by how “population” is used in the paper. On p. 1 we are informed about “the complex interactions between distinct population groups during the medieval period”; certainly, the authors do not have in mind here interactions between groups made of eight haplotypes. On p. 2 we have an indication that “population groups” might have been composed of several “populations”, “population” becoming a subset of a people: “most information on the genetic landscape of Romanian populations is based on mtDNA diversity in present-day inhabitants”. Things become again confused when we look at the description of the reference data sets (p. 6): one of them is made of “495 medieval sequences corresponding to 13 populations originating from Europe and one from Asia”. They are not “corresponding” to “populations”: they are those “populations”. “Corresponding” suggests a relation of representation with larger entities, but that is not the case. Below, on the same page 6 (“Diversity indices for the Romanian medieval population (consisting of 10 successfully typed individuals)”) the authors use an understanding in which a population can be made of any number of individuals they choose to analyse. This is made clear by some of the authors of this paper in another one when speaking about another “population” from Capidava. They name it “dataset”, but they compare it “to other ancient Eurasian populations”; then they name the six samples they have analysed “population”⁴⁷. The crucial information that helps us understand what “populations” are for the geneticists who authored this paper is what we can read on page 4: “Due to the fact that our investigated population is small (six samples) we grouped it together with four of the formerly published medieval samples from this necropolis”⁴⁸. Thus, a “population” is an artefact assembled by the geneticists, not the population historians and archaeologists have in mind. They would not dream about adding to the populations they study whatever might bring them closer to what they might want.

Assembling mitochondrial DNA haplotypes into populations and making comparisons with other similarly constructed populations, as the authors of this paper do, are not the only way of doing research on mitochondrial DNA diversity. At the beginnings of the Human Genome Diversity Project, two of its main initiators, Allan Wilson and Luigi Luca Cavalli-Sforza, had different views about how the genetic material was to be sampled: “Cavalli-Sforza wanted to use the traditional approach of sampling well-defined populations, while Wilson, eschewing all the assumptions inherent in identifying populations in the first place, wanted to sample along a geographic grid, collecting DNA from aboriginal peoples at more or less evenly spaced locations around the world”. At the meeting in Stanford, in July 1992, Mark Stoneking said that Cavalli-Sforza’s approach was flawed because “it just focuses on well-defined ethnic and linguistic groups. And when you are done with your survey

⁴⁷ Rusu *et alii* 2019, p. 1 and 8 (“The medieval population from Capidava”); “dataset” is used again on the same page. The main dictionaries recommend “data set”. Cf., *e.g.*, Aguirre-Liguori *et alii* 2020, where the populations are made of individuals, not of samples.

⁴⁸ Rusu *et alii* 2019, p. 4. Why only four and not all of them? No explanation is given.

you will find the human species is made up of well-defined ethnic and linguistic groups. By sampling that way you bias the results”. And this is what is happening in this paper. At the same meeting, Svante Pääbo said that the “crux of the issue... is how to define a population”⁴⁹.

The problems created by the use of “population” in what researchers of ancient DNA write have been repeatedly signalled⁵⁰. The two main meanings of population in the paper discussed here might come from the different uses made by the two kinds of researchers who authored it: the archaeologists, for whom population refers to a large number of people, and the geneticists, for whom any number of individuals or haplotypes makes a population. The relations between the meanings of these two kinds of populations are not explored and we are led to believe that the genetic populations represent much larger populations, although no statistical relationships can be established between them. This goes against what some researchers think is mandatory in interdisciplinary research: “in order to be able to engage in fruitful discussions geneticists and archaeologists need to agree on shared language, terms and concepts”⁵¹.

There are other notions that could replace “population”, such as “genetic dataset”⁵², which seems more appropriate than “genetic cluster”⁵³. Perhaps the best would be to name them “genetic assemblages”, thus drawing attention to the fact that they are made, not discovered⁵⁴.

The use of these available replacements is limited and “population”, with its ambiguities, prevails. Ambiguities might be useful for assembling researchers in

⁴⁹ Roberts 1992. I am grateful to Svante Pääbo for his answers to my question about the meaning of population in genetics, in an e-mail from 20 October, 2021. Of course, he is not responsible for what I learned from them

⁵⁰ *E.g.*, von Rummel 2018, p. 347: “Der zentrale Begriff der Population ist in der empirischen Populationsgenetik aber erstaunlicherweise nicht fest definiert (vgl. Stoneking 2017), sondern wird pragmatisch, von Fall zu Fall unterschiedlich, selten biologisch und häufig mit Rekurs auf gesellschaftlich erzeugte Kategorien konzipiert. Wenn die biologischen Kategorien aber nicht klar von anderen Begrifflichkeiten menschlicher Gruppenbildung, von Verbreitungsbildern archäologischer Sachkultur oder Sprachgruppen unterschieden werden, liegen Missverständnisse nicht fern”. However, Stoneking gives a definition (see above).

⁵¹ Eisenmann *et alii* 2018, p. 2. See also Haak, Schiffels 2018, p. 311: “Zum einen gibt es Missverständnisse zwischen den Disziplinen, die auf unterschiedliche Forschungstraditionen bzw. die Tatsache zurückzuführen sind, dass es keine gemeinsame wissenschaftliche Sprache oder Konventionen gibt”.

⁵² Rusu *et alii* 2019, p. 1, 4 and 10.

⁵³ Eisenmann *et alii* 2018; one of the solutions they consider for naming such data sets, a solution they discard, uses the notion of “population”.

⁵⁴ For an analysis showing that genetic populations are made for the purposes of the investigators, not discovered, see Gannett 2003. In Eisenmann *et alii* 2018, a paper authored by several prominent geneticists and archaeologists, the abstract states that the genetic assemblages are “encountered” (p. 1), while in the conclusions they appear as “theoretical constructions [that] result from our epistemological need to create space-time-entities as aids for further understanding” and described as “artificial and to some extent arbitrary” (p. 10).

interdisciplinary projects⁵⁵ and it has been argued that the ongoing calibration of research practices makes interdisciplinary collaboration without consensus on the meanings of central concepts possible⁵⁶. This way of looking at interdisciplinarity is close to Star and Griesmer's "boundary objects"⁵⁷, "fundamentally ambiguous conceptualizations...", which make coordinated action possible "not because actors reach consensus about norms and practices, but because they disregard the boundary object's ambiguity and act as if everyone shares a definition"⁵⁸.

However, I do not think that the assembling capacity of its ambiguity is the main reason for the persistent use of "population" in the paper analysed here. Very similar – if not identical – understandings by geneticists and archaeologists might be more important.

Because "population" is applied both to human beings and their genetic material, it helps bypassing the complicated problem of the relations that exist between individuals and their genes and landing in the common knowledge area in which genes make people what they are. So instead of "genetic data sets", which can hardly be imagined as human beings, we have "populations", which are conducive to the idea that what we have in this paper, an assemblage of haplotypes coming from ten individuals, is in fact a group of human beings, thus genetic material being mutated into people.

The most important reason for using "populations" might come from the people making interest, crucial for both archaeologists and ancient DNA geneticists. Reading about human "populations" makes us believe that humanity is made of groups, with clear borders, which delimitate distinctive ways of being human. And, because the haplotypes are genetic material, human association in groups acquires a biological foundation, a determination that is present in how they are imagined by many archaeologists, especially by those who work in the culture-historical paradigm⁵⁹, as do the archaeologists who are among the authors of this paper. Such archaeologists are seeking confirmation for their nationalist representation of human groups and they are getting it from geneticists who think about them in the same way, in an interdisciplinary cooperation in which there are no social scientists, who are inclined to question the validity of the direct link between material culture and genetic material. The nationalist representation "rests on the premise that cultural variation is discontinuous: that there are aggregates of people who essentially share a common culture, and interconnected differences that distinguish each such discrete

⁵⁵ Panofsky, Bliss 2017, p. 63.

⁵⁶ Centellas, Sardon, Fifield 2014.

⁵⁷ Star, Griesemer 1989. See also Star 2010 and Bowker *et alii* 2015, a volume dedicated to the memory of Susan Leigh Star and her work. See also Meloni, Testa 2014, who argue that multiple understandings of the same concepts were foundational to the rise of epigenetics.

⁵⁸ Panofsky, Bliss 2017, p. 63.

⁵⁹ See, *e.g.*, Madgearu 1997, p. 7, where ethnic continuity is seen as biological and demographic, or Bârzu, Brezeanu 1991, p. 34, where "ethnic mixture" is seen as a "biological process".

culture from all others”⁶⁰. However, most geneticists agree that genetic variation is usually gradual, without clear borders⁶¹, something makes people “similar to those nearby and different from those far away”⁶².

The continuous cultural and genetic variation is broken by political entrepreneurs and scientists in the same way: by selecting a few markers, used to construct entities that receive names, names that in the case of social phenomena will be carried by each member. The genetic assemblages from the paper analysed here are thus individualized and ready for a comparative analysis that is powered by typological thinking. The cultural and genetic fabrics become mosaics⁶³, names making invisible the internal variability of what they name and the processual reality⁶⁴.

Instead of what was to be expected from two disciplines as different as archaeology and molecular biology, instead of contrasting ways of thinking, we see that “interpreting aDNA results involves many of the same archaeologically informed assumptions as other studies of bones, pots and tools”. Elizabeth Sawchuck and Mary Prendergast also notice that “[a]ncient DNA changes how scientists do research, rather than the questions being asked. Geneticists are working on the same problems that archaeologists, anthropologists and linguists have wrestled with for decades” and mention that “the scientific aura of aDNA means findings are presented to the world through the media as more objective”, something that prompts “archaeologists’ frustrations over apparent “molecular chauvinism”⁶⁵. For this last formulation,

⁶⁰ Barth 1969, p. 9. See also Wolf 2010, p. 6: “By endowing nations, societies, or cultures with the qualities of internally homogeneous and externally distinctive and bounded objects, we create a model of the world as a global pool hall in which the entities spin off each other like so many hard and round billiard balls”.

⁶¹ See Krause, Trappe 2021, p. 227: “It’s true that the frequency of particular gene variants undergoes consistent shifts as we move from the Iberian Peninsula to the Urals, and geneticists can say on this basis where individual people roughly come from. Yet attempting to make genetic variants conform to national borders makes about as much sense as the notion of splitting a color gradient into individual colors. The transitions are too fluid: we can measure a difference between two individuals – or colors – but we cannot assign them to separate neighboring groups, or at least not on a rational basis”. See also Gokcumen, Frachetti 2020, p. 279 (“allele frequencies of mtDNA variants change gradually across time and geography, shaped by constant gene flow between neighboring populations”) and Simoni *et alii* 2000, Richards *et alii* 2002 and Fuentes *et alii* 2019, p. 401.

⁶² Marks 2017, p. 115.

⁶³ Moore 1996, p. 226: “human species is best considered as a fabric, not a mosaic. The boundaries of human polities, ethnicities, marriage pools and language communities are, always and everywhere, very fuzzy”.

⁶⁴ Sahlins 2017: “You can step into the same river twice if you just give it a name. The true essentialists are symbol-mongering humans who assemble differences into singularities – identities and categories – by the selective valuation of co-existing resemblances”. Cf. Sahlins 2002, p. 7.

⁶⁵ Sawchuck, Prendergast 2019. See also Furholt 2019, p. 53: “Instead of using this new data-source to explore new questions, or at least to re-assess the old ones, aDNA results have been tacked onto some of the most outdated narratives in European prehistory, stemming from the early twentieth century”.

Sawchuck and Prendergast refer to a paper published by the journal *Nature*⁶⁶, where the “uneasy relationship between archaeology and ancient genomics” is discussed. Nothing of the kind exists in the paper analysed here. That is an outcome of the scientism of the archaeologists, which makes molecular biology better than what they do, and of the convergence of how both kinds of researchers think about ethnic phenomena and about the relevance of biology in their study. Culture-historical archaeologists, who have not developed any kind of disciplinary thinking about such things, find the research of molecular biologists fully compatible and complementary with theirs because they have no other social theory than what common knowledge contains, heavily influenced by nationalist, politicized, representations of social groups. The geneticists who worked with them have the same problem.

Ancestry as determining ethnic and national identities is present in all nationalist representations and it is surprising to see geneticists accept this flawed idea, especially because there is a substantial discussion in their discipline about the merits of genetic ancestry vs. race⁶⁷.

The authors do not acknowledge the existence of this discussion, but their analysis places the Capidava population closer or farther from other populations named after geographical position and ethnicity. A direct link between genetic configuration and ethnicity is also suggested in the conclusions: “The presence of the Central Asian N9a haplotype seem to place Capidava in a genetic landscape dominated by Turkic influences”⁶⁸.

The “Turkic influences” are inferred from the presence of one haplotype and of two “private coding region variants” and are supported by contextual historical and archaeological information. The interpretation makes genetic sequences similar to the artefacts culture-historical archaeologists are accustomed to mapping in order to see where the people who used them are coming from, although mitochondrial DNA haplotypes have much longer lives than artefact types⁶⁹. The earliest sample of N9a mentioned by the authors is dated by archaeological means in the Iron Age (100–400 AD)⁷⁰. The authors do not properly examine the problem of how old the haplogroup might be and do not use inferences coming from molecular clock theories⁷¹. The Haplotype Information Project registers, together with the two finds

⁶⁶ Callaway 2018.

⁶⁷ Fujimura, Rajagopalan 2011; see also Burmeister 2021.

⁶⁸ Rusu *et alii* 2018, p. 14. The more substantial presence of N9a in Southern Asia (*e.g.*, Kong *et alii* 2003; Eng 2014; Xu, Hu 2015; Duong *et alii* 2018) is ignored, possibly because of historical convenience, because no migration from that area to Dobruja was ever imagined by historians or archaeologists.

⁶⁹ See Ion 2017, p. 182: “...if one picks ancient DNA data, such data works at a macro-level of analysis – group/population, larger time frames – and hence the research hypothesis will inherently follow the same scale of analysis”.

⁷⁰ Rusu *et alii* 2018, p. 7: “Characteristic N9a HVS-I polymorphisms ... was also found in an archaeological specimen (female) from Krasnoyarsk region, Siberia, dated to the Iron Age (100±400 AD)”.

⁷¹ About them see Dietrich, Skipper 2007. See also Stoneking 2017, p. 175–184.

from Capidava, dated 1050 BP, seven other occurrences of N9a9, the oldest ones being those discovered in Russia (Siberia, Tagar culture, 2900 BP, China, Xinjiang Uyghur Autonomous Region, 2650 BP, and Mongolia, Chandman Mountains, 2290 BP)⁷². In good archaeological reasoning, the dating of the Capidava discoveries gives a *terminus ante quem* for the presence of the haplotype and that from Siberia, registered as belonging to the Bronze Age Tagar culture and interpreted as being Scythian, a *terminus post quem*. That is, N9a9 individuals could have come to Dobruja at any time between 800 BC and 1000 AD. However, the authors offer only a “possible scenario”, in which “mobile groups of people that reached Dobruja settled for at least a few generations in the vicinity of Capidava fortress, burying their deceased in allotted familial cemetery plots”⁷³. What we know about the region indicates several moments in which that could have happened, starting with the Scythian presence⁷⁴ in Dobruja (its ancient name was Scythia Minor).

Another way of linking genetic material with ethnic groups consists of making ancestry stand for geographical location and ethnicity in a world imagined as inhabited by ethnically and genetically bounded populations. Populations are individualized by computing the frequencies of the identified mitochondrial haplotypes and then displayed as being more or less distant from one another. The populations thus created are irrelevant for a search of ethnic phenomena from the past, because we know that genetic variability is greater inside big populations than among them and that it depends on geographic distance, not on ethnic or political borders⁷⁵. Populations made of hundreds or thousands of people will, in most cases, exhibit genetic variability: “you could genotype all Red Sox fans and all Yankees fans and find that one group has a statistically significant higher frequency of a number of particular genetic variants than the other group... This does not mean that Red Sox fans and Yankees fans are genetically distinct races (though many might try to tell you they are)”⁷⁶.

The authors of the paper analysed here do not offer background information that could help the readers situate the genetic differences they bring forward in the bigger picture of the genetic diversity of humanity. If we compare it to that of other primates, the uniformity of mankind is striking: “What is clear is that humans differ from chimpanzees, gorillas, and orangutans by being less diverse. ... This is surprising

⁷² https://haplotree.info/maps/ancient_dna/samples.php?searchcolumn=mtDNA_haplogroup&searchfor=N9a9&ybp=500000,0.

⁷³ Rusu *et alii* 2018, p. 8.

⁷⁴ Dated by Vladimir Iliescu in the 4th century BC (Iliescu 1972), but which could be earlier, because Herodotus writes about a Scythian king who married a Greek woman from Histria (4.78); see Vulpe 2012. See also Irimia 2001 (where the names of six Scythian kings, known from local numismatic discoveries, are mentioned) and Teleaga 2014.

⁷⁵ See Krause, Trappe 2021, p. 227: “Freiburg and Heidelberg are both in the German state of Baden-Württemberg, but an average person from Freiburg will be more genetically similar to someone from Strasbourg, in France, than to someone from Heidelberg because Heidelberg is farther away. ... In Europe there is a smooth genetic gradient that can be reliably drawn on a map, but it is not consistent with national borders”.

⁷⁶ Kahn *et alii* 2018, p. 4.

because humans are orders of magnitude more numerous than the great apes. It is also surprising given the fact that humans are distributed over the entire world whereas apes are more restricted in their distribution”⁷⁷. Human beings are 99.5% genetically identical and that means that any individual may be 0.5% genetically different from another. Because the genome has more than 3 billion base pairs, that means 15 million base pairs could be different⁷⁸.

This number is much bigger than the hundreds of base pairs on which the differences between mitochondrial haplotypes rely. Individuals are grouped using less than 0.01% of their genome. And that becomes a biological basis for ethnicity, although its significance for the ancestries of the individuals from whose genome was extracted is reduced. Depending on how distant are those individuals from the mutation that generated that particular branch of the mitochondrial tree, the analysis ignores most of their ancestries. If the mutation is only 10 generations deep in time, that means that up to 1023 ancestors are ignored (all the male ancestors and all the female ancestors who did not have female offspring that continued to have female offspring up to the individual examined by the molecular biologists). The separation between “populations” is artificial, although the material used for it is biological⁷⁹, and is meaningful mostly because it endorses the common representation of humanity being split into ethnic entities.

There is no mention of “race” in the paper discussed here, unless we read Central Asian as part of a race; no mention of “ancestry” either, but they are brought forward by how the analysis is conducted and by its results.

A common understanding of race is that “the human species comes naturally partitioned into a reasonably small number of reasonably discrete kinds, each with distinct properties”⁸⁰. Only the discussion about the N9a9 haplotype invokes this meaning of race, by association with its assumed Central Asian origin⁸¹. The rest does not, but it amounts to the same thing: associating human groups with biological characteristics deemed to be distinctive⁸² and “linking genetics to ‘ancestral’ geographic locations”, produces “new, albeit finer, genetically bounded categorical distinctions among peoples”⁸³.

Johannes Krause claims that “[g]enetic sequencing has enabled us to read archaic and contemporary genomes as if they were journals chronicling *personal*

⁷⁷ Enard, Pääbo 2004, p. 356–357.

⁷⁸ Kahn *et alii* 2018, p. 4.

⁷⁹ From a population genetics point of view, “[j]ust as there is not a particular threshold of genetic distance for separating different species, there is also not one particular threshold for calling two groups of individuals separate populations or not” (Hahn 2019, p. 79).

⁸⁰ Marks 2017, p. 29.

⁸¹ Fujimura, Rajagopalan 2011, p. 21: “‘Asian’ is often read as a race category...”

⁸² See Yudell *et alii* 2016, p. 565: “Race ... is a pattern-based concept that has led scientists and laypersons alike to draw conclusions about hierarchical organization of humans, which connect an individual to a larger preconceived geographically circumscribed or socially constructed group”.

⁸³ Fujimura, Rajagopalan 2011, p. 21.

(italics added) stories of migration and genetic intermingling”⁸⁴. Mitochondrial DNA can do that, even if it gives access to a partial ancestry, to one very small component of the ancestries of an individual. Individual ancestry is biological. Group ancestries are not. As Franz Boas argued a long time ago, “[t]he error of modern theories is due largely to a faulty extension of the concept of individual heredity to that of racial heredity. Heredity acts only in lines of direct descent. There is no unity of descent in any of the existing races, and we have no right to assume that the mental characteristics of a few selected family lines are shared by all the members of a race”⁸⁵. There is a gap “between finding genetic differences between individuals and constructing genetic differences across groups by making conscious choices about which types of group matter for your purposes”. These kinds of groups can be “portrayed” using biological attributes, but “the meaning and significance of the groups is produced through social interventions”⁸⁶. Ancestries become races by group making, by transforming processes⁸⁷ into entities defined by patterns. The geneticists construct populations using the frequencies of mitochondrial haplogroups, and present them as “genetic portraits” of bounded human groups, which are geographically and, sometimes, ethnically labelled, thus giving biological grounding to labels which name static configurations, not processes.

INTERDISCIPLINARITY AT WORK

The paper discussed here is authored by 11 molecular biologists and 4 archaeologists. 5 molecular biologists are working in Romania, 5 in Italy and one in Spain. All 4 archaeologists are working in Romania. All 15 authors are indicated as having contributed with “Writing – review & editing”, but only 4 were involved in what it is termed “conceptualization”, all of them molecular biologists, 2 from Romania, 2 from Italy, and only 5 have contributed to what is described as “methodology”, all of them molecular biologists. 7 authors, including all archaeologists, are indicated as responsible for the “investigation” and 4 authors, all of them molecular biologists, are indicated as writing the original draft⁸⁸.

This peculiar division of labour invites two remarks:

1. The people involved in conceptualization were not among those who took care of the methodology and are not among the investigators. Thus, no investigator could choose the theory and the methods or modify them according to the needs of

⁸⁴ Krause, Trappe 2021, p. 224–225.

⁸⁵ Boas 1930, p. 91.

⁸⁶ Kahn *et alii* 2018, p. 4.

⁸⁷ “Ancestry is a process-based concept, a statement about an individual’s relationship to other individuals in their genealogical history” (Yudell *et alii* 2016, p. 565). See also Gockumen, Frachetti 2020, p. 279: “allele frequencies of mtDNA variants change gradually across time and geography, shaped by constant gene flow between neighboring populations”.

⁸⁸ Rusu *et alii* 2018, p. 16.

the research. This suggests a routine product, which does not require conceptual or methodological changes during the research process, because whatever the investigators find, it cannot change how the research is done. The same thing might be said about the conceptualizers and the methodologists: they are not among the investigators and so their thinking could not be affected by the investigation.

2. All archaeologists are only investigators and presented as having acted under the conceptual and methodological guidance of the 7 molecular biologists. That is highly unlikely. Archaeological research was done according to some locally accepted practices, not according to rules and concepts taken from molecular biology. The presentation of archaeological work as mere investigation indicates that for the leading authors archaeological concepts and methodology are of no consequence.

This kind of labour division is common in most interdisciplinary projects involving geneticists and archaeologists I have read. I am not aware of a single one in which archaeologists do the thinking, elaborate the methodology, and geneticists are just investigators. The conceptual and methodological work is done mainly by geneticists and this also happens in their cooperation with biological or cultural anthropologists, which does not go much beyond getting the biological samples they need and some contextual information. An ancient DNA researcher compared this with colonial practices: “[c]ertain geneticists see the rest of world as the 19th-century colonialists saw Africa — as raw-material opportunities and nothing else”⁸⁹. This image is supported by the authorship structure of most papers on ancient DNA: a few geneticists (David Reich, Johannes Krause, David Caramelli etc.) appear repeatedly among the authors, while archaeologists tend to be among the authors only once, something that confirms that their most important contribution was access to the bones, not disciplinary knowledge.

Such practices support the beliefs of those archaeologists who think that the *de facto* ownership of archaeological materials is their most important scientific asset and disrupts the evaluation processes, especially in countries like Romania, where too much importance is given to the number of citations. An example: the Romanian collaborators to one single paper got 349 citations⁹⁰, which is more than some of our best archaeologists, Alexandru Vulpe, Radu Harhoiu or Mircea Babeş got for all their publications. Of course, their participation might be of high quality, but I doubt it

⁸⁹ Reported by Lewis-Kraus 2019. A paper authored by an archaeologist and a geneticist (Spriggs, Reich 2020) tries to present their collaboration as something different, as advancing “the scholarship of practitioners in both disciplines”, and concludes that “[r]ather than disempowering archaeologists, the contribution of ancient DNA has in fact been a liberating experience. Controversies that could never have been resolved solely using archaeological methods (or by DNA studies of present-day populations) have now been settled”. In this representation of interdisciplinarity, scholarship and the “empowering” are brought by the work of the geneticists on material provided and contextualized by archaeologists, not by the archaeologists themselves. The progress in their thinking is limited to replacing the controversies generated by what their training allowed them to do with results they are not trained to properly understand or replicate.

⁹⁰ Mathieson *et alii* 2018. The number of citations is given by Google Scholar (August 30, 2021).

confirms the expectations of Kristian Kristiansen, who thought that interdisciplinarity will generate a “scientific revolution of archaeological knowledge” and that we will have “new theoretical and interpretative models”⁹¹. Many such collaborations between archaeologists and geneticists do not generate new ways of thinking and new questions, only answers to old ones, such as “who were they” and “where they were coming from”, answers generated with impressive scientific means, which support their legitimacy without questioning it.

The cooperation reveals significant similarities between the ways of conducting research, which made interdisciplinarity desirable and possible, despite the huge differences between the ways of thinking that can be found in the two disciplines; for instance, that between population thinking and typological thinking⁹².

One of them is the idea that progress can be achieved mainly by increasing the data available, regardless of how it is analysed, an idea present in the conclusions of the paper: “the main importance of the present study consists in supplying a list of mitochondrial variants for a space and time completely lacking information”⁹³. Just as it happens with culture-historical archaeology in Romania, the focus is on collecting data, not on making explicit and improving the theoretical background employed for the constitution of the “facts”, which appear as independent of it and timeless.

A related similarity is the emphasis on method, which does not seem to need any theory. A lot of space is dedicated to a detailed and useful presentation of their methods by the geneticists (nothing of this kind from the archaeologists), none to the theories that make them adequate. The central theory both geneticists and archaeologists tacitly employ in this paper is that the human species is divided into bounded populations.

This theory is in blatant contradiction with the achievements of both disciplines. After a long history of grounding human association forms in the biology of the participating individuals, which has produced the notion of race and is present in national ideologies, and after almost a century of gradual distancing from this cumbersome inheritance, some geneticists are bringing back biological fundamentalism by using group making methods that agree with the centrality of groups in culture-historical archaeology, where it persists even in some of the best attempts at an archaeological understanding of ethnic phenomena⁹⁴.

The geneticists who authored the paper make no reference to how various traditions of molecular biology research understand what they are doing, leaving us with the impression that it is representative. The archaeologists do the same, although they ignore the state of the art in the archaeological understanding of ethnic phenomena. A useful marker of their outlook is the use of the notion of “migratory

⁹¹ Kristiansen 2014, p. 24.

⁹² On the distinction, see Mayr 2006.

⁹³ Rusu *et alii* 2018, p. 15, where the following justification can be found: “In the age of NGS technology, a critical mass of data has to be reached in order to permit future more thorough phylogenetically, phylogeographically and demographically informative comparisons”.

⁹⁴ See Brather 2000, p. 159 and 2004, p. 98. For a critique, see Niculescu 2011, p. 11–14.

peoples”⁹⁵, which implies and opposes two kinds of people, the autochthonous and the migratory. Because of its inaccuracy and political loading, this notion is abandoned by international research⁹⁶.

The opposition between local families and the freshly arrived immigrants, who seem to have no families, indicates the impact of the political imagination and the subjection of the research to the topos of peaceful and civilized locals contrasted to the intruding barbarians coming from far away. This opposition is used for the representation of genetic realities: the research is supposed to help us understand “the genetic structure of larger subsequent populations, which are the de facto result of an original genetic pool modeled by familial relationships and immigrants arriving on different migratory routes”. The genetic evidence presented in this paper seems enough for indicating a migration from a great distance in the 10th century and the authors call this a local event⁹⁷. The archaeologists might have evidence that the burials can indeed be so dated, but, as argued above, molecular biologists cannot date the appearance of their haplogroups in Dobruja with such precision, because of the distance in time between the mutations that are used to build the sub-branches of the mitochondrial tree. Because of this, they cannot tell whether the presence of haplogroups that originate from far away is due to one migratory event or to multiple mobilities which took place over hundreds, if not thousands of years.

The geneticists who authored this paper do not mention the massive uniformity of the human genome⁹⁸ and engage in finding differences between populations labelled with geographic and ethnic terms, something that other geneticists try to avoid⁹⁹. The archaeologists ignore the substantial discussions about ethnic phenomena in their discipline and are happy to learn from the geneticists that there is biological grounding for the distinction between the “migratory” peoples and the

⁹⁵ Rusu *et alii* 2018, p. 2; see also p. 8: “...mobile groups of people...”. In a paper dedicated to another “population” from Capidava, the authors – presumably the archaeologists, because a reference is given to Pinter *et alii* 2011 – use “migratory populations” (Rusu *et alii* 2019, p. 2), thus contributing to the idea that genetic populations represent historical peoples.

⁹⁶ See, *e.g.*, Goffart 2006, p. 199 (“Some of the seven peoples I deal with had occasion to move over short or long distances in historical time. If they did, it was for reasons known to themselves (rarely to us); they were not prompted by an inner urge to migrate. None of them was ‘migratory’. If that name is applied to any of them, it is not by their doing but as a result of modern scholarly reconstructions and speculations dating to the sixteenth century and still actively engaged in today”) and Meier 2016 (“Hatte man bisher außergewöhnlichen Migrationsphänomenen wie der ‘Völkerwanderung’ als Ausnahmeerscheinungen innerhalb der Geschichte des Altertums besondere Aufmerksamkeit gewidmet, so wird inzwischen zunehmend anerkannt, dass Mobilität ein nahezu omnipräsentes Phänomen darstellte – keineswegs eine erklärungsbedürftige, punktuelle Sonderentwicklung, sondern tendenziell der Normalzustand”).

⁹⁷ Rusu *et alii* 2018, p. 2.

⁹⁸ See, *e.g.*, Marks 2017, p. 119.

⁹⁹ See Fujimura, Rajagopalan 2011, esp. p. 21–23.

“autochthonous” ones¹⁰⁰, a distinction that should have been abandoned a long time ago and which, instead of being weakened by the geneticists, who should know that we are all descendants of migrants and that European genomes are a “potpourri”¹⁰¹, is reinforced by opposing the mitochondrial lineage that can be traced to Central Asia to those described as local.

Both the geneticists and the archaeologists who authored this paper ignore the social sciences. The archaeologists belong to a local tradition of culture-history archaeology, which has no explicit theory and cultivates the idea of a world made of discrete ethnic entities, no longer supported by other traditions of archaeological research. The lack of interest for the social sciences of the geneticists is widespread enough to have elicited many warnings¹⁰². However, David Reich, one of the most important ancient DNA researchers, seems to believe that his research can be valid without help from the social sciences:

“... geneticists do not have formal training in archaeology, anthropology, and linguistics—the fields that have dominated the study of human prehistory—and are prone to make elementary mistakes or to be tripped up by known fallacies when summarizing findings from those fields. But it is foolhardy to ignore genetics. We geneticists may be the barbarians coming late to the study of the human past, but it is always a bad idea to ignore barbarians”¹⁰³.

It does not seem that Reich expects the barbarians to learn anything from the disciplines which study identities – geneticists cannot infer them from genetic material alone – for research on ancient DNA that aims “to address previously unapproachable questions about who ancient peoples were”. Having access to “a type of data that no one has had before”, as we learn from the same paragraph, seems enough.

The lack of interest for the social sciences explains the low capacity to resist the impact of political imagination and the meeting of the two disciplines on the common ground created by it and raises serious doubts about the validity of the knowledge

¹⁰⁰ On this opposition, very common in Romanian archaeology, see Niculescu 2002 and Dobos 2021.

¹⁰¹ Krause 2016: “Genetische Untersuchungen bestätigen eindrucksvoll, dass Migration und Mobilität schon immer ein Teil der Menschheitsgeschichte waren: Alle heutigen Europäer sind ein Potpourri von Genen aus unterschiedlichen Teilen Eurasiens, das sich im Verlauf der vergangenen Jahrtausende vermischt und keine klare genetische Abgrenzung zwischen den heutigen Einwohnern Europas erkennen lässt. Aus genetischer Sicht lassen sich keine Nationen als eigenständige Population erkennen”.

¹⁰² See, *e.g.*, Foster, Sharp 2002, p. 844: “...the burden of showing the scientific utility of racial and ethnic identities in the construction and analysis of genomic resources falls on researchers. This requires that genetic researchers pay as much attention to the social constitution of human populations as presently is paid to their genetic composition”. See also Kahn *et alii* 2018, p. 6: “The public should not cede the power to define race to scientists who themselves are not trained to understand the social contexts that shape the formation of this fraught category. ...we encourage geneticists to collaborate with their colleagues in the social sciences, humanities, and public health to consider more carefully how best to use racial categories in scientific research”.

¹⁰³ Reich 2018a, p. 128.

on ethnic phenomena they offer. Especially when, as we see in the paper analysed here, there is no interest, either from molecular biologists or from the archaeologists, in presenting how molecular and archaeological data are linked with them. Only suggestions, which revolve around the non-defined notion of “genetic affinity”¹⁰⁴, which bring to mind Zygmunt Bauman’s observation that national ideologies rely on promoting affinity, something over which we have no control, not solidarity, an outcome of intentional action¹⁰⁵.

For archaeology, the main outcome of this kind of interdisciplinarity is disintegration. Most archaeologists from Romania show little or no interest for much that has happened in their discipline outside their local tradition of research, *e.g.*, with the interpretation of ethnic phenomena. Any attempt to show that more archaeological knowledge would be helpful would be countered by the conviction that science is much better than what any archaeologist might say. Unfortunately, when interpreting ethnic phenomena, I do something similar to what the archaeologists involved in the production of this paper are doing: I focus on the social sciences because most archaeological interpretations seem to me limited to applications of theoretical statements, the very idea of applying theory being a major misunderstanding of how scientific research works.

Maybe the problem is the general approach to the past embraced by geneticists, historians and archaeologists when working without the insight from the social sciences¹⁰⁶ that may help them take into account how current circumstances might be naturalized in their work: they all try to see how the past generated the present, geneticists are focused on finding genetic determinations, historians on constructing narratives in which the past is determining the present, in which peoples are their main actors, and culture-historical archaeologists on doing the same. The past is certainly at work in the present, both in our bodies and in our institutions, “le mort saisit le vif”¹⁰⁷, but obstinately trying to match political identities with clusters of composite genetic ancestries exaggerates the importance of the natural and of the genetic¹⁰⁸, supports the naturalizing tendencies of our institutions, which derive contingent social arrangements from essential genetic proclivities¹⁰⁹, and fuels arguments to right wing movements¹¹⁰, which place identity above anything else.

¹⁰⁴ Rusu *et alii* 2018, p. 11 and 13.

¹⁰⁵ Bauman 1992, p. 685–686.

¹⁰⁶ For a fruitful comparison of “Anthropologyland” with “Historyland”, see Cohn 1980.

¹⁰⁷ Bourdieu 1980; a partial translation was published under the title *Men and machines*, in Knorr-Cetina, Cicourel 1981, p. 304–317.

¹⁰⁸ Daston, Vidal 2003. On the naturalistic fallacy, see also Sinclair 2019. Archaeologists could get a realistic image of how the genome can provide information about human groups from the following: “for any nuclear gene one needs to sequence thousands or tens of thousands of base pairs to have a chance of finding SNPs that are informative for population genetic purposes” (Kivisild 2015, p. 1).

¹⁰⁹ See, *e.g.*, Gould 1996 on intelligence, Souza 2008 on social inequality.

¹¹⁰ Hakenbeck 2019; Panofsky, Dasgupta, Itturiaga 2021.

CONCLUSION

Collaboration between archaeologists and geneticists might indeed lead to Kristiansen's new "theoretical and interpretative models" and to better archaeologies if the archaeologists will want to go beyond trying to match cultural groups with those created for the purposes of genetic research and explore the biological and cultural human variability, something that might change their ways of thinking. That depends on individual decisions to spend time, a lot of time, on something that until recently was not in their job description and for which they are not prepared by their education and on the readiness of their professional environments to accept such pursuits as worth doing.

The current state of culture-history archaeological research and that of the research on ancient DNA are dominated by identities, by the search for "who we are", as David Reich does in his book¹¹¹, following the nationalist tradition of inferring what we are from identities. We are not their outcomes. Social and biological reality invites us to focus on processes¹¹² and abandon the representation of humanity as being a patchwork of groups¹¹³.

Both archaeology and ancient DNA research should put "reason before identity", because:

"There is something deeply debilitating about denying choice when choice exists, for it is an abdication of responsibility to consider and assess how one should think and what one should identify with. It is a way of falling prey to unreasoned shifts in alleged self-knowledge based on a false belief that one's identity is to be discovered and accepted rather than examined and scrutinized"¹¹⁴.

An investigation inspired by the human capabilities approach¹¹⁵, centered on what our ancestors could do in the circumstances in which they lived, on how social identities might have changed the human genome, on the examination of epigenetic conditions and determinations¹¹⁶, of the consequences of poverty on health¹¹⁷, seems more promising than the production of genetic differences, using statistically non-representative samples, that might match those between political identities.

Writing this article was very difficult and time-consuming. At all times I kept in mind that my knowledge about genetics is very limited and that it might be plagued by serious misunderstandings. That is why I am very grateful to Adrian Soficaru and to Gabriel Vasile for their supportive comments, to which Andrei Soficaru added

¹¹¹ Reich 2018a.

¹¹² Abbott 2016; Dupré 2012 and Nicholson, Dupré 2018.

¹¹³ For an alternative to the representation of the social world as being made of groups, see Bourdieu 1985; for an understanding of ethnic phenomena that puts aside identities and groups, see Brubaker 2004.

¹¹⁴ Sen 1999, p. 21.

¹¹⁵ Sen 1979 and 1989.

¹¹⁶ Hanghøj, Orlando 2019.

¹¹⁷ Gravlee 2009; McDade *et alii* 2019.

papers that I am looking forward to reading and Gabriel Vasile improvements to the English of my text. Andrei Soficaru points out that the main source of racial thinking among physical anthropologists in Romania today is the teaching of Olga Necrasov (1910–2000), who studied in Germany under the guidance of Egon Freiherr von Eickstedt, the editor of *Zeitschrift für Rassenkunde und die gesamte Forschung am Menschen* (1937–1944), and writes that his own research experience shows that frequently geneticists expect archaeologists to provide only the discovery context and physical anthropologists to contribute only with the results the anthropological analysis of the skeletons. I am also very grateful to Alexandra Comşa and Liana Oța for their critical comments and for their confirmatory statements. They both believe that races are real, but reject the old political implications and any ideas of racial superiority. Alexandra Comşa sees them as “phenotypical expressions of the same genotype” and as “forms of organism adaptation to different environments”. This understanding does not change the problem, because the most important phenotypic traits used for making differences between the races have a clinal distribution¹¹⁸ and are inherited. Liana Oța supports the critique of interdisciplinary practices, stating that now archaeology seems to be seen as a Cinderella of the interdisciplinary teams and observing that archaeologists expect from them a validation of what they think, rather than a transformation of their discipline, while Alexandra Comşa sees in them mostly benefits and only some shortcomings. She agrees that shared terms and concepts are very important for interdisciplinary projects, but denies any role archaeologists might have in the genetic analysis and any possibility that they might generate a methodology for the geneticists. Concepts are part of the theoretical framework needed for choosing appropriate analytical methods. Archaeologists have something to say about them – at least about how geneticists understand the notion of archaeological culture – and there is at least one example of geneticists and archaeologists making a comparative conceptual analysis¹¹⁹. The study of genetic material relies on statistical procedures, such as cluster analysis or Principal Component Analysis. Many archaeologists use these procedures (not so many in Romania, unfortunately) and some have excellent knowledge about them.

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¹¹⁸ See, e.g., Relethford 2009.

¹¹⁹ Eisenmann *et alii* 2018.

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GENETICĂ ȘI ARHEOLOGIE: CUM DUC UNELE PRACTICI INTERDISCIPLINARE LA RASIALIZAREA ASCENDENȚEI

REZUMAT

Utilizarea rezultatelor produse de alte discipline, foarte populară în prezent, mai ales printre arheologi, nu duce în mod automat la o cunoaștere mai bună decât cea care exista deja în fiecare dintre disciplinele implicate, acest lucru fiind generat, mai ales, de faptul că doar anumite tradiții de cercetare participă, nu disciplinele în ansamblul lor. Un caz de cooperare între geneticieni și arheologi, deloc izolat, având ca scop principal plasarea unui număr mic de indivizi într-un peisaj etnic, ignoră cele mai bune încercări de înțelegerea a fenomenelor etnice din disciplinele lor și arată că terenul comun, necesar pentru orice întreprindere interdisciplinară, provine din cunoașterea comună politizată. O astfel de cooperare oferă răspunsuri la întrebări vechi, în loc să genereze noi moduri de a produce și examina faptele.

Cuvinte-cheie: România, Dobrogea, Ev Mediu, fenomene etnice, cunoaștere științifică, interdisciplinaritate

ABREVIERI

ÄAT	Ägypten und Altes Testament: Studien zu Geschichte, Kultur und Religion Ägyptens und des Alten Testaments
ActaMN	Acta Musei Napocensis, Muzeul Național de Istorie a Transilvaniei, Cluj-Napoca
AD	Αρχαιολογικόν Δελτίον, Athens
AÉ	L'Année épigraphique, Paris, 1888–
AEM	Archäologisch-epigraphische Mitteilungen aus Österreich-Ungarn, Vienna, 1877–1897
AIAC	Anuarul Institutului de Studii Clasice, Cluj
AJHG	American Journal of Human Genetics
AJPA	American Journal of Physical Anthropology
AmAnthr	American Anthropologist
AMMR	Anuarul Muzeului Marinei Române, Constanța
AnB	Analele Banatului, Timișoara
AnȘUIași	Analele Științifice ale Universității „Alexandru Ioan Cuza”, Iași
Antiquity	Antiquity, University of York
Apulum	Apulum. Acta Musei Apulensis, Alba Iulia
ArchBulg	Archaeologia Bulgarica, Sofia
ArchRoz	Archaeologické Rozhledy, Praga
Argesis	Argesis. Muzeul județean Argeș, Pitești
Arhivele Olteniei	Arhivele Olteniei, Craiova
AUA–SH	Annales Universitatis Apulensis. Series Historica, Alba Iulia
Banatica	Banatica. Muzeul Banatului Montan, Reșița
BCMI	Buletinul Comisiunii Monumentelor Istorice, București
BÉ	Bulletin épigraphique in REG, Paris, 1888 –
BIAB	Bulletin de l'Institut archéologique bulgare, Sofia
BiblThrac	Bibliotheca Thracologica, București
BMI	Buletinul Monumentelor Istorice, București
I.British Mus.	<i>The Collection of Ancient Greek Inscriptions in the British Museum</i> , Oxford, 1874–1916
Byzantina	Byzantina. Annual review of the Centre for Byzantine Research, Aristotle University of Thessaloniki, Thessaloniki
I.Byzantion	A. Lajtar, <i>Die Inschriften von Byzantion. I. Die Inschriften</i> (IGSK 58), Bonn, 2000
CAH	Communicationes Archaeologicae Hungariae, Budapesta
CCA	Cronica Cercetărilor Arheologice din România
CCET	Zlatozara Gočeva, Manfred Oppermann, Nubar Hampartumian and Aleksandrina Cermanović-Kuzmanović. <i>Corpus cultus equitis Thracii</i> . 5 vols. « Études préliminaires aux religions orientales dans l'Empire romain », 74,1-5. Leiden 1979-1984. Vol. I, Zlatozara Gočeva und Manfred Oppermann, eds., <i>Monumenta orae Ponti Euxini Bulgariae</i> (1979); II,1-2, Zlatozara Gočeva und Manfred Oppermann, <i>Monumenta inter Danubium et Haemum reperta. 1. Durostorum et vicinia, regio oppidi Tolbuhin, Marcianopolis et vicinia, regio oppidi Sumen</i> (1981) and ... 2. <i>Regio oppidi Targoviste, Abrittus et vicinia, Sexaginta Prista et vicinia, Nicopolis ad Istrum et vicinia. Novae</i> (1984): IV. Nubar Hampartumian. <i>Moesia Inferior</i>

	(<i>Romanian section</i>) and <i>Dacia</i> (1979); V, Aleksandrina Cermanović-Kuzmanović, <i>Monumenta intra fines Iugoslaviae reperta</i> (1982)
CepR	Constantin C. Petolescu, <i>Cronica epigrafică a României</i> , SCIVA, București
Chiron	Chiron. Mitteilungen der Kommission für Alte Geschichte und Epigraphik des Deutschen Archäologischen Instituts, München
CIG	<i>Corpus Inscriptionum Graecarum</i> , Berlin
CIGD	Ligia Ruscu, <i>Corpus Inscriptionum Graecarum Dacicarum</i> , Debrecen, 2003
CIL	<i>Corpus Inscriptionum Latinarum</i> , Berlin, 1863–
CIMRM	J.M. Vermaseren, <i>Corpus Inscriptionum et Monumentorum Religionis Mithriacae</i> , 2 vol. 1956–1960
CIRB	V.V. Struve, <i>Corpus inscriptionum Regni Bosporani</i> , Moscow, 1965
CNA	Cronica Numismatică și Arheologică, București
Corinth VIII.3	J.H. Kent, <i>Corinth, VIII.3. The Inscriptions 1926–1950</i> , Princeton, 1966
Crisia	Crisia. Muzeul Țării Crișurilor, Oradea
CSA	Current Swedish Archaeology, Swedish Archaeological Society, Stockholm
Dacia	Dacia – Dacia. Recherches et Découvertes Archéologiques en Roumanie, București; Dacia N.S. (nouvelle série), Revue d'Archéologie et d'Histoire Ancienne, Académie Roumaine, Institut d'archéologie « V. Pârvan », București
Das Altertum	Das Altertum, Deutsche Akademie der Wissenschaften zu Berlin, Berlin
DNP	H. Cancik, H. Schneider (ed.), <i>Der neue Pauly. Enzyklopädie der Antike</i> , Stuttgart, Weimar, 1996–2003
EAIVR	<i>Enciclopedia arheologiei și istoriei vechi a României, A–C, D–L, M–Q</i> , București, 1994, 1996, 2000
EphemNap	Ephemeris Napocensis, Cluj-Napoca
Epigraphica	Epigraphica. Periodico Internazionale di Epigraphia
Fortunatae	Fortunatae. Revista Canaria de Filología, Cultura y Humanidades Clásicas, Universidad de la Laguna, San Cristóbal, Tenerife, Spania
I.Hierapolis	W. Judeich, <i>Inchriften</i> , in C. Humann, C. Cichorius, W. Judeich, F. Winter, <i>Altertümer von Hierapolis</i> , Berlin, 1898, p. 67–180
IDR	<i>Inscriptiones Daciae Romanae – Inscrupțiile Daciei romane</i> , colecție coordonată de Dionisie M. Pippidi și Ioan Iosif Russu, București, I. <i>Introducere istorică și epigrafică – Diplomele militare – Tăblițele cerate</i> (Ioan Iosif Russu), 1975; II. <i>Oltenia și Muntenia</i> (Grigore Florescu și Constantin C. Petolescu), 1977; III/1. <i>Dacia Superior. Zona de sud-vest</i> (Ioan Iosif Russu, în colaborare cu Nicolae Gudea, Volker Wollmann și Milena Dușanić), 1977; III/2. <i>Ulpia Traiana Dacica (Sarmizegetusa)</i> (Ioan Iosif Russu, în colaborare cu Ioan Piso și Volker Wollmann), 1980; III/3. <i>Dacia Superior. Zona centrală (teritoriul dintre Ulpia Traiana, Micia, Apulum, Alburnus Maior, Valea Crișului)</i> (Ioan Iosif Russu, în colaborare cu Octavian Floca și Volker Wollmann), 1984; III/4. <i>Zona răsăriteană</i> (Ioan Iosif Russu), 1988; III/5 <i>Inscriptions d'Apulum</i> (deux fascicules, Ioan Piso), Paris, 2001 (Mémoires de l'Académie des Inscriptions et Belles Lettres, XXIV); III/6. <i>Apulum – Instrumentum domesticum</i> , București, 1999 (Cloșca L. Băluță)
IDRE	Constantin C. Petolescu, <i>Inscriptions de la Dacie romaine. Inscriptiones Daciae Romanae. Inscriptions externes concernant l'histoire de la Dacie (I^{er}-III^e siècles)</i> , I–II, Bucarest, 1996–2000
IG	<i>Inscriptiones Graecae</i> , Berlin, 1873–
IGB	Georgi Mihailov, <i>Inscriptiones Graecae in Bulgaria repertae</i> I–V, Sofia, 1956–1997

IGLR	Emilian Popescu, <i>Inscripțiile grecești și latine din secolele IV–XIII descoperite în România</i> , București, 1976
ILD	Constantin C. Petolescu, <i>Inscripții latine din Dacia</i> , I–II, București, 2005–2016
ILS	Hermann Dessau, <i>Inscriptiones Latinae Selectae</i> , Berlin, I (1892), II/1–2 (1906), III/1 (1914), III/2 (1916)
IMS I	M. Mirković, S. Dušanić, <i>Inscriptions de la Mésie Supérieure. I. Singidunum et le nord-ouest de la province</i> , Belgrade, 1976
ISM	<i>Inscriptiones Scythiae Minoris Graecae et Latinae – Inscripțiile din Sythia Minor</i> , București, I. <i>Histria și împrejurimile</i> (Dionisie M. Pippidi), 1983; II. <i>Tomis et territorium – Tomis și teritoriul său</i> (Iorgu Stoian), 1987; III. <i>Callatis et territorium – Callatis et son territoire</i> (Alexandru Avram), 1999; IV. <i>Tropaeum – Durostorum – Axiopolis</i> (Emilian Popescu), 2015; V. <i>Capidava – Troesmis – Noviodunum</i> (Emilia Doruțiu-Boilă), 1980; VI.2. <i>Supplementa 2. Tomis et territorium Tomis et son territoire</i> (Alexandru Avram, Maria Bărbulescu, Livia Buzoianu), 2018
Istros	Istros, Muzeul Brăilei „Carol I”, Brăila
JAHA	Journal of Ancient History and Archaeology, Cluj-Napoca
JAS	Journal of Archaeological Sciences, London – New York
LIMC V	<i>Lexicon Iconographicum Mythologiae Classicae</i> , vol. V. 1–2, Zürich – München, 1990.
LGPN I	P.M. Fraser, E. Matthews (eds.), <i>A Lexikon of Greek Personal Names, I. The Aegean Islands, Cyprus, Cyrenaica</i> , Oxford, 1987
LGPN II	M.J. Osborne, S.G. Byrne (eds.), <i>A Lexikon of Greek Personal Names, II. Attica</i> , Oxford, 1994
LGPN IV	P.M. Fraser, E. Matthews (eds.), <i>A Lexikon of Greek Personal Names, IV. Macedonia, Thrace, Northern Regions of the Black Sea</i> , Oxford, 2005
LGPN V A	T. Corsten (ed.), <i>A Lexikon of Greek Personal Names, V A. Coastal Asia Minor: Pontos to Ionia</i> , Oxford, 2010
LGPN V B	T. Corsten (ed.), <i>A Lexikon of Greek Personal Names, J.-S. Balzat, R. W. V. Catling, E. Chiricat, T. Corsten (eds.), V B. Coastal Asia Minor: Caria to Cilicia</i> , Oxford, 2014
LGPN V C	P.M. Fraser, E. Matthews (eds.), <i>A Lexikon of Greek Personal Names, J.-S. Balzat, R. W. V. Catling, E. Chiricat, T. Corsten (eds.), V C. Inland Asia Minor</i> , Oxford, 2018
Marisia	Marisia, Muzeul Județean Mureș, Târgu Mureș
MCA	Materiale și Cercetări Arheologice, București
I.Mus. Iznik	S. Şahin, <i>Katalog der antiken Inschriften des Museums von Iznik (Nikaia)</i> , I–II 1–3 (IGSK 9–10 1–3), Bonn, 1979–1987
O.Krok I	H. Cuvigny, <i>Ostraca de Krokodilô I. La correspondance militaire et sa circulation. Praesidia du désert de Bérénice II, O.Krok. 1–151</i> , Cairo, 2005
O.Krok II	A Bülow-Jacobsen, J.-L. Fournet, B. Redon, <i>Ostraca de Krokodilô II. La correspondance privée et les réseaux personnels de Philoklès, Apollôs et Ischyras. Praesidia du désert de Bérénice V, O.Krok 152–334</i> , Cairo, 2019
OLA	Orientalia Lovaniensia Analecta, Leuven
Oltenia	Oltenia. Studii și Comunicări, Craiova
PAT	Patrimonium Archaeologicum Transylvanicum, Cluj-Napoca/Paris – Budapesta
I.Perinthos	M.H. Sayar, <i>Perinthos-Herakleia (Marmara Ereğlisi) und Umgebung. Geschichte, Testimonien, griechische und lateinische Inschriften</i> , Vienna, 1998

Peuce	Peuce. Studii și cercetări de istorie și arheologie, Institutul de Cercetări Eco-Muzeale „Gavrilă Simion”, Tulcea
PIR ²	E. Groag <i>et alii</i> , <i>Prosopographia Imperii Romani</i> , 2nd ed., Berlin, 1933–.
Pontica	Pontica. Studii și materiale de istorie, arheologie și muzeografie, Muzeul de Istorie Națională și Arheologie, Constanța
RE	Pauly-Wissowa, <i>Real-Encyclopädie der Classischen Altertumswissenschaft</i> , Stuttgart, 1893–
RÉG	Revue des Études Grecques, Paris.
Revista Bistriței	Revista Bistriței, Bistrița
RICIS	L. Bricault, <i>Recueil des inscriptions concernant les cultes Isiaques</i> , Paris, 2005
RIU	<i>Römische Inschriften Ungarns</i> , Budapesta
RGZM	Barbara Pferdehirt, <i>Römische Militärdiplome und Entlassungsurkunden in der Sammlung des Römisch-Germanischen Zentralmuseums</i> , Mainz, 2004
RMD	Margaret M. Roxan, <i>Roman Military Diplomas</i> , London: I. <i>Roman Military Diplomas 1954–1977</i> , 1978; II. <i>Roman Military Diplomas 1978–1984</i> , 1985 ; III. <i>Roman Military Diplomas 1985–1993</i> , 1994; Margaret M. Roxan, P. Holder, <i>Roman Military Diplomas IV</i> , 2003; P. Holder, <i>Roman Military Diplomas V</i> , 2006
RMI	Revista Monumentelor Istorice, București
RMIA.SM	Revista Monumentelor Istorice și de Artă. Seria Monumente, București
RMM–MIA	Revista muzeelor și monumentelor. Monumente istorice și de artă, București
SCIM	Studii și Cercetări de Istorie Medie, București
SCIV(A)	Studii și Cercetări de Istorie Veche și Arheologie, București
SCN	Studii și Cercetări de Numismatică, București
SEG	<i>Supplementum Epigraphicum Graecum</i> , Leiden, 1923–
I.Smyrna	G. Petzl, <i>Die Inschriften von Smyrna</i> , I–II.1–2 (IGSK 23–24.1–2), Bonn, 1982–1990
SprawArch	Sprawozdania Archeologiczne, Wrocław-Varșovia-Cracovia
Starinar	Starinar, Belgrad
StComSatuMare	Studii și Comunicări, Satu Mare
StudiaUBB.Historia	Studia Universitatis „Babeș-Bolyai”. Studia Historia, Cluj-Napoca
StCl	Studii Clasice, București
TAM	<i>Tituli Asiae Minoris</i> , Vienna, 1901–
Terra Sebus	Terra Sebus. Acta Musei Sabesieinsis, Muzeul Municipal „Ioan Raica”, Sebeș
I.Thrake Aeg.	L.D. Loukopolou <i>et alii</i> , <i>Ἐπιγραφές τῆς Θράκης τοῦ Αἰγαίου μεταξύ τῶν ποταμῶν Νέστου καὶ Ἐβρου (Νομοὶ Ξάνθης, Ροδόπης καὶ Ἐβρου)</i> , Athens, 2005
Tyche	Tyche. Beiträge zur Alten Geschichte, Papyrologie und Epigraphik, Viena
Valachica	Valachica. Chronica Valachica. Studii și materiale de istorie, Muzeul Județean Dâmbovița, Târgoviște
VAMZ	Vjesnik Arheoloskog Muyeja u Zagrebu, Zagreb
VDI	Vestnik Drevnej Istorii, Moscova
YES	Yale Egyptological Seminar
Ziridava	Ziridava. Studia Archaeologica, Muzeul Județean Arad, Arad
ZPE	Zeitschrift für Papyrologie und Epigraphik, Bonn