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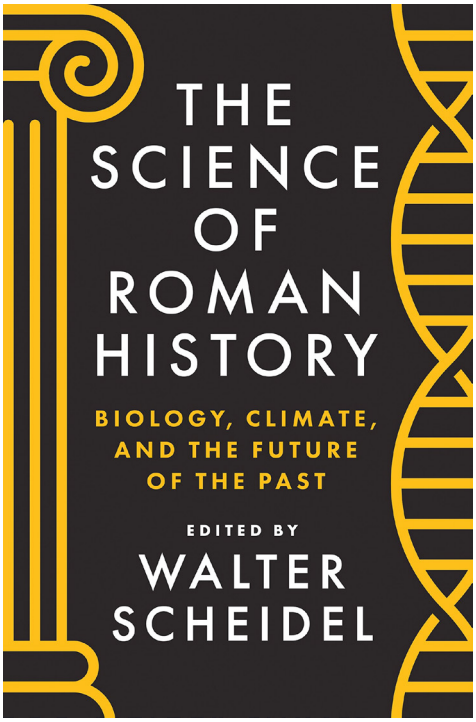
Reviews

Scheidel, Walter (ed.), *The Science of Roman History. Biology, Climate and the Future of the Past*, Princeton/Oxford, Princeton University Press, 2018. ISBN 978-0-691-16256-0, 260 p.

Csaba SZABÓ
Lucian Blaga University Sibiu
csaba.szabo@ulbsibiu.ro



Since the paradigmatic work of Edward Gibbon – which is still considered as one of the most influential Roman histories ever written, often published in new editions even in the 21st century[1] - there were tens of thousands of monographs and articles written on the various topics, events and issues of Roman history[2]. Literary sources didn't increase much since the age of Gibbon; most of the ancient authors known in the 18th century are reinterpreted constantly today[3]. Papyrological, epigraphic and mostly, archaeological sources however are in constant increase every year, which gives us an opportunity to introduce new methods, techniques and multidisciplinary approaches in the analysis of these sources. Network studies and 3D modeling, digital humanities and nondestructive methods in field archaeology are just few of the recent approaches booming in Roman studies[4].

The book edited by Walter Scheidel has an excellent and attractive title, which captivates the reader with its monumentality and ambition: The Science of Roman History. Almost as a manifesto, with a wonderfully designed cover of Chris Ferrante, a Roman column stands together with the schematic form of a human DNA sending out the powerful message, that the past from now on will be understand by the techniques and methods of the future. Although, the title and the cover are very well made, the content is much more modest and less ambitious: it doesn't speak about the above mentioned new, scientific techniques in Roman field archaeology, digital humanities used in Roman network studies and 3D modeling, but narrows its focus on climate studies, archaeobotany, zooarchaeology, osteological studies, historical demography and genetics research in historical sciences[5].

In the introduction, Walter Scheidel presents shortly the major results of each chapter, emphasizing that these new "bioscientific" approaches in the research of Roman history need to be done on the micro – and macro-level too. The book is focusing on the human body and its surrounding biosphere in a historical context and constant transformation. This might be one of the reasons why the above-mentioned great variety of new methods are not mentioned in the book, although the title would suggest that kind of interdisciplinarity too. Scheidel modestly admits, that no matter how comprehensive some of the chapters of the book can be – which they are indeed, as the tremendous bibliography suggests[6] – the rapidly changing aspects of biosciences will keep in charge and constantly dynamic the Roman studies.

1 Recently republished in Romanian in 2018.
2 As far as I know, there are no comprehensive database with a complete bibliography of Roman history. In the Dyabola Database there were more than 30.000 new titles introduced only in 2018: http://www.dyabola.de. Last accessed 21.01.2019.
3 An example from the last years: MALLAN-DAVENPORT 2015 on the famous Codex Vindobonensis Hist. gr. 73, ff. 192v–193r.
4 BAGNALL-HEATH 2018.
5 An argument for their absence might be their omnipresence and popularity in the field.
6 Almost 1100 titles.

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The first chapter is written by Kyle Harper and Michael McCormick and it is focusing on the reconstruction of the Roman Climate (pp.11-52.). Published just one year after the famous book of Harper[7] the chapter is a detailed summary of his major ideas which provoked a paradigmatic discussion on the issue of environmental history globally. The authors focus on the Mediterranean world as a major climate unit influenced by the North Atlantic Oscillation (NAO). Their results are focused on a large quantity of data from general paleoclimatic studies, ancient and prehistoric climate change analysis based especially on the recent results of the Greenland Ice sheet, Greenland Ice core and North Greenland Eamian Ice Drilling projects. Statistics focusing on TSI ^{14}C (Total Solar Irradiance) shows for example, that between 400 BC and 400 AD there is a very strong fluctuation of solar irradiance, producing high solar activity between 400-300 BC and having a historical minimum between 200 and 250 AD. From the Greenland Ice Sheet project, the authors analyzed also the long-term effects of volcanic sulfate emissions, which had historical eruptions in the end of the 1st century BC (around 44 BC). Major movements of European glaciers and precipitation statistics reveals also important climatic changes, and they are in correlation with the TSI data: data from France and Germany shows a historical low precipitation (from 250 mm from the early Principate to 150 mm between 200 and 250 AD) in the 3rd century, however a significant change will occur only in the late 5th century AD and especially after the so called dust veil event from 536-537 AD. The temperature reconstruction of the Spannagel cave in Austria, Tyrol and 10 other speleothem series reconstruct also the so-called Roman Climate Optimum of the early Principate with small fluctuations between 50 and 200 AD and with a sudden drop in the 3rd century AD. The authors close their study with an optimistic tone, opening perspectives for further studies which can contextualize not only macro-economic history of the empire, but also building projects, famine, plagues, historical demography and a reinterpretation or contextualization of the literary passages considered till recently as "fictive" accounts.

Marijke van der Veen presents the archaeology of human-plant interactions in the chapter on Archaeobotany. After a short introduction on climatic and biological factors of agricultural activities and plant production, van der Veen presents the methods of archaeogenetic identification of plant material. Habitual changes in agriculture, food production and trade can be identified for example from the widespread of grain weevils (23-44% of the archaeobotanical material of sprouted grains in Londinium). Most of the case studies the author presents are from individual sites, unfortunately the data is still limited especially on an empire scale. She presents some methods – such as the Scanning Electron Microscopy – and ethnographic traditions in studying the ways of food preparation and consumption. Although the author used a large number of analogies – mostly from Western provinces and Egypt – the lack of a systematic database of archaeobotanical analysis and sources can be observed in her narrative, which gives only a general picture about a very complex topic.

Michael MacKinnon's chapter is presenting the natural and cultural worlds from archaeological faunal remains and gives a comprehensive introduction on zooarchaeology. His chapter presents in detail some of the major questions and limitations of contemporary techniques in zooarchaeology: the problem of chronology ("when") and the limits of C14 dating, reconstructing historical movements and past extinctions of animals, establishing ecological and environmental settings and conditions, the complex issue of reconstructing historical landscapes and their fauna or establishing animal diets based on stable isotopes. The chapters present these large topics in short, but systematic subchapters giving a general overview on this large topic, focusing however especially on Anglo-Saxon literature and ignoring almost completely the results of Roman provincial archaeological studies in the German or Danubian area. The study of MacKinnon shows again the lack of comprehensive, long-term studies and systematic collaboration between states, the lack of digital databases on osteology and zooarchaeology or generally, the atomized, glocalised aspect of Roman studies generally. The fourth chapter of Alessandra Sperduti, Luca Bondoli, Oliver E. Craig, Tracy Prowse and Peter Garnsey are focusing on the historical values and problematic interpretation of human bones, teeth as primary sources in paleodemography, dietary history and beyond. The authors are highly critical with the older, historical approach and claim that "historians have shown a tendency to progress from judgments about the diet of a people to conclusions about their health" (p.124.). Health, food and diet need a reinterpretation in the context of new analytic methods used in historical osteology. The study examines the osteological material from recent finds in Velia, where 3000 skeletons were excavated in 2003-2006. The authors argued that historians often make wrong diagnoses and etiologies. For example, bones not only carry the signs of severe illnesses, but on the contrary might represent individuals who died suddenly in a pandemic or other individual malady. Bone tissues also responds in a very homogenous way to broad spectrum of afflictions and this complicates or even prevents differential diagnosis. The lack of a shared diagnostic standard reflects also a problem in the field. Osteological material is also, rarely complete which reflects the incomplete aspect of the research and can severely affect the overall picture and conclusion of big data in historical diet and health studies. The authors argued that bones and teeth are uniquely valuable sources for historical analysis, however the interpretation of the data needs an interdisciplinary analysis and the collaboration of historians with physicians and anthropologists too. The future of this field is in the study of stable isotope analysis, however a multidisciplinary approach with histology, microbiology and biochemical medicine can open much more unknown details of the past.

The fifth chapter deals with Human growth and stature by Rebecca Gowland and Lauren Walther. This topic was researched since at least a century in Roman studies. In the 1950's there were studies which argued that height of children at age seven was a useful predictor of future employment. These studies used the so called anatomical method: establishing the living stature from the measurement of all contiguous skeletal elements that directly contribute to a person's height. Even later, in the end of the 19th century the

7 HARPER 2017.

so called mathematical method was in fashion, where using a simple regression formulae to calculate adult stature from the measurement of single long bones (femur, tibia) created distortional results. These methods are presented in this chapter shortly, but very elegantly. The authors argued, that the vertebral measurements and the direct comparison of long bones are now advocated as methods. They concluded that the anatomical method should be used when possible to estimate stature from human skeletal remains and to create population specific formulae (pp. 194.).

Chapter seven written by Noreen Tuross and Michael Campana presents one of the most popular and booming research fields of Roman studies – and generally, of historical interdisciplinarity: the problem of the Ancient DNA. The article presents this highly sophisticated topic for an uninitiated public; therefore it begins with a subchapter focusing on the biochemistry of ancient DNA. They highlight, that one of the major risk in identifying and analyzing ancient DNA is the contamination with nonendogenous DNA. The second subchapter presents the history of research which begins in the 1980's and the major projects which contributed to the evolution of this discipline: the 27 medieval Tuscan tombs and their genetic material, the Egyptian royal mummies and their genealogy and the famous project which revealed the complete genomic sequence of the plague of Justinian and the recent results of paleomicrobiology[8]. The authors claimed that this field is still need much more attention in Roman studies, being used especially in prehistoric and medieval or later periods but rarely for Roman population studies.

In the last chapter, Roy King and Peter A. Underhill follows the same topic of archaeogenetics but in the context of Modern DNA and the Ancient Mediterranean. Shortly repeating the definition and some technical details on DNA and their variations in archaeogenetical studies, their study is focusing on genetic distance (relatedness, affinity), caveats, gene trees and substructures. They compare also the methodologies and advantages of studying mitochondrial DNA instead of Y Chromosome, but with reservations on both methods. They present shortly also the notions of haplogroups, molecular games of chance, genetic drifts and the major results from Neolithic and Bronze Age materials which changed radically our knowledge on these periods. The chapter however missed the Roman period which would be essential for this chapter[9].

The seven chapters and the major topics (climate, biology, physical anthropology, genomic studies) represents some of the booming fields of Roman Studies which will mark the discipline in the following years or even decades. Several other fields would have worth to be mentioned in this important volume: non-destructive archaeological field-methods, 3D techniques and advanced imaging software and methods[10] or the possibilities of the popular field of digital humanities. As it was mentioned numerous times above, the volume lacks almost completely the German and Central-East European literature and major results, which in case of scientific methods and disciplines dealing with big data and holistic, global views are unacceptable in the 21st century. The accessibility of information in the age of the digital era and the integration of Central-East European scholars in the global studies of Roman history are well established in the last two-three decades, therefore it is useful and urgent to have a really global view Roman Studies which goes beyond the Western literature and self-limitation of the Anglo-Saxon scholarship. Here I need to make a short remark also on the case of Romanian research in these booming fields: although there are several important studies since 1990 in the fields of zooarchaeology and archaeobotany in the study of Roman Dacia (especially some religious case studies from Apulum and Porolissum), but the collaboration of Romanian archaeologists with biologists, physicians and other specialists related to the fields presented here are still need an improvement.

The book edited by Walter Scheidel presents a small part of a large field of multidisciplinary collaboration which represents the future and probably the hope of survival of humanities in general, and Roman Studies in specific in the very future of the digital era.

8 See also: RAOULT-DRANCOURT 2008 which is not cited in their study.

9 Important to mention the ground-breaking project of Johannes Krause, Walter Pohl, Patrick Geary and Tivadar Vida who won an ERC Synergy Grant in 2019. Their project, HistoGenes - Integrating genetic, archaeological and historical perspectives on Eastern Central Europe - will seek to understand the impact of migrations and mobility on the population of the Carpathian Basin from 400-900 CE, based on a comprehensive analysis of samples from 6,000 ancient burial sites.

10 BARFOD *et alii* 2015.

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