SDCAS and Joukowsky Institute webinars on epidemics and pandemics in Antiquity

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During October and November 2020, a series of lectures on epidemics and pandemics and their role in Antiquity was delivered in the form of webinars, the format reflecting the currently complicated situation in the United States and other parts of the world due to the COVID-19 pandemic. The lectures consisted of one webinar organized by the San Diego County Archaeological Society (SDCAS) and a four-part series of webinars organized by the Joukowsky Institute for Archaeology and the Ancient World, Brown University.

On October 27th, two lectures took place just a few hours apart, the first one being organized by the Joukowsky Institute. On its first occasion, Joukowsky Institute introduced this event as a part of the course *Pandemics, Pathogens, and Plagues in the Greek and Roman Worlds* and hosted Kyle Harper, a historian of the ancient world and currently a professor at the University of Oklahoma, and, among others, also the author of a much-discussed book *The Fate of Rome*. According to Kyle Harper, the history of infectious disease is and should be relevant for us today. At the same time, however, it is increasingly difficult to write a comparative history of pandemics the further we look into the past, even more so in the case of some of the major disease outbreaks which spread in the Roman Empire. Focusing on the Antonine Plague, Harper first drew on the contours of this pandemic, then discussed its biological aspects, and finally spoke about the general impact of this pandemic on the Roman Empire. The Antonine Plague was a pandemic raging through the Roman Empire in the period between ca. 165–190 CE. As the traditional sources on the Antonine Plague (i.e., written sources, census patterns in Egypt, and proxy evidence of its impact) do not directly disclose what caused this pandemic, Harper emphasized how important the role of paleogenomics and phylogenetics in identifying the underlying pathogen is. Harper correctly pointed out the caution that has to be taken when identifying the cause of the Antonine Plague as smallpox, specifically because some aspects of this disease are not witnessed by the available evidence, but also since phylogenetic analyses show that the present-day smallpox virus is relatively young. This might indicate, according to Harper, that the cause of the Antonine Plague might have been some ancestor of the currently existing pox virus, possibly introduced into the Mediterranean region through the Red Sea and Indian Ocean trade, further spread through the Roman Empire being facilitated by urbanism and the dense network of Roman roads. Unfortunately, no biological evidence of the Antonine Plague is currently available, so the identification of its causal agent still has to be done retrospectively. Concerning the impact of the pandemic, Harper acknowledged that the current

scholarly debate diverges in settling on the estimates of the mortality it may have caused (in the range of 2–25%; Harper specifically objected to Bruun, 2007), him standing somewhere in the middle: based on the assumption that the basic crude death rate in the Roman Empire was ca. 30–35 per 1 000, and considering the crisis mortality rate to be three times higher than the basic crude death rate (in Early Modern Europe; it is likely not possible to estimate this factor with much higher precision for the society of the Roman Empire), Harper estimated the death rate to have been around 8–10% (likely lower in the countryside and perhaps up to two or three times higher in an urban setting). Since a multitude of factors played a role in the impact of the Antonine Plague on the socio-political transformation of the Roman Empire when this pandemic struck, future research is, according to Harper, facing the challenge to estimate the relative weight of the biological causes in comparison to climatic factors, geopolitics, Marcomannic invasions, etc.

Interestingly, Harper emphasized that the significance of this pandemic was attested, for example, by the sparse mentions of pandemics and epidemics prior to the second half of the 2nd century CE (meaning that the Antonine Plague must have been a significant event which deserved a notable mention in the writings of contemporary authors). Despite this, his objection to Christer Bruun's notion that "[only up to 2%] of the population of the empire may have died in the 160s" (2007: 209) is, in my opinion, unfounded: first, Bruun speaks only of the 160s, not of the whole period of the several decades the pandemic might have raged. And second, Bruun, in his argumentation, cites J. F. Gilliam, who focuses only on a limited period of Marcus Aurelius' reign and emphasizes the 1–2% mortality "[b]eyond the ordinary mortality of these years" (Gilliam, 1961: 250), which is the same mortality type (i.e. the increase over the expected mortality rate) Harper estimated in his lecture (although with perhaps a different result). To be fair, however, Harper did acknowledge that there are still many unknowns concerning the specific pathogen that caused the Antonine plague, its virulence, its evolutionary history, or the details regarding the connection of this pandemic to specific parts of east Asia. All in all, Harper's lecture has shown a concise narrative of the Antonine Plague representing a bit more the maximalist interpretation of this chapter of the history of the Roman Empire, yet with a correct point in emphasizing the importance of molecular evidence in further research of this pandemic.

The second webinar of the day was a popularizing lecture organized by the SDCAS. Despite a similar topic to the webinar series hosted by the Joukowsky Institute, it was organized independently and without a direct focus on expert audience. The lecture was delivered by the archaeologists Karen Lacy and Sandra Pentney and was titled *Archaeology of Epidemics*. Lacy and Pentney spoke about the available archaeological evidence for epidemics that can be traced to as early as 3 000 BCE and discussed the major outbreaks and how different methods can be employed in their study. Besides the archaeological evidence of epidemics, the authors discussed the historical evidence of related phenomena such as quarantine practices, sanitation, and mask-wearing. As the authors emphasized, drastic events, such as epidemics, can often be accompanied by abrupt changes in culture (specifically, in burial practices) that can be identified in the archaeological record. This is interesting with regard to one of the problematic issues in the current research of the Antonine Plague discussed above, for which there is limited and

difficult to interpret material evidence (Mitrofan, 2014). Besides these topics, the authors covered the relationship between international trade and the spread of disease, the utilization of climatological evidence for tracking changes in agricultural activity (a proxy for population size that can be used to identify the impact of epidemics), and, to a certain extent, also the impact of epidemics on religion and culture (according to the authors, the frequency of chapel construction was affected, as well as the level of education required for entering clergy). In sum, the lecture discussed various aspects of epidemics and their relationship to culture to inform non-experts in a currently relevant topic.

On November 5th, another lecture in the series by the Joukowsky Institute was delivered. The lecture, entitled *The Economic Impact of the Antonine Plague*, was given by Andrew Wilson, an archaeologist and currently a professor at the University of Oxford. Wilson first summarized the literary and archaeological evidence surrounding the Antonine Plague, illustrating a chronology of the pandemic. Based on evidence that can be interpreted as a religious response to the events, i.e., increased activity related to oracles and amulet-finding, he noted that there might indeed have been a disease outbreak. However, he was cautious in identifying it as smallpox, more so in applying the current epidemiological features of smallpox to estimate this pandemic's mortality. After summarizing the history of the scholarly debate surrounding the research of the Antonine Plague, he pointed out that a lot of the supposed evidence might not be indicative of population decrease due to a disease (or diseases alone), but that climatic causes are plausible as well (for example, climatic instability resulting in failed harvests). Lastly, Wilson presented evidence indicating that the Antonine Plague might have indeed affected the Roman economy to a certain extent. First, there are strong indices of areas being abandoned in London in the times of the Antonine Plague, and a mass grave was discovered in 2008, in which the likely cause of death was a disease (there is an absence of trauma wounds on the corpses, the underlying pathogens are however not yet known). Moreover, there seems to have been a significant decline of mining activity, predominantly in the western and northern regions of the Roman Empire in the time of the Antonine Plague, as is indicated by Icelandic ice core studies. While the results have yet to be verified by Russian ice core content (as they are more indicative of the European lead pollution, a proxy of mining activity), it seems that mining activity (and in turn silver production and coin minting) might have for some reason ceased in the 160s and 170s AD. While the reasons for the cessation are not known, disease is one of the plausible causes. Similarly, archaeological findings from Dacia (present-day Romania) indicate that a series of mines were abandoned in the 160s AD, although the reason is not apparent here as well (besides disease, it is possible that the mines were abandoned due to invasions).

Wilson importantly noted that in comparison to the Black Death, there are no signs of massive village abandonment in the case of Antonine Plague, nor of mass dying. Also, literary evidence suggests that by 200 AD, the north African region might have already recovered, which may indicate that the impact of the Antonine Plague was not the same in each part of the empire. In response to questions posed in the discussion that followed the talk, Wilson clarified that the Icelandic ice core evidence for mining activity did also account for circulation patterns that

would drive the lead pollution towards the locations where the pollution was concentrated. Specifically, about half-a-century of wind data was used to account for this parameter, although he admitted it might be possible that the wind patterns in Antiquity could have differed.

On November 10th, the third lecture of the Joukowsky Institute series was delivered. The lecture titled *Quisquamne regno gaudet? Politics and plague in Seneca's Oedipus* was given by Hunter Gardner, a classics scholar and currently a professor at the University of South Carolina. In contrast with the rest of the series' talks, Gardner focused predominantly on literary sources and examined the discourse of politics and disease circulating during the Julio-Claudian principate. In her presentation, Gardner compared the distinctly Roman idioms of plague that surround the descriptions of the hero and disease in Seneca's *Oedipus* with the older, Greek version of the same drama written by Sophocles. Besides the transformation from a democratic context to a monarchic one, Seneca, according to Gardner, exploited the discursive power of narratives of contagious disease, using it as a metaphor to diagnose the civil wars that afflicted the Roman Republic in the late 1st century BCE. Drawing on previous work by Susan Sontag and René Girard, Gardner illustrated that Romans, who were plagued by civil war in the late 1st century, might have used plague narratives to work through, diagnose and treat the competitive strife among aristocrats that had led to civil war (which itself might have led to a certain level of redistribution of power after the civil war).

It is interesting how Romans utilized medically mythical, but aesthetically strong depictions of disease (as Gardner observed based on Girard's work) in narratives of infectious disease. Although interpretations of such narratives in the light of their context (civil strife in late Republic and early Empire) illuminate the possible reasons for the formation of these narratives, it is nevertheless likely that similar notions stemming from the cultural background and creative objectives of Roman authors might make it harder for us to quantify aspects of the depicted disease outbreaks.

On November 17th, the 4th and final lecture of the Joukowsky Institute series was delivered. The lecture titled *Palaeogenetic Insights into the First Plague Pandemic (541–750)* was given by Marcel Keller, a biologist and postdoctoral researcher at the University of Tartu. In his lecture, Keller first summarized the methods suitable for studying ancient disease outbreaks, then discussed the current research of *Yersinia pestis* (the bacterium that causes the disease *plague*) and the Justinianic Plague and concluded with future directions in the study of both the *Y. pestis* and the Justinianic Plague. According to Keller, the study of ancient pandemics benefits greatly from paleogenomic research of their causative agents, since for a long time the only sources available were descriptions and depictions in literary and archaeological sources. In the study of the Justinianic Plague, such paleogenomic data allowed to consider certain routes by which *Y. Pestis* could have entered the Mediterranean region as more plausible than others. They have shown that the Justinianic Plague itself (spanning only several years in the beginning of the so-called First Pandemic, i.e., a pandemic of plague between 541 and 750 CE) was caused by a different plague strain than the later outbreaks that are comprised under the First Pandemic. Keller emphasized that predicting mortality based on paleogenomic data is not currently possible, less

so in the case of *Y. Pestis* which spreads via several types of hosts. Moreover, the different strains of the same pathogens could have behaved differently than is currently known from studying the more recent plague outbreaks.

Overall, the five talks delivered at the turn of October and November 2020 offered an enriching insight into the latest research of past epidemic events, making the turbulent year struck by the COVID-19 pandemic a little more bearable and underlining the relevancy of the plagued past to our current experience.

References

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