

Human-environment interactions in prehistoric Anatolia

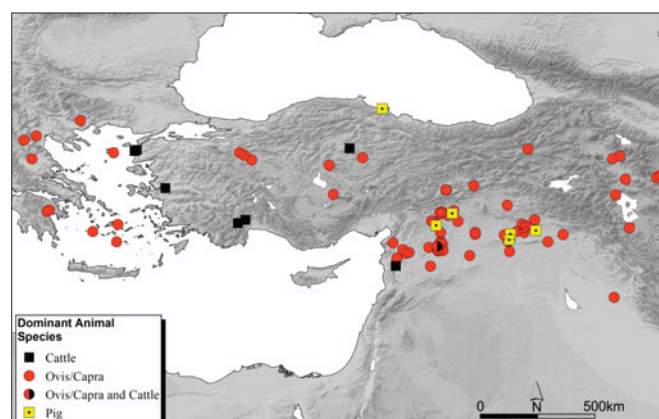
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Despite a growing interest and acknowledgement of its importance, bioarchaeology as an all-encompassing, holistic approach to answering questions about the human past is still mostly overlooked. This is especially true when compared to more traditional material culture studies analysing pottery, architecture and metals etc. Nonetheless, the bioarchaeological triumvirate of archaeozoology, archaeobotany and human osteoarchaeology have a long research history within Turkey and Turkish archaeology. All three have made extremely important and valuable contributions to the dataset and knowledge pool over the last half century or more. More recently, however, the importance of multifaceted approaches utilising quantifiable data to examine larger regional, pan-regional and diachronic variations and changes has been stimulated. The development and elaboration of my doctoral research in conjunction with my post-doctoral fellowship project at the British Institute at Ankara aims to explore exactly these types of developments. Falling under the remit of several of the Institute's strategic research initiatives – 'Migration, minorities and regional identities', 'Climate change and the environment' and 'Habitat and settlement in prehistoric, historic and contemporary perspectives' – my project aims to examine human-environment interactions by studying dietary, subsistence and mobility patterns through a bioarchaeological approach, including human and faunal osteological, botanical and stable isotopic and bio/geochemical analytical methods. Simply put, by examining what people ate, how they organised their arable agriculture and livestock farming, and how they moved themselves and their animals can provide us with insights into societal dynamics. Furthermore, studying human and animal mobility can provide us with an indication of the interaction between movement and other aspects of society, such as trade and exchange, and social and political developments. There are several proposed hypotheses about the existence and aetiologies of increased interaction, trade and exchange, and pastoralism and the relationship between humans and animals in the Early Bronze Age of Anatolia, and this project aims to analyse and test them.

For example, my research is demonstrating – in part by utilising the examination of human and faunal $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values – that not all of the animals raised and kept by third-millennium BC populations were consumed in a primary manner (i.e. as meat). Furthermore, the isotope data, namely large ranges in $\delta^{13}\text{C}$ signals, suggest that there were different management strategies for domestic livestock. In other words, the large range in faunal $\delta^{13}\text{C}$ signals suggests a variety of sources for the plants consumed by animals. This

may indicate foddering of animals, grazing on crop stubble close to settlements and grazing at greater distances from the core population zone (i.e. pastoralist activities). By examining the dietary signals of the animals we may begin to obtain preliminary insights into animal and, by proxy, human mobility. The mobility of animals is also further indicated by the use of stable isotopes of sulphur ($\delta^{34}\text{S}$). For example, at mid-third-millennium BC Bademağacı, north of Antalya, the $\delta^{34}\text{S}$ signals indicate the presence of non-local animals. The next step is to expand upon these preliminary findings and hypotheses by sampling more faunal remains for $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$, as well as conducting isotopic analyses more commonly designed to track mobility patterns (i.e. those of strontium and oxygen).

The isotopic signals in conjunction with the archaeozoological data (age of the animals and kill-off profiles, etc.) are suggesting the importance of secondary product exploitation and the development, intensification and specialisation of the secondary products revolution. It seems to be clear that at most settlements the inhabitants practised a mixed strategy of animal subsistence and management, particularly for sheep, goats and cattle. This means that some animals were raised and then slaughtered for their meat (primary consumption), whilst others were kept to older ages, implying the exploitation of their secondary products, such as milk, wool, hair and traction. Moreover, there is a clear dominance of sheep, or at least *Ovis/Capra*, in the faunal assemblages of the period. Examination of these factors, as well as other archaeological information (such as the increase in contact, trade, exchange and the presence of consumable and disposable 'objects of wealth') leads me to suggest that the importance of the wool trade, which is famously epitomised in the Ebla tablets from the second millennium BC, had already begun in the third millennium BC.



Dominant species of domestic animals at sites in Turkey and adjacent regions (mid-fourth to early second millennium BC).



Presenting my research at the 41. Uluslararası Kazı, Araştırma ve Arkeometri Sempozyumu in Diyarbakır.

Over the course of the last year my research has begun to embrace and utilise more fully holistic methodology, examining previously published isotopic (including my own data), archaeobotanical and archaeozoological data in order to examine larger scale, regional and diachronic patterns in Anatolia and adjacent regions. It has become clear that there were diachronic changes; most noticeably, in the late fourth to early second millennium BC there was a narrowing in the stable isotope values of humans, a narrowing in the range of food resources, subsistence strategies and, therefore, by inference, dietary habits. I have been tentatively referring to this as an 'Early/Middle Bronze Age package'. This 'package' is related to the intensified and specialised extensification of agriculture and livestock farming, perhaps more eloquently referred to as an 'Early to Middle Bronze Age mode of staple finance'. This, in turn, is no doubt part of the increased intensity of other aspects of Early to Middle Bronze Age population and societal dynamics (for example metallurgy, architecture and settlement organisation, interpersonal violence, secondary products and wealth/finance – trade, wool/cloth, feasting activities and consumable and disposable 'objects of wealth'). I will continue to develop and publish these ideas over the course of the coming year.

This first year of my fellowship has been incredibly productive, which is hardly surprising given the amiable conditions in which I have been working and the ethos at the Institute in Ankara. I have had three articles published in high-impact journals, with, at the time of writing, one in press, another submitted (in collaboration with Kameray Özdemir of Hacettepe University, providing an overview and research history for the first time of biogeochemical research, with a bioarchaeological focus, in Turkey) and several more at various stages of preparation. During 2019, I have presented my research at seven different conferences, in locations ranging from San Diego to Diyarbakır, and by the

time you are reading this, the British Institute at Ankara will have hosted a (very productive and successful – fingers crossed!) one-day workshop on physical anthropology in Anatolia, organised by myself in collaboration with Yılmaz Selim Erdal of Hacettepe University and the Director of the Institute, Lutgarde Vandepuit. This workshop, whilst focusing primarily on physical anthropology, will bring together several experts within and around the discipline, all with their own specialities (dental and oral health, stable isotopes, DNA, osteological pathologies, etc.) to encourage and increase dialogue, co-operation and collaboration. This is one of the key facets of the methodological approach of my research. Being holistic in nature, opening dialogue between different specialists and disciplines/fields of research under the umbrella of bioarchaeology – and indeed beyond it – and encouraging interdisciplinary collaboration are all enormously important facets of this methodology, and together can provide an exceptionally powerful means to analyse intensely past human biographies and population dynamics.

So, as the first 12 months of my Institute fellowship come to an end and I now turn my attention to the final year, I can look back with satisfaction on what I have achieved and look forward with excitement to what is to come. I have no doubt that it will be busy, and at times chaotic, but I am also sure that *her şey iyi olacak!*