

NOV 2014

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PN-II-RU-TE-2012-3-0386

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Late Pleistocene and Holocene climatic variability in the Carpathian-Balkan region. Abstracts volume



**Late Pleistocene and Holocene Climatic Variability
in the Carpathian-Balkan Region**

ABSTRACTS VOLUME



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Contributions of Human Osteo-archaeology to the reconstruction of climatic shifts in medieval Romania

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Huizinga (1996) used striking but quite realistic words to describe the Middle Ages: *'When the world was half a thousand years younger all events had much sharper outlines than now [...] Sickness contrasted more strongly with health. The cutting cold and the dreaded darkness of winter were more concrete evils'*.

This picture is particularly appropriate for depicting the 'Little Ice Age' (c. 14th – 19th centuries), a period which strongly contrasted with the previous 'Medieval Warm Period'. It was a time of hardships for populations across Europe, tormented by climatic shifts, famine, epidemics and wars for many consecutive years, sometimes even decades, when seasons manifested their extremes in long, harsh winters, cool and wet summers, and cold peaks such as the so called Great Frost in 1709.

Scholars and scientists have used several tools for the reconstruction of past climates and the understanding of the complex human-environment relations. The most 'traditional' indicators are human instrumental and non-instrumental records, natural proxies, and archaeological sources. Where available, church archives, journals and chronicles written by travellers and diplomats are very useful sources of information before technological devices to measure temperature and precipitation were invented. However, in recent years more disciplines have joined this ever-growing inter-disciplinary network. In Romania, historical (Cernovodeanu and Binder 1993) and new climatologic (Geantă et al. 2012; Cristea et al. 2014) studies have shown that during the late medieval period a substantial climate change occurred in the Romanian Countries as in the more documented Western countries.

The aim of this paper is to introduce briefly how data obtained from the analysis of human skeletal assemblages and their archaeological contexts can be used together with historical and climatologic sources to reconstruct past climates. It also endeavours to identify the effects of climatic shifts on Romanian populations during the late medieval period. The main research question is: could such significant climate changes, after leaving traces of their occurrence on the human and natural memory across time and space, have also left their marks on skeletal populations from medieval cemeteries? In fact, the detrimental effects of sudden or long-term climate changes are generally identified on human populations through:

- Higher rates of mortality;
- Retarded growth;
- Higher levels of psychological stress;
- Signs of malnutrition;
- A greater prevalence of metabolic and infectious disease;
- Increase of violent behaviours.

Attempts to answer this question have been addressed in other countries by historians and scientists since the 1980s, although mostly focusing on society and culture (Lamb 1982; Fricke et al. 1995; Fagan 2000; Anderson et al. 2007; Büntgen et al. 2011), or by using specific health indicators (Lafferty et al. 2009; McMichael 2012). On the contrary, such approaches to skeletal assemblages from Romania can be considered a novelty. Furthermore, given the small number of local written sources from the given period in this country, the availability of human and animal bones becomes vital to us.

In the framework of this multi-disciplinary study, two skeletal assemblages from Romania were the object of comprehensive osteological analyses. The first group of burials was excavated during street works in the historical centre of Bucharest between 2007 and 2008 and roughly dates back to the period between the 15th and the 18th centuries. The second, dated 14th-19th centuries, was recently unearthed in Braşov following the rescue excavation of the cemetery surrounding the Biserica Neagră (Black Church). While archaeological data were available for the first assemblage, only some preliminary reports could be obtained for the second given that the excavation of the site was only recently finalized.

Long- and short-term environmental changes affect the human body in different ways, but can somewhat be reconstructed and predicted if constants and variables are identified. In fact physiological and psychological responses to climatic shifts can be reflected by macroscopic and microscopic changes at the bone level. Changes in stature, the presence of certain diseases, and the identification of fractures or traumas caused by violent behaviour are some of the expectable indicators of climate change on skeletal remains. Consequently, the purpose of the present study was to obtain more than mere population mortality and morbidity rates. The interpretation stage was in fact also aimed at understanding the relationship between the environment and society, and the impact of climate change on life-expectancy, behaviour and well-being of populations from the medieval Romanian Countries. However, it is important to stress that osteo-archaeological data alone are not enough for the application of this method, and historical and climatic evidence must also be available for its successful application.

The Bucharest and Braşov skeletal populations complement each other both chronologically (they overlap, and the latter includes burials from a warmer period) and geographically (Southern Romania vs. Transylvania). Moreover, they both are located in urban contexts, and the burials represent mostly low and middle class individuals. Unfortunately it is not possible to give statistically and theoretically conclusive data at this stage given that the present research is still on-going; however, we can anticipate that some general patterns have already been identified. In fact, both assemblages have shown low life-expectancy, with high mortality rates between young and early mature adults (i.e. between twenty-five and thirty-five years of age), diffused severe nutritional issues, the presence of several infectious diseases and evidence for violent behaviours. These finds might well be indicative of a climatically and, nonetheless, socially hostile environment - as medieval cities notoriously were.

By cross-referencing and graphically plotting this information with historical and climatic evidence collected from this area, clusters of 'climate markers' in the years recorded as colder and wetter should appear. In fact, when we consider the living conditions and environment of populations across Europe during the late medieval ages, it is easy to imagine that they only could have been worsened by climate changes.

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