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Demographic structures in Moesia Inferior and Moesia Superior (1st–3rd centuries AD)

Abstract

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Starting with the Renaissance, the study of ancient history has become a subject of analysis for numerous scholars. The twentieth century brought along – for ancient history and for the study of the other periods – a change of interest from political history to social and economic history. In this context, historic demography in general and ancient demography in particular have developed remarkably.

The first scientific work on ancient demography was published at the end of the nineteenth century. Karl Julius Beloch – in his book *Die Bevölkerung der griechisch-römischen Welt* (1886) – anticipates the future directions of ancient demography. The author analyses various problems, such as the comparative use of the results on age structure or the issue of age-rounding in the epigraphic sources. Theodor Mommsen and the Positivist school of Berlin severely criticized the author, by accusing him of having built his research on "numeric games" based on "circumstantial statistics". This way, his propositions were not followed, leading to a significant regress in the study of ancient demography. Only in 1960, through the demographic contributions of Keith Hopkins, the study of ancient populations began to acquire today's scale.

The publishing of the written sources of Antiquity – begun at the end of the nineteenth century in the German world – knew a true explosion in the second half of the twentieth century, due to the national historiographies of various countries.

In this context of historiographic development, Walter Scheidel identified three methodological models that have attracted attention throughout time.

The first model focuses on the positivist interpretation of the data provided by Antiquity – inscriptions, papyri, other written sources or osteological remains – without relating to other information (this methodological approach seems more appropriate for the beginnings of demography, but it is also used today). In his book, Scheidel gives the examples of W. Suder, *A Study of the Age and Sex Structure of the Population in the Western Provinces of the Roman Empire*, Wroclaw (1990) and M. Sgarlata, *Richerche di demografia storica: le inscrizioni tardo-imperiali di Siracuza*, Vatican (1991).

The second methodological model is the one proposed by K. Hopkins in the 60s, which rejects any data processing in the absence of representative results. Scheidel notes that the partisans of this method gave up on calculating important statistics (such as mortality, fertility, *sex ratio*) starting directly from data provided by ancient sources, using only the modern models of the demographic structures considered similar to ancient models.

Bruce W. Frier proposes the third model. He admits the efficiency of applying the modern demographic methods in the study of ancient populations, but he does not reject the exploitable ancient sources. In 1994, Frier and Roger S. Bagnall (a specialist in ancient Egypt) published *The Demography of Roman Egypt*. Bagnall and Frier collected 300 lists with *census* comprising 1,084 individuals

and – using modern life tables – they offered an image of life and death in Roman Egypt. In the Romanian historiography, Lucreţiu Mihailescu-Bîrliba presents this model of ancient demography. The Romanian author published several studies and books on this theme. We mention the following: *L'étude démographique sur les familles des magistrats municipaux en Dacie romaine – une démarche impossible?*; *Individu et société en Dacie romaine. Etudes de démographie historique*; *L'espérance de vie, la structure d'âge et la mortalité en Pannonie (I^{er}-III^{e} s. ap.J.C.)*.

An essential aspect in all demographic endeavours involving the calculation and interpretation of demographic parameters is represented by ancient sources. They can be divided into two categories: the written sources represented by tombstones, the inscriptions within columbariums (such as for Rome), mummy labels and the *census* returns (for Egypt), and the osteological sources comprised of the skeletons discovered in ancient necropolises.

A study published in 1980 by A. Salomon and I. Lengyel on a small necropolis in Pannonia comprised 28 individuals, among whom some with elongated skulls. After performing a DNA analysis of the skeletons, the scholars were able to determine the family tree of the persons buried there. The scholars observed that the custom of altering the skull was brought in this small community and that it became a more and more popular tradition among the members of these families with each generation.

In 2004, Robert Sallares, Abigail Bouwman and Cecilia Anderung published an article on the spread of malaria to southern

Europe. The DNA-analyzed osteological remains of a female 2-3 years old at death presented signs of malaria.

The two examples above are exceptions of the results presented by osteological remains. Their study depends on the state of conservation of the bones, on the deceased's age, as well as on the diseases affecting the bones.

In a work published in 1992, Tim G. Parkin drew attention on the shortcomings of the demographic approaches of that time.

In the graduation paper, I elaborated a catalogue of the necropolises and isolated graves in Roman Dobrudja. In this area, both funeral rites are present, meaning incineration and inhumation, and the presence of incineration makes it difficult to find archaeological data. The necropolises are published partially, and often they do not provide an exact dating or they only mention if the skeleton belonged to an infant, to a teenager, or to an adult, without mentioning the gender. A similar situation is that of Serbia, where a recently published study on salvage excavations in Belgrade does not provide any archaeological data. However, I do mention several studies that include such data, such as that by Dardu Nicolăescu–Plopşor dedicated to the discoveries within the necropolis of Histria; the study by Constantin Chera–Mărgineanu, where he presents a grave within the locality of Ostrov; or the more recent papers of Andrei Soficaru, such as that on the Roman–Byzantine burial chamber at Slava Rusă.

I chose not to present the isolated necropolises and graves within the two provinces of Moesia because they are included in

three different national historiographies, published in various journals and in less accessible languages (Bulgarian or Serbo-Croatian). The attempts made by Lucreţiu Mihailescu-Bîrliba for Roman Dacia and by myself for Roman Dobrudja show, on one side, the possibilities offered by the skeletons within the inhumation graves and, on the other, the lack of anthropological information. In the future, publishing the anthropological results will lead to the elaboration of samples comprising the data provided, and a comparison can be made with the parameters obtained based on inscriptions.

This work is part of a broader study initiated by Lucreţiu Mihailescu–Bîrliba through the book on the demography of Roman Dacia and continued through the study dedicated to the two provinces of Pannonia. This project wishes to offer results of the main demographic parameters for the Balkan-Danubian provinces.

The study comprises the provinces of Moesia Superior and Moesia Inferior, in the area of Lower Danube. Several demographic papers have been published concerning the territories of the two provinces. In this sense, I mention the work of Alexandru Suceveanu in 1977, where the author also notes the number of inhabitants on the territory of each city in Roman Dobrudja. I also remind the study of Miroslava Mirković on the militaries in Moesia. However, there is no study on the demographic parameters, except for several studies elaborated by myself. I refer here to *Speranţa de viaţă şi structura de vârstă în Dobrogea Romană (secolele I-III)*; *L'espérance de vie et la structure d'âge de la population féminine en Mésie Inférieure (Ier-*

IIIe siècles ap. J.-C.); and *L'espérance de vie, la structure d'âge et la mortalité en Mésie Inferieure et en Scythie Mineure*.

As regards the chronological aspects, I have chosen to study the period of the 1st-3rd centuries AD because it is the epoch with the highest number of discovered inscriptions within the entire Antiquity.

The sources for my study are the tombstones that mention the age at death for the deceased. These tombstones make two samples comprising 481 persons in Moesia Superior and 397 persons in Moesia Inferior.

The methodology used in the study of life expectancy, age structure and mortality in the two provinces of Moesia is the one used by Bagnall and Frier for Roman Egypt and by Mihailescu-Bîrliba in his works referring to Roman Dacia and to the two Pannonias. In order to calculate the demographic parameters, I used the samples provided by the inscriptions separately, by sex and age categories. I also used the modern life tables of Coale and Demeny for modern populations. The two authors created four life tables corresponding to the four cardinal points. They based on the information provided mostly by the European populations after the census returns at the end of the nineteenth century and the beginning of the twentieth century. The authors recommend the *West* model for the studies involving populations with high infant mortality.

For accurate results, I have compared the main demographic parameters with the results obtained for Roman Egypt, Dacia, Pannonia Inferior and Pannonia Superior. Unlike Roman Egypt,

where the *census* returns were used, in the case of the Danubian provinces (with samples made of inscriptions), the results obtained are different to a certain extent.

A study of R.P. Duncan-Jones – *Age-rounding Illiteracy and Social Differentiation in the Roman Empire* – analyzes the age-rounding process for the ages within the tombstones in the entire Latin-speaking area of the Roman Empire. Duncan-Jones draws attention that this phenomenon is also present in the contemporary epoch.

In order to calculate age-rounding, I use Whipple's Index, also employed by Duncan-Jones in his study. It applies to the interval 23-62 years old, thus eliminating young ages, better known by parents, and the old ages, less known. This interval is divided into four decades. The index is obtained by summing the age returns between 23 and 63 years inclusive and finding what percentage is borne by the sum of the returns of years ending with 5 and 0 to one-fifth of the total sum. If there are only ages ending in 5, the result is 100, and if they represent 20%, than the result is 0.

Scheidel states Whipple's Index is based on two "questionable assumptions". The first presumption is that the number of ages in each ten-year range is supposed to be equal, which is obviously not the case, not even in contemporary societies. The second assumption is that the division by digits is supposed to be equal within each ten-year range (each digit should represent 10 % of the sample for ten-year range). Regarding the first assumptions (an equal number of persons in each series), the number of births

should remain stable over time (in the pre-industrial societies, epidemics, famine, and wars make birth rate fluctuate significantly) and life expectancy should be rather high, but this situation does not occur in the contemporary societies, either. Regarding the second assumption, it is hard to believe that the same number of persons died at 23 and at 32, and this situation stands for the other decades, too. This way, if the life expectancy of a sample ranges between 20 and 30, a significant part of the sample is not included in the calculation of Whipple's Index. The author believes that the sample should be extended from 23 to 62 years old to a sample from 10 to 69 years old, thus comprising a larger number of persons.

In his study, Duncan-Jones uses around 40,000 ages at death from the tombstones within the Latin-speaking area of the empire. He calculates age-rounding by social class, sex, region of discovery, and the province where it was discovered. In his study on digit preference, Scheidel only deals with Roman Egypt. Nonetheless, it comprises a sample of 2,136 persons for the category 10–69 years old, very hard to find in any area of the empire, with the exception of Rome, maybe. I will calculate Whipple's Index for the sample proposed by Duncan Jones, as well as for the extended one, proposed by Scheidel.

The life expectancy of the female populations in Moesia Inferior and Moesia Superior is around 30 years old, providing similar results to those obtained in the other Danubian provinces. Still, in Moesia Inferior, the ages under 25 are much better represented percentage-wise than in Moesia Superior, but the value

is quite different from that obtained for the sample in ancient Rome. Both samples include an under-representation of young and very young ages, a situation present in almost all the samples made of information from tombstones.

Age-rounding for the female populations in Moesia Inferior and Moesia Superior is different. In Moesia Superior, I notice that over half of the female sample has an age at death ending in 0; the sample of Moesia Inferior presents more not rounded ages at death and more ages at death ending in 5. The "exact" ages at death are concentrated under 45 years old in both provinces: 91.1% in Moesia Inferior and 96.2% in Moesia Superior. The very exact ages – though equal in both samples – have much higher percentage in Moesia Inferior. The persons with very exact ages stated are, for the most part, citizens, with one exception: the daughter of a slave. Rounded ages are concentrated between 30 and 60 years old, with a preference for ages ending in 0. Young ages are better represented in Moesia Inferior, while the old ages are better represented in Moesia Superior.

The life expectancy at birth of the male population is a little over 41 years old in both provinces. The male samples in Moesia Inferior and Moesia Superior also comprise the most long-living persons registered with an age at death over 100 years old. The very young and young ages are under-represented in both provinces; the same goes for the categories 51-55 years old, 61-65 years old and 81-85 years old. The percentages of the categories 0-25 years old have a very close value; the same pattern applies to the number of

individuals on the 5-year category. The life structures of the male samples in Moesia Inferior and Moesia Superior are very similar.

Age-rounding in the male samples is significantly different from that of the female samples. The percentage of ages at death ending in 0 is a little below 45% in both provinces because it has fewer ages at death ending in 5 than that in Moesia Superior. The not rounded ages can be compared, just like in the case of the female population, in the first part of the samples, meaning less than 35 years old: 60.95% in Moesia Inferior and 70.7% in Moesia Superior. However, for the male population there is another concentration of not rounded ages around 60 years old, which could be related to the veterans being discharged. 89.52% represents the percentage of not rounded ages (up to 65 years old) in Moesia Inferior, while in Moesia Superior it is of 94.9%. I have to add here an interesting detail: both ages over 100 years old in Moesia Inferior are not rounded ages. The number of ages more exactly presented is slightly higher than in the case of female samples, meaning 19 in Moesia Inferior and 14 in Moesia Superior, but the values are significantly lower percentage wise. Out of these 33 persons, 31 are citizens, and then there is a *peregrinus* and a person with an unknown social status. Parts of these inscriptions are related to the military setting, as the deceased or the dedicators are militaries or veterans. The concentration of rounded ages at death is situated between 20 and 80 years old in Moesia Superior – 89.95%, and in Moesia Inferior between 20 and 70 years old: 87.19% of the rounded ages at death. The ages with the most occurrences are the same in Moesia Inferior

and Moesia Superior: 60 years old, 50 years old 40 years old and 70 years old.

The age structure of the entire sample within both provinces is similar. Within the sample in Moesia Inferior, young ages are slightly better represented, while within the sample in Moesia Superior the adult ages are better represented.

By using Whipple's Index – though on small samples – I have shown that the results obtained by Duncan-Jones for the entire empire also stand for the two provinces. In the case of females, there are higher values of the rounding process than in the case of males. The same way, in case of female and male citizens there is lower age-rounding tendency than in the case of non-citizens. In the military setting, there is a decrease in the values of the index. The sample of the magistrates in Moesia Superior registered the lowest values for Whipple's Index, showing that the age-rounding process can be related to literacy and social status.

Mortality, analyzed differently by sex, indicates two different models for the female population and for the entire sample.

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