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### Leven en sterven langs de Limes : het fysisch-antropologisch onderzoek van vier grafveldpopulaties uit de noordelijke grenszone van Germania Inferior in de Vroeg- en Midden-Romeinse tijd

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## Summary

The conquests of North-western Europe by the Romans led at the beginning of our era to a confrontation between the native tribes and the Roman army and society. After the first period of warfare, with genocide and movements of native populations and tribes, a period of relative peace and integration followed.

The establishment of an infrastructure with a trade network and the consolidation of the northern frontier along the Lower Rhine resulted in a multicultural habitation of the border zone. Settlements were built in the vicinity of the fortresses as the founding of the *castellae* and the presence of the military troops led to an influx of populations, mostly from the hinterland of the Roman Empire.

This dissertation presents the investigation of the cremated remains of four cemetery populations from the northern frontier zone of *Germania Inferior*. It focuses on the demographic and cultural composition of these populations and the changes therein during the first two centuries AD.

The location of the cemeteries near the military fortresses and the associated civilian settlements led to the expectation at the start of this study that in these cemeteries both military and civilians were buried. Especially in the 1<sup>st</sup> century, a period of frequent warfare, military graves are expected to be present in the cemeteries.

The composition of the cemetery populations should have been more balanced in the 2<sup>nd</sup> century, because this period was more peaceful and prosperous, known as the *Pax Romana*, comprising mainly the civil inhabitants of the settlements. The improvement in living conditions would have led to healthier populations than in the 1<sup>st</sup> century AD.

To test these assumptions the human skeletal remains, mostly cremations, from the cemeteries of Valkenburg- Marktveld, Nijmegen-Museum Kamstraat, Moers-Asberg and Krefeld-Gellep were studied. The cemetery of Valkenburg was in use during the first two centuries AD and comprised 520 cremation- and 134 inhumation-graves. It was located in the vicinity of the *castellum* Praetorium Agrippinae and the *vicus* on the Woerd.

In Nijmegen many military and civilian sites were excavated. The cemetery of the Museum Kamstraat is one of the earliest cemeteries and dates from circa 30 till 70 AD. Studied were 131 graves with cremated remains that were part of a much larger complex, most of which hasn't been excavated due to modern building.

Moers-Asberg is the location of the *vicus*, which was situated near the *castellum* of *Asciburgium*. There were two cemeteries here, the northern and the southern one. From the northern cemetery 89 cremation graves were available for study dating from the first two centuries. From the southern cemetery the results of the investigation of 94 cremation graves were used to compare with the demographic structure of the northern cemetery.

The extended cemetery of Krefeld-Gellep is situated near the *castellum Gelduba*. There are 670 graves with cremated remains from the first three centuries AD which were studied.

The diversity in the cremation graves is shown by the grave typology. The main grave types are: Urn-graves (U), Urn-graves with pyre remains (Us), *Brandgruben*-graves (Bg), *Brandschüttungs*-graves (Bs), graves with 'clean' cremated bones (Cr) and *Bustum*-graves (Bu). The results of the physical-anthropological analysis were studied in relation with the information on the grave types and the dates of the graves.

Each cemetery is discussed in a separate chapter that is arranged in the same way. Firstly the quality of the cremated remains and the research possibilities are described. The results of the age- and sex-diagnoses are analysed by way of mortality curves followed by a description of the demographic composition of the cemetery populations, divided by the 1<sup>st</sup> and 2<sup>nd</sup> century when possible. The health of the populations is discussed according to the osteological pathological changes, the reconstructed stature and the mean age. After this the burial traditions are described in relation to the data on the sex, age and the grave types.

The description of the cremated remains according to the weight, the fragmentation and the presence of the several skeletal parts has shown that the quality is best when these were buried in an urn. The quality is a lot worse when the loose cremated remains were buried in a pit, resulting in less research possibilities. The variety of the *Bustum*-graves is responsible for differences in the quality of the remains. In Valkenburg these graves contained more cremated bones than those in Moers and Krefeld. In Moers the cremations had sometimes been deposited in a small pile and in Krefeld in some of these graves an urn had been placed.

Age-diagnosis was possible in 50-70 % of the cases and concerning the adults a sex-diagnosis in 52-89% of the individuals. This is an important addition to the archaeological sex diagnosis, which is based on the so-called 'female' and 'male' grave goods. In those cases where both methods could be applied, the results are compatible with only a few exceptions. The sex-related grave goods from the graves of females are *fibulae*, toiletries, jewellery and specific implements. In the graves of males these items are specific types of *fibulae*, weapons and tools.

The demographic structure of the cemetery populations shows minor differences between both centuries. There was no surplus of young men in the 1<sup>st</sup> century. Child mortality was high and most of the adults died in the age of 20-40 years. The civil population treated their dead according to old, indigenous rules, but also followed the Roman rules on this subject. The dead were cremated except for newly born children who were buried. In case of warfare normal procedures were abandoned, the victims were buried apparently without any consideration, as is implied by the inhumation graves from Krefeld and possibly those of the adults and elderly children in Valkenburg.

It is not possible to draw conclusions on the health of the population and a change herein during the first two centuries because the fragmented and mostly incomplete nature of the cremated remains inhibits the detection of pathological features on the bones. Also the dates of most of the graves are not specific enough. An exception is the toxicological research into

the lead content of the skeletons of the newborn children in Valkenburg, which has shown that the lead was transported via the mother during pregnancy. The lead content of food, like wine, probably had a negative influence on the pregnancy and the survival of these children.

The presence of certain grave types shows a chronological trend that can be related to the different population groups in this region. The urn graves, with and without pyre remains (U- and Us-graves) mostly date from the 1<sup>st</sup> century when military troops and possibly also civilians from the Gallic hinterland were settled in the fortresses and associated settlements. The *Bustum-graves* (Bu-graves) appeared when troops from the Balkan countries were moved to the Lower Rhine. These graves were also popular in the 2<sup>nd</sup> century. *Brandschüttungs-graves* (Bs-graves) and graves with 'clean' cremated bones (Cr-graves) appeared at the end of the 2<sup>nd</sup> century. *Brandgruben-graves* (Bg-graves) are abundant in both centuries and form the largest group. The Bg-, Bs- and Cr-graves are probably of indigenous origin and are not related to military presence in the border zone.

The urn and *Bustum-graves* indicate an adoption of other rituals by the local population. The variation in the *Bustum-graves*, with special treatment of the cremated remains or the deposition of an urn, points to a blending of various burial traditions.

The study has shown that on a higher aggregation level, that of the cemeteries, based on the combined physical-anthropological and cultural archaeological data meaningful conclusions can be drawn on the demographical and cultural features of the populations under study. This has led to a model for the composition of the population in the border zone of *Germania inferior* in the Early- and Middle-Roman period. In this region the native population was settled alongside civilians and soldiers from Gaul and military troops from the Balkan area.

The research possibilities give cause to the construction of a research agenda for *Germania inferior*. Several regions can be defined with each a diversity of habitation forms like military fortresses, large-scale urban sites, small-scale civilian settlements and villas.

Physical-anthropological and cultural archaeological investigations can give insight in the demographic and cultural characteristics of these areas and thus contribute to a better understanding of society in this part of the Roman Empire as well as the restrictions and possibilities of this approach.

