

Chapter 3

Archaeological Proof of an Abrupt Mortality Crisis: Simultaneous Deposit of Cadavers, Simultaneous Deaths?

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Abstract Several parameters have to be taken into account when considering the archaeology of death, including the number of the dead, differentiation between ‘cremation’ or ‘incineration’ and ‘inhumation’ and between ‘primary deposits’ and ‘secondary deposits’. In the case of a primary deposit, the simultaneity of the deposits demonstrates *ipso facto* the simultaneity or close proximity in time of the deaths provided that there is the possibility of prolonged conservation, either by cold, desiccation, or a particular environment. In the case of secondary burials, simultaneous deposits in no way indicate simultaneous deaths. Archaeology helps demonstrate the synchronous deposition of the remains of several bodies. Dating methods are generally ineffectual in this context. In some circumstances the excavation uncovers determinative information. Biological analysis of skeletons may also provide valuable information. Finally, there remains the information from the excavation. The nature of the dead must also be taken into account. It can thus be seen that, in the absence of textual or epigraphic data, the archaeological demonstration of an abrupt mortality crisis is generally possible only when inhumations take place inside structures in which the remains of a large number of subjects are assembled within a restricted space.

3.1 Introduction

When considering how the archaeology of death, in particular funerary archaeology, can draw attention to abrupt mortality crises, the definition of terms is of primary importance (Boulestin and Duday 2005). The most obvious distinction to be made concerns the number of the dead. The death of a variable number of subjects within a relatively brief period cannot be considered in relation to an isolated individual grave (i.e. a burial place containing the remains of a single individual), but only in relation

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to a complete funerary complex, which can be classified into several types. Cemeteries or necropolises assemble a number of graves (in general individual) within a defined space (sometimes delimited by a ditch, wall or fence). Each grave has its own architecture, in some cases a simple pit. Where the remains of several individuals are found within the same structure, Leclerc and Tarrête (1988) have suggested the use of the general term *sépultures plurielles* or 'plural burials'. Within this category, the term *sépultures multiples* or 'multiple burials' refers to burials where the deposition of several or many bodies is simultaneous – *sépultures doubles ou triples* or 'double or triple burials' being the *a minima* examples. On the other hand, *sépultures collectives* or 'collective burials' are the result of depositions staggered over a long period of time (often decades or, in some cases, several centuries). Obviously, this type of operation requires a system for opening and closing the funerary chamber as needed.

It is also usual to differentiate between 'cremation' or 'incineration' (treatment of the cadaver by fire) and 'inhumation' (an inappropriate term used to signify that the body has not been burned, whereas its etymology explicitly suggests the idea of placing in the ground).

Finally, as in the field of ethnology, which distinguishes simple and multiple funerals, archaeological literature contrasts 'primary deposits' (a recent cadaver, or part of a cadaver, that is still anatomically complete) with 'secondary deposits' made up of 'dry' bones no longer connected by ligaments because of decomposition or certain funerary practices (e.g. cremation).

3.2 Simultaneous Deposits, Simultaneous Deaths

In the case of a primary deposit, decomposition takes place at what becomes the final burial site of the body. As putrefaction of organic matter is a relatively rapid phenomenon, the deposition of several complete bodies implies that the subjects concerned died at or about the same time, within a period less than that necessary for the disarticulation of the first cadavers to have begun (this period is generally estimated as no more than a few weeks). It is thus considered that the simultaneity of the deposits demonstrates *ipso facto* the simultaneity or close proximity in time of the deaths.

This is a well-founded argument, provided that there has been prolonged conservation, either by cold, desiccation, a particular environment (e.g. peat bogs, anaerobic surroundings) that inhibits the action of bacteria active in the process of putrefaction, or a combination of several of these factors (for instance, the dry, very cold and well-ventilated caves found at high altitudes in the Andes). The prolongation or blocking of putrefaction may also be caused by a particular treatment of the cadaver (injections of antibacterial or fungicidal liquids, mummification). In such cases, it is of course possible to depose intact remains of subjects who died at different times in the same place, and examples of this abound (e.g. the catacombs of the Capuchin Convent in Palermo, but also morgues, or dissection rooms in medical schools). In very cold countries, when burial ditches could not be dug in the frozen ground, it was common to place the coffin containing the corpse in the snow on the

roof of the house until the thaw softened the ground at the same time as the process of decomposition (until then inhibited by the low temperatures) started. If several individuals from the same community died at different times during the winter, their intact corpses, conserved by the cold, could be interred simultaneously, generally in individual graves.

In the case of secondary burials, simultaneous deposits in no way indicate simultaneous deaths. A first example concerns burial after cremation. When a cinerary urn contains the burnt bones of two individuals, their bones sometimes lie in two well-defined and superimposed layers, but nothing indicates the length of time between the two ceremonies, which may have followed closely. The bones of the two individuals can, on the other hand, be completely mixed. In this case there is no proof that they were burned together, or, of course, that they died at the same time; it is perfectly feasible to burn a corpse, to keep the remains in a temporary receptacle until the death of the individual with whom they are to be associated, to burn this individual and, finally, to mix the bones of the two individuals in the same cinerary urn. Another example is that of Neolithic collective burials, where it is common to find the cranio-facial blocks and the long bones of the arms and legs arranged along the walls of the funerary chamber (dolmen, sepulchre or hypogeum). These practices, which take place after decomposition of the bodies, often concern the detached bones of a number of individuals; nothing leads us to suppose that they were put in place at the same time, nor *a fortiori* that the subjects died at the same time.

3.3 Demonstration of the Simultaneity of Deposits

If a relationship between simultaneous deposits and simultaneous deaths is envisaged, it remains to be seen how archaeology can demonstrate the synchronous deposition of the remains of several bodies. Conditions vary according to funerary practices and treatments.

Dating methods are generally ineffectual in this context, and do not allow precision on the order of days or weeks, either in the case of absolute dates (methods using physics or chemistry), or in that of relative dates (chronology of the different elements of associated accessories or equipment). Dendrochronology allows dating to within a year, or even a season, of course, but the chronological link between the felling of a tree and its use in a funerary context (built elements, coffin) must also be established.

In some, quite exceptional, circumstances the stratigraphy can be a determining contribution: this is the case when bodies have been suddenly buried by a mudslide, landslide, collapse of a wall or building (earthquake), or by volcanic ash (Pompeii or Herculaneum). However, these are natural catastrophes outside the funerary context.

In some circumstances, the excavation uncovers determinative information, for example, epitaphs where the date of death is explicitly indicated or commemorative inscriptions that relate a particular event (as is sometimes the case on battlegrounds). In historical periods, records may relate an abrupt mortality crisis and indicate the funerary site (e.g. Les Fédons, Lambesc) (Bizot et al. 2005; Moreau et al. 2005).

Biological analysis of the skeletons may also provide valuable information by showing that all the deaths at a given site have the same cause. This approach has been restricted for a long time to warlike activity (fatal injuries from weapons), but it is now possible in the study of epidemics thanks to the progress of molecular palaeobiochemistry (identification of the DNA of infectious agents, in particular *Yersinia pestis*). These methods are, of course, very costly and cannot be employed indiscriminately. It is necessary to restrict their use to funerary sites at which there are serious indications of a mortality crisis unconnected to a massacre or act of war, either by the very character of the deposit (cf. *infra*) or by peculiarities of the mortality curve [in such cases, the anomalies detected in the distribution by age group should reveal an ‘unnatural’ mortality (compared to a mortality outside a period of crisis) and not a selection biased for cultural reasons].

Finally, there remains the information from the excavation. Archaeoethanatology is totally ineffectual when the skeletons are not in direct contact with each other, for example, in cemeteries and necropolises, or in plural burials where the number of bodies is very low with regard to the available area (see Chambon 2003, about the tumulus ‘La Hoguette’ at Fontenay-le-Marmion). On the contrary, when several bodies are found in a restricted space the relative chronology of the articular dislocations may be used. If the deposits are staggered in time, the laying down of a new subject will inevitably perturb the arrangement of the skeletons already present; secondary gestures of ‘reduction’ (which do not correspond to true secondary burials) are frequently observed. However, if the deposits are simultaneous, the (articular) connections should be more strictly respected, because all the bodies will decompose at the same time; the displacements observed result from the action of gravity [with the exception of possible ulterior rearrangements (anthropic intervention, burrowing animals, water drip, collapse of structures...)], bones liberated by decomposition slip into the spaces freed by the disappearance of the soft tissue of the subjects underneath – these are principally vertical displacements.

This method is obviously much more effective than the usual dating methods employed in archaeology, the limits of discrimination being fixed to the time necessary for the destruction of the most labile articular connections (those loosened most rapidly during decomposition) (Duday 2005a, 2005b, 2006). This period is, however, of the order of a few weeks (it varies considerably according to climatic conditions and, naturally, funerary treatments) and thus it is not possible to differentiate between truly simultaneous deposits and those separated by a few days or weeks. Under some circumstances, this is not important as an abrupt mortality crisis is defined precisely as the death of a relatively large number of subjects within a relatively short period of time.

The nature of the dead must also be taken into account. The simultaneous death of several members of the same family, either in a traffic accident, poisoned by a dish of *amanita phalloides* (Death Caps), or intoxicated by carbon monoxide from a faulty boiler, while certainly a dramatic event in a household, represents no more than a news item in the town in which they live. In such cases, nobody would suggest an abrupt mortality crisis, and accidents of this type must be considered when a double or triple burial is uncovered during an excavation, as well as the reasons

for an inhumation at the same time within the same structure (this question can be profitably referred to in the remarkable work of A. Testart, dealing with ‘associated deaths’) (Testart 2004).

It can thus be seen that, in the absence of textual or epigraphic data, the archaeological demonstration of an abrupt mortality crisis is generally possible only when inhumations take place inside structures in which the remains of a large number of subjects are assembled within a restricted space. Although we can sometimes (more and more often) specify the relative chronology of the deposits in secondary burials, whether cremations or inhumations, we can in no way indicate the moment of death. As far as cemeteries and necropolises are concerned, it is very difficult to place the tombs on a timescale if they are dissociated, or even if they are adjacent or aligned; the information given by the possible intersection of pits and associated accessories or equipment is too imprecise to guarantee the necessary discrimination (of the order of a few days to a few weeks). It is therefore evident that, although the archaeology of death has made enormous progress in the study of these very particular funerary assemblages, methods for the recognition of all deposits that may be due to abrupt mortality crises are inadequate as yet.

It would seem that the use of large burial pits represents only one of the modalities – the most spectacular, but certainly not the only form – of management of cadavers in such contexts (the cemetery at Les Fédons is an excellent example). The archives indicate a connection with an epidemic of plague, and molecular palaeomicrobiochemistry has revealed the DNA of *Yersinia pestis*, but nevertheless most of the dead were deposited in individual pits. This may have resulted from urgent inhumation, perhaps when the rate of death was too rapid for gravediggers to bury each cadaver individually. They represent, nonetheless, a veritable funerary treatment [Thus military archives indicate that the pit at Saint-Remi-la-Calonne, where the German army inhumated the bodies of 21 French officers and soldiers (including that of the author Alain Fournier) killed on 22nd September 1914 at the front, represents without any doubt a true grave] (Adam et al. 1993) and in this sense provide fundamental cultural information. It is for this reason that comparison with the management of the cadavers at ‘normal’ times (outwith periods of crisis) is seen as a priority in archaeological funerary research.

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