

HUMAN TAPHONOMY AND HISTORIC CEMETERIES: FACTORS INFLUENCING THE LOSS AND SUBSEQUENT RECOVERY OF HUMAN REMAINS

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INTRODUCTION

"Taphonomy" can be defined as the study of what happens to the physical remains of animals after death, and how various death-related processes affect archeological and zoological interpretation. In general, two broad categories of variables can be identified as important in taphonomic studies: (1) individual or life-history variables, such as the physical characteristics or behaviors of the animal whose remains are under question, and (2) environmental variables that affect the remains, such as water transport or carnivore activity. When the subject of analysis becomes human remains, we must add a third category of variables: cultural and social influences, such as preparation of the dead and burial practices. The wide range and complexity of variables in this third category justifies a separate subfield of study, which I prefer to call "human taphonomy," focusing on the death-related forces that influence the discovery, recovery, and analysis of human remains.

Historic cemeteries are common features on the landscapes of practically every town and hamlet in the Northeast, and archeologists are becoming increasingly involved in locating and mitigating these cultural resources. In this paper I examine the various taphonomic factors that can contribute to the deterioration and eventual loss of historic cemeteries or portions thereof over time, as well as those factors that affect their subsequent identification and recovery by archeologists. By "loss" I refer primarily to the physical disappearance of surface features of a cemetery or burial plot, such as headstones, access roads and paths, and formally-recognized boundaries. Frequently, however, even the written histories, documentation of the interred, and grounds maps for a cemetery become lost. Eventually, the memory of the site becomes erased from the minds of the local inhabitants. As a result, the act of locating some or all of the burials can become extremely difficult for the archeologist. In many cases, previously-lost cemeteries are found quite by accident during construction work or subsurface survey. Large numbers of skeletal remains and their associated artifacts can be damaged as a result, their contexts and stratigraphy made unclear. For example, the Oneida Burial Site, a late 19th century poorhouse cemetery in Oneida County near Rome, New York, was discovered in 1988 only after construction workers with backhoes and other heavy machinery had already destroyed up to 100 burials (Nawrocki 1989, 1990). Human bones and artifacts were found eroding from large backdirt piles for months after archeological operations began there to remove the remaining intact burials. Thus it would benefit archeologists to be aware of the causes of cemetery loss and to enter into Cultural Resource Management (CRM) surveys knowing what features to look for when they suspect that unmarked burials may exist within the project area. These issues are especially important given the recent surge of both public and professional concern over the respectful recovery and proper disposition of buried human remains.

I have organized this paper loosely around two general levels of analysis. First I describe factors that may lead to the loss of entire cemeteries. I then briefly focus on processes that can obscure specific portions or subdivisions of a cemetery while leaving other portions intact. Certainly not all of these categories of variables as I have defined them are mutually exclusive, nor can all of them be

separated at more than a conceptual level. I have arranged them rather opportunistically around my own personal observations of cemeteries in the Northeast.

FACTORS INFLUENCING THE LOSS OF ENTIRE CEMETERIES

Size & Location. Obviously, size and location play major roles in the loss of cemeteries. Small, private "farmer's plots" holding members of one or a few families were quite common in rural communities even well into this century. These plots are frequently located in out-of-the-way areas behind the main homestead, such as on uncultivated hills at the juncture of fields or at the edges of wooded areas. With the decline of the small rural farmer during the past 50 years and the subsequent breakup of farmland into smaller parcels, these cemeteries commonly pass into oblivion, becoming overgrown with vegetation and forgotten. Plots that are more conspicuously placed along roadsides or on prominent geographic features such as hills may stand a better chance of surviving, although the paths that roads take can change as easily as land boundaries.

By contrast, one would expect that the larger, more centralized urban cemeteries that contain members of an entire community would fare better against the ravages of time. In fact, many Victorian-era cemeteries - both rural and urban - were designed as recreational parks suited for Sunday strolls and picnics and were well-maintained by associations formed specifically to manage them (McGuire 1988). Yet large size is not always sufficient to protect a graveyard. For example, recent investigations in Dallas, Texas have uncovered a previously little-known cemetery containing the graves of over 2000 freed slaves (Real 1990).

Unfortuitous locations of cemeteries can contribute to their loss. For example, flooding of the Chenango River throughout this century is reported to have washed away hundreds of burials from the Broome County poorhouse cemetery in Binghamton, New York (personal interviews). The cemetery was placed on a hill overlooking a bend of the river, which heavily scoured the bank when swollen. Landscaping and cemetery design. Cemeteries show a wide range of variation in design and basic arrangement on the landscape, and like the better-studied headstone, they can vary stylistically according to region and time of construction. Cemeteries sometimes show interesting adaptations to peculiarities of terrain as well. The designers of Hilton Cemetery, located in Troy Township in north central Pennsylvania, overcame steep grade problems on the hillside they selected by terracing. Each row of burials is placed on one of approximately eight 'tiers' that become progressively tighter in diameter as one ascends to the top of the hill, not unlike a circular Babylonian ziggurat. The headstones, which date from the late 19th well into the 20th century, face outward and are placed at the outer edge of each tier so that they can be read from below while one is standing on the next lower tier. A similarly-designed cemetery exists just outside of Deposit, New York, in Broome County, and thus the Hilton cemetery is not an isolated example.

This hillside arrangement has interesting ramifications for future archeologists who might be involved in its survey or mitigation. The design would seem to be particularly susceptible to erosion and thus demand considerable preventative maintenance and constant inspection while in use. The headstones might more easily tumble down from their rather precarious positions than in more traditionally-designed cemeteries, leading to more rapid loss of surface indicators. Additionally, the terraced design places the coffins and human remains close to two erosive surfaces - the top and side walls. Without reference to photographs, a physical anthropologist in the distant future might be hard pressed to explain why so many excavated skeletons are missing their feet (or heads).

Marker type. Most European cemeteries have some sort of above-ground marker system to indicate not only that someone's remains are placed there, but also to give some hint as to who they were, what they did, and when they lived. Marker styles range from the simplest uninscribed wooden crosses to ornate and costly stone tombs. Obviously, different types of markers will survive the ravages of time differently, having important implications for burial archeology and human taphonomy.

The mere presence of footstones in late 19th century cemeteries will essentially double the number of surface features available for detection by an archeologist conducting a walkover survey. On the other hand, more recent trends in marker and vault design will make matters more difficult. For example, some cemeteries have begun to require small, unobtrusive markers that lie flush with the ground surface. Not only do these markers blend in well with the surrounding countryside, but they also greatly reduce mowing costs.

Vegetation. A common practice in earlier cemeteries was to plant small bushes or trees such as arborvitae or cedar near or around particular burials or family plots. Many of these plants can actually grow to quite a respectable size if left untrimmed, pushing over the headstones and cracking vaults in just a few decades. The impact of vegetation on the buried human remains can be just as important, although not always in obvious ways. While heavy roots can stave in a coffin as easily as a skull, it is my experience that skeletal materials found in close association with the fine root tendrils of large hardwoods can be remarkably well preserved (Nawrocki 1989). It seems that these roots draw ground water away from the bone, helping to prevent the periodic soaking and drying that can crack and erode even the dense outer cortical layers of long bones.

A very interesting case of vegetation encroachment can be observed at a small cemetery outside of Groton, New York, in Cayuga County. A dense mat of myrtle covers the entire area, obscuring the ground features and a number of fallen headstones. The total effect, however, is not displeasing, and I assume that the mat was allowed to encroach as far as it has because it cuts down on trimming maintenance. No church or access road accompanies this cemetery, and it was probably used by the townspeople as a public burial ground. It is obvious, however, that a significant percentage of the burials are no longer marked on the surface, and all may eventually disappear.

Urban expansion and construction. It is no secret that cemeteries have frequently been relocated or destroyed in the face of urban expansion. During the construction of Interstate 81 north of Binghamton, New York in the 1960's, hundreds of Broome County poorhouse burials as well as Native American interments were hastily removed by local undertakers (personal interviews; see also McGuire 1989). Yet the numerous accounts of unmarked cemeteries found in downtown areas during construction activities and CRM surveys strongly suggest that more frequently than not, corporate recognition of the sanctity of the grave has not been overwhelming in the past.

Of course, large-scale construction is not the only source of attrition by expansion in historic cemeteries. When the Pine Bush Reformed Church in Orange County, New York, decided to add a small kitchen and organ wing to the back of their building, they apparently took great pains not to disturb, or at least to carefully replace, the headstones that came right up to the base of the building. Yet upon closer examination, it is difficult to believe that individual burials were not somehow affected by the construction, particularly by the builder's trenches. Even such simple factors as the alteration of ground water drainage patterns can have substantial implications for skeletal preservation (Nawrocki 1989). In addition, the proximity of the graves to the building suggests that any future reparations, such as fixing a leaky foundation, would have the potential to disturb human remains.

Small churches and their cemeteries frequently lie in close spatial association, and if a congregation has been in existence for quite some time, the archeologist must be aware that even small renovations could significantly impact burials. After the Immanuel Episcopal Church in New Castle, Delaware, burned to the ground in 1980, archeologists discovered six unmarked burials beneath the floor of the sanctuary (Roberts 1987). These graves predated an 1822 renovation and expansion of the church building, although they were apparently deliberately interred below pews. Thus the exact boundary between the church and its cemetery can become somewhat fuzzy, and one should not automatically assume that the bones end where the building begins.

Affiliation, ownership, and socioeconomic status. Of course, the official affiliation of a cemetery will affect its chances for survival over time. Specific ethnic groups frequently have traditional and unique ways of marking graves and constructing their cemeteries. The recognized symbolic functions or meaning of particular cemeteries are also important. For example, military cemeteries containing war dead frequently fall under federal or state government control and thus may be subject to different types of protection and maintenance, factors which can obviously influence the types of taphonomic processes that occur there.

The socioeconomic status of the interred can play an extremely important role in the long-term survival of a cemetery. Groups with low status, such as the poor, the institutionalized, and minorities frequently have no bulldogs to champion their cause in the face of extensive urban expansion projects. During a large expansion project in the 1930's at a state-run asylum near Rome, New York, hundreds of graves from an older poorhouse cemetery were destroyed (Nawrocki 1989, 1990). Since human bone fragments were recognized in many of the soil test borings that were taken well in advance of the construction, it is almost certain that the state knew of the cemetery and had a rough idea of its size and boundaries. This cemetery was rediscovered quite by accident during renovations in 1988, and extensive background research turned up almost no mention of it in the state or county records. Certainly, it would have been much less likely that a similar fate would have fallen on these burials had the cemetery held prominent, respected, and wealthy members of the community rather than indigents.

FACTORS INFLUENCING THE DIFFERENTIAL LOSS OF PORTIONS OF CEMETERIES

The loss of only certain parts of cemeteries may have important ramifications for osteological analysis. Individuals are usually not randomly assigned plots within a particular cemetery. Rather, one can observe significant clustering and sorting of individuals by, for example, familial and genetic affiliation and by status or rank. As a result, osteologists have to seriously consider whether their samples are truly representative of the society from which they were drawn, and whether their analyses of health, disease, and population composition (demography) are realistic.

Peripheral loss and socioeconomic partitioning. The edges of cemeteries are frequently more at risk to loss than more central areas. Vegetation, erosion, and development can gradually creep up and take markers and even complete burials located at the periphery. In all likelihood, these peripherally-placed burials will differ from those in other areas. For example, since in many cases cemetery expansion occurs at the edges as the number of interred individuals swells, those at the center will tend to have died at an earlier date and may thus not be truly representative either biologically or culturally of later populations inhabiting the area.

Similarly, the lower social classes were frequently buried at the peripheries in larger cemeteries, particularly until about the 1900s, after which the distribution of social classes within cemeteries became much more homogeneous (R. McGuire, personal communication). Special areas designated for paupers, criminals, and the institutionalized were not uncommon. Since the town had to pay for many of these burials, grave markers were typically simple and inexpensive, consisting of wooden plaques or small stones - factors contributing to easy loss. Age-related partitioning was also common. Unbaptized children and fetuses were often placed in separate areas or else buried unmarked in pathways and corners to avoid using up valuable plot space, a practice that continues, legally, today. The problem presented to osteologists and demographers by peripheral loss is compounded by the fact that these burials will probably be increasingly excavated by archeologists in the future. Civil awareness of buried human remains is on the rise, and many communities have organized to prevent urban expansion from carelessly destroying known or suspected burial grounds. If developers are faced with the extreme costs of removing and reburying the remains, they may opt to reroute their construction activities so that the size of the mitigation is reduced. As a result, the peripheral burials are more likely to be impacted than the central ones. I find it intriguing as a physical anthropologist that most of the large collections of 19th and 20th century American skeletal remains - originating from both anatomical dissecting rooms and from archeological contexts - come from the lower socioeconomic classes. Certainly our interpretations of even basic biological data relating to stature, health, and disease can be greatly influenced by these potentially-biased samples, and it does not appear that these biases will be corrected in the future by CRM activities.

Coffin design and preparation of the dead. Coffins provide the first and sometimes the only line of defense against the elements for buried human remains, and different varieties of coffins convey different levels of protection. The intricate lead-lined metal coffins popular during the Civil War era can preserve bones and even soft tissues remarkably well. Above-ground vaults have the same effects on their occupants, primarily because they protect the remains from water. At the other extreme, cardboard coffins were frequently used in the past for pauper burials and offered little protection. A wide range of coffin types exists between these extremes, and variables such as basic design, type of wood, the use of paints, and the types of nails used can all alter a skeleton's chance for survival over time.

A recent trend is to place the entire coffin in a sealed rectangular concrete case, which is then lowered into the ground by a backhoe. Because they are large and heavy, they are likely to survive well and protect their contents from the outside environment. Future excavators encountering them would probably be required to move the whole ensemble unopened directly to the reburial location, precluding osteological analysis.

The preparation of the body itself is also important. Embalming, which became popular during the Civil War because it allowed dead soldiers to be transported long distances to their home towns, has been known to preserve buried soft tissues for as long as a hundred years. Embalming is still widely practiced in the United States. Other factors such as the use of burial shrouds and clothes and cremation must be figured into the preservation equation.

Other factors. A vast number of other taphonomic variables can contribute to the loss of individual burials, and I will only briefly mention some of them here. Groundhogs are common features in cemeteries, and not only can they disturb burials, but they can be directly responsible for the identification of subsurface archeological deposits during survey. Deliberate human intervention can also play a significant role in the life-history of the cemetery, ranging from the casual resetting or retrieval of fallen headstones to organized efforts by civic-minded communities to restore entire

sections of a cemetery. Unfortunately, however, it seems that incidents of deliberate damage and vandalism far outweigh the good-intentioned acts of kindness towards cemeteries.

CONCLUSION

Cemeteries are uniquely important cultural resources because they not only contain information on the beliefs, customs, and world views of a society, but they also preserve the biological remains of their makers. Cemeteries thus provide substantial opportunities to create integrated and multidisciplinary approaches to the study of the human past. Human taphonomy embodies the recognition that the study of skeletal materials can never be separated from a basic knowledge of both the environmental and sociocultural factors that affect buried remains.

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