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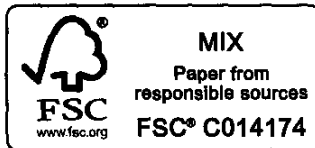
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Dating of Garbage Deposition

Garbage leaves a fossil record, the accumulation and degradation of which can be dated to bring insights into patterns of consumption and waste. The origins and methods behind the dating of garbage have an interesting history. Cultural behaviors relative to the formation of trash deposits can be analyzed with relative and absolute dating methods.

Significance

Why date garbage? The answer lies deep in the history of scientific thought and the study of the past. In late-18th-century Western Europe, scientists were looking for ways to understand the origins of geological deposits, challenging the assumed recent origin of the planet. While their efforts ultimately led to the recognition of the Earth's antiquity, they also cleared the way for an empirical study of the past. As field research intensified in the 19th century, the discovery of ancient stone tools alongside the remains of extinct animals showed the utility of stratified deposits to date ancient artifacts. More importantly, it became apparent that the bulk of past cultural remains is composed of refuse—objects and other remains that have been produced or modified by humans but which have lost their usefulness, becoming garbage.

Methods

The discard of trash and its accumulation are different than geological depositions. Consequently, garbologists (archaeologists who specialize in the study of rubbish and refuse deposits) have developed methods to order, sequence, and date trash deposits, from fresh rubbish to ancient archaeological contexts. Broadly, garbologists rely on two categories of dating strategies.

First, patterns of accumulation and superimposition of buried deposits can serve to create relative sequences of events. These patterns can bring insights into the conditions and the time elapsed throughout periods of trash deposition. The number of distinct strata as a proxy to the number of discard events, coupled with the thickness and compaction of the deposits, can all point toward frequency, intensity, and length of the use of middens (heaps of rubbish

that represent the accumulation of daily refuse). Meanwhile, comparisons of changes through time can shed light on historical events and broader social changes. More broadly, stratified middens can be organized into broad periods by looking at the characteristics of broken artifacts and their change over time.

Second, the analysis of the physical and chemical properties of garbage deposits can provide chronometric and absolute dates. Chronometric measurements from stratified deposits give archaeologists the opportunity to place sequences of deposition in an absolute time frame. The most commonly used chronometric techniques for dating ancient garbage are radiocarbon and, more recently, accelerator mass spectrometry (AMS). Radiocarbon methods measure the decay of a radioactive isotope (C-14) to evaluate the time elapsed since the death of a living organism. These techniques can be advantageously applied to many types of rubbish, including animal bones, charcoal, plant remains, shells, and paper. Precautions are needed when interpreting radiocarbon results, including archaeological associations to contamination, accuracy, and precision. Nevertheless, coupled with relative sequencing, chronometric dating is a powerful tool to date middens and their formation.

Challenges

The challenges of interpreting the chronology of garbage deposition are manifold. At the most basic level, a distinction has to be made between primary and secondary refuse. Primary discard typically happens at the place where trash is produced, whereas secondary depositions imply a certain delay in discard, such as the storage or transportation of trash away from the original activity area. The context of a hearth located in the vicinity of a habitation area where there is evidence for food processing and consumption provides a viable example. In this case, the discovery and radiocarbon dating of burned organic trash can provide a range of absolute dates for activities associated with that same household. Here, it can be assumed that the dating of a garbage deposition is somehow representative of the time when that trash was produced and discarded. In opposition, in the context of secondary trash deposits such as construction and landfills, gar-

bage may have been accumulated and stored for an unknown amount of time before it was discarded. In this particular instance, absolute chronometric measurements provide a range of dates associated with the production of waste, rather than its discard. Moreover, secondary deposits might possibly contain remains from various places and primary activity areas, leaving the chronological interpretation of mixed trash uncertain.

Study and Cultural Interpretation

Middens are the materialization of complex actions and meanings reflected in heavy garbage deposits. The study of garbage deposition thus requires a consideration of cultural variables, including curative and recycling practices, the impact of trash on immediate human life conditions, cultural habits, symbolic meanings, and the ritual use of waste. Trash represents the sum of discrete events situated at unique space-time intersections, and—although it is subject to similar and uniform postdepositional processes—its formation is as culturally laden as any other human behavior.

Archaeologists and other trash specialists must differentiate and characterize the types of garbage deposition to be dated and their respective implications. Modern garbologists might be interested in assessing garbage deposition on a daily or weekly basis, while prehistorians might focus on seasonal patterns of hunting and fishing. The Garbage Project of the University of Arizona, for example, keeps track of individual trash pickup events with detailed time and day data. In contrast, the study of prehistoric state societies often deals with mixed deposits and multiple discard events. Here, the objective might be to evaluate amounts of trash produced and discarded over specific periods of time as proxies for past demographics and patterns of consumption through time.

Processes of decomposition and preservation are also key to date garbages, as the rates of material decay vary whether refuse is deposited in open air dumps, housepits, or landfills. Modern garbologists monitor the production of biogas such as methane to evaluate the rate of biodegradation in different landfill contexts. In contrast, research at ancient cave sites might focus on stone tool debitage and fossilized bones.

The dating of garbage deposition must be considered from a situational perspective in relation to specific preservation conditions, types, and life cycles of refuse, as well as corresponding research questions. The complexity of garbage deposition points toward the importance of developing adequate schemes to date, sequence, and understand discard events.

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See Also: Archaeological Techniques, Modern Day; Archaeology of Garbage; Archaeology of Modern Landfills; Garbology.

Further Readings

Maschner, H. D. G. and C. Chippindale, eds.

Handbook of Archaeological Methods. Lanham, MD: Altamira Press, 2005.

Rathje W. and C. Murphy. *Rubbish: The Archaeology of Garbage.* Tucson: University of Arizona Press, 2001.

Definition of Waste

The term *waste*, as a noun used colloquially, means some form of devastation such as wasteland; on a smaller scale, it is synonymous with rubbish, garbage, and trash. Waste also has specific meanings, defined for a particular purpose. In economics, waste implies the unproductive use of resources. For example: labor used to move work-in-progress around a factory is defined as waste because the cost incurred in doing so adds no value to the finished product. To protect the environment, governments in many developed countries define waste to include, in effect, every conceivable substance in any conceivable form. Comprehensive definitions enable regulators such as the Environmental Protection Agency to control as tightly as possible the disposal of anything that might potentially injure the environment. Such definitions, however, may not be conducive to achieving optimum results.

Implications for Industry

Historically, substances discarded as waste have been dumped, typically in dedicated landfills, waterways,