



Earth Common Journal
Convergence
MacEwan University
Volume 5, Number 1, September 2015

Article

A Tale of Garbage

Ian McTaggart

MacEwan University, Canada

Abstract

In 1973, an American archaeologist named Dr. William Rathje sought to create a method that would help his students understand the intricacies of archaeological fieldwork. Dr. Rathje recognized that his students at the University of Arizona were having a difficult time understanding cultural remains from the past (Rathje, 1979, p. 4), so his idea was to use contemporary cultural material waste as a study tool. He named this method “The Garbage Project.” Given that the project took place during 1970s and students of the time were far removed from potsherds and post holes, it made sense to articulate archaeological sites in a contemporary way. Over time, this process would come to be known as *garbology*, which has come to inform both past research and present-day disciplines such as economics and public policy. This paper will outline the cross-discipline benefits that archaeology brings to modern society, including how it informs us about sustainability issues and how human societies interact and identify with their waste.

Garbology: The Archaeology of Today

Garbology is, in essence, modern-day archaeology; however, before delving into the definition of garbology, it is important to understand the role of the archaeologist. While common stereotypes cast archaeologists as treasure hunters seeking trinkets from societies long gone, this simplistic view does not fully encompass the job. According to Rathje, archaeologists are “scientists that scrutinize the material remains they come into contact with, in order to reconstruct the behaviour involved in their production, use and eventual discard” (1974, p. 236). Archaeology is carried out in a systematic, detailed, and rigorous manner. While most work in the field relates to societies from long ago, there is no requirement for this to be so. Since garbology is the study of contemporary remains versus ancient ones, archaeologists’ ability to work across time and space is what allowed the study of garbology to develop.

Garbology is the study of humans in our own lifetimes. Rather than potsherds, arrow points, post holes and city walls, garbologists study modern day waste. Through landfill excavation, these scientists study how organic materials decompose in various matrices, identify how waste shifts and transforms over time, and then draw conclusions about artifacts and behaviour. From an archaeological perspective, garbology contributes directly to “teaching Archaeological principles, testing Archaeological principles, doing the Archaeology of today and relating our own society to those of the past” (Rathje, 1979, p. 4). Basically, garbology is an applied science that explores how humans dispose of, and create, waste.

Garbology studies are commonly used as a way to verify public opinion polls conducted to determine waste creation and disposal in various urban and rural centres. Garbology can oftentimes provide empirical evidence that contradicts what people are self-reporting. Since the inception of “The Garbage Project,” researchers like Dr. Rathje began to notice that empirical findings from the study of landfills did not add up with what city officials and the landfills themselves had been reporting. One of the areas that highlighted this in his earlier studies was the idea that fast food packaging created the most waste in terms of waste going to landfill. Dr. Rathje noted in a 1988 newsletter that residents of San Francisco, Chicago, and Tucson reported in a public opinion poll that fast food containers, and especially Styrofoam containers made up anywhere from 5 to 35 percent of landfill waste, with the majority of responses stating 20 to 30 percent. What Dr. Rathje found in examining their landfills like an archaeologist was that fast food waste only made up 0.26 percent% by weight and 0.27 percent% by volume (Rathje, 1988, pp. 3-4). Some of the discrepancy in public perception of waste versus its reality may be due to the visibility of certain types of garbage around us.

Modern industrialized societies literally face an uphill battle concerning waste production, waste storage, waste disposal, and environmental degradation. Specifically, issues arise when researchers consider how modern societies deal with the vast amount of waste that is generated. To highlight the magnitude of the problem, one ought to think about the fact that nearly every urban centre uses a landfill to dispose of its waste. These landfills become full, new ones need to be created, and precious land is eventually filled with garbage. Furthermore, huge amounts of waste are not just being deposited into the earth but also into our oceans, rivers, lakes, and into space. Despite the current prevalence of environmental responsibility, waste generation is not declining; in fact, as “The Garbage Project” shows, the exact opposite is happening (Mervis, 2012, pp. 664-667). Between 1980 and 2005, total waste generated in the United States went from 600 KG per capita per year, to just under 900 KG per capita per year (Mervis, 2012, p. 667).

Garbology as a discipline is simply a series of methods based on time-tested and refined methods from archaeology. Working in landfills is also beneficial, in that everything is deposited layer upon layer over time and in a defined space. Landfills themselves are compartmentalized into what are termed “lifts” (Rathje, 1992, p. 438), which are composed of hundreds of cells depending on landfill size. These cells are filled with refuse daily and covered with a thin layer of dirt. Once the layer is completely filled, another layer of soil up to 1.5 metres thick is placed on top and a new lift begun (Rahtje, 1992, p. 438). Thus, landfills are an ideal place to perform archaeological undertakings. Sites are homogeneous, compartmentalized and stratified in nature, with the newest layers at the top. The artifacts uncovered are also contemporary and not as affected by bias or cultural relativism as artifacts from cultures long ago.

Scholars in other disciplines already recognize that historical literary evidence is sometimes incomplete and not representative of the history or the society under study; however, contemporary scholars seem to not view our current society in the same light where gaps in the written records of human behaviour clearly exist (Rathje, 1979, p. 10). Few behavioural scientists in the 1970s and 1980s collected data in a systematic or quantitative manner. This was then compounded by the data itself being collected in ways that have a built in bias, like public opinion polling or surveys (Rathje, 1979, p. 10). Even to this day, many public policy decisions are made using data collected in unreliable ways. Seeing the obvious perception issues related to fast food packaging, it could be safely stated studies like “The Garbage Project” contribute to a better understanding of waste and human interaction with waste. It can also be a tool for policy planners when determining what approaches to take when tackling waste issues in the future.

Garbology has also been used to critique public policy concerning landfills. One of these critiques concerned landfill waste from corporations. Many landfills from the 1950s through the 1990s failed to catalogue huge aspects of what made up their landfills. An example of this is what Dr. Rathje referred to as “C/D debris,” or waste deposited by contractors and companies in the construction industry. This waste included anything from rebar and concrete slabs to wooden posts. Most municipalities could not keep track of this waste because private contractors were directly responsible for the disposal of this waste into landfills (Rahtje, 1992, p. 441). When this bias was removed during the years of “The Garbage Project,” it was discovered that this waste made up almost 20 percent of the total garbage that was not being taken into account in calculating landfill life cycles (Rathje, 1992, p. 441).

Another valuable finding from the early days of “The Garbage Project” was how landfills measure the lifecycle of landfills themselves. From the 1970s through the 1990s, the lifecycles of landfills (how long until the landfill needed to be closed due to reaching capacity) were measured in weight. The cost of transporting the waste to the landfill was based on the weight of the product; thus, when so much weight of garbage had been deposited into landfill, the landfill was at capacity. Dr. Rathje and his studies in garbology showed that the lifecycle of landfills should instead be measured by volume (Rathje, 1992, p. 439)—a logical adjustment given that a landfill is a stationary object occupying a finite space. It also makes sense because different types of material decompose at different rates under different conditions. That is, not all landfills are uniform in moisture content, soil composition, or even usage.

Another matter that arises when studies of this nature take place is how (or if) human nature and culture determine what is thrown away and what is not. Some objects are viewed as antiques and kept away from the refuse cycle by collectors. These items range from old to brand new (as in the case of comics and baseball cards); however, a great deal of material culture finds its way into some form of waste stream. The question then becomes, what can studies like garbology share about why these items end up being thrown away, and is there anything we can do to prevent this from occurring? Evidently, this is an area that requires further study.

Garbage and Economics

Humans and garbage go hand in hand. One would be hard pressed to consider human activities that do not create some form of waste. Even the prehistoric production of stone tools and flint arrowheads created waste. The problem we have today is the sheer volume of waste individual humans generate; however, we must not assume that all cultures or

peoples are equal in this regard. Studies show a strong correlation between wealth and waste. Wealthy nations, for example, create on average 2.1 kg of material waste per day per capita, while poorer nations produce 0.60 kg of material waste per day per capita (Mervis, 2012, p. 665). Much of the variance comes from packaging materials. In the United Kingdom, for example, nearly 25 percent of landfill waste is from packaging material, which has increased dramatically over time (Gray, 1997, p. 70). This same study on packaging materials in the United Kingdom also found that "68% of household waste is compostable, 68% is combustible and 60% is recyclable, yet 90% of waste in the United Kingdom is landfilled" (Gray, 1997, p. 70). Another notable finding from the study is that less than 15 percent of all waste came from households with recycling efforts. The majority of waste going to landfill was made up of industrial and commercial waste, which for the most part had little responsibility in reducing their waste (Gray, 1997, p. 70).

One would assume that with industrial and commercial waste making up the bulk of waste in landfill, there would be greater incentive to reduce this in terms of profit or governmental policy. Waste created from the production of materials that eventually end up in landfill has a net negative impact on any producer's bottom line. Another negative impact is the huge amount of resource development required in order to meet the needs of the continued manufacturing itself, which then creates even more waste.

There is also the issue of technology and waste. Simply put, wealthier countries are more likely to have newer technologies and therefore more waste than lower income jurisdictions. This is not to say that people in low-income countries do not create electronic waste or "e-waste," but the proportion is on a different scale—e-waste is turning out to be a significant problem simply due to the culture surrounding technology. In the USA, for example, consumers dispose of nearly 400 million electronic items per year, resulting in the deposition of more than one million tons of e-waste (Plambeck and Wang, 2009, p. 333). The problem surrounding e-waste is the culture of its users as a whole. Once a new electronic device comes out, the older devices are no longer desirable and sales focus solely on the newest model. This forces producers of electronics to introduce products too rapidly, with poor functionality, with little thought to disposal or lifecycle, while also enjoying periods of short profitability before the device is duplicated by someone else (Plambeck and Wang, 2009, p. 333). This impacts the environment, resource development, and waste generation. How is this sustainable? Can a society be sustainable when the economy of that society is based on consumption? Is consumption sustainable or is there some dichotomy between the two stances that needs to be equated and figured out?

The final aspect of garbage and economy is recycling. Recycling has the obvious advantage of reducing waste while also reducing resource development and environmental degradation. As formerly mentioned, “The Garbage Project” demonstrated that even with recycling initiatives, waste has increased. A plausible explanation is that cost of throwing something away is less than the cost associated with not producing the waste in the first place, or recycling it. This also seems to be true in the way humans seem to treat garbage in and of itself. For example, newspapers have been recycled for decades, yet they are still being thrown away and make up roughly 11 to 14 percent of waste going to landfill (Rathje, 1988, p. 3). Is there a positivist image associated with recycling that makes objects deemed recyclable more likely to end up in landfill? Over the last few years we have seen this in modern culture concerning plastic bottles. Again, plastic bottles have a positive image due to recycling and bottle return, yet untold numbers end up tossed away in our landfills and waterways.

With this there has also been an increase in products with a known recycling image that still up in the waste stream, such as aluminum. A 2010 study by the U.S Geological Survey (USGS) suggested that the recycling of aluminum was having less of an effect than was previously thought (Mervis, 2012, p. 672). This is largely due to the expected rise in the demand for the metal itself. Over the next few decades, the rise in the need for aluminum is expected to triple in usage with most of the demand coming from developing countries (Mervis, 2012, p. 672). Developing countries are primarily using, and plan to use, aluminum for infrastructure projects like bridges and buildings, thereby removing the ability to have it recycled in the short term. The aluminum currently being recycled in the developed nations will not be able to meet demand with the usual outcome of more resource development and environmental degradation (Mervis, 2012, pp. 672-673).

Conclusion

Garbology can play a role in finding better ways to not just deal with our waste, but to stop the creation of it in the first place. The ideas first proposed by Dr. William Rathje in the early 1970s are still having profound effects on our understanding of waste—even today. Western society still favours disposing of waste versus stopping the creation of it. This is exemplified with greater technology and energy being used to eradicate human material waste—and this is not sustainable. We have designed incinerators, deep well injection sites, carbon sequestration mechanisms, sanitary landfills and toxic waste dumps, all in an effort to separate ourselves from our waste. Perhaps this energy could be better used to dispose of waste. Perhaps it could be more cost effective to find a way to stop

reducing waste in the first place. This is especially true when we consider space garbage and the hazards that exist as humans begin to travel more in space.

On a governmental level, the focus of policy and initiatives appears to be placed on educating consumers and changing behaviour. While this is a goal that should be praised, it also must be contrasted with the role industry plays. Garbology studies show that the largest contributors to the waste stream are the commercial and industrial sectors of western society. It must be noted that this paper is not exhaustive, and that many more examples of failed policies regarding waste creation and disposal exist. Everything humans create, including what is thrown away, has an inherent cost. Once this reality comes to the forefront of people's minds, maybe society can find solutions regarding waste.

*Author: Ian McTaggart is a student in the Bachelor of Science, Anthropology program at MacEwan University.

References

- Ashenmiller, Bevin. *Cash Recycling, Waste Disposal Costs, and the Incomes of the Working Poor: Evidence from California*, *Land Economics*, Vol. 85, No. 3 (Aug. 2009) pp. 539-551.
- Deweese, Donald N. and Hare, Michael J. *Economic Analysis of Packaging Waste Reduction*, *Canadian Public Policy / Analyse de Politiques*, Vol. 24, No. 4 (Dec., 1998), pp. 453-470.
- Farina, Blaise. *A Portrait of World Historical Production and World Historical Waste after 1945*, *Review (Fernand Braudel Center)*, Vol. 30, No. 3 (2007), pp. 177-213.
- Gray, Murray J. *Environment, Policy and Municipal Waste Management in the UK*, *Transactions of the Institute of British Geographers*, Vol. 22, No. 1 (1997), pp. 69-90.
- Lindenlauf, Astrid. *The Sea as a Place of No Return in Ancient Greece*, *World Archaeology*, Vol. 35 No. 3, *Seascapes*, Dec 2003 pp.416-433.
- Mervis, Jeffrey. *Working with Waste: World of Waste*, *Science Magazine*, Vol. 337, August 2012 pp. 664-667.
- Mervis, Jeffrey. *Garbology 101: Getting a Grip on Waste*, *Science Magazine*, Vol. 337, August 2012 pp.668-672.

- Plambeck, Erica and Wang, Qiong. *Effects of E-Waste Regulation on New Product Introduction*, Management Science, Vol. 55, No. 3 (Mar. 2009) pp. 333-347.
- Prothero, Andrea, Dobscha, Susan, Freund, Jim et al. *Sustainable Consumption: Opportunities for Consumer Research and Public Policy*, American Marketing Association, Journal of Public Policy & Marketing, Vol. 30 (1) Spring 2011, 31–38.
- Rathje, William L. *The Garbage Project: A New Way of Looking At the Problems of Archaeology*, Archaeology, Vol. 27, No. 4, (October 1974) pp. 236-241.
- Rathje, William L. et al. *Discussion and Debate: Behavioural Archaeology: Four Strategies*, American Anthropologist, Vol. 77, 1975 pp.864-868.
- Rathje, William L. *Modern Material Culture Studies*, Advances in Archaeological Method and Theory, Vol. 2 (1979), pp. 1-37.
- Rathje, William L. *The Garbage Decade: The Materialist Bias an Archaeology of US Garbage*, The American Behavioral Scientist (pre-1986), Sep/Oct 1984, pp. 9-28.
- Rathje, William L. *Fast Food Plastic in Landfill Garbage*, American Anthropological Association: Anthropology Newsletter, Vol. 29, No. 3 March 1988 pp.3-4.
- Rathje, William L. et al. *The Archaeology of Contemporary Landfills*, American Antiquity, Vol. 57, No. 3 (Jul., 1992), pp. 437-447.
- Rathje, William L. *Archaeological intervention in the past, present and future tense*, Archaeological Dialogues, Volume 18, Issue 02, December 2011, pp 176 - 180.
- Rathje, William L, Shanks Michael and Witmore Christopher (editors) 2013. *Archaeology in the Making: Conversations Through a Discipline*, New York, Routledge.
- Reschovsky, James D. and Stone, Sarah E. *Market Incentives to Encourage Household Waste Recycling: Paying for What You Throw Away*, Journal of Policy Analysis and Management, Vol. 13, No. 1 (Winter, 1994), pp. 120-139.