

## William L. Rathje, Father of Garbology<sup>1</sup>

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Even before he finished his Harvard dissertation on the Classic Maya, the late William L. Rathje was hired by the Department of Anthropology at the University of Arizona. In the next few years, he published many scholarly articles on the Maya, some with memorable titles such as “Praise the Gods and Pass the Metates,” and “Last Tango in Mayapan.” His fresh ideas on trade, religion, and other topics established for Maya research a new agenda. By the time he was 30 years old, Rathje had become the preeminent young Mayanist. Then something unexpected happened.

A brilliant teacher of undergraduates, Rathje had assigned an open-ended term paper to one of his first archaeology classes. He received many creative papers, but two in particular grabbed his attention. The students had surreptitiously collected garbage from street-side trash bins at several houses in two neighborhoods—one wealthy, the other poor. The

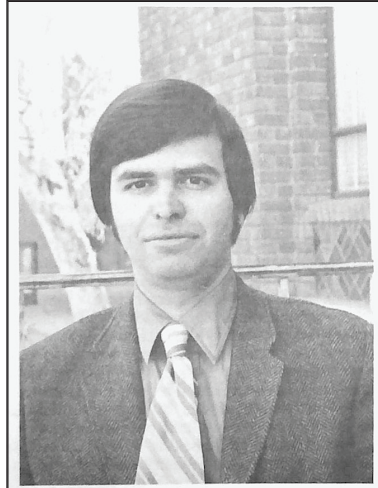
students’ hinted that households in different neighborhoods discard different items (Rathje and Murphy 1992:20). Rathje immediately grasped the possibility that research on household garbage might yield new insights into modern human behavior. After all, if we can learn about ancient societies from their garbage, then we should also be able to learn about modern societies from their garbage (Rathje and Murphy 1992:11). What’s more, no other social or behavioral scientists had staked out garbage as their research domain. Ignoring snickers from some archaeologists, in 1973 Rathje founded the Garbage Project, also known as the *Le Projet du Garbage* (Rathje 1974).

Rathje conceived the Garbage Project as a versatile tool in search of applications—any applications. In his words, “The primary goal of the Garbage Project is to explore the potential contributions of refuse research by providing valuable data to as many researchers and policy planners in

<sup>1</sup> William L. Rathje was a mentor, colleague, and friend whom I miss greatly. Some information in this section came from his resumé on file at the School of Anthropology, University of Arizona. I have also added “color” commentary.

as many areas of interest as possible" (Rathje 1984:12). Because the Garbage Project offered a unique window into actual human behavior, its findings could serve as a baseline for predicting the effects of a new activity or technology, perhaps helping to prevent avoidable tragedies such as "urban renewal projects that create slums, toys that harm children, cleaning products that pollute, medicines that cause disease, energy-saving devices that use more energy, and fail-safe devices that fail" (Rathje 1984:12). Rathje pursued his vision relentlessly, trying to convince researchers across the academy and in the business world—as well as policy makers—that the Garbage Project might answer some of their pressing questions.

With the collaboration of the City of Tucson Sanitation Division, which owned the trash bins and their contents, Rathje secured samples of household garbage from diverse Tucson neighborhoods. Bags of garbage were delivered to the Sanitation Division's maintenance yard for sorting, counting, and weighing of individual items. On a lengthy form the sorters



(Photo S. Luebbemann)

WILLIAM L. RATHJE  
Ph.D. Harvard University 1971  
Assistant Professor

Areas of Specialization: Complex civilizations, especially Mesoamerica, the Near East, and Peru; modern material culture.

Courses: (1) Anthropology 1a with Hermann Bleibtreu; (2) Anthropology 135, Prehistory.

Aims: (1) To survive the course. (2) To present a series of approaches to the study of culture process illustrated by studies drawn from a spectrum that represents the widest possible range of archaeological time and space. The approaches are also being applied in independent studies of modern material culture by 135 students.

Research and Field Experience: Grasshopper 1966; Thesis research involving analysis of 1009 Lowland Maya burials. Future research: a four-week survey in Northern Yucatan with special emphasis on housemound distributions and trading sites. This work will form the basis for a proposed two-year excavation project in cooperation with Jeremy Sabloff of Harvard; Research advisor to the Royal Ontario Museum's planned excavations in the Lambayeque Valley, Peru, 1971-1976.

**Figure 41:** A brief biography of Dr. William Rathje, posted in the 1971/72 issue of the *Atlatl* aimed at fostering faculty and student communication. The faculty profiles provide insights into faculty member's sense of humor, their expectations of students, and their research agenda. This profile predates the Garbage Project, highlighting Rathje's Mesoamerican research. *Atlatl* re-print courtesy of Arizona State Museum Archives.

tallied the contents of each household's trash and entered them into a computer database. To preserve the anonymity of the families, the sorters recorded no addresses or names. Sorting became much more convenient when, a decade later, garbage was delivered to the University of Arizona campus (Rathje and Murphy 1992:63).

The sorters were student volunteers in archaeology classes; wearing gloves, they pawed through everything from half-eaten T-bone steaks to rotting fruit and disposable diapers. This was not glamorous work, but Rathje's ability to recruit dozens of students, year after year for more than two decades, testifies to his passion for the project and to his ability to communicate its importance to would-be volunteers. And it helped that he was a gregarious and charismatic leader. However, aware that his own management skills were sketchy, Rathje put the project's daily operations in the hands of Wilson Hughes, his very capable co-director and field supervisor.

Because the Garbage Project required ongoing funding, Rathje spent a great deal of time writing grant proposals to government agencies and soliciting contracts from businesses. And he was very successful, winning grants

from the National Science Foundation, Department of Agriculture, Environmental Protection Agency, and the National Cancer Institute. He also obtained contracts with dozens of companies including Frito-Lay, Procter and Gamble, and Miller Brewing Co. It must have given Rathje, a notorious beer lover, satisfaction that a big-time brewer was supporting his research.

By the late 1970s, Maya archaeology had taken a back seat to garbage studies in Rathje's research. When archaeologists began to realize that his move to garbage was not a brief dalliance but a committed relationship, some were appalled and wondered why he would "throw away" his Harvard degree and stellar career as a Mayanist. But Rathje wanted to make his mark in the world, and for him the world of Maya archaeology was a little too small.

Rathje was especially eager for the Garbage Project to help remake social science by documenting many aspects of human behavior more accurately than the recollections and attitudes sampled by interviews and questionnaires. These venerable social-science tools, it is well known, are subject to all kinds of errors and biases. After all, people cannot recall all of their activities, they may mis-



**Figure 42:** A student archaeologist sorting household refuse in Tucson, Arizona on behalf of Dr. Rathje's *Projet du Garbàge* in the late 1970s. Image courtesy of the Arizona State Museum Archives.

lead and lie and be mistaken, and they may shape their responses to meet what they believe are the researcher's expectations. Though smelly and gross, garbage data do not suffer from these problems and can furnish evidence of many behaviors in material form. In addition, Rathje believed that decades-long records of household garbage might reveal unsuspected behavioral trends and patterns—and they did.

Beginning in the Spring of 1973, the United States suffered a beef shortage that lasted through Sep-

tember; many cuts were scarce and prices spiked. Rathje wondered if the Garbage Project could discern whether the shortage caused a change in the amount of beef wasted. Fortunately, meat packaging is "labeled with the type of cut, the weight, the price, and the date" (Rathje and Murphy 1992:60). These data were duly recorded for a period lasting 15 months. The results were very puzzling. During the shortage period, 9 percent of the beef brought into the house was wasted, but after the shortage the

wastage dropped to 3 percent. When beef was in short supply, Rathje suggested, people bought larger amounts than usual as well as unfamiliar cuts. Perhaps some of the beef couldn't be stored or prepared effectively, and so wastage increased. These findings led to the "First Principle of Food Waste:...the more you eat the same things day after day—the less food you waste" (Rathje and Murphy 1992:62). This is a simple principle but it has profound implications for managing household purchases: variety may be the spice of life, but in the case of food it comes at a price.

Another study relating to household management examined package sizes. A widely accepted hypothesis, one that had never been tested on material evidence, was that poor households buy items—from rice to laundry detergent—in smaller packages than wealthy ones, and so the poor pay more per ounce of contents. The period of rampant inflation and stagnant wages during the mid and late 1970s provided an opportunity to test this hypothesis. Focusing on canned foods, the Garbage Project found that wealthy households bought more large cans but poor ones bought more small ones. The hypothesis was supported, which allowed Rathje

to develop one of its implications about proposed product-disposal charges that some communities were advocating at that time. Rathje counseled that this seemingly beneficial move might have a "disproportionate impact on the poor" because their purchases involved more packaging material per ounce of contents (Rathje and Murphy 1992:66).

In addition to sorting garbage by neighborhood, the Garbage Project conducted "front door, back door" studies. The idea was to compare data from interviews and questionnaires with garbage from the same households. In seeking permissions for these studies, the Garbage Project found that most people didn't mind having their garbage analyzed but many did object to the interviews (Rathje and Murphy 1992:67). Fortunately, the Garbage Project was able to enroll enough willing families.

Front door, back door studies led Rathje to identify a "Good Provider Syndrome": people overreport the use of fresh ingredients in cooking meals at home and underreport the amount of prepared (ready-to-eat) foods they buy. He also identified a "Lean Cuisine Syndrome." Influenced by media accounts of healthful diets, "People consistently underreport

the amount of regular soda, pastries, chocolate, and fats that they consume; they consistently over-report the amount of fruits and diet soda." The discrepancies are dramatic: candy is underreported by 80 percent and cottage cheese is overreported by 311 percent (Rathje and Murphy 1997:70-71). These kinds of findings on diet—there were many more—were of special interest to the U.S. Department of Agriculture, which funded some of the studies.

During the Garbage Project's long life, Rathje expanded it to other U.S. cities. He also did more typical archaeology, excavating samples from landfills in Tucson, Naples, Florida, and many other cities. These excavations were supported by federal agencies and cities that were keenly interested in learning about actual landfill contents so that they could develop policies for reducing the amounts of material going into them. The excavation tools included backhoe and bucket augur, the latter a machine that could penetrate to a depth of 100 feet, grab a sample of garbage, and return it to the surface. The samples were dated (1952-1988) on the basis of newspapers and other artifacts, and were "sorted into as many as 35 material composition/type categories that were recorded

by weight, volume, and moisture content" (Rathje et al. 1992:439).

One of the bombshell findings of the landfill excavations was the limited amount of biodegradation taking place. Laboratory experiments had previously shown that organic items such as paper, food waste, and lawn clippings would be rapidly degraded in landfills by bacteria, a process that formed methane. Yet, measurements of methane coming from landfills were always much lower than laboratory-based estimates. The Garbage Project explained this discrepancy, finding that organic materials were decomposing slowly if at all. A sample of deposits predating 1975 had "more than 25 percent recognizable and readable paper items (Rathje et al. 1992:442). Rathje was especially fond of showing off a decades-old hotdog that was still recognizable; also easily identified were lettuce, corncobs, and Kaiser rolls. Moisture content is the most important factor affecting decomposition, but even in rainy regions the moisture content of rapidly buried garbage, covered with a thick layer of soil, is too low to promote much decay. This discovery had an obvious implication: develop better recycling policies and practices, which many cities did.

Because the Garbage Project's

findings were so compelling, often surprising, and clearly relevant to present-day concerns, Rathje was able to attract an enormous amount of media attention. For three decades the Garbage Project received more publicity than any other University of Arizona research project. To millions of Americans, he was the public face of archaeology, highly visible on television and radio, in newspapers and magazines, and as a keynote speaker at trade association conventions. He even testified in Washington before Senate committees. And, often with collaborators, he published Garbage Project findings in dozens of journals, delivered numerous invited talks at professional meetings, and briefed many dozens of governmental agencies—federal, state, and local—which had solicited his advice on garbage-related topics.

Although the value of Rathje's approach was apparent to researchers in many universities, companies, and governmental agencies, American archaeologists were slow to give the Garbage Project much respect. However, the snickering eventually stopped as archaeologists realized that, owing to Rathje, their discipline was making contributions to the social sciences that were unexpected, significant, and widely

known. Today, almost every introductory textbook on archaeology includes a section lauding Rathje and the Garbage Project. In addition, books in other social sciences point to the Garbage Project as a new kind of “nonreactive” measure for monitoring behavior. In one of his last projects, Rathje was the consulting editor to the massive *Encyclopedia of Consumption and Waste: The Social Science of Garbage* (Zimring 2012). And Mayanists still draw inspiration from Rathje's early work.

### Some Afterthoughts

Rathje joined the Arizona faculty during my second year of graduate studies, after I had failed the old comprehensive exams, which covered all four fields of anthropology. He urged me to retake the exams—all four fields again—and not leave Arizona. Fortunately I followed his advice and passed (barely, I suspect) on the second try.

When I told him about my research on the formation processes of the archaeological record, he gave me much encouragement, confidently predicting that one day many archaeologists would follow my lead and pursue that line of research.

I was strongly influenced by

Rathje's insistence on the importance of material culture for prehistory, historical archaeology, and—especially—the present. Indeed, Rathje is the person who pioneered studies of “modern material culture,” a label he coined early on. We were both disappointed that such studies never achieved a measure of popularity among archaeologists in the United States. Fortunately, they have taken off in England and several countries on the continent. For many years Rathje taught what is now Anthropology 337, modern material culture.

Rathje gave his Teaching Assistants much leeway to present their own material in lectures and discussion sections. And he depended on them—and his faculty colleagues—to fill in for him when he was flying around the globe giving talks. I remember, not always fondly, receiving his phone call late in the evening from some distant city, begging that I teach a class the next day. I usually said yes. When he was doing fieldwork in Cozumel with Jeremy Sabloff during the spring of 1973, he asked me to teach what is now Anthropology 336, basic principles of archaeology. Still a graduate student, I was honored to be given this responsibility. I took full advantage by preparing

an entire semester of lectures, some of whose ideas were incorporated into my dissertation and the book derived from it (Schiffer 1976).

In later years we wrote an introductory textbook (Rathje and Schiffer 1982). Being two of the three founders of behavioral archaeology (J. Jefferson Reid was the third), we took the position that behavioral archaeology's framework was foundational for all archaeologists and wrote the book accordingly: a thinly disguised introduction to behavioral archaeology. We worked on every sentence together, sitting in the conference room or at my home; it was exhilarating because of the many ideas that took shape in those settings. Unfortunately the book sold poorly—apparently, behavioral archaeology was not well enough disguised—but we had great fun writing it, and even decades later believed the effort was worthwhile.

After his retirement from Arizona in 2000, Rathje moved to Stanford where he became a Buddhist and co-taught a graduate seminar with Michael Shanks. As artists and students of modern material culture, they were not exactly the odd couple that might be suspected. Their collaboration led to a very interesting edited volume, based on guest



lecturers recruited from around the country who performed in the seminar (Rathje, Shanks, and Witmore 2013). In his last years, Rathje moved back to Tucson but was in poor health. He passed away in 2013.

Rathje was the most creative person I have known. Creativity infused his scholarly work and was also expressed in several artistic media, from pen-and-ink caricatures to food sculptures to cloud pictures. He was also a people person: gregarious, ebullient, a great story teller, spontaneous, and generous with friends and students. Above all, he had an infectious enthusiasm for ideas, which he shared easily. He also had a singularly rare gift, for he was an amalgam of brilliance, creativity, perseverance, and vision. William L. Rathje, who died so young, is sorely missed.

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