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Seeking the Truth in Refuse

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After 20 years of sorting through garbage cans and landfills, the archaeologist William L. Rathje has accumulated precious memories. There are the 40-year-old hot dogs, perfectly preserved beneath dozens of strata of waste, and the head of lettuce still in pristine condition after 25 years. But the hands-down winner, the one that still makes him shake his head in disbelief, is an order of guacamole he recently unearthed. Almost as good as new, it sat next to a newspaper apparently thrown out the same day. The date was 1967.

The guacamole that would not die reinforces a point that Mr. Rathje and his co-author, Cullen Murphy, make in "Rubbish!" recently published by HarperCollins (\$23). The garbage dumped in landfills tends not to biodegrade. It becomes mummified.

That's not all. "Rubbish!" pulls the rug from under a number of popular misconceptions about what experts call the "solid-waste stream." It reports that disposable diapers, plastic and foam account, by volume, for perhaps 3 percent of the nation's landfill waste. "If you could wave a magic wand and make all the plastic and the disposable diapers disappear overnight, landfill operators wouldn't even notice," said Mr. Rathje, who has sorted through parts of the Fresh Kills Landfill on Staten Island and was interviewed recently in Manhattan with Mr. Murphy. Not a Crisis, but a Task

Paper, on the other hand, counts for more than 40 percent of landfill volume, and like the guacamole, it stubbornly resists biodegradation.

If anyone should know, it is Mr. Rathje (pronounced RATH-jee) who more or less invented the scientific subdiscipline that he, and, since 1975, the Oxford English Dictionary, calls garbology. Garbology is the study of trash, refuse, rubbish and litter -- they are not the same -- to gain insight into human behavior and cultural patterns. As a practical matter it has also shed needed light on the garbage crisis, which, Mr. Rathje insists, is not a crisis at all, but a manageable task, like water treatment or street cleaning.

Mr. Rathje, 47 years old, is a professor of archaeology at the University of Arizona and the director of its Garbage Project in Tucson, which he founded in 1972 as an outgrowth of a course on archaeological methods. For the first 14 years of its existence, the project, staffed by student volunteers with strong stomachs, conducted surveys of household garbage in the United States and Mexico.

"After 14 years, I turned to my colleagues and said, 'Isn't it wonderful that we can provide useful information in the garbage debate?' " Mr. Rathje said. "And they said, 'Yes, Bill, it's wonderful, but it's not archaeology because there's no dirt.'"

So in 1987, Mr. Rathje commenced digging. Thus far, he has excavated 15 landfills and painstakingly sorted through and catalogued 25 tons of garbage. This fall, garbology will achieve a new level of respect when an article by Mr. Rathje on landfill excavation appears in *American Antiquity*, the archaeological equivalent of the *New England Journal of Medicine*.

Mr. Rathje, a stocky Midwesterner with a loud voice and a gregarious manner, looks like a man who would rather lead his troops around a landfill than deliver a scholarly paper. His idea of formal wear is a rumpled jacket with his jeans, and a tie held in place with a stainless-steel clip in the form of a pop top.

Mr. Murphy, a bookish-looking 39-year-old with a fussy bow tie, seems to have been cast for contrast with his rumpled co-editor. His attitude toward garbage is different, too. When asked whether he had ever gone on an excavation, he shuddered. "I thank God I have been spared that," he said. "Frankly, why anyone would do it, even for credit, is beyond me." Steering well clear of the raw material, Mr. Murphy served as editor, researcher and schedule monitor for the foot-dragging Mr. Rathje.

This odd couple of garbology first crossed paths about 10 years ago, when Mr. Murphy, an editor at The Wilson Quarterly, published by the Woodrow Wilson International Center for Scholars in Washington, assigned Mr. Rathje to write some general articles on archaeology. Although Mr. Rathje is identified as a garbage man today, he wrote his undergraduate honors thesis on Tzankol polychrome basal flangeware pottery and did his graduate work at Harvard on classic Mayan civilization. *A Book Is Born*

After moving to The Atlantic magazine, Mr. Murphy asked Mr. Rathje to write an article about his favorite subject. The resulting article was nominated for a National Magazine Award in 1990 and became a runaway hit for The Atlantic, which eventually ran off 150,000 reprints of it. Because so much material for the article wound up on the cutting-room floor, the two men decided to write a book.

The conclusions of the Garbage Project have pleased and offended business and environmental groups in equal measure. "The fast-food industry and the Styrofoam people have been very pleased with our results," said Mr. Rathje. Environmental groups, whom Mr. Rathje makes a point of inviting on all his excavations, have sometimes had to swallow hard as cherished targets like fast-food packaging have been shown to be minor offenders compared with newspapers and telephone books. But neither side can challenge the Garbage Project's data, for a simple reason. "We're the only group that's systematically dug up and sorted through the debris," Mr. Rathje said.

Mr. Rathje said he does worry that his findings will be interpreted to mean that such convenient environmental targets as disposable diapers and plastic do not matter. "Everything that goes into a landfill takes up space," he said. "What we hope to do is refocus attention on more significant issues without decreasing attention on the more symbolic articles." To avoid charges of bias, the Garbage Project gets its money from government, environmental groups and industry alike. *A Fine-Tuned Method*

The research material may be disgusting, but the analytical methods are refined. Mr. Rathje's team excavates layer by layer, their trowel a spinning bucket auger suspended from a derrick. Working back through time, they sort the contents into 150 coded categories. "The fastidiousness is amazing," said Mr. Murphy. "I visited the lab and they were looking at spoonfuls of grit with magnifying glasses, then weighing it carefully."

This touches on a matter of some sensitivity for Mr. Rathje, who bristles at descriptions of his activities. "They always say that I'm rooting, picking or poking," he fumed. "I don't root: I sort."

The sorting goes on. The Garbage Project just finished a study evaluating Toronto's recycling program, which over the last decade has decreased the amount of newspaper, glass bottles and cans by 50 percent, saving 20 percent of the space in local landfill as a result. *'The Nice Thing'*

The project is also conducting a study on the commercial waste stream in Tucson, and is trying to determine how much space cereal boxes, candy wrappers and cigarette boxes take up in landfills. There is no shortage of interesting research avenues. "That's the nice thing about garbage," said Mr. Rathje. "It's so diverse."

The project closest to Mr. Rathje's heart is an impending study on recycling behavior. Although many polls suggest that Americans now recycle assiduously, Mr. Rathje says he does not believe them. His past studies have shown that people will describe their behavior to satisfy cultural expectations, like the mothers in Tucson who unanimously claimed they made their baby food from scratch, but whose garbage told a very different tale.

In his book, Mr. Rathje cites a newspaper article on the garbage taken from a Hare Krishna temple in Detroit, which included the price tag from an Oleg Cassini garment, and four ticket stubs from a local drive-in theater showing "Horrible House on the Hill" and "The Night God Screamed." The truth will out. More often than not it can be found in a 30-gallon can.