

Waste and Resource: Household Management of Solid Waste on the North Coast of Honduras

Jennifer Goett

*Department of Geography
University of Texas at Austin
Austin, TX 78712-1098*

ABSTRACT In Honduras many communities do not have access to organized public solid waste collection and disposal services. This study of waste management in two Garifuna communities on the north coast of Honduras reveals that, at the household level, people use a variety of management and disposal strategies. These pathways (places and practices) for solid waste disposal are guided by local perceptions of waste as harmless refuse, re-usable resources, or dangerous materials and the environments appropriate for its disposal. The paper concludes that people manage household waste using diverse strategies that are both rational and effective.

INTRODUCTION

On the north coast of Honduras, most urban and rural communities do not have organized public solid waste management services.¹ Households that have no access to collection and disposal services must cope daily with the problems of where to put their waste and how to keep their community environment safe and clean. Most literature discussing solid waste management in developing countries assumes that when organized services are absent, local people practice no strategic management of waste (Faris and Hart 1994; Holms 1984; McCoy 1996; Nadakaavukaren 1995). This premise suggests that householders indiscriminately dump waste in the community and it implies that local people have no regard for their community environment. Essentially, such an approach depicts regulated and organized management of waste as "practical," "logical," and "informed," while it criticizes local people for their "destructive" and "irrational" behavior (Escobar 1995: 194-195). But within this body of literature, there have been few in-depth studies focusing on micro-level processes such as household generation and disposal of solid waste, household consumption patterns and resource management (which might be related to resource recovery and reuse²), and local perceptions of environmental sanitation and contamination.

A good example of this type of bias in development literature is seen in *Participación Comunitaria y Turismo Eco-Social*, a United Nations Development Program (UNDP) report published in Honduras (Gálvez and Garcí 1993). The report presents an analysis of the social, economic, and cultural conditions of fifteen different communities in the Tela Bay area, including San Juan and Tornabe. The authors' principal source of information was a series of workshops held in each community in order to encourage an open exchange of opinions and perspectives between community members and project organizers. The report describes the current state of environmental sanitation in San Juan and appears to be presented from the perspective of the UNDP consultants rather than from that of community participants:

Children were seen playing in stagnant water; there are unpleasant odors in some areas near the sea; there is no control of trash; normally waste and refuse are flung about the yards of households or in the streets and around the beach (Galvez and Garcia 1993: 12, my translation).

The report concludes that there is a general lack of basic infrastructure and sanitation in the communities, resulting in environmental contamination, and it recommends increased environmental education at the local level and the organization of community-wide solid waste collection and disposal services (Galvez and García 1993: 63-65). In this case, the UNDP consultants saw only what is absent in the community, while the strategies that individuals actually use become invisible and insignificant.

In contrast, this paper takes a more intimate look at the ways that individuals manage their resources and dispose of their household waste. In this paper I explore household waste management in two adjacent Garifuna communities, San Juan and Tornabe, which are located on the northwestern coast of Honduras in the municipality of Tela (Figure 1).³ Population estimates for San Juan and Tornabe are highly variable, but range between 1,000 and 4,000 people each (Garcia and Galvez 1993: 10,21; Hoover-Castaneda 1995: 7; Lopez 1991: 62). Both communities' populations probably fluctuate considerably from year to year and throughout the year due to the continual in and out migration of residents. San Juan and Tornabe have a settlement pattern typical of Garifuna communities, linear and parallel to the beach (Davidson 1976), and are located in the "buffer zone" of Parque Nacional Jeannette Kawas.⁴

The data I present were collected during a threemonth field study in the summer of 1996.⁵ In San Juan and Tornabe, I used three levels of qualitative field analysis including: 1) an in-depth study of two households' waste management practices, 2) participant observation at the community level, and 3) informal ethnographic interviews with community members. The two households selected for in-depth study have distinct household structures, subsistence and wage earning strategies, income levels, and consumption habits. I gathered further information on other households in San Juan and Tornabe through interaction with the community on an informal basis and while attending community meetings and environmental health workshops. Finally, I conducted informal open-ended interviews in Spanish and English with community members, local leaders, and non-governmental organization (NGO) workers. I recorded some interviews with the consent of the interviewee, while I wrote down other individuals' responses after the interview.

My objective in this paper is not to provide a detailed empirical analysis of household waste management practices, but to give insight into some of the ways that people within households manage waste and to present a more balanced account of local practices and perceptions. I argue that people in San Juan and Tornabe use diverse strategies for household waste management that are both rational and effective. These household management strategies are not arbitrary, but are guided by local perceptions and definitions of 'waste' and the places and practices appropriate for its disposal.

LOCAL DEFINITIONS OF HOUSEHOLD OUTPUT

Differences in the ways that people in San Juan and Tornabe manage, use, and dispose of household output (i.e. materials left over from household production and consumption) are influenced by local notions of what constitutes waste. My research reveals that local people's definitions of waste (versus resource) are highly variable. That is, people do not view all types of household output as useless or valueless as the term 'waste' suggests. Rather different views of household output as useless but harmless refuse, reusable resources, or as hazardous materials help to determine local waste management and disposal practices.

Useless and Harmless Output

People in San Juan and Tornabe identify several types of organic and non-

organic output as useless ("basura") and harmless ("no es peligroso"). Individuals rarely identified materials that do not easily rot, emit foul odors, or attract insects and rodents (e.g., plastics, metals, paper, cut grass, palm fronds, and raked leaves) as dangerous ('peligroso') or dirty ("sucio"). While local people do not generally view these types of household output as dangerous to household sanitation and health, they do occasionally indicate that they are unpleasant ("desagradable") or unattractive ("feo"). One middle-aged man in San Juan pointed out that a beach

cluttered with refuse is an eyesore, spoiling the natural beauty of the coastline:

Sometimes the people take care of it [the trash] or the sea gets a little bit rough and strews it all over. Every dirt goes right to the beach. They're not thinking about maybe other people are coming to see, or not even that, but ourselves, you know. A little village like this is supposed to be clean because this is like a park; it is beautiful. When you come up here this way [he points down the beach], it is beautiful.

Another young woman in San Juan told me that she was unhappy with her husband for leaving accumulated yard waste and a couple of old rusted out chairs in their backyard, because they were cluttering up her yard space and they looked unattractive. She hoped he would "do something" with these materials.

Reusable Output

While people in San Juan and Tornabe view many types of household output as useless trash ("basura"), wide-scale reuse of other materials does take place in both communities. For instance, some householders reuse discarded coconut shells for cooking fuel. Women in San Juan and Tornabe usually say that they prefer to

use wood for cooking fuel, but wood can be arduous to collect and expensive to purchase as land behind the communities is now largely deforested. Coconut shells, however, are in abundant supply in both communities due to the expansive coconut palm groves lining the shore.

In other cases, householders feed their penned pigs various types of organic household waste. This is another way that certain types of household output may be turned into a resource. Similarly free-ranging domesticated animals like dogs, cats, and chickens forage in waste disposal sites for food (Figure 2). In most households these domestic animals are dependent on left over food scraps and

discarded organic waste for their survival.

Glass containers are frequently reused in both communities. Shop owners and individuals who sell bottled soft drinks out of their homes allow customers to purchase soft drinks and beer with the understanding that they will return the bottles when they are finished. This is especially true when community members buy large quantities of bottled drinks to serve to guests during religious festivities, ritual occasions (e.g. funerals and wakes), and family gatherings. In other cases, shop owners have a trade-in policy: in order to buy a soft drink and take it home in its reusable bottle, the buyer must pay for the soft drink and trade-in an empty bottle at the same time. This local practice helps to stem the proliferation of disposable aluminum and plastic containers.⁶



At the household level, people refill glass bottles and plastic containers with homemade cough syrup, alcoholic beverages, skin salves, and coconut oil. Local people usually package these liquid products, which they produce and sell within the community, in reused glass and plastic bottles. Community members sell other products, such as fish or tobacco, wrapped in old pieces of newspaper. Children also use their creative energy to transform a variety of discarded materials into toys (Figure 3). And homeowners frequently reuse old construction materials, such as metal siding, broken cement blocks, or splintered two-by-fours, to reinforce old structures or to build new ones (Figure 4). Both communities are in a constant state of construction and renovation as individuals strive to improve their living conditions.

Not all potentially reusable resources, however, are reused or perceived to be valuable by all individuals in San Juan and Tornabe. For instance, when a household has an ample supply of coconut shells for cooking fuel, additional shells are no longer valuable.

When the supply exceeds the demand, reusable resources may be viewed as superfluous waste. Moreover, householders who own gas ranges do not need coconut shells for cooking fuel. Thus, local people's individual circumstances are an important factor in determining whether they view materials as resources or refuse.

Hazardous Waste

People in San Juan and Tornabe point out that many kinds of trash ("basura") are dirty ("sucio" or "no limpio") and unhealthy ("no es bueno para la salud"). Mothers admonish their children for picking up trash off of the ground, and call their little girls pigs ("chanchas") when they catch them playing with trash. Informal interviews and daily observations of household activities indicate that local people clearly perceive some types of household output to be more hazardous than other types.

For instance, people do not dispose of all waste in the same manner. Special care is given to waste such as feces, used toilet paper, dirty diapers, dead animals, bloody water, fish bones, and crab shells. In one San Juan household, when members dispose of used toilet paper they immediately burn it in the backyard, while they leave

other types of organic and non-organic waste for many days before burning it.

In another household in Tornabe, women throw bloody water from cleaning fish far away from the house, while they dump other gray waters right in the yard or out of a window.

Local people consistently identify these types of organic or biological waste as dangerous to family health ("peligroso" or "peligroso para la salud familiar") and relate them to the transmission of contagious diseases. For instance one man in San Juan pointed out, "Maybe a dog goes right there [he gestures to the ground in front of him] and tomorrow it dries up and the kids are playing there. Then the next day, one or two of them gets sick."

Most people complain that organic waste attracts flies, cockroaches, ants, mosquitoes, rats, cats, and dogs, which are dirty ("sucio") and spread disease. Mosquitoes not only cause painful and unsightly bug bites but also spread malaria and dengue fever, while flies spread cholera and other gastro-intestinal illnesses. One middle-aged woman in Tornabe complained, "We don't have good health because there's always trash around the community. For example, we have dengue and malaria from the mosquitoes and cholera comes from the flies--these types of illnesses." Mothers scold their children for throwing crab shells and fish bones into the yard and onto the patio, complaining they will draw flies and ants. Local people also identify rats, cockroaches, cats, and dogs as the carriers of a host of other nonspecific diseases ("enfermedades").

During the course of my fieldwork, people in San Juan and Tornabe frequently described various types of waste as serious health and sanitation hazards. On the other hand, people rarely identified contamination from solid waste as a danger to the environment or to local plant and animal species. When I asked if the air, soil, and water in and around the community are contaminated by trash, people usually responded that they are not: "At this point there has been no contamination." Moreover, my inquiries concerning pollution or contamination of the environment tended to engender ambivalent responses. People acknowledged that protecting and conserving the environment is "important," but tended to be uncertain about why this might be the case or what aspects of the environment might be endangered. They rarely expressed a sense of urgency about the looming dangers of environmental contamination from solid waste, dangers which NGO employees and park officials claim are rapidly creating a state of local environmental crisis. As one park official warned, "The truth is that contamination from solid wastes has real consequences--this problem is very serious and it impacts the environmental health in the communities surrounding the park."

APPROPRIATE ENVIRONMENTS FOR DISPOSAL As revealed through interviews and field observations, appropriate places for household waste disposal in San Juan and Tornabe are influenced by a number of variables including: community-wide respect for private household property, the types and amounts of materials being disposed, household location within the community, and sanitary and aesthetic considerations.

Public and Private Space

In both communities, residents acknowledge that there is general community-wide respect for other people's household property and personal space. While littering (i.e. leaving small quantities of waste like a candy wrapper or a plastic baggy) in public spaces is acceptable behavior and widely practiced, it is not necessarily appropriate within private household space. That is, local people consider it illmannered ("malcriado") to leave even small amounts of waste on a neighbor's property. Adults often chastise small neighborhood children for littering ("tirar basura") on their property. Children usually answer by picking up the discarded material and throwing it into the street, a response that appears to satisfy adults. This collectively understood social norm necessitates that householders dispose of the majority of their solid waste within the confines of their own property or in public areas. Although, indiscriminate open dumping of

large quantities of household solid waste in heavily used public areas like the street or the soccer field is frowned upon and rarely occurs.

Household Yards

Due to the community-wide respect for private household property, householders in the more densely populated barrios of San Juan and Tornahe dispose of their waste in relatively confined spaces between houses and on the margins of their yards. People in both communities say that this is a problem, because yards and patios are valuable living spaces where domestic chores are carried out, children play, and adults socialize. Householders indicate that they try to keep their solid waste disposal sites on the outskirts of their property or as far away from the house and outside living areas as possible. Because people do not burn or bury their waste every time they deposit it, there are often several days worth of waste accumulated in household disposal sites. Householders generally feel that it is undesirable to have these sites in close proximity to their outside living space, because they find them unsightly, bad-smelling, and unsanitary. Crowding in the central barrios of both communities makes it increasingly difficult for people to dispose of their solid waste within the confines of their own property and at the same time maintain a perceived adequate level of household sanitation.

The Sea

Local people usually dispose of perceived dangerous wastes far away from the household compound, often into the sea. For instance, I have seen children (at the bidding of their mother) throw a dead chicken in to the water, and women have traditionally emptied their chamber pots into the sea. One middle-aged man in San Juan told me that when he was a teenager, women disposed of their night soil in the ocean. He pointed out, however, that this practice has been strongly discouraged since the late 1970s for public health reasons and no longer takes place. Contradictorily, a young woman in Tornahe insisted that women living in houses adjacent to the sea still routinely empty their chamber pots in the water. I suspect that these disposal methods continue to be practiced especially by those households located near to the beach that do not have access to sanitary facilities. Many households in San Juan and Tornahe, however, do have good access to flush latrines and, in some higher-income households, modern indoor plumbing.

The Beach

During interviews, individuals most often identified the beach as the worst place

to dispose of solid waste for aesthetic reasons, even though households located on the beach usually dispose of their waste within the confines of their beach-front property. People express a fondness for their community environment and an appreciation of the beauty of their surroundings, which is reflected in their distaste for trash on the beach. On one occasion a group of women from Tornabe got together and removed all of the waste from the beach. This was not a regularly scheduled practice; therefore, in a few weeks time more household waste accumulated. While solid waste on the beach is not aesthetically pleasing to some people in the community, beach disposal sites are convenient for households located on the beach, and they tend not to be viewed as significant dangers to family health. Therefore, beach-front waste disposal sites persist.

The most common household output management strategies I observed in San Juan and Tornabe were burying, burning, open dumping, feeding to animals, depositing in the sea, reuse, gift-giving, and sale. Interviews and observations of daily household routines reveal that women in San Juan and Tornabe usually manage and dispose of household output as a part of their domestic labor. These domestic roles, however, are fluid and men and boys also participate in the management and disposal of output. For instance, men often perform the more arduous tasks of household waste disposal, such as burning large quantities of trash, collecting and disposing of yard waste, and digging and covering the holes ("hoyos") where waste is deposited. In some cases, women alone or women and men together carry out these tasks.

Burying

In San Juan and Tornabe most household yards are not randomly strewn with trash. Rather, most households have a localized disposal site on their property. Often householders dig holes about two to four feet deep and two to four feet in diameter somewhere on their property and use these holes for the disposal of waste over an extended period of time (Figure 5). Holes are convenient for disposal because they keep waste from blowing around one's property and may be quickly covered over when full. At this point, a new hole may be dug adjacent to the old. People also practice burying of household in combination with other disposal methods like burning.

Burning

Householders do not reduce their waste by burning every time a small quantity of waste is collected. Usually people let waste collect in the disposal site (often a

hole in the ground) throughout the week and then burn it all at once in the evening at the end of the week. Some local people use the smoke from burning household waste to repel mosquitoes and other biting insects during the evening hours when these pests are most prevalent (Figure 6). On weekend evenings, when people gather on their patios to socialize, I would stand at my doorway and see the smoke and flames of three or four different households' waste fires. In this case, some local people view burning trash as a positive pest control strategy, rather than a potential environmental contaminant or a health hazard.

Reuse, G

Gift-Giving, and Sale

People often open-dump household waste that they perceive to be useless and harmless on their property and leave it for an indefinite period before burning or burying it. Householders also store potentially reusable resources in their yards. As mentioned earlier, some people leave discarded coconut shells in their yards to dry in the sun, and use them later for cooking fuel (Figure 7). In other cases, people collect used construction materials in their yards for future use. While piles of splintered wood, scrap metal, or broken cement blocks may appear to be useless debris to an outsider, more often than not household members have a specific future use planned for these resources.

When householders do not find reusable materials to be useful, they may offer unwanted materials such as old two-by-fours, scraps of metal siding, or clothing and shoes (that their children have outgrown) to family, friends, or neighbors. Usually the recipient readily accepts these gifts. Occasionally, however, a person will accept the offer (perhaps out of politeness) but never come to collect the materials. Two different men interviewed in San Juan told me that while they were not planning on reusing the old pieces of wood that were stored in their yards, they had offered them to friends who had accepted, yet had not collected the wood. In one of these cases, the man who was offered the materials finally came to collect them, and in the other case the householder burned the wood.

The sale of some types of reusable or recyclable materials turns household output into a valuable resource for some individuals. People in San Juan and Tornabe collect and sell discarded aluminum soft drink and beer cans in the nearby town of Tela, for five centavos per can. Some community members, especially those who run small restaurants or bars, sell reusable materials to a middleman who buys from neighboring communities (Figure 8).

It is important to point out that there is considerable variation in waste management practices between individuals and households in San Juan and Tornabe. Therefore, the examples I describe above are only a sampling of the wide diversity of practices that exist in both communities. Within households different disposal practices such as burying, burning, open dumping, and depositing in the sea are applied in combinations depending on the quantities and kinds of waste disposed of, on individuals' preferences for certain strategies, and on householders' penchants for experimentation. In fact, multiple strategies for waste management are evident even within the same household.

Sometimes local people express uncertainty or indecision about the best way to dispose of household waste. One middle-aged man in San Juan said: I don't like to go there [he points to the beach in front of his home] and bum it in the morning, but I have to do it. I want this here to be clean [he gestures to the patio area of his home]. Sometimes I bury it. Really, I don't know what to do with it.

A single 25 year old man who lives by himself in Tornabe told me that he bums his trash because he has no other way of eliminating it. Later in the interview, he said that he really did not like to bum the trash and wondered if burying it might be a better disposal method. Another older man in Tornabe claimed that some people are more attentive to their household sanitation and dispose of their waste very carefully ("cuidadosamente"), while others are not as careful and tend to open dump their waste behind their houses and on the beach, rather than burying or burning it.

Local diversity in waste management strategies illustrates that, indeed, individuality and experimentation are important factors in determining microlevel anatION in cultural-ecological practice (Denevan 1983; Grossman 1992). This reinforces the concept that, in reality, local people's behavior and practices are not static or uniform. In San Juan and Tornabe, people do not form homogeneous groups with generalized cultural and ecological behavior. Instead, adjustments occur at the micro-level as individuals continuously experiment with the alternatives that they perceive to be available in managing their household output. Individuality and experimentation at the micro-level result in multiple hybrid waste management practices within the communities.

During my research in San Juan and Tornabe, I developed an appreciation for the rationality and creativity of local practice. While residents of both

communities do not have access to technically sophisticated and collectively organized solid waste management systems, they nevertheless use micro-level strategies for the management of their household output. I found that at the household level people use a complex of logical and effective waste management practices influenced by locally constructed definitions of household output (as waste or resource) and the places and practices appropriate for its disposal.

By focusing on the absence of sanitation infrastructure, discussions of solid waste management in the environment and development literature often are unable to discern the local practices that actually exist. While such analyses may be useful tools for identifying infrastructure needs in communities, they should avoid assumptions concerning local practice. All too frequently local people are depicted as reckless in their management of household and community sanitation, while the real complexity and rationality of local practice remains unexplored. Instead, due to local people's frequent reuse of resources, management of household output in San Juan and Tornabe may be more efficient and sustainable than waste disposal techniques practiced in "developed" nations. The scattered coconut shells, broken cement blocks, splintered wood, or piles of smoldering waste in people's yards may really be future cooking fuel, useful construction materials, or insect repellent. Only when outsiders learn to appreciate the complexity and sophistication of local practice in the management of household output, can outsiders and local people work towards collective solutions. A clear understanding of local practices, perceptions, and needs is an essential element in conservation-oriented development in Garifuna communities.

NOTES 2. Resource recovery may be broadly defined as "any productive use of what would otherwise be a waste material requiring disposal" (Nadakavukaren 1995, 645).

3. The Garifuna are the descendants of escaped African slaves and island Caribs. They represent a distinct and cohesive transnational ethnic group, some 98,000 strong in Honduras (Rivas 1993: 257).

4. In an audio promotional tape for Parque Nacional Jeannette Kawas produced by Fundación Prolansate, the "buffer zone" is defined as a "fringe area surrounding the core zone, which acts as a barrier against external influences." The tape continues to explain that "this zone is sufficient in area to absorb

physical and chemical disturbances; for example, the contamination of air, soil, and water, fire, illegal hunting, noise, and undesirable development projects."

5. I conducted this research for my Master's thesis, *Waste and Resource: Two Garifuna Households on the North Coast of Honduras*, Department of Geography, University of Texas at Austin, December 1997.

6. While soft drinks and beer packaged in aluminum cans are not widely sold in San Juan and Tornabe, they were introduced in Honduras in the early 1990s and are now available all over the country, even in remote areas on the Mosquito Coast. In fact, aluminum cans are often found in remote and isolated areas, because they are more convenient for distributors and merchants than glass bottles, which must be returned to a depository. In less remote regions, the growth of tourism has encouraged the sale of purified water, soft drinks, and beer packaged in disposable plastic and aluminum containers, which are beginning to be sold in some small shops in Tornabe. These products, ubiquitous in areas heavily frequented by tourists, generate large amounts of non-biodegradable waste that is not reused and result in persistent litter.

7. During my research, I did not encounter any households that composted their organic waste, even though two of the people interviewed had kitchen gardens planted in the sandy soil around their homes.

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RESUMEN

En Honduras muchas comunidades no tienen acceso a servicios públicos de recolección y tratamiento de desechos sólidos. El presente estudio sobre dos comunidades Garifunas en la costa norte de Honduras revela que 10 hogares emplean una variedad de estrategias para el tratamiento de la basura. Estas estrategias están guiadas por la percepción local según la cual los desechos son vistos como: (1) materiales inútiles y no peligrosos, (2) materiales que el propio ambiente puede reciclar, o (3) materiales peligrosos, y a estos tres tipos les son asignados lugares específicos en el medio ambiente. Finalmente, este trabajo conduce que, en estas dos comunidades, la gente maneja sus desperdicios de una manera efectiva y racional utilizando estrategias diversas.