Sociological Imagination

Vol. 50 No. 1 2014

Editor: Margarita V. Alario
Assistant to the Editor: Abby Larson
University of Wisconsin – Whitewater

Food Scraps Recovery and Composting:
A Sociological Imagination for Sustainability

N.J. Smith-Sebasto
Kean University

In his now revered classic tome, *Man and Nature*, Marsh (1867:58) observed

> *The products of agricultural industry are not suffered to rot upon the ground, and thus raise it by an annual stratum of new mould. They are gathered, transported to greater or less distances, and after they have served their uses in human economy, on the final decomposition of their elements, into new combinations, and are only in small proportion returned to the soil on which they grew.*

In Shaler (1905:19) similarly observed

> *The problem of how we are to maintain the fertility of the soil when the [E]arth is taxed by a population...as great as it now supports, depends...on our ability to restore to the land the materials which the cultivated plants remove.*

Several decades later, Dr. John Snell, former head of the Department of Civil Engineering at Michigan State University, opined

> *During the next 50 years, composting will in its own way be of greater total benefit to [hu]mankind than has the automobile....It is firmly believed that conservation of these wastes should become part of our way of life, or eventually our nations will suffer* (Rodale 1964:546).

Goldstein (1969:24-25) emphatically stated

> *[Composting] holds the key to whether or not we will be able to save our nation from becoming one large dump. The return of organic wastes to the soil in a manner which does not violate environmental laws is the most*

sensible, the most economical, the most constructive treatment process. Instead of having an uncontrolled flood of wastes to contend with, we find ourselves blessed with a continuous source of soil-building material. Certainly humanity should not ignore such a potential that could offer a tremendous boost to the world's ability to feed its inhabitants.

According to Commoner (1971:282),

If we are to survive economically as well as biologically, industry, agriculture, and transportation will have to meet the inescapable demands of the ecosystem. This will require the development of major new technologies, including: systems to return sewage and garbage directly to the soil...."

While Nancy Pelosi was Speaker of the United States House of Representatives, posters hang in numerous locations of the United States Capitol proclaiming, "Composting – along with saving energy, conserving water, and reducing fossil fuel use – is one of the most [E]arth friendly things you can do." These statements reflect a sociological imagination (Mills 1959) that has remained restricted to what might be instead of what exists especially in light of the fact that when the Republican Party gained the majority in the House of Representatives in 2010, the composting program was quickly eliminated.

Paradoxically, given nearly 150 years of repeated calls for recovering nutrients in discarded organic materials, composting has still not found its way adequately into the sociological imagination of our nation. And if a scientific notion for why composting should be part of society's mindset isn't enough, nearly 50 years ago, Douglas (1966:207) identified the idea of "that which is rejected is ploughed back for a renewal of life" as a "composting religion." Given that her *Purity and Danger* was identified by the *Times Literary Supplement* in 1991 as one of the one hundred most influential non-fiction books published in the period between 1945 and 1991, it is reasonable to posit that composting should have found its way into the sociological imagination more than it has. Yet the evidence suggests that it hasn't. For example, according to the United States Environmental Protection Agency (USEPA), in 2011, Americans generated over 250 million tons of municipal solid waste (USEPA 2013). Of that amount, only 20 million tons (8%) were composted despite the fact that 156 million tons

(62.4%) were materials, such as paper and paperboard (28%), food (14.5%) yard trimmings (13.5%) and wood (6.4%) that are compostable. And when composting is conducted, the currently dominant method of doing so, windrowing, often creates as many or more problems than it solves, including odors and potential groundwater contamination. This actuality stands in stark contrast to Lou and Nair's (2009:3792) assertion that composting is "widely acknowledged as an alternative to landfills." It is also curious because "surprisingly little discussion has been devoted to the issue of food waste" (Hall et al. 2009:7940). It has been a "hugely under-researched area of interest for social scientists" despite the fact that "the issue of food waste in particular…is one that is rapidly gaining traction in the realms of policy and regulation, cultural politics and environmental debate….a focus on *food* waste offers a useful lens through which to lend to a number of live debates and contemporary issues in sociology and social theory" (Evans, Campbell, and Murcott, 2013:5-6). In food waste, "we find material proof that there is no plan for stewarding the [E]arth, that resources are not being conserved, that waste and destruction are the necessary analogues of consumer society" (Rogers, 2005:6).

The 14.5% food waste figure reveals that Americans generated about 36 million tons of uneaten food in 2011. The amount of food waste recovered for composting was only 1.4 million tons (3.8%). This means that approximately 96% of all of the food waste generated in the United States was either buried in a landfill or burned in an incinerator. Both of these solid waste management options have serious environmental repercussions and are not sustainable. Landfilling food scraps leads to methane emissions because what little decomposition that occurs in landfills does so under anaerobic (no oxygen) conditions and to leachate (liquid extract) that may contaminate groundwater and cause unpleasant odors. "Landfill gas emissions are one of the largest anthropogenic sources of methane especially because of food waste" (Adhikari, Barrington, and Martinez 2006:421). Methane is a gas that acts as a blanket trapping heat in Earth's atmosphere that would normally be radiated to space and redirecting it back to the surface, thereby, causing the climate to warm. The global warming potential of methane is 86 times that of a comparable amount of carbon dioxide over a 20-year period (IPCC 2013:714).

Leachate, liquid from materials put into landfills (most food waste is about 50-70 percent water) as well as precipitation that seeps through the landfill, is problematic because water soluble toxics in the buried materials that dissolve in it may contaminate groundwater once it leaches to that level underground. Modern landfills include liners that function like a "gigantic underground bladder that is intended to prevent contamination of groundwater by collecting leachate" (Rogers 2006:18); however, this stills imposes "a financial collection and treatment burden" (Adhikari, Barrington, and Martinez 2009:422) because it has been suggested that thousands to hundreds of thousand of gallons of leachate may be generated monthly by a landfill (Wilson 2011:6-7).

Incinerating food scraps is problematic because food does not have a large energy recovery value because of its high water content; in fact, food has one of the lowest BTU values of any component of the total municipal solid waste stream. So when food scraps are incinerated, they burn at a temperature far lower than what is optimal for the combustion process and often contribute to the need for the incinerator operator to supplement the combustion material with fossil fuels in order to maintain an acceptable core temperature. Additionally, landfills and incinerators as management options for discarded food scraps are expensive. Given estimated national average tipping fees at landfills and incinerators of $50 and $67 respectively, and given that according to the USEPA 135 million tons of municipal solid waste was landfilled in 2011 while 29 million tons were incinerated, the costs of these two unsustainable waste management options were $950 million and $268 million respectively after subtracting the 36 million tons of food scraps that are recovered. That's over $1 *billion* wasted by not treating food scraps as a replenishable nature resource. Composting, on the other hand, when performed properly, has no environmental repercussions. In fact, the USEPA has determined, "…the CO_2 emitted…during composting is biogenic" (USEPA 1998:13), which means that it is not considered an anthropogenic greenhouse gas emission. Additionally, "…composting, when properly done, does not result in methane generation" (USEPA 1998:71). When done properly, it also produces no leachate. Also, tipping fees at composting facilities often cost one-half or less of those at landfills and/or incinerators. Importantly, the end product is a value-added commodity!

Other reasons why food scraps should, perhaps must, be composted have to do with peak oil and peak phosphorus. Peak oil means that humans have past the peak of the most amount of oil that may be pumped from the Earth over any period and are now on the downward slope of production (Hubbert 1949; Murray and King 2012). Think of a roller coaster at the highest point, the peak, of the ride. Once past that point, it is all downhill! That is the situation that many scientists believe describes the amount of oil remaining: there is less today than there was yesterday. Peak phosphorus is the same concept only having to do with the mined mineral (see Vaccari 2009). Peak phosphorus extraction is anticipated to occur in less than 25 years (Cordell, Drangert, and White 2009:298). "Phosphorus can be recovered from the food production and consumption system and reused as a fertilizer either directly or after intermediate processing. These recovery measures include…composting food waste…" (*Ibid*:300).

What the two have in common is they are both are used to manufacture synthetic fertilizer. So, when both are gone, how are fertilizers going to be made? The answer is compost! And not just any compost, food scraps compost.

Recent research has suggested, "Clearly, the world faces a looming and growing agricultural crisis. Yields are not improving fast enough to keep up with projected demands in 2050" (Ray et al. 2013:6). According to Oldeman, Hakkeling, and Sombroek (1991), 1,964 million ha out of 13,013 million ha (15%) of the total land area of Earth has experienced soil degradation. They classified the degradation as:

- Light: The terrain has *somewhat reduced agricultural suitability*, but is suitable for use in local farming systems. Restoration to full productivity is possible by modifications of the management system. Original biotic functions are still largely intact. (749 million ha)
- Moderate: The terrain has *greatly reduced agricultural productivity* hut is still suitable for use in local farming systems. Major improvements are required to restore productivity. Original biotic functions are partially destroyed. (910 million ha)
- Strong: The terrain *is not reclaimable at farm level*. Major engineering works are required for terrain restoration. Original biotic functions are largely destroyed. (296 million ha)
- Extreme: The terrain is *irreclaimable* and beyond restoration. Original biotic functions are fully destroyed. (9 million)

While Oldeman, Hakkeling, and Sombroek may have quantified the extent to which soils have been degraded globally, the concept of the importance of soil to the sustainability of humanity is not new. Over one century ago, Van Hise

(1912:263) cautioned, “The [soil] is the great fundamental resource of the nation, the [soil] is indeed more important than all other resources. From the [soil] comes our food and clothing; food and clothing, we must have; all of our other needs are subordinate to these. The productivity of the [soil] is therefore the basal factor which will control in the future the density of our population”. Nearly 20 years earlier, Andrew Sloan Draper, President of the University of Illinois, opined, “The wealth of Illinois is in her soil, and her strength lies in its intelligent development.” His statement is memorialized on Davenport Hall, the first location of the College of Agriculture, on the campus in Champaign-Urbana. Illinois can, perhaps must, be replaced with America, because the United States has some of the richest and most abundant topsoil in the world.

So, one of the major questions for sustainability is: if the human population is still growing exponentially and is projected to increase by “almost one billion…within the next 12 years, reaching 8.1 billion in 2025” (United Nations 2013:xv), while the amount of land that we have available to grow food is decreasing—nearly 23 million acres since 2003 (USDA 2013)—and the fertility of the remaining soil is decreasing, how are we going to feed future generations? How are we going to ensure equity, fairness, and justice insofar as food is concerned? The oceans were once thought to be the source of an endless supply of food for humanity. That thought is now seriously questioned by new research that suggests that the bounty of the oceans will be exhausted by 2048 if current fisheries practices remain unchanged (Worm et al.:2011). One answer is to instigate a sociological imagination with a vision where soil is rich and fertile, where it is sustained by the continual replacement of vital nutrients from uneaten food that has been converted into compost in a biologically and economically efficient manner. A vision where all food that came from the Earth is returned to the Earth if it is not eaten: a closed cycle where there is no beginning and, more important, no end. A vision of sustainable humanity where hunger as a noun ceases to exist because waste as a noun insofar as food is concerned has also ceased to exist.

So why are all of the food scraps generated in the United States not recovered and composted and why is this nutrient-dense compost not being used to revitalize our soils and improve our ability to grow enough food to sustain a well-nourished population? That is the question I will explore in this paper.

BACKGROUND

I believe in challenging the accepted contemporary notions of food waste. I write contemporary because "issues of food waste might…be thought of as something older resurfacing" (Evans et al.:16). My research has focused on designing and researching food scraps recovery and on-site composting.

I believe part of the reason why Americans have not embraced a sociological imagination that has been espoused for over one century may have to do with our vocabulary. For example, the word waste has both a noun and verb form.Waste as a noun is commonly defined as something that has no value or is useless and undesirable. Synonyms include garbage, refuse, and trash. This is problematic because it violates Commoner's (1971:36) generally accepted proposed second law of ecology, namely "...in nature there is no such thing as 'waste'." "The classification of items as 'waste', and thereby dealt with by some sort of disposal, leads to their becoming 'out of sight, out of mind' – culturally invisible – and thus without an explicit scholarly effort of reflexivity they risk remaining inaccessible to the gaze of social scientists" (Evans at al.:6). Because of the out of sight, out of mind mentality, "the now ubiquitous landfill spread it infectious new gospel…across the land" (Rodgers 2005:80). That which is perceived as waste "is managed as waste…and that which is [perceived] as waste is managed" (Gregson and Crang 2010:1026). That which is perceived as a replishable natural resource is often, although not always, protected, preserved, and conserved! Uneaten food is a replenishable natural resource insofar as it is the best option for restoring the vitality to soil once it has been converted to compost.

Antonyms of waste include resource, which is something that has value or is valuable and desirable. In the verb form, waste is commonly defined as to fail to take full advantage of a situation or opportunity. So, the reflective and historically-grounded thinking that Mills (1959) suggested guides people as they attempt to connect their personal experiences and choices with the social factors that influence them are in themselves part of the problem. So long as waste is accepted in our vocabulary in the noun form, so long as the prevailing sociological imagination is one where waste is a presumed unavoidable byproduct of humanity, sustainability will remain elusive.

> *The intellectual part of this challenge calls for researchers and activists to integrate their sociological imagination with a biogeophysical imagination....Integrating a biogeophysical imagination with the sociological one deepens one's perspective by taking into account the interlocking ecospatial scales of life. That is, it enables a better understanding of the linkages and interactions that bind (or tear) life at various levels: including the milieu of an individual household; the social and political field of neighborhoods and metropolitan areas; and the spheres of local, regional, and global economy—all of which depend on stocks, flows, and sinks provided by ecosystems* (Pezzoli 1998:348).

There is an axiom that has been used commonly for decades in the sustainability movement: *think globally act locally*. While this sounds like a defensible idea, making the words reality often proves difficult. Take for example a 2013 report by the Institute for Local Self-Reliance (ILSR), "a national non-profit research and technical assistance organization that since 1974, has championed local self-reliance, a strategy that underscores the need for humanly scaled institutions and economies and the widest possible distribution of ownership" (http://www.ilsr.org/about-the-institute-for-local-self-reliance/) titled *Pay Dirt: Composting in Maryland to Reduce Waste, Create Jobs, & Protect the Bay*. In the report, the ILSR suggests, "Locally produced compost is a valuable soil amendment for local food production…" (ILSR 2013:3). It further suggests, "What is needed is a highly decentralized and diverse organics recovery infrastructure that first prioritizes food rescue, backyard composting, on-site institutional systems, community composting, and urban and rural on-farm composting before the development of centralized regional facilities" (ILSR 2013:23). This is an important recommendation because according to the USEPA (1998:71), "with centralized composting there are non-biogenic CO_2 emissions from collection and transportation of the organic materials to the central composting site…." ISLR continued, "the state's composting operations, on a per-ton and a per-dollar-capital-investment basis, sustain more jobs than its landfills or incinerators….Hundreds of new jobs could be created if organic material was diverted from landfills and incinerators to composting facilities. The potential job creation would increase if a diverse composting infrastructure was developed, that included many small- and medium-sized operations" (ILSR 2013:42-43). The question becomes, how are small- and medium-sized food scraps composting operations created? One cannot efficiently operate a small windrow, for example. They are commonly 6-10 feet high, 12-20 feet wide, and may be hundreds of feet long. So, the challenge was to identify a process whereby composting of food scraps could be performed locally without the spatial requirements of windrows and without the odor and leachate issues commonly associated with them.

CASE STUDY

The authors of the Essex Report suggested, "Higher education institutions bear a profound moral responsibility to increase the awareness, knowledge, skills and values needed to create a just and sustainable future" (Second Nature 1995:4). I agree with this statement, so I developed a food scraps recovery and composting project at a medium-sized, urban, Mid-Atlantic university. I believed that such a university is an apt microcosm for cities, municipalities, and/or towns. In other words, places where local projects like those advocated by the ILSR might happen.

The first step in this project, and it will need to be the first step for any comparable effort, was to determine the precise amount of food scraps that were being generated on campus. During the summer of 2009, a firm was contracted to conduct a discarded organics audit. The findings revealed that about 1,000 lbs. of uneaten food was discarded daily during the academic week. Less was discarded on weekends. With this information and based on nearly 10 years of experience using three commercially available composting systems, I was provided with the opportunity to design and have manufactured a state-of-the-art, aerobic (requires oxygen to function properly), in-vessel (confined to a sealable container), rotary drum (sealable container turns like a cement truck) food scraps composting system. This design is known to have the lower operating emissions than windrows (Lou & Nair, 2009).

The next step involved working with the contracted food service vendor to develop a protocol for the recovery of both pre- and post-consumer food scraps. This was not complicated. It involved adding 10-gallon plastic buckets with lids in the kitchen prep area. Instead of scraping food scraps into a larger bucket for all garbage, the food scraps were placed in the smaller buckets. The food service workers that would have scraped the plates the students place on the conveyer in the dining hall that brings them to the dishwashing area into an InSinkErator-type of drain instead scrape them into one of the buckets. So, there really wasn't any additional labor required.

Once the buckets are full, they are transported by a handcart to the composting facility, which is located very centrally on campus, near all but one of the dining locations. Again, the food service workers previously transported the buckets to the dumpsters, which are located immediately adjacent to the composting facility, so no additional labor was required to make this sustainability transition.

All buckets are weighed to determine the exact amount of food scraps that have been recovered. At the time when this manuscript was written, the project had been in operation for over 500 days during which time nearly 400,000 lbs. of food scraps had been recovered and converted into compost. These data are also critical because they are necessary to determine the amount of bulking agent/carbon source that must be added to the process. Because food is typically between 50% and 70% water, it is too wet to process in an aerobic in-vessel rotary drum system without first reducing the water content. The best way to do so is by blending kiln-dried wood shavings with the food scraps after they've been sized reduced by a shear shredder. These are often available from mills and woodworkers for whom they are a waste product that most be disposed of at a cost. I am able to secure them for free making a gain-gain situation for both parties. The idea moisture content of the compostable material going into the digestion vessel is about 50%.

Once inside of the vessel, the material to be composted is provided with fresh air during a prescribed interval so that the process remains aerobic. This is a required step because the microorganisms that digest the food scraps, which are in the food, no others are added, are so biologically efficient that they are capable of depleting all of the oxygen in the vessel as quickly as in 10-15 minutes. The vessel also turns once every hour, which contributes to a physical breakdown of the food scraps as a result of the tumbling. It also facilitates movement of the material from the input of the vessel to the discharge at the opposite end. The entire digestion process takes just five days, during which the temperature inside of the vessel consistently reaches that required to kill any harmful bacteria that might exist in the material being composted. After five days, the compost is off-loaded and is ready to be used as a soil amendment. It may also be stored and used when needed. "When we add compost to the soil, we are not working at cross-purposes with nature, but simply augmenting and speeding up the process" (Cox 1991:17). The cost to convert one ton of food scraps into compost is about $30, which is far less than the cost to haul the food scraps either to a landfill or an incinerator, where an additional tipping fee is also charged.

Since the inception of the food scraps recovery and composting project, getting students involved was important. I have been able to secure three or four Federal Work Study students every academic year. Additionally, four to six more volunteer their time. The project resonates exceptionally well with the students. I believe it helps them establish their sociological imagination that recognizes the importance of perceiving food scraps as a replenishable natural resource. I also think the immediacy of watching the food scraps be converted into compost and then to see the compost be used to improve the fertility of soil on the campus provides the kind of reinforcement that is necessary to sustain interest in new behaviors as well as the sustained adoption of those behaviors. By comparison, if a student places a plastic bottle in a recycling container (of course a reusable water bottle should be used instead of a single-use plastic one) he/she likely receives no reinforcement about performing this environmentally responsible behavior. In fact, he/she may be confused when he/she learns that the mass of plastic, including water bottles, in the ocean is approximately six times that of plankton (Moore et al. 2001).

An important lesson for the students and one which no doubt also influences the evolution of their sociological imagination is when they observe first-hand the quantity and quality of food that is wasted. They are often stunned to see what appears to be food that is still edible being discarded. They do find some solace knowing that at least it is not being wasted by being put into a dumpster and then transported to a landfill or incinerator. The compost that is generated is used on a 6-acre on-campus farm. The food grown there is used on campus illustrating the model advocated by the ILSR.

Recently, I asked them to provide a brief paragraph describing how they think working on the project has or might affect their behavior (which I considered as a proxy for their sociological imagination). Responses include:

I have been cutting down on my usage of beauty supplies - particularly bottled cleansing products and trying solid shampoos and conditioners and lotions and such. I've been starting a compost barrel at my house and cleaning my house from things that I do not use and my family does not need (particularly clothes). I've been buying less items and the items that I have been purchasing I have been looking into the amount of packaging used for the product and how far it and it's items used to create it have been shipped. Other than that, I've been spreading the word to others through easy suggestions and just informing them about different facts I have learned through this semester that I feel they may find to be enlightening.
Judy H.

The composting project has dramatically changed the way in which I perceive food scraps. Prior to working on the project I viewed food scraps as leftovers, or simply waste; after working on the project food scraps have become a renewable resource, a soil amendment, and most importantly a immense source of energy and life currently being regarded as waste in a time of degrading soil quality, and overpopulation.
Bryan R.

Doing this work has really changed my life and has given me something to fight for. It's something I've been passionate about and have always had strong views about and now doing this kind of work has been pushing me more to ultimate life long goals. It has made me a healthier more active person. Doing the work we do on campus is influencing me to take more action in my community to do exactly the same even make a small farm. It's really something I almost cannot put into words but want to show people the beauty of it all.
Connor B.

Working on the composting project...has completely changed the way I view food scraps. It has changed the lens in which I view the world around me. Instead of viewing food scraps as waste, I now view them as a resource. It saddens me when I'm out and I see just how careless people are with their food and that they have no regard for where it comes from and how many resources were consumed in order to grow it. The wonderful thing about the composting project is that I now have a respect for the process in which food is grown and I try not to waste it. Working on the composting project...has made me feel like I am making a difference and every day I help divert thousands of pounds of food from going to landfill or incinerator.

Bryan N.

Working on the composting project has changed my behavior towards food scraps tremendously. Although before the composting project I had an understanding on the importance of food, I understood that it should not be taken for granted, so why waste it. But after working on the composting project, I learnt a deeper importance to food. My behavior towards food scraps changed from trying not to waste that much food, to not only not wanting to waste food, but to reduce the amount of waste being put into landfills and being burned at the incinerators. Another change that I saw, which might be the most important change, would be my care for soil restoration. The restoration of soil is a tremendously important aspect to sustainability. Due to working on the composting project, I am able to understand different important aspects that this project helps to resolve.

Eziokwubundu U.

Working the composting project has definitely changed my attitude regarding food scraps, but the overall behavior of my family has changed little. Since we lack space for a garden, we have no use in setting aside food scraps for any compost. We have, however, begun making smaller portions, ensuring that we have no leftovers

and therefore do not send any food scraps to a landfill. Certainly when I have my own place in the future I plan on having a garden and utilizing compost but for now I do my best to finish everything I eat and no longer see disposed food as waste but rather another resource that I hope is better harnessed by people.
Bryan A.

Wasting food has driven me crazy long before I started working on the project. However, since seeing the absurdity of food scraps that the campus can produce on a single day, I have become more meticulous about the way that I eat and how my family handles our spoiled food.

My mother and I have composted for about ten years for her garden, but recently I've become much more diligent about trying to eat older things first so they don't need to be composted in the first place, which will hopefully lead to us buying less food. I've also made sure that when any non-meats are spoiled that they end up in our pile.

The most profound way working on the project has changed the way I think and behave is my attitude towards approaching others with comments on sustainability. Being able to work with people that are much more outspoken than I could ever be has enabled me to be much more courageous about speaking with others regarding the way that they handle their food as well as their living habits in general. This has ranged from conversations about composting to convincing my mother to buy two years worth of 100% recycled toilet paper while it was on sale....Pouring my time and sweat into the digester has convinced me that I have the right to speak up about someone's bad habits that we're are all trying so hard to counteract.
Joe R.

To document the ability of the compost to restore the vitality of soil, I conducted a study for the USEPA in which I blended decontaminated river sediment with compost in varying amounts based on volume and observed the effect on growing grass in greenhouse conditions. The results clearly indicated that the compost is an exceptional soil amendment (Smith-Sebasto, Olsen, and Woubneh 2012). Campus personnel involved with landscaping and food production have also provided anecdotal evidence of the value of the compost as a soil amendment by providing observations such as, "I have been using the compost in all aspects of groundskeeping….We have noticed hardier blooms on our roses as well as our perennials and annuals. Lawn areas where we have incorporated the compost exhibit a noticeably darker green color even through drought type conditions. The compost's moisture retention ability has also significantly reduced our watering requirements." and "The fruits and vegetables cultivated with [the compost] have a marked difference in final yield weight and overall juiciness and flavor."

In the documentary, *Dirt! The Movie*, narrator Jamie Lee Curtis states, "The process that turns garbage into a garden is central to our survival. We depend on [soil] to purify and heal the systems that sustain us." It has also been suggested, "harvesting food waste as a reusable resource is the next frontier in recycling" (Anon. 2010:13). "Compost is more than a fertilizer or a healing agent for the soil's wounds. It is a symbol of continuing life" (Staff of Organic Gardening Magazine 1978:236). With all due respect to Rachel Carson, it is ironic to think that humanity might determine its own future by something so seemingly trivial as the choice to recover and compost food scraps.

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