DOWN IN THE DUMPS:

UNCOVERING NEW MEANING IN THE LANDSCAPE OF LANDFILLS

by

LAUREN MARIE BRANDES

(Under the Direction of Marianne Cramer)

ABSTRACT

This thesis is an examination of ways to reintegrate capped landfills into useable places for communities. The thesis analyzes attitudes and values about waste and the effects of building landfills. It then examines integrative approaches for readapting these degraded landscapes. Emphasis is on how landfills should be considered as sublime landscapes which are rich with cultural history and on the importance of remembering the history of these places as communities begin to re-use them. It is hoped that the thesis will lead to a new understanding about the significance of these landscapes.

INDEX WORDS: Garbage, Landfill, Place Identity, Sublime, Waste

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DEDICATION

This thesis is dedicated to my mother who has taken me to many of the sublime places in the world and to my brother who has helped me to make sense of the seeming chaos of the world.

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I would first like to thank Marianne Cramer for being my advisor for this thesis. Her endless enthusiasm and guidance made it much more enjoyable to go through this whole process. My committee members, Hank Methvin, Andrew Pearson, and Paul Sutter provided me with insightful comments and questions that helped to shape this thesis, and I am grateful for their willingness and time. I also am greatly appreciative of Brad Rickard and Savic Enn from the Athens Municipal Landfill for giving me the lowdown on landfills and letting me explore the landscape. Many thanks also to my stepfather for giving me an aerial tour above the Athens landfill.

I want to especially thank my fellow colleague and boyfriend, Eric Baugher, whose imagination and intellect has helped spark countless ideas throughout my time in graduate school.

Finally I want to thank all of my classmates in the MLA program. Having a group of people like you around was definitely the most enjoyable and memorable aspect of my life here in Athens and the part that I will miss the most.

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CHAPTER 1

INTRODUCTION

Each individual in this country is helping to create landscapes which have enormous environmental, psychological, and physical effects. Yet most people are unmindful or oblivious about their contribution to these landscapes as they gradually add pieces, bit by bit. These pieces, which individually seem insignificant, accumulate to create landforms which are replete with meaning and yet are perceived as undesirable in communities. Every person in this country contributes to this by throwing away garbage, most of which ends up buried in the nearly two-thousand landfills which are currently active in America.

This thesis is an exploration of the various meanings of the landscape of landfills. This investigation delves into the significance of both the internal contents of the mounds and of the external landforms that are the result of the piling up of garbage. Its aim is to show ways that designers can transform capped landfills into places that express these meanings and become places that are viewed with interest and increase the awareness of the landscape's and individual's own role in waste disposal.

People often perceive landfills as wastelands that create a source of guilt. Yet American society has deemed it an acceptable method of disposing of its solid waste. Although communities continue to create and use landfills, they do not want to be reminded of their existence, and they often try to camouflage these waste disposal sites.

Subsequently, people become less aware of the effects of their own consumptive habits and the result of this waste production. The second chapter of this thesis focuses on these attitudes towards garbage and how the waste itself reflects the values of those who throw it away.

While each person contributes to the construction of landfills by throwing away trash, the design and construction of them is highly engineered and controlled. Because of their potentially hazardous nature, landfills are regulated by strict environmental laws, thereby creating a challenging landscape for designers to transform. Chapter three discusses the physical structure of these landscapes that designers must work with when readapting capped landfills for community needs.

Chapter four begins to explore the greater meaning and metaphors of the landfill landscape. Landfills are time capsules which contain the remnants of daily American life. Their contents represent the values of American culture and also give an identity to the site as a waste disposal area. Additionally, these landforms create landscapes that touch upon aspects of the sublime. Designers can use revelatory elements in their designs for capped landfills to help emphasize the sense of astonishment associated with sublime landscapes. By recognizing the history of the site as a landfill and incorporating revelatory elements into capped landfills, designers can transform these guilt-ridden landscapes into intriguing places for community members to explore and enjoy.

When a landfill has reached its maximum capacity, its service to the community changes. Designers can help transform these sites into places that suit the needs of the community, especially in terms of the community's desire for open space. Chapter five investigates and evaluates four examples of landfills that have been or will be made into

open space for communities. The evaluations focus on each design's ability to create new places that incorporate many different elements, especially ones that concentrate on the site's history and aspects of the sublime.

The sixth chapter builds upon each of the previous chapters. It presents examples that designers can use to bring about a greater awareness of the different meanings of these waste sites while at the same time make them into places that provide for the open space needs of communities. The explorations throughout this thesis will help to show that landfills are landscapes that can adapt to the needs of communities but still reflect the past use of the site. This will hopefully help designers to develop even more ways to approach the many derelict landscapes with which we are increasingly faced.

CHAPTER 2

CULTURAL PERCEPTIONS OF GARBAGE

> Such a ride uptown! Such scalding dashes of sunshine coming in on both sides of the choky, hot railroad car….Then the feast of fat things that come reeking under one's nose at each special puddle of festering filth that Center Street provided in its reeking, fermenting, putrefying, pestilential gutter! I thought I should have died of the stink, rage, and headache before I got to Twenty-first Street.
>
> -June 19, 1852 journal entry of George Strong, citizen of New York City (Kelly 1973, p. 25).

Waste is an element of every life cycle. The Webster's II Dictionary defines waste as "a worthless or useless by-product." This definition is useful when looking at different kinds of systems. Living creatures consume resources and leave behind waste, which consists of the remnants of those resources. Most often other organisms view these remnants as resources for themselves and then re-use them. This process continues along through the complex food web, creating a system in which the unwanted and the wanted are never that far apart. As a result, waste is an element which is in a state of transition (Moser 2002, p. 102). No material or compound is inherently waste but rather a substance that gains and loses value relative to the being that uses it. This dynamic quality of fluctuating between value and devaluation blurs the definition of waste and makes it more difficult to identify.

The definition of waste becomes even more complicated for systems in which human beings determine the worth of the different materials. Part of this is because the

categorization of objects that we use and discard is dynamic and socially defined (Strasser 1999, p. 8). In human systems, cultural attitudes shape the way that people view garbage, thereby creating different perceptions and notions of waste. What one society views as mere rubbish, another might hold in high esteem. Cultural opinions also change throughout time within the same society. An object that someone once found useful may become obsolete or disposable. However, even though the specific materials that a culture defines as trash may change in time and space, the emotions associated with words for filth and impurity are usually negative (Lynch 1990, p. 11). Therefore, no matter what the object is that one considers as waste, that person usually views it in a negative way.

American attitudes towards garbage have changed dramatically over the past centuries. Furthermore, Americans have become more and more removed from waste processes such as disposal and decomposition. This disconnection has affected ways of thinking about waste and waste sites. This chapter will explore this change in waste treatment and the resulting transformation in American attitudes about solid waste.

Historic Treatment of Garbage

Although the classification of garbage is constantly changing, the ways of dealing with it have remained relatively unchanged throughout millennia. For thousands of years, the most common method was to simply discard remnant materials by tossing them on the ground wherever one happened to be. This method worked well for hunter-gatherer societies who moved frequently. Presumably these societies were small enough to not generate enormous amounts of waste. Whatever waste that they did dispose of probably decomposed or was scavenged relatively quickly. However, as civilizations

grew and as people became less nomadic, they could no longer simply run away from their discards. Civilizations began to develop other ways to deal with their trash. These techniques mainly consisted of dumping, burning, recycling, and source reduction (Rathke 1992, p. 33). These methods are still the most common means of handling waste disposal today.

As urbanization increased, and city populations grew, so did the challenge of waste disposal. Municipal sanitation services of past centuries were quite deficient, especially by today's standards. Eighteenth and nineteenth century European and American cities provided little or no waste collection services; rather most city inhabitants left garbage strewn in the streets to decay and let the pigs, dogs and vermin fight for the scraps (Alexander 1993, p. 3). Whatever romantic notions a twenty-

Figure 2.1 Photo of dead horse in New York City street, circa 1880 (courtesy Bill Mann).

first century person has of nineteenth century American life can be quickly spoiled by the detailed accounts of rotting refuse that littered the streets (figure 2.1). New York City provides an example of what cities did with their garbage. Archivist Otto Bettmann

provides vivid descriptions of the filth of nineteenth century city life in the book *The Good Old Days – They Were Terrible*: "There was hardly a block in downtown Manhattan that a pedestrian could negotiate without climbing over a heap of trash or, in rain, wading through a bed of slime" (p. 7). Thus the garbage not only posed a health hazard in the spread of disease, but also created a physical danger by impeding pedestrians on sidewalks (figure 2.2).

Figure 2.2 19th Century image of garbage impeding pedestrians on sidewalks (Bettmann 1974, p. 7).

City dwellers did not always leave all of their garbage in the gutter. In the mid-1800's it was also common for New Yorkers to dump their trash off of platforms into the East River; however, most of it ended up on the beaches of Long Island and New Jersey. Eventually barges began taking the refuse twenty-five miles off the coast to dump it into the ocean (Alexander 1993, p. 6). Understandably, there were many undesirable effects from this kind of garbage disposal (or lack of disposal), but it was not until 1895 that the

city began a strong effort to clean up the streets. It was at that point that the city hired "the Apostle of Cleanliness," George E. Waring to act as the Street Cleaning Commissioner of New York City. Waring, a protégé of Frederick Law Olmsted, set up the first comprehensive system of public-sector garbage management in the country. Although Waring and his two-thousand white-clad employees known as "White Wings" by no means perfected municipal waste management, their efforts regarding public health had a lasting effect on other cities. By 1910 eight out of ten American cities had municipally run systems of solid waste disposal (Rathke 1990, p. 42).

Open dumps and incinerators were the main means of municipal garbage disposal until the advent of the modern landfill. Once again public health was the main impetus for developing a new means of getting rid of waste. The connection between open dumps and the spread of disease led people to explore new methods and eventually led to the creation of sanitary landfills (Rathke 1990, p. 86). Ironically, these landfills were initially built on *undesirable* land such as wetlands. This process of waste disposal was considered sanitary because it involved depositing the garbage into trenches and then spreading a layer of dirt on top of the garbage, which was then compacted by heavy machinery (Tarr 1996, p. 22). Layers of garbage and dirt were thus piled on top of each other forming a giant mound. Nowadays, there are strict regulations regarding the siting of landfills as well as the creation of an impermeable layer so that no toxic elements can leak from the landfill into the surrounding water supply. The following chapter will go into greater detail about the actual structure of sanitary landfills and the ways they affect the landscape.

While there is usually a negative association with dumps, these mounds of trash can also help illustrate different attitudes about the value of the objects interred within. Scavenging waste disposal areas has been a common practice for centuries. An object that one person has discarded can have great value to another person. Often this kind of sorting is seen as an issue of class. Those that cannot afford new items may see a greater value in reusing the item than those that can simply go out and buy a newer version (Strasser 1999, p. 9). That which is seen as excess or unnecessary is often discarded. This scavenging is not limited to those with less money, however. Many of the waste sites are places of mystery and offer an environment of exploration and play. They provide ruins among which children often love to play and discover (Lynch 1990, p. 25). In his book *Wolf Willow*, Wallace Stegner gives a poetic account of his youth, describing such a scene in which he delighted in the treasures that his local town dump had to offer:

> But nothing else in the east end of town was as good as the dump ground…If the history of Whitemud was not exactly written, it was at least hinted, in the dump… The place fascinated us, as it should have. For this was the kitchen midden of all the civilization we knew. It gave us the most tantalizing glimpses into our neighbor's lives and our own; it provided an aesthetic distance from which to know ourselves. The town dump was our poetry and our history (p. 31-36).

In this example, a seemingly repellant place becomes a place full of wonder and delight. Memories such as this can perhaps help lead to a reanalysis of the attitudes towards landfills and ways to help communities develop alternate approaches to these waste sites.

Changes In Trash Composition

The twentieth century in America not only brought about a different means by which to handle solid waste, but also a different attitude towards creating it. This involved the transformation of a society of reuse into one of disposability (Strasser 1999,

p. 18). This trend was a result of the nineteenth century Industrial Revolution. Many of the items that end up in landfills today are ones that were invented a century earlier: tin cans, corrugated cardboard, ready-made clothes, and commercial packaging (Rathke 1992, p. 41). The cycle between waste and production changed significantly at this point as well. Waste products, which once served as raw materials for other industries, simply became waste that ended up in dumps. This in turn created an economic market which depended upon the disposal of old items so that they could be replaced by new products (Strasser 1999, p. 15). Improvements in technologies in the twentieth century allowed for these goods to be mass produced. Production was streamlined, and prices of goods dropped, thereby making them more affordable. People no longer kept objects until they completely fell apart or invested in repairing them. Instead they tossed them into the garbage bins and replaced the used item with a new one. As a result, consumers saw less value in an object that was mass produced by machines than ones that were hand crafted. This devaluing of commodities made it more socially acceptable to discard items.

Another dramatic change over the past century is the overall composition of trash that ends up in landfills. Much of this has been the result of the economic boom following the end of WWII. In the second half of the twentieth century, America became the definitive consumer society as disposable products proliferated in the market. Additionally, rapid advances in technology rendered objects obsolete in a matter of years (Hauser, 2002 p. 41). This kind of material culture still exists today as consumers often quip about the technological advances that make items such as computers outdated as soon as one takes them out of the store. Most often these disposable and obsolete items come packaged in paper or plastic wrapping. On the one hand, this encasement has

reduced the amount of unused goods that are thrown away because they become damaged or rotten before the consumer can use them. On the other hand, this packaging has created a tremendous amount of material that ends up in landfills, since it usually serves one purpose: to get the product from the manufacturer to the consumer without damage.

The change in garbage composition over the twentieth century reflects the changes in consumer products. The amount of paper and plastic in landfills has increased dramatically while the amount of glass and metal continues to decrease (Rathke 1992, p. 104). Construction waste is also a major contributor to landfills. In the past, demolished buildings provided materials from which to build new buildings. Over the years however, the price of raw materials has declined such that it is often more affordable to use new materials rather than try to re-use fragments from the demolition of other structures. While there has been a dramatic increase in the disposal of those kinds of materials, the quantity of discarded elements such as ashes, animal carcasses and food waste has declined (Alexander 1993, p. 6).

Changes in Attitudes Toward Waste

Through all of the past century's measurable changes in the actual content of solid waste, there is a less easily quantifiable change in the American society's attitude toward waste. These complex attitudes are a consequence of the increased waste production resulting from industrialization and the ecological awareness of our actions, which have led to recycling and recuperation efforts (Moser 2002, p. 85). No longer is trash seen simply as a discarded, unwanted item. Certainly negative connotations still exist for waste, but garbage has also been elevated to a new level of discussion. Waste is now a pertinent topic for many different fields: engineering, economics, ecology, history,

landscape architecture, and even art (Moser 2002, p. 88). Each discipline has its own attitudes towards waste. For example, an engineer may focus on how to bury trash effectively so that it poses little hazard to the general public. An ecologist would concentrate on the potential environmental effects of burying the trash in the manner in which the engineer proposes. The artist might consider that same pile of trash and how to use its elements to create a provocative statement about American society. Each perspective provides a valid viewpoint regarding waste, and each represents the current pulse of cultural attitudes. The emergence of these diverse points of view also creates ambivalence and contradictions towards waste. On the one hand, our society respects the need to dispose of garbage safely, yet on the other hand it recognizes the potentially negative environmental and aesthetic impacts of dealing with our solid waste as we currently do.

The evolution from object to trash is often complex and must be looked at on an individual basis to be really understood. Nothing is intrinsically garbage, but only becomes so when a person views it as such. Each society establishes its own reasons for discarding things. It seems that Americans have reached a new level of sorting out objects destined for the dump by throwing away items simply because they do not want them any more (Strasser 1999, p. 4). It no longer has anything to do with need. Our opinions change as we get tired of the every day objects of our lives. We get bored with our wardrobes, or feel like changing the look of our homes. Why keep that old container around when it can be easily replaced by a new one if needed? We are constantly buying objects with little essential value and then tossing them out when we have grown tired of them.

In his book *Rubbish Theory*, anthropologist Michael Thompson describes rubbish through the change in value over the lifetime of an object. According to Thompson, each object has a life history that exists in three stages: transient value, zero value and permanent value (Thompson 1979, p. 10). First, an item has a certain value to us. We use it to serve some need. Whether this need is important or not does not matter. The fact that we determine that that object is desirable is what gives it value. This first stage is often ephemeral as the new objects gradually lose their value as they become worn and used or simply go out of style. The next stage, zero value, marks the point at which the item loses all of its value and one views it as rubbish. Yet it does not necessarily get sent straight to the rubbish bin. Often as an object transitions from one category to another, it is in a state of limbo in which it persists in our lives, awaiting our next decision: do we toss it or keep it? Ironically, if we keep a certain item around long enough it enters into a new phase of value, one that is more permanent. At this point, the item is valued for its historical, sentimental or aesthetic qualities. While this categorization of value of objects provides an interesting view of how an object's value can change over time, it does have limitations. The categories are not as discrete as they may seem. Certainly an object can have less than zero value. It can have qualities that one perceives as dangerous or unpleasant. Additionally once an object reaches permanent value, it does not necessarily have to remain in that category. Objects that have regained value through sentimentalism or history may once again become valueless if the memory of those objects is lost (Moser 2002, p. 94). Nonetheless, this viewpoint does demonstrate how our own fluctuating desires help give value to objects and determine their worth.

As explained before, once an object has lost its apparent usefulness, it does not necessarily lose its value. Objects that have been used and discarded provide an important link to the past. According to Clause Levi-Strauss, these material remains are the only means to understand that 'something' occurred between people in the past. (Levi-Strauss 1997). If that is the case, then the piles of trash that we create provide a significant connection to our history. They detail the values of our society. They describe the everyday elements of our lifestyle. They provide clues to the way we live and the choices we make. Our garbage represents the raw data of our civilization. It has not been culled through by museum curators who have their own value judgments when deciding which artifacts to display. Museums can not possibly house all of the artifacts of our everyday life (Hauser 2002, p. 49). Yet our landfills do. Even though we discard these items so that we no longer have to deal with them, they do not disappear completely from our lives. They contain the memories of our lives. Additionally, they change our landscape through the creation of landfills to inter these objects. The gradual decomposition of these objects potentially will have harmful effects on public health and our environment if we are not careful. Consequently, the value of our trash continues to change long after we have separated ourselves from it.

The changes in lifestyles and attitudes over the past century have led to the overwhelming feeling that we as a nation are involved in a garbage crisis (Alexander 1993, p. 9). We see images in the news about barges full of trash floating up and down the eastern seaboard looking for a permanent resting place. We hear overwhelming statistics about the amount of trash that the average American discards each year. We learn of the environmental impacts of toxic substances leaking out of landfills and into

the ground water. Yet in the midst of this alleged crisis, we continue to generate enormous amounts of waste and dot our landscapes with the burial mounds of this waste. We have created this problem and now we must address its impacts. Few people want to live next to a landfill, especially while it is actively receiving trash. Yet when the landfill eventually closes, there is great potential to see that landscape not as simply a huge pile of discarded items that are negatively impacting the environment, but rather as a time capsule which reflects our cultural attitudes. Additionally, it can help us to investigate the repercussions of our actions and reconnect people with waste processes. Burying trash in large mounds certainly has many consequences, especially for the community that lives closest to the landfill. Understanding the many levels of meaning associated with these discarded objects can help communities address the issues that are a result of these landfills and learn how to help transform that landscape of waste into something that reflects the greater meaning imbedded under the earth.

CHAPTER 3

THE ANATOMY OF LANDFILLS

> Almost all of the organic material remained readily identifiable…onion parings were onion parings, carrot tops were carrot tops. Grass clippings that might have been thrown away the day before yesterday spilled from bulky black lawn and leaf bags…Whole hot dogs have been found in the course of every excavation the Garbage Project has done, some of them in strata suggesting an age upwards of several decades.
>
> - William Rathje describing core samples taken from landfills (Rathje and Murphy 1992, p. 114).

In order to fully understand the impacts of landfills on the landscape and the communities in which they lay, one must be aware of the technical and real aspects of these sites. The Australian archaeologist Rowland Fletcher uses the term Monstrous Visual Symbols, or MVSes to identify the largest monument that a society builds for itself (Rathje and Murphy 1992, p. 82). Many of the MVSes in the American society are landfills. Even though these MVSes might not have been built by the same motivations as monuments such as the Egyptian pyramids or French cathedrals, landfills do require a great amount of technical engineering and regulation.

Conception: The Origin of Sanitary Landfills

The term 'sanitary landfill' originated in the late 1930's. It describes a means of disposing of garbage in a sanitary manner, covering each layer of trash with a layer of dirt each day to prevent vermin from getting into the trash and to eliminate obnoxious odors from wafting into the air (Hickman and Eldredge 2001). It was during WWII when

the concept really gained momentum. The U.S. Army determined that sanitary landfills were an effective way to dispose of garbage in a variety of conditions. It was also relatively easy for them to do since they already had the heavy machinery necessary to dig trenches and bury the trash (Hickman and Eldredge 2001). The treatment of garbage in this manner quickly spread to civilian refuse operations, and by 1945 almost 100 American cities were using sanitary landfills. It took several years, however, before local and federal governments created standards for concerns such as compaction requirements, frequency and depth of cover requirements and limited access. As a result, many landfills were only sanitary in name and did not differ much from open dumps. It was not until 1959 when the American Society of Civil Engineers published a standard guide to sanitary landfilling. Six years later, the federal government created the first solid waste management law, the Solid Waste Disposal Act, which provided grants for state governments to research different aspects of solid waste disposal (EPA Milestones in Garbage 2002). Since the creation of the Environmental Protection Agency (EPA) in 1970, the design of sanitary landfills has become more regulated. In 1979, the EPA officially banned open dumping and set the first federal standards for landfills. Twelve years later in 1991, the EPA improved these standards by addressing requirements for location, groundwater protection, monitoring, and post-closure care (EPA Milestones in Garbage 2002). Today, landfills are primarily regulated by state, tribal and local governments but they also must conform to these federal standards established by the EPA.

The EPA has developed a three-pronged approach toward managing municipal solid waste (MSW): source reduction, recycling and composting, and disposal (EPA Basic Facts). Even though the EPA states the preferred methods of MSW management as source reduction and recycling, 72% of MSW is disposed of through combustion and landfilling (figure 3.1). However, when viewed over the past 40 years, there has been a trend toward reducing the total percentage of MSW that is disposed of in landfills (figure 3.2).

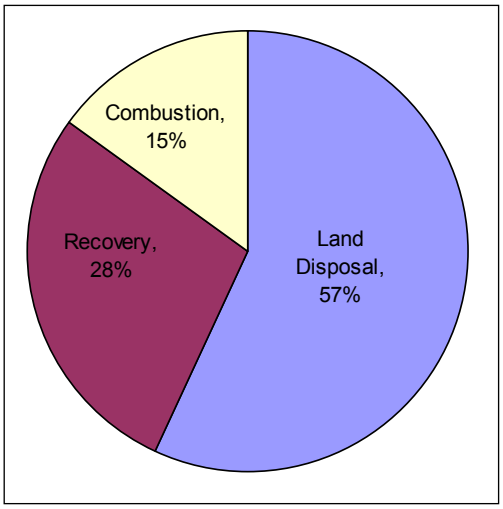

Figure 3.1 Management of MSW in U.S. in 2000 (EPA Basic Facts).

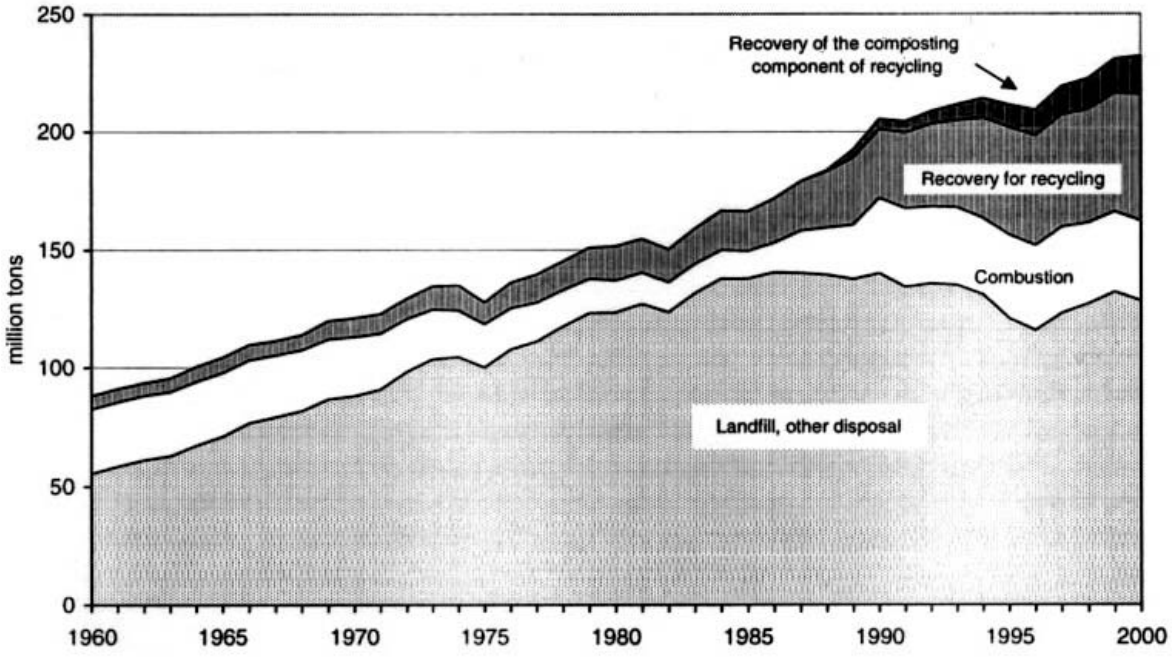

Figure 3.2 MSW Management 1960-2000 (EPA MSW in the U.S. 2000, p. 124).

Skeleton: Landfill Structure

Landfill structure has changed substantially over the past fifty years. The EPA document, *A Decision Makers Guide to Solid Waste Management,* details important information regarding landfill construction, use, and post-use. This document defines the following key terms regarding landfills: waste management boundary, leachate, landfill gas, liner, and cover. *Waste management boundaries* are simply the boundary areas occupied by the landfill waste and are measured in acres. *Leachate* is liquid that emerges from solid waste and usually contains soluble, suspended, or miscible materials that originated from the solid waste. This liquid must be treated carefully since it may contain hazardous materials and could contaminate ground water. *Landfill gas* is a mixture of methane and carbon dioxide generated by the anaerobic decomposition of organic wastes. A *liner* is a system of clay or a geosynthetic membrane on the bottom of the landfill which is used to collect leachate and prevent contamination of the groundwater. A *cover* consists of soil and geosynthetic materials and has two functions: first as a daily cover over the waste at the close of each day's operations, and second as a final cap when the landfill is closed to prevent elements from entering and leaving the landfill mound (p. 9-9 and 9-10). Figure 3.3 shows a schematic diagram of how landfills are built. The landfill is essentially a self-contained unit with alternating layers of garbage and soil. Appropriate mechanisms must be in place to monitor ground water and methane gas production as well as to collect leachate.

Before construction of a landfill, engineers determine the maximum size for the landfill. The landfill engineers establish the topographic lines which indicate the size and shape of the trash mounds to be built. The maximum slope for the mounds is three to

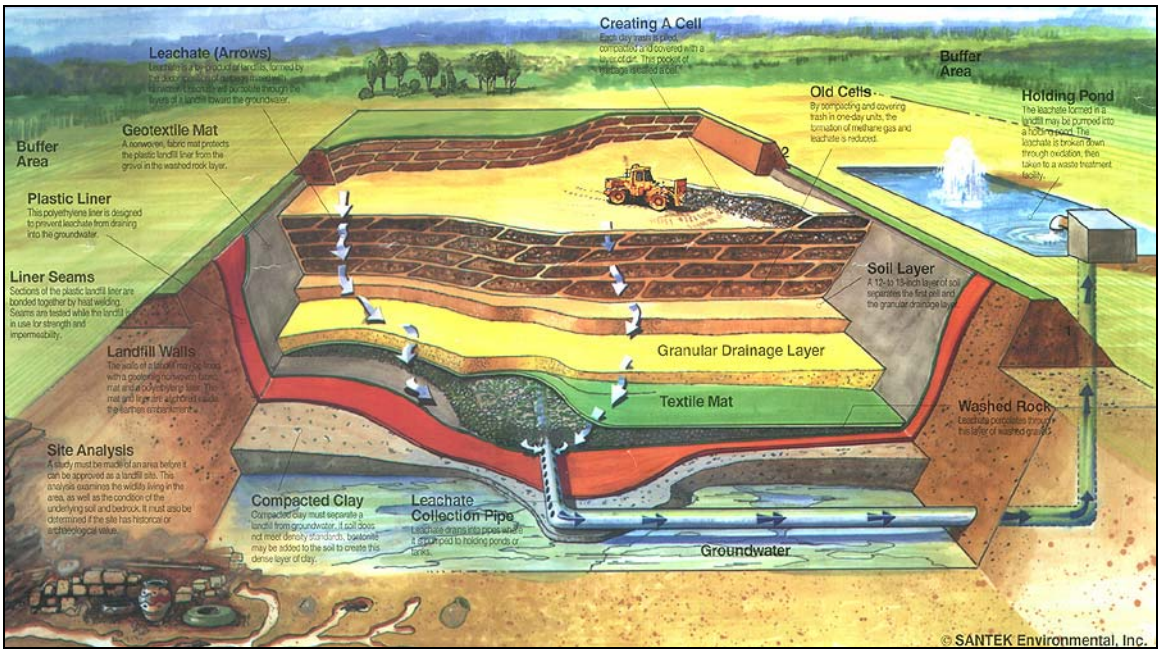

Figure 3.3 Landfill schematic diagram (Santek Environmental).

one; therefore the final height of the mound depends on the initial footprint. Each day, the sanitation workers deposit the trash in order to build the mounds as the engineers predetermined them. The speed at which the mounds reach their maximum height depends on how much MSW communities deposit in them (Rickard 2003). When a landfill is active, garbage trucks deposit the solid waste into the landfill, compact it down, and then cover it with a layer of soil, thus creating cells of trash within the entire landfill (figure 3.4). Compacting the waste in this manner helps to reduce the amount of settling that occurs

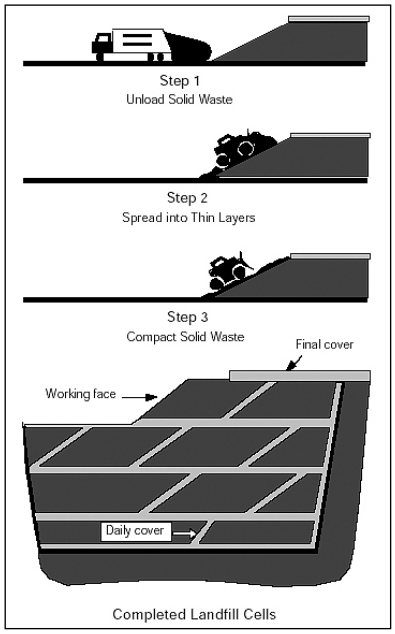

Figure 3.4 Solid waste compaction
(EPA Decision Maker's Guide 1995, p. 9-31).

over time. With proper compaction, the surface will settle to 80 to 85 percent of the original height within five years (EPA Decision Makers Guide 1995, p. 9-14).

Innards: Landfill Contents

Landfills are huge mounds of trash, but it is important to get a better understanding of the details of this trash to begin to explain the values inherent in the landfill contents. The EPA has been documenting the kind of garbage that Americans have placed in the municipal solid waste stream over the past forty years. This information reveals trends in waste production, and it gives insight into the specific contents of landfills. The EPA document, *Municipal Solid Waste in the United States: 2000 Facts and Figures,* shows the most recent statistics of this study.

The 2000 Facts and Figures EPA report defines municipal solid waste (MSW) as everyday items such as product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, appliances, and batteries. Contents such as construction and demolition debris, municipal wastewater treatment sludge, and non-hazardous industrial wastes are deposited in landfills, but are not considered MSW and therefore are not represented in the graphs from the report (p. 25). This EPA report analyzes the MSW in two ways. The first is by *material,* which categorizes items based on the components of the products, i.e. paper, yard trimmings, food scraps, plastics, metals, glass, wood, rubber, leather, and textiles. The second analysis considers *product,* which categorizes the trash into types of goods, i.e. containers and packaging, nondurable goods, durable goods, and food scraps (p. 5). This classification is helpful because it reveals not only the individual materials of the trash, but also the kinds of products that are making their way into the MSW stream.

Over the past forty years Americans have been steadily increasing the amount of total MSW. Figure 3.5 shows that the total amount of MSW generated in the U.S. has increased from 88.1 million tons to 231.9 million tons. The amount of per capita generation has increased from 2.7 pounds per person per day in 1960 to 4.5 pounds per person per day, thereby illustrating that the increase in total MSW production is not just due to an increase in the total population over the past forty years. It is important to note however, that the waste generation statistics presented here detail the amount of waste created before any of the waste has been recovered or recycled; therefore these numbers do not reflect the exact amount of waste that is being disposed of in landfills.

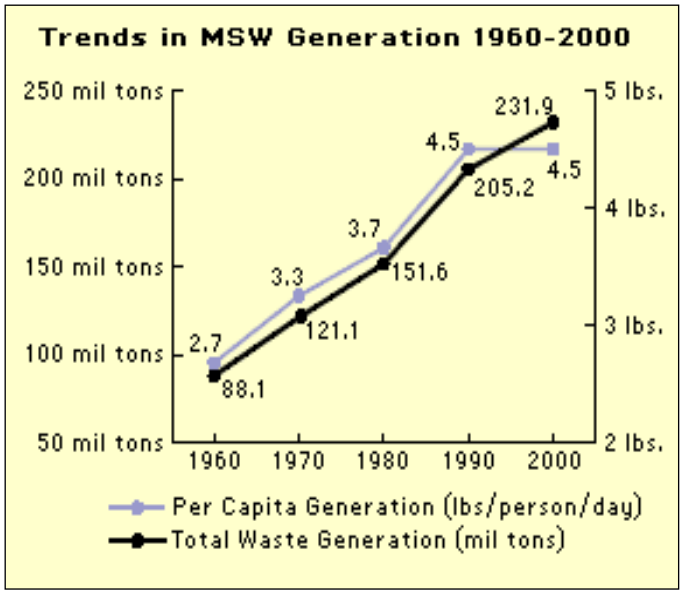

Figure 3.5 MSW Management 1960-2000 (EPA Basic Facts).

Figure 3.6 shows the increase in the generation of different materials in MSW from 1960 to 2000. Paper and paperboard have become the most dominant material in MSW and now comprise 37.4 percent of generation in 2000. On the other hand, the amount of yard trimmings as a total MSW percentage has been declining in recent years due to state and local legislated landfill bans and backyard composting. Metal materials and food scraps have remained at a somewhat constant percentage of the total MSW over the past four decades.

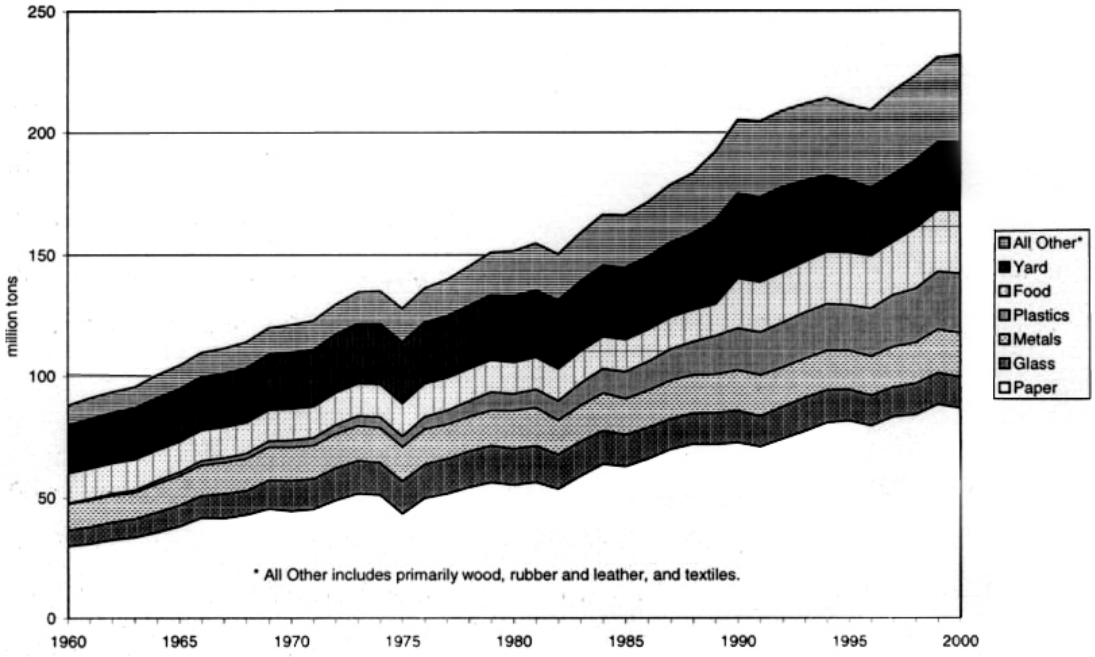

Figure 3.6 Generation of materials in MSW 1960-2000 (EPA MSW in U.S. 2000, p. 56).

The amount of plastics in MSW has increased substantially over the years as plastic products are more common than they were fifty years. The increase in plastics is evident when one looks at the generation of products in MSW from 1960 to 2000. Figure 3.7 shows graphically that nondurable goods and containers and packaging have accounted for the large increases in MSW generation. The Department of Commerce defines nondurable goods as those having a lifetime of less than 3 years. Products made of paper and paperboard comprise the largest portion of nondurable goods. Other nondurable products include paper and plastic plates, cups, and other disposable food service products such as disposable diapers, clothing and footwear, and linens (EPA MSW in U.S. 2000, p. 71).

As seen by the previous graphs, over the past forty years, Americans have been producing more and more solid waste, and the composition of that waste is changing. In

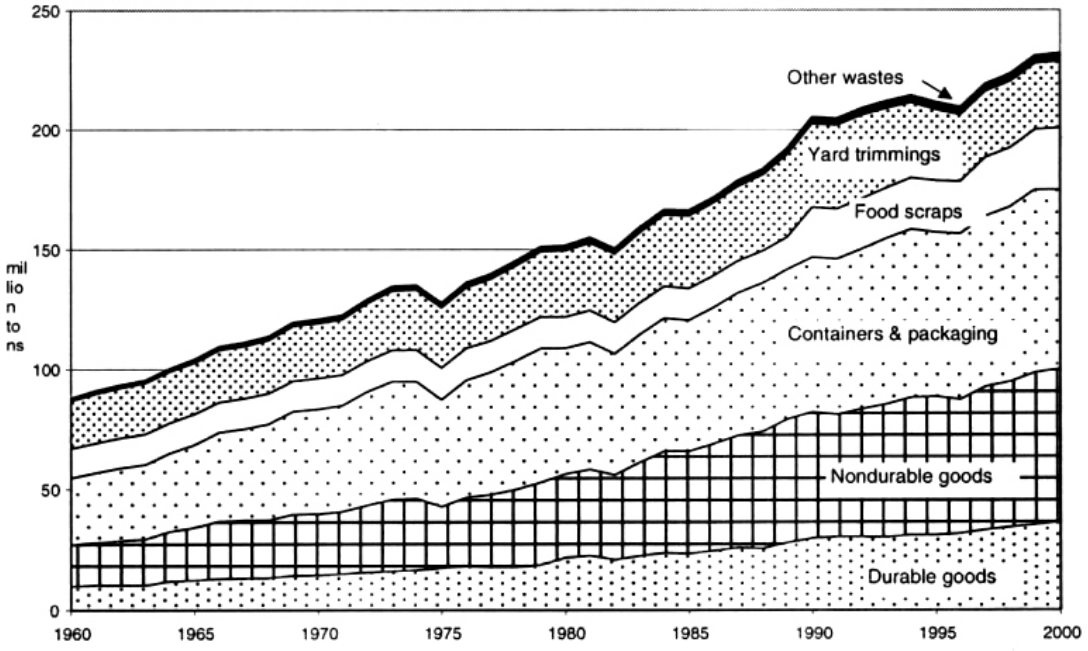

Figure 3.7 Generation of products in MSW 1960-2000 (EPA MSW in U.S. 2000, p. 89).

the year 2000 Americans generated over 230 million tons of solid waste. Of that generated MSW, 57 percent was disposed of in landfills (figure 3.1); therefore landfill operators buried a total of 131 million tons of that MSW under compacted earth. That trash has been buried even more over the past two years as additional garbage continues to be layered on top. Millions of tons of paper, plastic, metal, glass, yard clippings, and food scraps lie in these highly engineered sites. Even if some of the products that go into landfills are biodegradable, the biodegradation process does not proceed at its normal pace. Landfills are not compost piles; rather, they are designed to reduce and control decomposition so that harmful leachate and methane gas do not cause hazards (Alexander 1993, p. 136).

Digestion: Decomposition in Landfills

For biodegradation to work most efficiently, debris should be in small pieces, kept wet, and regularly turned to expose oxygen to the microorganisms that feed on the debris. Sanitary landfills by their nature prevent such an environment and create anaerobic conditions in which decomposition occurs in a much different manner. Anaerobic biodegradation depends on variables such as acidity and temperature of the landfill as well as the size of the debris itself (Rathje and Murphy 1992, p. 117). Additionally, anaerobic decomposition occurs at a much slower rate than aerobic biodegradation. As a result, landfills are prolonging the life of the garbage that we discard. William Rathje, an archaeology professor at the University of Arizona, has excavated landfills to find out exactly what happens to the contents after decades of entombment. Some of these excavations are of landfills that have been burying garbage for almost forty years. He and his garbage team have taken core samples from numerous landfills and have revealed the slow decomposition process inside of them. They detail the specific contents of trash that has been buried for decades. Often it is easy for them to tell the exact date of the trash being excavated because they can simply read the dates on the various packages and newspapers (Rathje and Murphy 1992). Rathje has even coined the word *garbology* to describe the archaeology of modern garbage. Certainly landfills provide an environment that make this kind of exploration easier because the contents remain fairly intact and easy to identify, even after decades of burial.

Embalming: Landfill Closure Procedures

No matter how sophisticated landfill technology is, each landfill will at some point reach capacity and will need to be closed (figure 3.8). There are strict EPA

guidelines to ensure that the landfill is closed in accordance with an approved closure plan. The 1995 EPA publication, *A Decision Makers Guide to Solid Waste Management*, states that, "the primary objectives of landfill closure are to establish low-maintenance cover systems and to design a final cover that minimizes the infiltration of precipitation into the waste" (p. 62). Planning for the closure of the landfill should begin well before the landfill stops receiving waste. These measures help ensure that the landfill will pose minimum hazards. Post-closure care can last for over 30 years during which time the landfill owner is responsible for the general upkeep of the site as well as the monitoring of the site's environmental features.

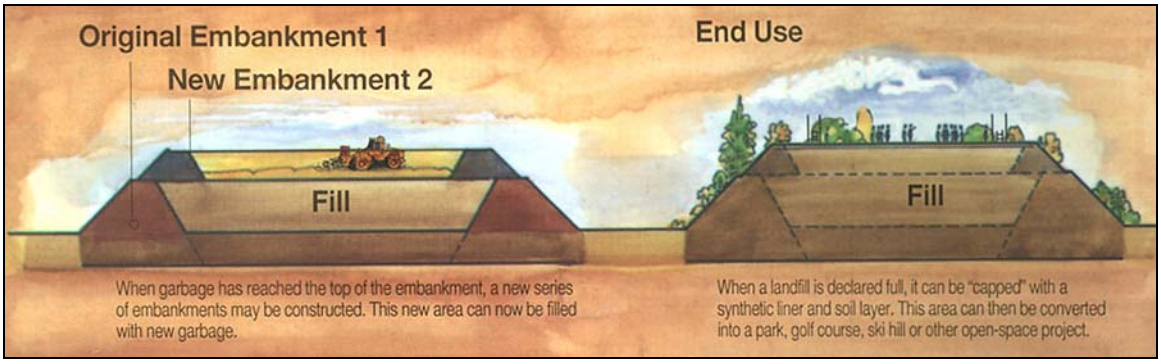

Figure 3.8 Illustration of active and capped landfill mounds (Santek Environmental).

The cover that is placed over the landfill is an important barrier which helps to curtail potential contamination from the site; thus it is important to minimize possible damage to this cover. The EPA requires that the final cover system be composed of an infiltration layer a minimum of 18 inches thick which is then overlain by an erosion layer a minimum of 6 inches thick (EPA Decision Makers Guide 1995, p. 9-49). Synthetic liners and soil usually comprise this cap. Settlement of the garbage continues as decomposition occurs. Although this settlement slows after the first few years of closure,

this could potentially cause breaks in the landfill cover. It is also important to prevent erosion of the cover. This is often addressed by planting vegetation on top of the landfill (EPA Decision Makers Guide 1995, p. 9-63).

Controlled water drainage and leachate and gas monitoring are also essential aspects to ensuring the safety of closed landfills. Drainage patterns may change as the landfill settles. As a result, drainage channels must be inspected periodically. Additionally the surface runoff must be properly managed so as not to cause flooding or erosion. Even after the landfill cap is installed, the landfill will continue to generate leachate. This leachate needs to be collected and treated either on-site or at an off-site facility. The leachate collection system must be monitored regularly to ensure that no contamination of the groundwater is occurring. Finally, gas emanating from the landfill must be controlled and monitored. Gas monitoring probes should be installed to help detect landfill gas. The gas is composed mostly of methane, a dangerous greenhouse gas. It can either be mitigated by flaring it on site or it can be collected and used as a fuel additive (EPA Decision Makers Guide 1995, p. 9-64).

The number of active landfills is decreasing each year. From 1988 to 2000, the number of open landfills decreased by 5967 (figure 3.9). New landfills are much larger than they used to be, and therefore they can accommodate the increase in MSW that has occurred over the past several decades. However, with more older landfills being capped, there are more and more of these landscapes that warrant new design strategies. Understanding the mechanics of the landfill will help guide designers in dealing with the unique qualities of these sites. The steep slopes and thin soils of landfills are often juxtaposed by the surrounding environment. The growing conditions of these landscapes

tend to be stressful to plants because of the thin, poor quality soils which limit moisture and nutrient retention. Gas seepage and erosion can also add stress to plants (Marton 1996, p. 41). There is also some concern that the roots of large plants might rupture the landfill cap. However recent experiences and studies suggest that these problems could be alleviated by increasing the soil depth and developing stronger landfill covers (Marton 1996, p. 42).

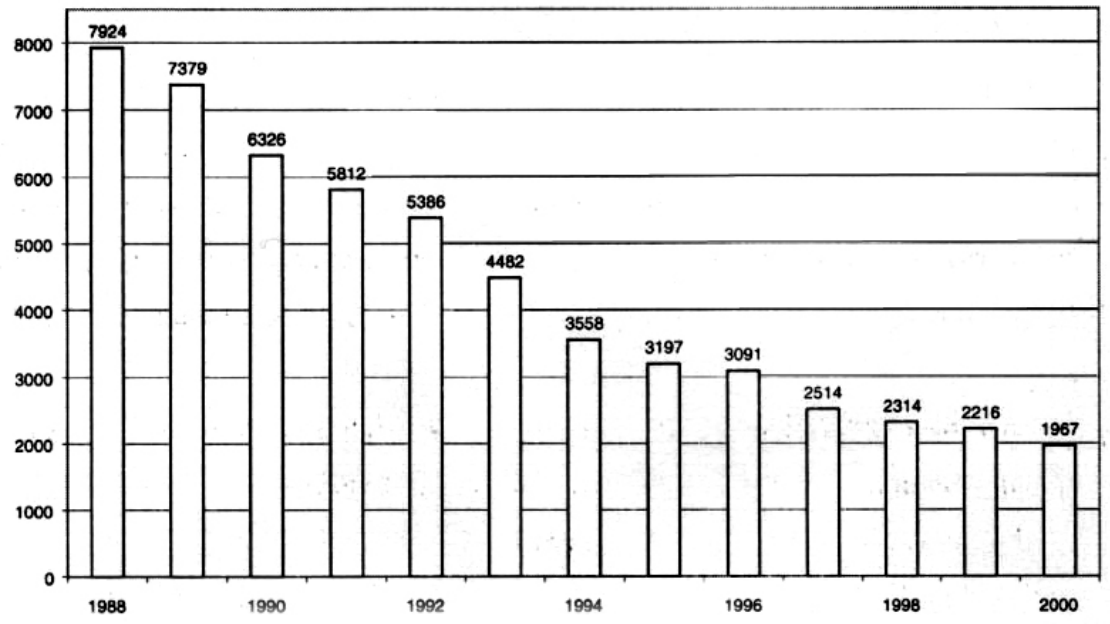

Figure 3.9 Numbers of active landfill in the U.S. 1960-2000 (EPA MSW in the U.S. in 2000 p. 15).

While the EPA *Decision Makers Guide* lists nature parks, recreation parks, wilderness areas, golf courses and parking lots as appropriate uses for landfill sites after they have been capped, it is important for designers to realize that these sites have inherent history buried beneath the surface. Post-use treatment of these landfills can potentially reveal that history while at the same time provide environments that suit the

needs of visitors. As Mierle Ukeles, the resident artist in the New York City department of Sanitation said in regards to the Fresh Kills Landfill, "this place could be a site of transformation, where people could see our power to take something that was so degraded, and such a hard thing to bear, and heal it" (quoted in O'Connell Aug 2001, p. 84). In this way designers can help bring healing to these degraded sites. Part of that healing process involves revealing the literal meaning of the site. It is important to understand the technical aspects of landfills in order to be aware of the difficulties in working with those kinds of landscapes. Designers must also understand that these sites have challenges as well as potential. Comprehending the realistic aspects of landfills can also lead to new ideas about metaphorical interpretations of these places. The following chapter will explore this interpretation further.

CHAPTER 4

LANDFILL INTERPRETATIONS

> If these phenomena [waste and abandonment] are simply regarded with distaste, if our only hope is to hide them or push them further away from wherever we happen to be, then in time we shall live surrounded by our own excrement. But when we look at waste and scars with interest, we may learn how to integrate them into a continuous cycle of use (Lynch 1972, p. 190).

Landfills are much more than highly engineered heaps of trash. The following chapter will explore how landfills are replete with meaning about twentieth and twenty-first century American society. Viewing landfills in this manner can help lead to innovative and comprehensive interpretations of those landscapes as their uses change over time.

For the purpose of this thesis, the interpretation of landfills sites will be divided into two categories: first, as postmodern sublime landscapes and, secondly, as embodiments of place identity. Both of these interpretations stem from the fact that landfills are literally huge mounds of garbage. Landfills contain many of the same qualities as sublime landscapes; yet, rather than being majestic places of wilderness carved out by forces of nature, they are grand testaments of humankind's technological advance and consumer habits. They still exhibit, however, some of the same elements found in sublime wilderness landscapes.

Landfills also create a sense of place identity, not just through their sheer size, but also in the history that they encapsulate. By their nature, landfills become places that are enriched with culture and values. They can therefore become places where garbage is no longer viewed as purely negative, thereby allowing communities to regain pride through their reuse of these degraded sites. It is important that communities recognize the uniqueness of the previous site history as they begin to create new identities for these places in order to prevent these waste sites from becoming just another generic kind of landscape.

Sublime Landscapes

The sublime has existed in discourse for centuries. Even though the arguments as to what evokes sublime experiences have changed over time, the sublime has always been equated with the feeling of astonishment (Nye 1994, p. 3). It was not until the eighteenth century, however, that the concept of sublime in terms of landscape gained popularity. It was at that point when nature and wilderness were seen as the primary means by which one could experience this sense of astonishment. This was due in part to the "positive revaluation of the natural world that by the eighteenth century had become a potential source of inspiration and education" (Nye 1994, p. 6). This sense of the sublime in nature was

Figure 4.1 The 19th Century American Sublime: Photograph by F. Jay Haynes of the canyon from Inspiration Point, Yellowstone Park, 1892 (R. J. Balrog's website).

quite strong in America as new frontiersmen explored the natural wonders of the North American continent (figure 4.1).

This interest in the ideas of the sublime brought about further intellectual exploration into the source of these feelings and the need to distinguish the concept of the sublime from the concept of the beautiful. Edmund Burke's mid-eighteenth century work, *A Philosophical Enquiry Into the Origin of Our Ideas of the Sublime and the Beautiful,* provides a detailed examination of the concepts of the sublime and the beautiful and the qualities that each embodies. Burke felt that his contemporaries were often misusing the terms *beauty* and *sublime* and that, "both were indiscriminately applied to things greatly differing, and sometimes of natures directly opposite" (Burke 1958, p. 1). For Burke, the overwhelming difference between the two was that the sublime elicited a sense of fear.

Eighteenth century notions of wilderness brought about emotional reactions often of terror and awe, and in the eyes of eighteenth and nineteenth century Americans, sublime landscapes evoked emotions that were far from pleasurable (Cronon 1995, p. 73). While the concept of wilderness has changed over the past two centuries, the sublime still exists in our surroundings, albeit in a different form. The kinds of things that provoke the feelings of astonishment associated with the sublime are socially constructed, and therefore different kinds of landscapes provoke this feeling now than those that did two hundred years ago (Nye 1994, p. 3). Yet even though Burke's inquiry was through the eyes of an eighteenth century theorist, there are many aspects to his concept of the sublime that one can apply when viewing twentieth and twenty-first century landscapes. The main difference however, is that one can now perceive the

sublime in man-made landscapes, not just the awe-inspiring natural landscapes that eighteenth and nineteenth century viewers labeled as sublime. A landfill is the example of the kind of landscape that can provoke some of the emotions equated with eighteenth century sublime landscapes. The key element is that these sublime sights stimulate feelings of astonishment. Often this triggers a feeling of fear. However, it does not result in harm, but rather a sense of delight, much in the way that a roller coaster ride evokes both fear and pleasure (Burke 1958 p. 40).

As described in the previous chapter, landfills are extremely engineered, man-made sites. Regarding them, however, from the perspective of the sublime gives them another more meaningful quality; therefore it is important to investigate the sublime character of these landscapes to see how they can be places that elicit feelings of astonishment and awe. The sublime nature of landfills can be expressed in the following qualities: terror, vastness, smell, and contrast and juxtaposition. These qualities all contribute to experiences that are indicative of the sublime.

Terror

According to Burke, terror is one of the strongest emotions that the mind is capable of feeling (Burke, 1958 p. 39) and is therefore "either more openly or latently the ruling principle of the sublime" (p. 58). Yet this sense of terror does not produce harm since it is always at a safe distance:

> When danger or pain press too nearly, they are incapable of giving any delight, and are simply terrible; but at certain distances, and with certain modifications, they may be, and they are delightful, as we every day experience (p. 40).

This vacillation between terror and delight is an important attribute because it produces conflicting feelings, and the viewer is in a state of indeterminacy. The viewer regards the

scene with an air of great seriousness because of the danger that it represents. Yet there is a feeling of safety that keeps the viewer from simply running away.

Landfills can evoke the same kind of sense of terror for many reasons. First, they are inherently hazardous sites. Toxic sludge oozes through them as the material products from our society decompose and leak down through the mound. Methane gas bubbles up through the garbage creating volatile spots along the surface. The ground gradually settles, creating visible changes in the topography in a relatively short period of time. Additionally, they are visual testaments to the wasteful culture in America (figure 4.2). Statistics of tonnage of solid waste production are often hard to appreciate when there is no comparison by which to understand the data. Seeing enormous landforms that are essentially huge mounds of trash has a different, more terrifying effect because the viewer can see the actual physical representation of all of that garbage.

Figure 4.2 Daily dumping at the Athens, GA Landfill (photo by author).

Vastness

Eighteenth century sublime landscapes were generally too large to be fully comprehended by one's spatial relationship to them. The enormity of canyons or mountains could only be grasped in the viewer's mind, and this in itself was so profound that it elicited terror and awe (Meyer 1998, p. 13). Burke describes this aspect of the

sublime as greatness in dimension or vastness (Burke 1958, p. 72). Vastness of size is certainly still a strong factor in the sublime from a twenty-first century point of view, but another more recent perspective is that of vastness of time. According to Elizabeth Meyer, "this postmodern sense of the sublime landscape has more to do with the limitlessness of time than with the limitlessness of space or mass" (Meyer 1998, p. 15).

When viewed in these terms, landfills express both vastness of space and time. A landfill like the Fresh Kills Landfill on Staten Island, NY is over 2,200 acres and reaches heights of up to 225 feet, making it one of the tallest land features on the eastern seaboard (Fresh Kills Website, Fresh Kills Reference, 2002). Fresh Kills is a landscape of enormous scale that is hard to comprehend (figures 4.3 and 4.4). Yet the vast scale is not only physical; it taps into the temporal as well. Degraded landscapes such as landfills reveal open-ended processes. Decomposition occurs at varying rates throughout the landfill. The amount of time it will potentially take to biodegrade the contents is quite long. Additionally, these landscapes show, via temporal scales, the effects of human disturbance on the land (Meyer 1998 p. 15). Human use has highly affected these kinds of sites, and that human impact will be evident for centuries, perhaps even millennia.

Figure 4.3 Aerial views of Fresh Kills Landfill (Cryptome website 2002).

Figures 4.4 Aerial view of Fresh Kills Landfill (AirPhoto USA 2000).

Smell

Visual sense is not the only way to evoke the sublime; the sense of smell can also bring about feelings of astonishment and terror. According to Burke, "no smells or tastes can produce a grand sensation, except excessive bitters and intolerable stenches" (Burke 1958, p. 85). Burke goes on to explain that while foul smells in themselves usually evoke terror without the subsequent delight, if moderated in some way, such as through a literary description, they can then suggest astonishment. That is to say, simply reading a

vivid description of a retched smell is enough to make a person feel disgust and fright, yet experiencing in this way is somewhat safe since that person did not really have to smell the offensive material.

Decomposing waste certainly has a pungent and offensive odor. The smell of rotting garbage can easily provoke overwhelming disgust. Landfills do smell when they are actively receiving garbage before the landfill operator has covered up the fresh load of garbage with dirt. If handled properly however, a closed landfill should not emit any of these nauseating odors. Yet the smell associated with rotting garbage should not be completely forgotten. In fact, that is one aspect that most people anticipate experiencing when visiting dumps. Awareness of the odor, whether through a purely descriptive rather than an experiential manner, can help bring about the feelings associated with the sublime.

Contrast and Juxtaposition

While not typically viewed as an element of the eighteenth century sublime, contrast and juxtaposition are key facets of the postmodern sublime and are especially useful when observing human constructed landscapes (Meyer 1998, p. 28). The experience of viewing a highly engineered man-made feature in the landscape becomes all the more powerful when surrounded by more naturalistic elements. This kind of striking contrast often allows the viewer to really see the site for what it really is – a huge mound of trash (Condon 1998, p. 56).

Landfills stick up out of the landscape. This juxtaposition with the surrounding environment gives greater impact to the experience of seeing one of these sights. The mounds of trash rise up in an organized manner that is obviously man-made. Yet these

places are not completely disconnected from their surroundings, and they experience the same cycles and forces of nature as their surroundings. This adds another dimension to these sites because they often reclaim elements that are more indicative of the area before it was disturbed. For instance, the Fresh Kills Landfill, which was built on wetlands, has developed into a whole new ecosystem of its own. While it is by no means a natural environment, ecological functions still exist in the landscape. As a result, the landfill serves as valuable wildlife habitat (Fresh Kills Website, Fresh Kills Reference, 2002). Contrast therefore exists not just with the environs but within the sight itself.

These contrasts can also reveal the ambiguity associated with man-made places. On the one hand, degraded sites such as landfills represent technological achievements of our civilization. On the other hand, they also are sources for shame because of the harmful impacts of those kinds of technological accomplishments. This interplay between the forces of human progress and natural processes creates an uncertainty and discomfort that is indicative of the postmodern sublime (Meyer 1998, p. 10).

Landfills express this ambiguity. In terms of public health, they provide a much safer means of garbage disposal than existed a hundred years ago. Yet they negatively affect the ecological health of the landscape. Additionally they have a negative psychological effect on the communities in which they are built. This vacillation between shame and gratification is analogous to the sublime's fluctuation between terror and delight. In this way, the postmodern sublime is more of an "eco-technological sublime [which] operates in the margins between a society dependent on nature as a resource for production and technological growth and a society interdependent with nature as a source of biological life and spiritual sustenance" (Meyer 1998, p. 25).

For the sublime to have its greatest impact, it is important for both the cultural and environmental histories of the site to be evident (Meyer 1998, p. 24). This is the basis for revelatory design. Through the revelation of the layers of use of the landscape, the viewer can begin to comprehend the possible meanings of that landscape and the effects of human activity within a larger ecological framework (Greco 2000, p. 3). Additionally since the postmodern sublime landscape is mostly man-made, the history of human interaction with that landscape is an essential part of the identity of that place.

Place Identity

Exactly how we decide to acknowledge the history of sites becomes a force in itself and in a way begins to direct us into a certain kind of future. In his book, *What Time Is This Place?*, Kevin Lynch asks important questions regarding the factors upon which we base our decisions to preserve certain elements of the past:

> Are we looking for evidence of the climatic movements or for any manifestations of tradition we can find, or are we judging and evaluating the past, choosing the more significant over the less, retaining what we think of as best? Should things be saved because…they are unique or nearly so or…because they were most typical of their time? Because of their importance as a group symbol? Because of their intrinsic qualities in the present? Because of their special usefulness as sources of intellectual information about the past? Or should we let chance select for us and preserve for a second century everything that has happened to survive the first? (1972, p. 35-6).

These kinds of questions help us to understand that the very choice of culling through the past affects our present consciousness. Just as the museum curator must choose which artifacts to display to tell a story, designers must also carefully decide how much landscape history to reveal as they try to incorporate present day use of sites.

The objects that we use and discard describe the values of our society at certain time periods. Likewise, the landscape in which we live gives details of our culture and

the choices that we collectively make. The human landscape provides clues to our culture's history that can be read like a book. As stated by Pierce Lewis, "the culture of any nation is unintentionally reflected in its ordinary vernacular landscape" (quoted in Lippard 1997, p. 9). Landscapes evolve over time, not just through ecological function, but also through human use. In this way, the past is always somehow attached to the present and is "constantly being broken down and reintegrated and reinterpreted into the present" (Lippard 1997, p. 85). A place such as a landfill has a specific purpose for our society: to safely conceal our garbage. The lifespan of that landscape as an active landfill is limited from the very beginning. These places must one day take on new identities when they cease accepting waste. Yet the history of that place as a landfill has important implications for future uses and interpretations of that site.

The landscape of landfills is layered, both physically and metaphorically. These sites are imbedded with cultural artifacts, and yet at the same time, have serious implications toward the ecology and health of the surrounding landscape and community. The questions that Kevin Lynch asks regarding preservation are relevant when approaching degraded landscapes such as landfills. These sites do represent a certain time in our history when we have deemed it acceptable to create large mounds of trash. They are visual symbols of our consumption and willingness to discard certain material goods. They also contain artifacts that chronicle our very lives. Acknowledging these levels of meaning can be helpful in determining how to address these places and how the past and present are infinitely connected. Additionally they help point to ways that these degraded sites are important when regarding place identity. Landfills can create place identity in two ways: first, internally through the waste that is buried and secondly,

externally through the manipulations of the topography of the landscape that are the result of burying that waste.

Internal identity

By its very definition, waste has negative connotations. However, garbage can be seen as a positive element as well. Historian David Gross describes two ways in which one can view waste in a positive manner:

> first it can reveal something about the nature of the society that both defines *what waste is* and determines just when and why and how certain objects come to be declared worthless…The second function that waste can have goes well beyond its role in providing clues to the norms, codes or categories of some previous epoch…waste may also make visible certain larger "truths" that transcend any particular era of the past and consequently have the capacity to shed some light even on our own present and possibly our future as well (Gross 2002, p. 34).

Gross' description of the first function of waste as a determinate of social values provides insight as to how landfills can be of archaeological importance. Archaeologists sift through the material remains of past cultures looking for evidence of social, cultural and ecological change. The relationship of one object to another and the ground in which they are buried often reveals a deeper, more actual meaning of the artifact (Lippard 1997, p. 116). In a landfill, however, the relationships among buried objects have less importance than they do in an ancient settlement that has been discovered. For instance, in a landfill an item such as a bottle opener could be buried beside a diaper. These two objects have no relationship to each other for the function of one is completely independent from the other. Therefore the exact location of objects in a landfill may not have any significance in terms of its use in conjunction with other items. On the other hand, its vertical location within the entire mound has some importance. The vertical layer in which the item is buried indicates when that item was discarded. This

information is useful when looking for changes in daily habits that could be reflected in the trash content. As discussed in chapter three, the amount of paper products in landfills has increased dramatically over the past few decades. A landfill layer from 40 years ago would therefore have much less paper than one from a few years ago. A glimpse into these landfill layers can show many interesting facets about our society. As William Rathje's Garbage Project discovered, "landfills represent valuable lodes of information that may, when mined and interpreted, produce valuable insights – insights not into the nature of some past society, of course, but into the nature of our own" (Rathje and Murphy 1992, p. 4). It is important to realize that these discarded objects are not just a collection of artifacts that tell stories; they also point to the society and values that determined the degeneration of that object from one of use to one of waste (Neville and Villeneuve 2002, p. 4). When viewed in this manner, the place identity of landfills is largely defined by the fact that the landscape contains these artifacts from our society that in themselves are full of meaning. We have created these sites and imbedded them with objects that represent changing values of our culture.

The second point that Gross brings up is the potential for waste to somehow reveal certain "truths" which reveal something greater about ourselves. If this is to occur, waste must undergo a metamorphosis of sorts in which it goes from being rubbish to an object that has value once again. The person valuing the object now, however, must be doing so for reasons that are different from the original appreciation of the item (Gross 2002, p. 34). This change in attitude perhaps will lead to a better understanding of our deeper values. This approach taps into values associated with sentimentality and the idea that the usefulness of an object is not necessarily what gives it value. Once an item

becomes a cherished element in our lives, it has a new status and no longer is simply a commodity. This viewpoint is useful when trying to regard landfills in a different way. If the trash that is imbedded within can gain a different level of meaning through new interpretations, then perhaps these degraded sites can be transformed into places that allow the landscape to speak and tell its history of disturbance in a way that is not shameful.

External Identity

The physical form of landfills has great meaning as well in terms of place identity. Because of environmental concerns the initial landfill pit does not extend very deeply into the ground and as a result, these large mounds of trash rise up out of the earth (Enn 2003). In his book, *Space and Place*, the geographer Yi-Fu Tuan discusses the ways in which place identity can be defined. Tuan states that one of the factors of place identity is visual in that "place is whatever stable object catches our attention" (Tuan 1977, p. 161). According to Tuan, these features serve as visual landmarks as the viewer's gaze pauses at points of interest in the landscape. Tuan goes on to illustrate how scientists and artists can help draw our attention to places and make us aware of experiences of that place that we may otherwise have not been aware of (p. 162). Using these kinds of factors for place identity can help bring more understanding to derelict sites such as landfills. They already serve as visual monuments in the landscape. Designers can augment the monumental stature of landfills by exploiting their form and making them places to be noticed. Designers can extend that feeling even further by helping visitors understand the embedded meaning within these landscapes and their connection to our society's values.

Another way that the physical form of landfills has an impact is through their ability to express the temporal aspect of the world. As discussed previously, this is an aspect of the sublime nature of landfills. However, in terms of helping to define a sense of place, the temporal aspect of these sites can have its greatest effect in demonstrating the nature of change. Landscapes are not static, and humans have a profound impact on the rate of change of many landscapes. As each layer of the landfill is built higher and higher, there is a physical representation of our waste. If these places are left hidden behind fences when they are finally capped and their use in terms of fulfilling human needs is not continued, then there is a greater chance of the community continuing to view these sites with disgust. However, if the temporal aspect of change continues and communities learn how to find new uses for them, they can then approach these places in a different manner. It is important to remember that to re-use the site is not to forget the past use of it. Recognition of the prior importance of that landscape leads people to self-understanding and can help lead to new attitudes and actions (Lynch 1972, p. 194).

It is important to recognize the past use of landfills after they have been capped because it will help our current culture to comprehend these visual symbols in terms of our consumption of goods. The past that is buried inside of landfills is not so ancient that it is inaccessible. Those entrenched artifacts inside the mounds were once part of the present for anyone that is alive today. Over time, however, people will become less connected to the discarded items as new generations produce their own trash. Yet in a larger scale, the connection remains because the garbage, no matter what the contents, still represents our society's willingness to consume and discard. If a capped landfill contains no recognition of its past function, then the sense of place and the connection of

that place to society's values will be lost. We must recognize the importance of these places in their ability to make us more aware of the effects of our consumption and to help reconnect us to the past, for in order "to strengthen our sense of the self, the past needs to be rescued and made accessible" (Tuan 1977, p. 187).

CHAPTER 5

EVALUATIONS OF INTEGRATIVE APPROACHES TO CAPPED LANDFILLS

> The closure of the Fresh Kills Landfill is, by far, the highlight of my 27-year political career, and perhaps the greatest victory in our Borough's history. The closure of the dump represents a bright, new beginning for Staten Island.
>
> --Staten Island Borough President Guy V. Molinari, March 22, 2001 (Press Release)

Landfills are sites that communities can adapt to serve other needs. This chapter explores ways in which landfills are treated once they have been capped and evaluates the depth of the post-closure treatment in terms of integrating aspects of the sublime and place identity. The evaluations of four case studies will then lead to a discussion in the following chapter about how designers can use design elements to emphasize the importance of landfill sites and to interpret the concepts of the sublime and place identity.

Conventional Treatment

Adapting landfills to new uses is a challenging endeavor. The biggest concern in re-using these sites is the potential threat to public health. As a result, when most landfills are capped, they are simply fenced off and kept isolated from the surrounding community (Rickard 2003). Even if the site is not adapted to a new use, it must be monitored for at least thirty years to ensure that there is no contamination of ground water or other kind of health hazard for the area (EPA Decision Makers Guide 1995 p. 9-63).

High costs and potential structural problems limit the kinds of development that can be placed on landfills (Marton 1996, p. 38). As open greenspace becomes more and more valuable, communities have been looking for ways to re-adapt landfills to accommodate new use areas. As a result, more communities are transforming their capped solid waste disposal sites into recreational amenities such golf courses, nature parks, or ball fields. This kind of treatment does render the landfill site useable once again, yet it often does not address all of the complexities and potential of these sites.

It is useful to investigate ways that communities have addressed waste sites in order to evaluate the success of those kinds of designs and determine better ways to approach redesigning these places. Mira Engler, professor of Landscape Architecture at the Iowa State University, has developed eight descriptions for ways that waste site facilities are treated: camouflage, restoration, recycling, mitigation, sustainable, educative, celebrative and integrative (Engler, 1995 p. 15). Engler uses these categories to describe various kinds of waste sites, from sewage plants to landfills. Table 5.1 summarizes the characteristics of each of these categories.

There are many examples of each of these approaches, and each example has its own effect in terms of a community's attitudes about that specific waste site. For instance, the camouflage and restoration treatments are somewhat superficial in that they do not respond to the larger issues (Engler 1995, p. 23). Those kinds of designs fail to acknowledge the broader social concerns, such as discussing ways that communities can begin to reduce their waste or helping reconnect people with a greater awareness about waste production. The recycling, mitigation and sustainable approaches consider the

Table 5.1 Eight approaches for designing contemporary waste sites (Summarized from Engler 1995).

Design Approach	Waste Facility Status	Site seen as Public Amenity	Waste Site History Recognized	Creates New Kind of Landscape	Rehabilitates Ecological Function	Encourages New Attitudes About Waste Sites	Overall Characteristics Of Design Approach
CAMOUFLAGE	Active or Stopped	No	No	No	No	No	-disguises waste site facility -appeases community fears about waste facility yet it continues to inhibit public perceptions and restrain public care for waste problems.
RESTORATION	Stopped	No	No	Yes	Yes	No	-seeks to rehabilitate site by returning it to its previous conditions. -creates a new, viable landscape for wildlife and reconstructs 'nature' for people, but it simply masks the waste.
RECYCLING	Stopped	Yes	No	Yes	No	No	-reuses the waste site as a public amenity for recreational, agricultural or private land development.
MITIGATION	Active or Stopped	Sometimes	No	Yes	Yes	No	-weakens the impact or reduces the severity of polluted land or water. -scientific solutions drive the design. It is based on understanding how nature works yet often results in implementing restorative processes that are obscured from the visitor. -sometimes it results in a viable landscape that can be used by wildlife or people.
SUSTAINABLE	Active or Stopped	Yes	Yes	Sometimes	Yes	No	-concerned with the economics, conservation and self-sufficiency of the site. -employs a diverse program that often includes elements of production or reuse of waste resources. -considers waste a valued resource.
EDUCATIVE	Active or Stopped	Yes	Yes	Yes	No	Yes	-emphasizes public awareness and change of attitudes toward waste. -invites people to experience the realities of waste sites and nourishes a more open relationship toward refuse.
CELEBRATIVE	Active or Stopped	Yes	Yes	Yes	No	Yes	-promotes and dramatizes waste sites and facilities through works of art, special design features and unique experiences. -garbage becomes a metaphor of refuse, excess and resources mismanagement. -focuses on reducing the distance between people and their waste and revealing the multiplicity and interconnectedness of waste systems.
INTEGRATIVE	Active or Stopped	Yes	Yes	Yes	Yes	Yes	-combines elements of the celebrative, with the other strategies. -integrates principles of ecology with art. -changes an abused site while at the same time amplifies its reality. -expresses fresh spatial conditions and aesthetic possibilities.

site's ecological health, but fail to recognize valuable metaphors in the site that can contribute to a community's knowledge or change in attitude about waste (Engler 1995, p. 24). In contrast, the educative and celebrative approaches do help people see the problems associated with waste, but they might fail to actually bring about any real change (Engler 1995, p. 24).

The one approach that seems to achieve the most in terms of variety of experience is the integrative approach. According to Engler, this approach "operates under the premise that, with more grace, prominence, and access, design of waste facilities not only helps modify aesthetic sensibilities, but also develops public ownership and responsibility" (Engler 1995, p. 22). This method is truly integrative as it attempts to synthesize program, aesthetics, practical needs, expressive metaphors, natural science, art, public sensibilities and avant-garde aspirations (Engler 1995, p. 24).

Case Studies

Evaluation Criteria

Evaluating designs that attempt to be integrative can be helpful in determining if this approach is successful in helping to heal the site as well as allowing communities to view waste and waste sites differently. The following section will evaluate four case studies based on their integrative approaches with an emphasis on each design's ability to express sublimity and place identity. While there are various means of evaluating these designs, there are four main questions that I will be using to evaluate the four case studies. Each of these questions has more specific, detailed criteria that will be addressed. Table 5.2 shows these main questions and criteria. The criteria are a combination of Mira Engler's description of the integrative design approach to waste

sites and my own inquiries about ways to approach these kinds of sites. Looking closely at these case studies will develop a better understanding of integrative approaches towards reuse of waste sites.

Table 5.2 Criteria for evaluating case studies.

QUESTION ONE: What are the programmatic elements of the design? • Does it provide for human use? • Does it try to heal the site ecologically? • Does it acknowledge the history of the site in terms of its use as a landfill?
QUESTION TWO: Does the design contain elements that reveal the sublime? • Is there a sense of vastness, physically or temporally? • Is there an emphasis on contrast and juxtaposition? • Is the reality of the site as a waste facility amplified?
QUESTION THREE: How does the design contribute to the identity of that site? • Does it recognize the internal contents of the landfill? • Does it acknowledge that these waste sites are visual monuments that rise out of the ground?
QUESTION FOUR: Does the design encourage new interactions with the degraded landscape that help encourage a greater sense of awareness and connection to waste and its repercussions? • Does it reveal new metaphors about waste sites? • Does it bring people closer to understanding the waste process? • Does it give people a renewed sense of pride about that site or their community?

Selection of Designs

Each of the case studies was selected because of the designer's attempt to integrate many different elements into their design. The first two case studies are designs

that Engler gives as examples of integrative approaches to waste sites: Nancy Holt's Sky Mound and Hargreaves and Associates' Byxbee Park. The third case study is of Danehy Park in Cambridge, Massachusetts. Engler uses Danehy Park as an example of the recycling approach. For reasons that will be discussed later, it should be considered as an example of the integrative approach. The final case study will be the first place design submittal from Field Operations for the Fresh Kills Landfill in Staten Island, NY. While this last case study does not demonstrate a design that has been implemented, it does provide insight into integrative ways to address the closure of the world's largest landfill.

Case Study: Sky Mound, Meadowlands of Hackensack, New Jersey (1983-ongoing)

Figure 5.1 Proposed site for Nancy Holt's Sky Mound, Kearny Landfill, Hackensack New Jersey (ArtsEdNet 1999).

In an effort to begin the transformation of the Hackensack Meadowlands' 57 acre Kearny landfill from a dump (figure 5.1) to a reusable site, the Hackensack Meadowlands Development Commission hired artist Nancy Holt to create a design that would help heal the land but also bring larger conceptual elements to the site thereby making it into a "park/artwork" (Marter 1994, p. 31). This work marked a change in attitudes about waste sites because it was the nation's first permanent, large-scale work of art created from a landfill. Holt collaborated with landscape architect Cassandra Wilday, the GFS Energy Group (which specializes in methane gas recovery) and astro-archaeologists James Mavor and Bryon Dix to create an open-air solar, lunar and stellar observatory which also functions as a methane gas recovery system (LeVeque 1988, p. 85). Holt designed the installation in two phases. The first phase consists of elements necessary for the landfill closure: a proper seal and cap for the landfill, methane recovery pipe systems, and a small constructed pond for wildlife habitat (Engler 1995, p. 20). The second phase (figure 5.2) consists of the more metaphorical and artistic elements: construction of smaller

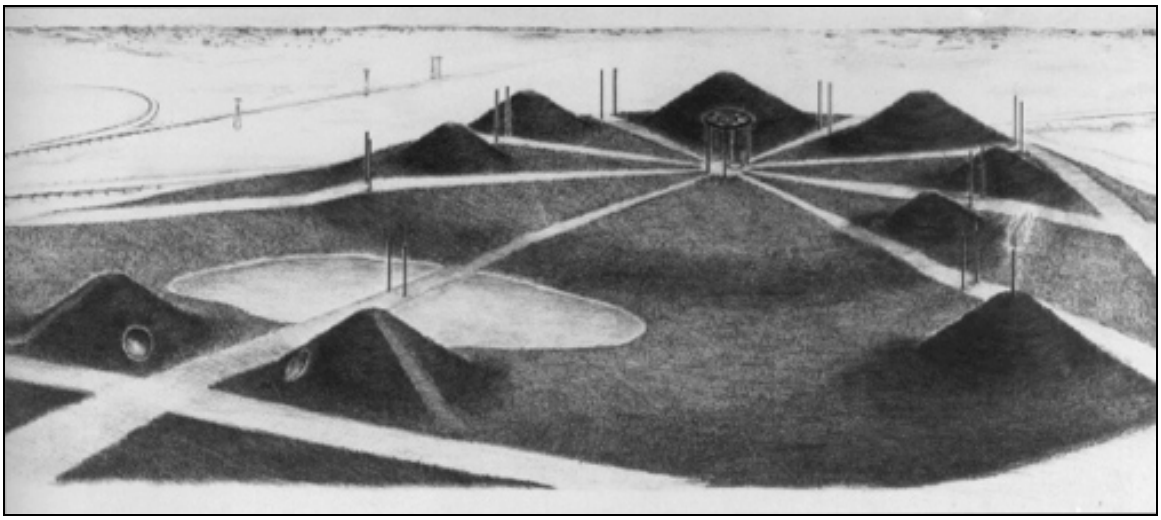

Figure 5.2 Nancy Holt Sky Mound Rendering: Sun-viewing area with pond and star-viewing mounds (Frost-Kumpf 1995).

earthmounds, alignment of protruding metal pipes with celestial bodies (the sun and moon) during astronomically significant dates, spinning wind vents, steel measuring poles marking the original height of the landfill summit, and flaring off of the landfill gas (Engler 1995, p. 20). This phase, however, has been postponed indefinitely since 1991 so that further technological studies can be performed on the site (ArtsEdNet 1999).

Question one: Programmatic Elements

Sky Mound is intended to involve and encourage human interaction with the site while at the same time tend to the needs of the landscape. The proposed observatory reclaims the site for public uses, while it also focuses the visitor's attention on the larger context of the cosmos. Holt also addresses the technological needs of the site as a capped landfill: methane recovery wells, water drainage ponds, and vegetative cover to control erosion. These features are installed in such a way as to attract migrating birds and other wildlife (LeVeque 1988, p. 85).

Holt's design does acknowledge the history of the site as a landfill in that she does not try to cover up and hide the major topographical features of the landscape. She has added elements to them that in fact draw attention to the site. For example, part of the design includes a starburst of radiating paths that will be visible from planes (figure 5.3). Holt says that "seeing the landfill makes one strongly aware of our role in changing the natural environment, and will increase awareness of the complicated problem of what we do with our garbage" (LeVeque 1988, p. 86). Holt's work is commendable in that it tries to address not only the technological needs of the site but also encourages new activities on the site. Yet the programmatic elements do not go far enough in terms of acknowledging the site's use as a landfill. There is no mention of education about the

features such as the methane collection system or the very structure of the landfill itself. While those elements are not hidden from view, they risk being misunderstood if there is not some interpretation of the function of those features.

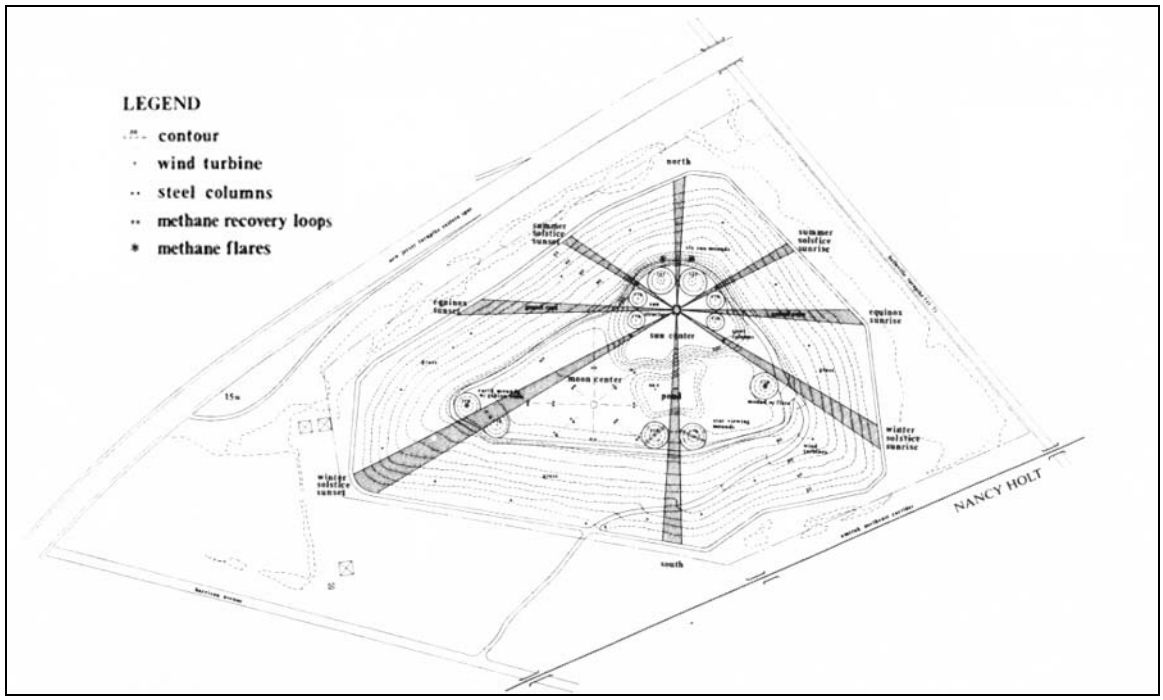

Figure 5.3 Plan view of Sky Mound. Paths radiate out from the center, accentuating the sun's angle during various times (LeVeque 1988, p. 82).

Question two: Sublime Elements

The Kearny landfill, upon which Sky Mound is installed, is a giant manmade landform rising from the surrounding marshlands (figure 5.1). While the surrounding area is by no means pristine, the landfill does create a contrast with the adjacent landscape. One can very well imagine the site itself creating the sense of astonishment associated with the sublime. Holt has taken this sense of awe provided by the site and extended it even further by connecting the place with the larger scheme of the universe. Holt sees the site as "a place where sky and ground meet, where you can track the sun,

moon and stars with the naked eye, and where you have 360 degree panoramic view of Manhattan, Newark…and here and there decaying remnants of the Industrial Revolution" (Holt quoted from Marter 1994 p. 31). This attempt to provide places where the visitor is reconnected to the immense, vast universe makes the visitor more aware of its infinite scale. Design elements, which are not yet installed, will provide places to view the solstices, lunar cycles, and stellar alignments. Yet this begs the question of how successful these elements will be; the light pollution in this heavily populated area probably makes star gazing virtually impossible. Nonetheless, the viewer will get a grand view of areas surrounding the site.

Holt's design also adds to the contrasts inherent in this kind of site. The emphasis of the celestial elements helps to focus on certain universal constants – the sun, moon and stars – while the environment of the site itself is constantly changing (LeVeque 1988, p. 85). Additionally, technological features such as the methane collection system are intermingled with ponds and native vegetation. Yet the contrast could be emphasized even more in order to create a greater sense of ambiguity. Holt's emphasis on the celestial connection to the place perhaps will draw attention away from the fact that the site is constructed on large mounds of garbage. If she is able to lead people's awareness back to the reality of the place, then it might add greater emphasis to both the celestial and worldly qualities of the site. This could perhaps be achieved by revealing more of the actual elements of the landfill.

Question three: Place Identity Elements

Sky Mound is in a very observable location and thereby easily serves as a place marker within the landscape. It is visible from the New Jersey Turnpike, Amtrak and

New Jersey Transit trains, as well as from airplanes approaching Newark Airport (Marter 1994, p. 31). An innovative aspect of the design in terms of place identity is how it acknowledges the larger context of the universe. It exposes elements of the cosmos that we sometimes forget about. By doing so, it makes the viewer aware he/ she is in a place that exists within a much larger picture. The design also takes advantage of the topography of the site, and "Holt acknowledges that the site in some way resembles a prehistoric native American mound" (Marter 1994, p. 31). The large mound of the landfill is an integral part of the design as it serves as the platform for the various celestial observatories.

In terms of the identity of the place as a repository of garbage, the strongest feature is the burning of the methane gas which will create flares along the skyline (Engler 1995, p. 21). Yet this is perhaps the only real acknowledgment of the actual contents of the landfill. There is no consideration given to the specific items buried within this artistic earthwork nor is there insight into what that trash says about American values and culture.

Question four: Innovative interactions and awareness

The most powerful element of Sky Mound is its ability to create a space that connects humans with the universe above and the human constructed landscape below (Engler 1995, p. 20). Transforming a landfill into that kind of place creates a completely new metaphor for that landscape. It allows us to see the potential of waste sites to become places that have more meaning than one probably could have imagined. Additionally, Sky Mound provides a potentially intriguing place for visitors to explore and gain a new interest in that landscape. Unfortunately installation of the second phase

has not yet begun. The features from that phase are the ones that strive to encourage more human interaction with the landscape. Yet with all of these wonderful qualities, the design does not bring people closer to understanding the waste process. There is a sense of removal from that aspect of the site and the site's history. If more of the elements associated with the landfill itself, such as a recognition of the garbage itself, had been integrated with the overall design, then perhaps there would be even more depth and awareness to this design that is already brimming with innovative approaches to waste sites.

Case Study: Byxbee Park, Palo Alto, California (opened 1992)

Byxbee Park is located on a 150-acre closed landfill on the South Shore of San Francisco Bay. The 30-acre park is a collaboration of Hargreaves Associates and the environmental artists Peter Richards and Michael Oppenheimer (Rainey 1994, p. 172). Citizens and local governments were instrumental in determining how to transform this waste site into an amenity for their communities. They demanded a park that "would not further disturb the natural ecosystems of the Bay," while also providing a space for jogging, bird watching, other more contemplative forms of recreation, as well as a place to display civic art (Rainey 1994, p. 173). Hargreaves Associates was able to meet the needs of the community by focusing on the site's unique characteristics: landfill, slough, marsh, wind, and sky (Hargreaves Associates Webpage).

Much of the form of the park comes from the technological requirements in dealing with a capped landfill. Two feet of soil and a one foot impenetrable clay cap cover the trash mounds which rise up by as much as 60 feet (Hargreaves Associates Webpage). The design team did not attempt to recreate the pristine, natural landscape of

the Bay shore as it existed before it became a dump. Rather they attempted to abstract forms to give the visitor a heightened awareness of nature. Hargreaves Associates graded the site into a series of slopes that are planted mostly with native grasses. Throughout the park, artistic earthworks and sculptures create a place of 'surprise and discovery' (Rainey 1994, p. 178).

Near the visitor parking lot, a series of eight concrete chevrons defines the entrance to the park (figure 5.4). The chevrons mark the approach path of small airplanes landing in a nearby airport. They also slow down runoff as it descends the slopes,

Figure 5.4 Concrete chevrons at the entrance to Byxbee Park (Palo Alto Website).

thereby preventing erosion (Rainey 1994, p. 175). A path of crushed oystershells then leads the visitor through a narrow "landgate" which is "a sculpted notch in the swale which marks the transition from the open and exposed north end of the park to the more sheltered areas of the tidal marsh" (Rainey 1994, p. 176). Other works of environmental

art include the 'pole field' (figure 5.5) and the 'wind wave piece' (figure 5.6). Pole field consists of 72 evenly spaced wooden telephone poles. Their heights vary to give the

Figure 5.5 View of 'pole field' (Hess 1992, p. 43).

Figure 5.6 View of 'wind wave piece' (Palo Alto Website).

impression of a tilted plane. The geometry of the grid dissolves as the poles reach the marsh (Rainey 1994, p. 176). Wind wave piece consists of two vertical poles which support twenty-five ropes suspended fifteen feet above ground. The ropes hang freely and give a visual representation of the ever present wind and therefore accentuate the visitor's experience of the natural character of the region (Rainey 1994, p. 177).

Question one: Programmatic Elements

Byxbee Park is definitely designed with the user in mind. Hargreaves Associates has created a park that meets the demands initially stated by the community. Joggers have a place in which they can run along the springy surface of oystershell paths. Bird watchers can spy on the various birds that use the marshland as habitat. Land-art installations make the forces of wind and light more visible to the visitor (Rainey 1994, p. 174).

As stated before, Hargreaves' intention was not to recreate the natural landscape in a pristine form. He does, however, use elements that nurture the ecological landscape. Most of the grasses and hedges on the site are native to the region and require no irrigation or mowing (Rainey 1994, p. 177). The goal was that these plants would provide a wind-born seed source which would help create a self-sustaining landscape. However, sites such as these often provide great challenges, and a lack of maintenance has led to the establishment of exotic weeds that are now outcompeting many of the native plants (Marton 1996, p. 40). Nonetheless, wildlife use the park for habitat as the site begins to reintegrate with natural elements.

Elements of the park subtly allude to the site's history as a landfill. The constructed mounds in the landscape are in themselves miniature landfills (figure 5.7). Their obvious artificiality reminds the visitor that this landscape bears the imprint of human use. Yet the regrading of the site also alters the original form of the landfill. Treating the site in this manner lessens the impact of the history of the site and hides some of the elements that are important to the place in terms of its story as a dump.

Programmatically, the design emphasizes the visitor's exploration of the natural elements of the area rather than the consequences of the site in terms of it being a landfill.

Figure 5.7 Artificial hillocks constructed from the landfill (Hargreaves Associate Website).

Question two: Sublime Elements

The design of Byxbee Park evokes feelings of the nineteenth century picturesque (Rainey 1974, p. 174). The winding paths glide gracefully through the gentle features of the landscape. The paths lead to secluded points from which to view the marshland and surrounding areas. This is not to say, however, that sublime elements do not exist in the park as well. There is a sense of vastness both temporally and physically. Environmental regulations prohibited trees from being planted for fear that they would puncture the clay cap. As a result, the landscape extends out unobstructed by trees, thereby creating expansive views of the site and its surroundings. Additionally, the site allows for change over time (Greco 2001, p. 64). Plants are not manicured to give the illusion that time has stopped, but rather they change according to environmental factors.

Byxbee Park does best in evoking feelings of the sublime when it presents contrasts in the landscape. This is perhaps the most obvious way that the design elicits feelings of astonishment. Contrast is inherent in this landscape. When Hargreaves Associates first began designing the site, they were working with a landscape that contained both the "abandoned interstices of the industrial landscape mixed with a few fragments of natural marsh land" (Rainey 1994, p. 173). Hargreaves' design makes these contrasts and juxtapositions even more apparent. This contrast is usually between the natural and cultural aspects of the site. This juxtaposition can be in the form of activities of the visitor. For example, the park provides for both bird watching and observation of the mechanical flight of man (Rainey 1994, p. 175). Another example is the contrast of one design element to another. The 'pole field' gives the impression that there is a tilted, geometric plane in the landscape which forms a counterpoint to the undulations of the slopes in the distance (Rainey 1994, p. 176).

The design, however, misses one aspect to really create an even more powerful juxtaposition. The adjacent operating landfill is not integrated into the park, even though it can be viewed from it (Engler 1995, p. 21). If the design had taken advantage of the fact acknowledging that there is still an active landfill nearby, the change that that park has undergone would perhaps be even more profound for the observer. Additionally, features of this active landfill could help amplify the reality of Byxbee Park in its own past history as a waste site.

Question three: Place Identity Elements

By transforming a capped landfill into a viable park, Hargreaves creates a new identity for that site. There are, however, few features that recognize the internal

contents of the landfill. The one element that does allude to the contents within is the methane gas disposal unit. The methane gas is flared off, giving a visual clue to the production of methane deep within the land. Additionally, the gas unit sits above a bed of white gravel shaped like a keyhole. This keyhole serves as a metaphor for the secrets of the landfill which lie underneath the surface (Rainey 1994, p. 176).

The design also takes advantage of the physical forms in the landscape. The use of the small mounds scattered throughout the site is intended to recall the mounds of the Ohlone Indians who first inhabited the site over 2000 years ago (Rainey 1994, p. 176). These are also playful ways to address the physical topography that landfills create. Even though each mound does not reach the same proportions of the original landfill, they remind the viewer of the physical features of landfills.

Question four: Innovative interactions and awareness

Hargreaves Associates' design for Byxbee Park creates new metaphors in the landscape by reconnecting people to the natural features that exist in the site. The features such as wind and light persist in the landscape whether or not the site is highly natural or highly degraded. The community can feel a greater sense of pride in that landscape as a result of the design of the park; it gives them a place to enjoy being outdoors, and it has slowed down the environmental degradation of the marsh areas.

While the design emphasizes certain natural processes, it does not necessarily bring a greater understanding about waste processes. This is where it misses the chance to reconnect people with ideas about waste. The site is a fascinating park which allows visitors to explore an unusual landscape. It seeks to appease aesthetic sensibilities. As a result, it loses its ability to make the viewer face the realities of waste production and the

consequences of our consumptive habits. The local community lobbied hard to transform that landfill into a useable park, yet this makes one wonder if that community realized that it was probably the major contributor of garbage to that landfill.

Case Study: Danehy Park, Cambridge, MA (opened since 1990)

Built upon a former landfill, Danehy Park provides recreation areas and has increased the open space in Cambridge by 20 percent. The design team consisted of professionals from the environmental services firm Camp Dresser and McKee (CDM) and local firms Haley and Aldrich and Moriece and Gary. Landscape architect John Kissada (CDM) led the project to create the 50-acre park (O'Connell 2002, p. 26). As mentioned previously, Mira Engler uses Danehy Park as an example of the recycling approach. According to Engler this approach "reuses the waste sites as public amenity for recreational, for agricultural, and sometimes private land development" (Engler 1995, p. 17). Danehy Park does adapt the former landfill to accommodate recreation activities, many of which are centered on organized sports (Figure 5.8). But it adds these features

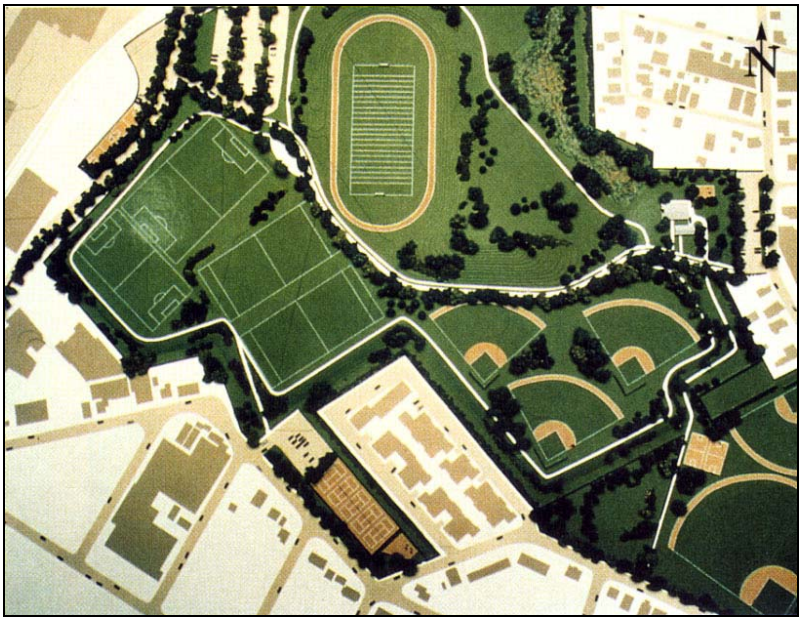

Figure 5.8 Plan view of recreation areas of Danehy Park (O'Connell 2000, p. 26).

in a way that integrates environmental concerns and artistic elements, thereby making it more integrative than Engler presents it. As a result, this has become a popular and well used park (O'Connell 2000, p. 26).

Perhaps the most unusual aspect of Danehy Park is the incorporation of public art into the design. The Cambridge Arts Council hired artist Mierle Laderman Ukeles (also employed as the artist in residence for the New York City Department of Sanitation) to create a large work of public art for the city. Ukeles titled the four part work *Turnaround Surround for Danehy Park*. According to Ukeles these four part works are "like a musical composition about our relationship to the land…[They] focus sequentially on taking pieces out of the land, putting pieces back in, and then out again, and back in" (O'Connell 2000, p. 28). The first phase is a handicap accessible "glassphalt" path. The second phase involves planting a collection of plants that Ukeles refers to as "wavers, smellers, and allées:" wavers are grasses that blow in the wind, smellers are flowers and herbs with pleasant odors, and allées consist of trees such as red maples, ash and pin oaks which serve as transitions and shade. The third part is an installation of two circular forms that appear to come out of the earth (figure 5.9). One is a large throne structure and the other a dance floor. The last part uses the spaces created from part three to establish a forum for the exchange of cultural values (O'Connell 2000, p. 28).

Figure 5.9 One of the circular forms in the ground (Cambridge Arts Council Website 2002).

Question one: Programmatic Elements

Most of the programmatic elements of Danehy park involve recreational use for the park's visitors. The park provides spaces for more active kinds of recreation than the designs of Sky Mound and Byxbee park. The park includes three softball fields, three soccer fields, a multi-purpose playing field, a sledding hill, and more than two and a half miles of jogging, walking and biking paths (O'Connell 2000, p. 26).

The park also addresses the environmental and safety concerns of the landfill site. CDM monitored the site to study questions concerning settlement, methane gas production, groundwater quality, and storm water run-off for ten years prior to the opening of the park (Marton 1996, p. 40). Several features of the design address these concerns. The park has a 2-acre wetland which serves as a collection point for water runoff as well as habitat for wildlife (O'Connell 2000, p. 26). In terms of dealing with the release of methane gas, the design does not flare it off as many other landfill sites do. Rather a crushed stone passive venting trench surrounds the park allowing the gas to mix with air in the porous spaces between the crushed stone, thereby diluting it so that it is not harmful when it reaches the surface (O'Connell 2000, p. 30).

Yet one aspect that the design could have more openly acknowledged is the history of that site as a landfill. Often visitors are not even aware that they are walking upon an old dump. In fact this has led to some challenges when dealing with some of the concerns that arise when reusing capped landfill sites. The parks lead designer, Kissida remarks, "When we tell soccer players who show up for a game the day after a storm that they can't use the field, they get angry. People don't remember that the park used to be a landfill" (quoted from O'Conner 2000, p. 43).

Question two: Sublime Elements

Danehy Park does not exhibit many of the sublime elements that other landfills do. Since much of the history of the site has been erased, visitors are disconnected from some of the astonishing elements of these waste sites. Unlike many other landfills, the topography of Danehy Park is quite varied and does not have one plateau upon which the design is built (O'Conner 2000, p. 26). This variety in the topography provides an interesting environment in which to create different elements of the park, yet it dilutes the effect of the enormous mound of trash rising out of the earth. As a result, there is no sense of awe about the landscape and less of a connection to the place as a degraded site. It is as if the designers focused too much on creating a pleasing park that would not challenge and intrigue visitors. While enjoyable park spaces are wonderful assets to communities, sites that are richly layered with meanings can provide a wider variety of experiences.

Where there is contrast and juxtaposition, it is done in a way that focuses more on aesthetics than on creating a truly jarring scene. For example, Ukeles' artistic work in the park emphasizes the dynamic of taking pieces out of the earth and putting them back in (O'Conner 2000, p. 28). Yet Ukeles achieves this in a way that is somewhat sanitized. The two circular forms rising out of the ground that serve as platforms for other activities (figure 5.9) are more like beautiful pieces of sculpture than metaphors for the trash that lies underneath. Ukeles perhaps uses these features as a symbol for the transformation of the dirty underbelly of the site to the cleaner more pleasant surface. While this artistic interpretation creates thought provoking forms, it does not effectively represent the grimy

past of the landfill. By not emphasizing and acknowledging these 'dirty' elements of the site, the park might not evoke the powerful feelings of the sublime.

Question three: Place Identity Elements

What Danehy Park lacks in capturing the sublime, it succeeds in establishing a sense of identity for the community. The design features of Ukeles' art piece are distinctive elements that make the park a unique place. One of these elements does acknowledge the site's contents and hints at the past of the site: the glassphalt path. Ukeles designed the glassphalt path so it would appear that the glass buried in the landfill was rising up out of the ground. Ukeles did not use glass that was collected from that site, but she did obtain most of it from a nearby recycling center and from a collection taken up by area schoolchildren (O'Conner 2000, p. 28). Yet this is one of the only examples of that recognizes the items that are buried underneath the ground.

Another way that Danehy Park does not draw a stronger connection to the garbage down below is their methane gas ventilation systems. In other landfill parks, the flaring of the methane gas serves as a visual reminder of the decomposing waste underground. However, as mentioned before, in Danehy Park a crushed stone buffer gradually dilutes and releases the methane. Treating the methane in this way hides yet another element of this park which alludes to the contents of the landfill.

The use of public art in the park seems to be the greatest contributor to the place as identity markers. But for the most part the sense of identity pays little heed to its history as a landfill. The city recently commission local public artist, Holly Compton Alderman to paint a mural in the park. This mural titled *Hockney by Holly* (figure 5.10) serves as "placemaker" which "celebrates the neighborhood and reminds us of local

history." In reference to her mural for Danehy Park, Alderman says, "At Danehy Park, I'm including children's games, sports teams and playing fields, local wildflowers and wildlife, the large landscape, as well as a bit of Cambridge history" (Holly Compton web-site). Even though the mural, which sits at one of the park's entrances, acknowledges much of the history of the area, it makes no mention of the history of the park as a landfill. It is as if that potentially shameful part of the park's history has been erased.

Figure 5.10 Holly Compton Alderman's mural *Hockney by Holly* (Holly Compton website)

The overall visual quality of the landscape does not evoke the site's history either. There is not the sense that this park is a large visual monument rising out of the ground. Rather, it looks more like an ordinary open space surrounded by the dense development of Cam-bridge (Figure 5.11). However, this may be due to

Figure 5.11 Aerial view of Danehy Park (O'Connell 2000, p. 26).

the fact that the land-fill sits in an old, excavated clay pit, and therefore the trash lies much deeper underground than it would in landfills built today (O'Connell 2000, p. 24).

Question four: Innovative interactions and awareness

Overall, the design of Danehy Park succeeds in its efforts to transform a capped landfill into a vibrant urban park. Yet it focuses mostly on recreation and public art to create meaning in the park. These elements do help to bring a renewed sense of pride to the site, and as Ukeles states, "here's a place where you can have that feeling of public ownership of a public space" (O'Connell 2000, p. 28). Yet they seldom recognize the past history of the site.

The public art also helps to establish new metaphors in that landscape. One of Ukeles' concepts is to create a ceremonial event in which representatives of different cultures in the community place meaningful items into special containers and embed them in the throne structure of one of the circular sculptural forms. In doing this, Ukeles is "trying to reinstate the flow of material into the earth that is full of value" (O'Connell 2000, p. 28). Ukeles' efforts to recognize the value of objects are commendable, but there is still not enough thought given to the value of the materials that are already interred in the landfill. Danehy Park is therefore a public place that has new meaning for the surrounding community but yet does not create a greater depth of meaning due to its lack of acknowledgement as a place that once served as the community's landfill.

<u>Case Study: Lifescapes Fresh Kills Reserve, Staten Island, NY (designed in 2001, not installed)</u>

The final case study is of the first place winner of the design competition for the Fresh Kills Landfill. Landscape Architect James Corner and architect Stan Allen of Field

Operations led the design team which also included engineers, habitat restoration experts, economic analysts, plant and wetland ecologists, wildlife ecologists, lighting designers, and media and communications artists (Fresh Kills: Landfill to Landscape). About half of the 2,200-acre landfill consists of four large mounds which range in height from 90 to 225 feet. The flatter areas in between the mounds host everything from landfill infrastructure and roadways to intact wetlands and wildlife habitats (Fresh Kills website 2002). Local citizens played an important role in the closing of the landfill; therefore the goals of the design competition were geared to suit the needs and desires of the surrounding communities. Those goals included the following: open space; improved circulation; active recreation; recognition of site's unique size, topography and metropolitan location; diverse land uses; and consideration of the site's ecological sustainability. The landfill was set to close on December 31, 2001, but remained open to house the debris from the World Trade Center attacks of September 11, 2001, thereby creating another layer of meaning in that landscape (Krinke 2002, p. 78).

Field Operations' design proposal focuses on ecological succession and the creation of new habitats through:

> a matrix of lines (threads), surfaces (mats), and clusters (islands) [which] maximize opportunities for access and movement – movement of seeds and biota as well as people and activities. Linear threads direct flows of water, energy and matter around the site, injecting new life into otherwise homogenous areas. Surface mats create a patch-like mosaic of mostly porous surfaces to provide self-sustainable coverage, erosion control and native habitat. Clusters of islands provide denser nests of protected habitat, seed source and program activity" (Field Operations Narrative Summary 2001, p. 7).

These threads, mats, and islands are layers which integrate and create a landscape that focuses on the interaction of cultural and natural processes (figure 5.12). These elements

will form as a catalyst for the transformation of this landscape, and the designers envision that "the reclaimed Fresh Kills Reserve will form an expansive green matrix of infinite horizons and newly connected ecosystems" (Field Operations Narrative Summary 2001, p. 7).

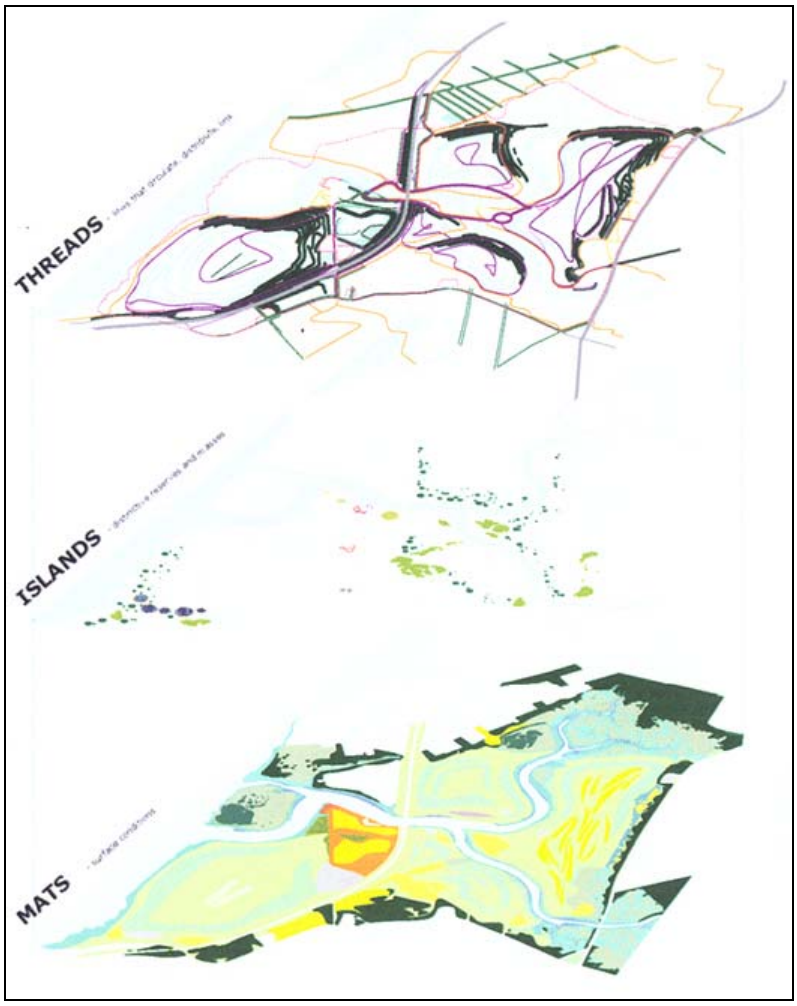

Figure 5.12 Layers of threads, islands, and mats over the landscape (Field Operations Drawings 2001).

Question one: Programmatic Elements

The program of Lifescapes focuses mostly on reestablishing biodiversity in the landscape. Yet the design recognizes opportunities for human activities including passive recreation, sports, extreme sports, soccer, golf, equestrian uses, fishing, and canoeing

(figure 5.13). The framework for the location of these kinds of activities is loose. Illustrations give the viewer an idea of how these kinds of activities would fit into the landscape even though the specific locations may not be set yet. The designers emphasize that the design is meant to be flexible, adapting to the changes of the landscape over time; therefore the few details that are given are meant to be suggestions of ideas rather than the final form that they will take (Field Operations Narrative Summary 2001, p. 9).

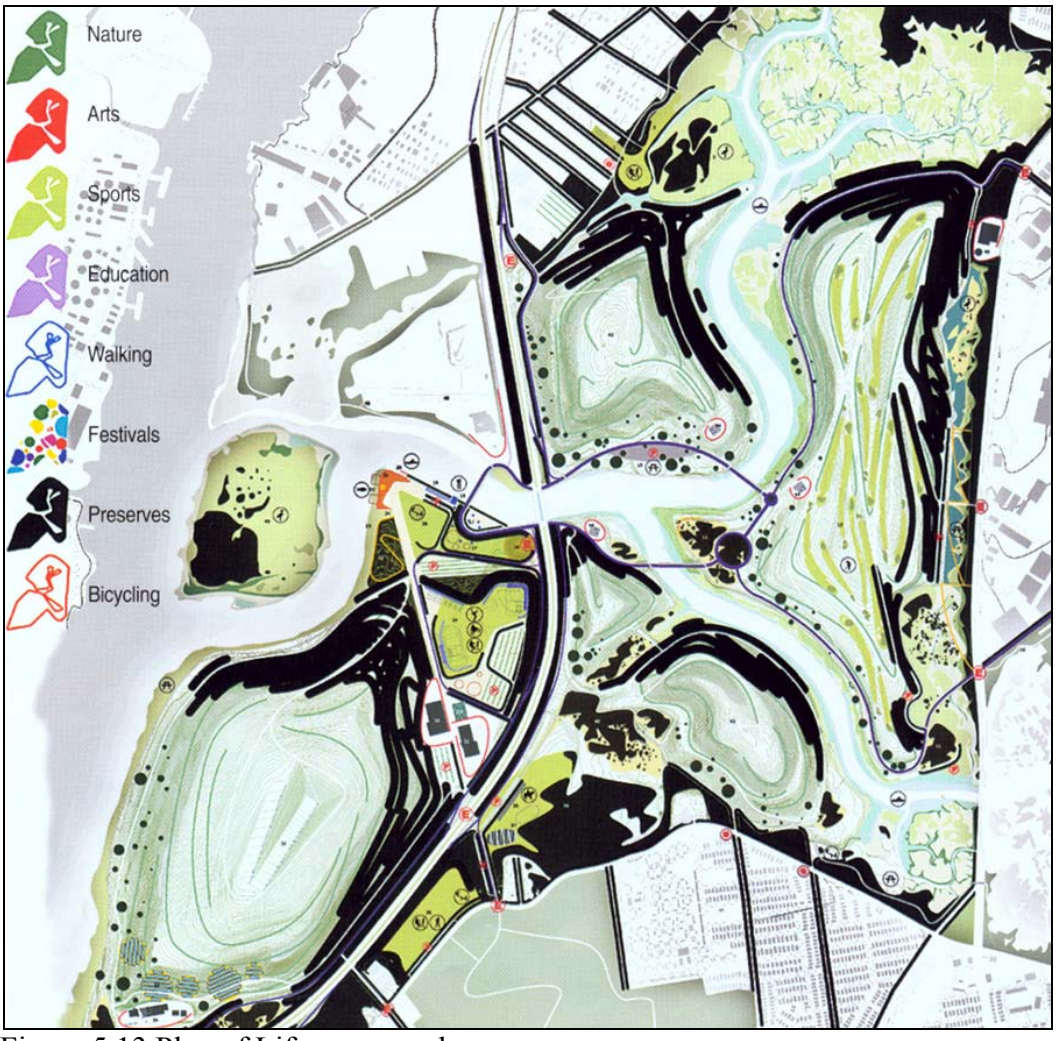

Figure 5.13 Plan of Lifescapes and program zones
(Field Operations Drawings 2001).

The ecological features of the site are a prominent part of the overall design. Field Operations notes that Staten Island supports more plant species than any similarly sized area in New York State, and it also serves as an important point along the north-eastern migrating bird flyway (Field Operations Narrative Summary 2001, p. 9). This has led the design team to focus on a restoration of Fresh Kills which would create an enormous nature preserve. Once again, specifics are not given about the details of this restoration, but the main concepts of threads, islands, and mats serve as the mechanism for starting the transformation. The plan emphasizes the creation of additional ecologically healthy habitat and connections of these habitats within and out from the site to the surrounding areas (Field Operations Narrative Summary 2001, p. 11). The designers intend for these natural habitats to provide educational opportunities for visitors to learn about awareness and appreciation of the natural environment (Field Operations Narrative Summary 2001, p. 12).

While there are strong efforts to combine human activities and ecological restoration of the Fresh Kills landfill, Lifescapes chooses not to acknowledge the history of the site as a landfill. The design is mostly concerned with establishing a new identity for the site as a "new nature-lifestyle island" (Field Operations Narrative Summary 2001, p. 6). Programmatic elements focus on education about natural features, yet the designers do not recognize the importance of educative features that tell the story of the site as a landfill (Krinke 2002, p. 80).

Question two: Sublime Elements

Fresh Kills is a landscape that reaches monumental proportions. Visible from outer space, the landfill is a complex site altered by human use (Field Operations

Narrative Summary 2001, p. 7). By virtue of its sheer size, it has the potential to be a superb example of the postmodern sublime, provoking a sense of astonishment in anyone who visits it. Yet the design of Lifescapes denies many of these sublime aspects. Instead it "offers us a familiar formula of 'wild' nature" (Engler quoted in Krinke 2002, p. 84).

Field Operations states that one of their goals is to "recognize the site's unique size, topographical variation and metropolitan location as an opportunity for diverse land uses" (Field Operations Narrative Summary 2001, p. 9). Yet their design does not take advantage of these unique aspects, and they risk losing the emotional impact of the place by not emphasizing the features that make the site a landfill. Fresh Kills is a site that is replete with contradictions (Krinke 2002, p. 84). Marsh habitat flows in-between the largest mounds of garbage created in the twentieth century. Life springs up from these habitats as the waste from our lives decomposes underground. The site has been a source of shame for decades, yet it now houses the consecrated remains of the World Trade Center. Recognizing these kinds of contradictions can bring greater meaning to this landscape rather than turning it into only a naturalized park. The landscape is not natural underground so why pretend to create a wholly natural environment above ground?

It is important to ecologically heal the landscape, but this healing process does not mean that we must forget why we are trying to heal it. The reality of the site as 'Fresh Kills' is forgotten in its transformation into 'Lifescapes.' Field Operations has overlooked the fact that even though this landscape can start to function as a healthier ecosystem, it still functions as a repository of billions of tons of garbage and will continue to do so for centuries.

Question three: Place Identity Elements

As mentioned before, Lifescapes creates a new sense of identity for the site but does not recognize the internal elements of the landscape. One way, however, in which the design does acknowledge the landfill contents, is in the memorial for the World Trade Center debris. The meaning of the landfill changed dramatically when this debris was

Figure 5.14 View of upland meadow leading up to WTC Memorial earthwork (Field Operations Drawings 2001).

buried in the site. The proposed earthwork memorial (figure 5.14) reminds visitors of the contents contained within the landfill mound. While the value and meaning of all of the other items buried in the landfill is quite different from that of the WTC, it is important to remember that those other artifacts have stories as well. Thus there is a great potential to create a landscape narrative based on those artifacts.

The four enormous mounds of Fresh Kills serve as visual markers in the landscape as it exists right now. Because of potential settling of these mounds, very little human activity can occur on them over the next thirty years (Krinke 2002, p. 78). Therefore they will likely continue to serve as landmarks. Field Operations, however, does not seem to take advantage of ways to draw even more attention to these places by

boldly creating a new visual marker for Staten Island. In the Lifescapes design, the mounds become incidental rather than integral into the plan.

Question four: Innovative interactions and awareness

Lifescapes strongest element is that it tries to create new metaphors in this landscape through the restoration and regeneration of natural habitat. It seeks to "develop a new ecological landscape, an alternative paradigm of human creativity, biologically informed, guided more by time and process than by space and form" (Field Operations Narrative Summary 2001, p. 7). Recognizing the importance of change in this landscape over time is a significant step in the evolution of this landscape. If implemented, Lifescapes can become a place for Staten Islanders to once again take pride in this landscape. However, the design does not really bring visitors a greater understanding about waste sites. Field Operations' design does not recognize one of the most important narratives in that landscape: its history as a landfill. In doing so, they fail to establish a "deeper consideration of the site's potential relationships with its visitors" (Krinke 2002, p. 80).

These four case studies provide insight into ways to incorporate new uses into landfill sites. Even though each integrates many different uses and features, each offers a different approach in how to work with the unique character of these sites. Each design provides a reasonable adaptation of the landfill into park space for the surrounding communities. Yet based on my evaluations regarding issues concerning the sublime and place identity, the designs have not adequately addressed these topics. The criteria used to evaluate these case studies will be helpful in determining better ways to approach these complex landscapes. Table 5.3 summarizes the evaluation of the case studies. The next

chapter will be an exploration of how to use design to better address the concerns of the evaluation criteria especially in terms of the concept of sublime and place identity.

Table 5.3 Summary of case studies in terms of evaluation criteria.
Successful elements | Unsuccessful Elements

CASE STUDY	PROGRAM ELEMENTS	SUBLIME ELEMENTS	PLACE IDENTITY ELEMENTS	METAPHORS & INTERACTIONS
SKY MOUND	-stellar, lunar and solar observatories -methane collection -constructed ponds and wildlife habitat	-connects with larger scale of universe -environmental change contrasts with celestial constants	-aware of place in relation to cosmos -flaring of gas reveals evidence of contents -mound rises up as visual monument	-new metaphor of site and cosmos -reuse brings sense of pride in site
	-elements do not go far enough in explaining history of site	-reality of site as landfill not amplified	-no consideration to the specific history of elements within landfill	-does not necessarily bring closer understanding of waste process
BYXBEE PARK	-allows for active and passive recreation -begins ecological healing of site -land art makes natural processes more visible	-sense of vastness physically and temporally -many contrasts between natural and cultural elements	-flaring gas revels evidence of landfill contents -gravel keyhole as metaphor -small mounds evoke shape of landfills	-waste site as place to reconnect people to natural elements -renewed sense of pride in landscape
	-regrading of site risks diluting history of site as landfill	-does not connect with adjacent active landfill	-could have a stronger connection with internal contents of site	- does not necessarily bring closer understanding of waste process
DANEHY PARK	-ball fields, trails -constructed ponds for wildlife habitat -public art -passive gas control	-very little sublime, does try to acknowledge some contrasts	-public art creates unique places	-public art creates a sense of ownership in the place -reconnects with values of objects
	-visitors don't realize they are on a landfill	-elements are aesthetic rather than shocking	-little recognition of contents of site -form of site does not suggest landfills	-fails to utilize site's history to create a greater depth of meaning for the site
LIFE-SCAPES FRESH KILLS RESERVE	-many types of recreation -ecological restoration of site -education about ecology	-tries to maintain openness and visual links	-WTC memorial reminds visitors of the landfill's tragic contents	-creates new metaphors about regeneration in a waste site
	-no recognition of the importance of history of site as a landfill	-denies contradictions of site -ignores reality of site as a waste facility	-does not remind visitors of other contents inside site -does not take advantage of large mounds as visual markers	-does not bring about better understanding of waste sites or of the narratives imbedded within the site

CHAPTER SIX

DESIGN APPLICATION

> What are the roots that clutch, what branches grow
> Out of this stony rubbish?
> -T.S. Eliot *The Waste Land* lines 19-20

Landfills are rich with meaning. They reflect the changing values in our society and address the need to dispose of solid waste. Once a landfill has reached capacity, the landscape will take on a new role in a community. Even though the 'solid waste disposal' chapter is closed, designers can retell the story imbedded in the landfill landscape as they begin to adapt it for new needs. The following chapter explores ways in which design elements can tell this story, with special consideration given to the elements of the sublime and place identity.

While every design is ultimately site specific, the design elements here represent ideas that designers can apply to most landfill sites because they focus on some of the universal characteristics of landfills. The criteria used for the evaluation of the case studies will provide the categories for the design elements. These categories are as follows: program, sublime, place identity, and new metaphors and interactions. There are general as well as specific design examples for each of the four categories. Some of the illustrations are based on photographs from the Athens, Georgia Municipal Landfill, but they do not represent specific designs for that location; rather they give an image of design elements that can be applied to many different places. Landfill sites are large

enough that they can incorporate many of these different design features. Therefore, these design features should not extend uniformly over the site; rather different areas in the site can be dedicated to different elements.

Program

Education

Because of the unusual site conditions, if a capped landfill is going to be adapted for human use, it is most often transformed into a recreation area (Marton 1996, p. 38). Encouraging people to come to the site is an essential part of the following design elements. As detailed in the previous chapter, activities such as walking, jogging, and birding can easily be integrated into the site's features. However, designers can augment the visitor's experience by adding educational and interpretive elements to the site as well. These can be in the form of signs throughout the site which explain details about the landfill such as how it functions. Additionally, park employees can lead walks throughout the site, explaining the characteristics of the landscape.

Park managers can also collaborate with educators to develop creative ways to encourage exploration of the landscape. The landfill park can become a place that teachers bring students for field trips. An example of an educational way to engage school children is through scavenger hunts. Scavenger birds such as vultures, crows and gulls are common at landfills (figure 6.1). The park manager can come up with a list of things that the children must find when they are at the site such as some of the relicts left over from the site's days as an active landfill. Because of safety and health concerns, it would be improbable for the kids to hunt for actual trash, but other items relevant to the site could be part of the hunt.

Figure 6.1 Vultures are common sights at landfills (photo by author).

Educators and park managers should gear educational experiences to many different age levels. This will make the visit to the landfill park interesting and stimulating not just for younger children, but for teenagers and adults as well. These educational activities can change throughout the year, thereby keeping visits to the site exciting and novel.

Scientific Research

Landfills can become interesting recreation areas for communities but they also can serve as important places for scientific research. These kinds of waste sites contain many unknowns since they have been around for less than a century. Sanitary landfills, like many other kinds of waste lands that originated in the twentieth century, are places that serve very specific needs. Gradually, governmental agencies have administered regulations for these places, but there may be effects from the landfill that may not yet be known. Environmental laws already require certain kinds of monitoring such as ground water testing and methane gas ventilation. Yet there are many other potentially hazardous effects of these places. Scientists can use landfills as places to research the effects of degraded land on the surrounding landscape and wildlife and to help tell the environmental stories of these sites.

Even though designs for the reuse of landfills should acknowledge the history of the site, designers must also recognize the need to ecologically heal these places as well. Landfills should be used as laboratories to find better, more innovative ways to help clean up and restore these landscapes. An example of this kind of research is phytoremediation of toxic materials from the land through the use of trees. Additional research could include the recycling of materials from the site.

This research can be easily tied into the educative component of the site as well. This educative element can be important to the success of restoration efforts. Oftentimes, ecological restoration involves techniques that observers might not recognize as benefiting the environment. Explaining these techniques and the processes of restoration can help visitors understand the need for those actions. Visitors then may also respect some of the limitations of using that landscape if educational signs describe what is happening to the site.

Naming

One of the easiest ways to incorporate the past of a place with new uses is through naming. In the book *Landscape Narratives*, Matthew Potteiger and Jamie Purinton describe the importance in naming:

> Naming is a fundamental strategy of making places, transforming undifferentiated, raw spaces, mass, objects, land…into known places…The named site also becomes a storied place…Place names become abbreviated narratives of various types (p. 77).

Names bestow an identity to a place and often serve as a memorials. For example, in the case studies from the previous chapter, the Palo Alto community named Byxbee Park to honor an important citizen from the area.

The name given to a landfill when it becomes a new place for a community can help preserve the history of the site. It is certainly gracious to name a place after valuable community members, but this approach may end up erasing particular aspects of that place. A different approach is to honor the site's use as a repository for the community's solid waste by means of retaining at least part of the name of the place from its days as a waste site facility.

If a community does not feel comfortable naming its new recreational area something like "Dump Park," there are other ways to incorporate names into the park features. A closed landfill site has many features that already have names that originated in its life as an active waste disposal place. Often these names distinguish the different mounds of trash (figure 6.2). For instance, Fresh Kills has four distinct mounds referred to as 1/9, 2/8, 3/4 and 6/7 (Fresh Kills: Landfill to Landscape). Designers can use the very same names as the landfill managers when designing different areas of the park. There may also be other 'unofficial' names that landfill managers and others who work there use to describe different sections of the site. Their input can be helpful in continuing on the names of certain places in the site.

Figure 6.2 Signs identifying sections
at the Athens, GA landfill (photo by author).

Sublime

As discussed in previous chapters, landfills contain many elements that can contribute to a visitor's experience of the sublime. In some cases, the sublime features are part of the physical characteristic of the landfill, i.e. the large mounds jutting up from the ground. Yet if designers wish to really make the most of the landscape's sublime attributes, they must reveal the reality of the site as a waste disposal place. Sometimes this involves manipulating and enhancing the site's features. Other times this entails revealing the truth of the landscape to the visitor. In either case, the designer is helping to augment the astonishing features of these human-made landscapes.

Vastness

As the number of active landfills decreases, their overall size in both height and acreage is increasing (EPA MSW in the U.S. 2000 p. 15). This increase in the size of landfills can contribute to the sublime character of these landscapes. The sheer enormity of the sites can create a sense of amazement associated with the sublime. In order for this astonishment to have its greatest impact, the viewer must be aware that it is more than just another denuded landscape and that it is the result of the burial of garbage.

One way to give visitors the ability to take in the enormous size of landfills is to maintain the open vistas in the landscape. When a landfill is active, the cleared land allows for long views across the landscape (figures 6.3, 6.4). While designers may not want to maintain all of this openness, they should consider important viewsheds that will give visitors a chance to see panoramic views of the site. The different mounds of trash provide vistas from which to view the overall landscape. Often, the three to one slope of the landfill mounds creates a steep slope that looks artificial when next to more natural

Figure 6.3 Views from mounds at Athens, GA landfill (photos by author).

Figure 6.4 Aerial views of the Athens, GA landfill (photos by author).

features of the site. The final grading for the closing plan can enhance the artificiality of the mounds by not 'naturalizing' the site with gently rolling slopes.

There are ways that designers can add new places to view the landscape as well. Observation towers on the tops of the mounds would allow visitors to climb above the landfill to get an even vaster perspective of the landscape. Another innovative way to use the products of the landscape would be to have tethered hot air balloons that take passengers up above the mounds (figure 6.5). Potentially the landfill gases produced on site could serve as the fuel source for these balloon rides.

Figure 6.5 Hot air balloons can lift visitors above the mounds for a more panoramic perspective of the site (illustration by author).

Another sublime aspect of landfills is the temporal scale of the landscape. This can be demonstrated by illustrating both the increase in height when the landfill was active, and the decrease in height as the contents settle. Designers can do this by adding

features which mark the height of the mounds over time. These markers can be interesting sculptural elements as well. Figure 6.6 shows an example of sculptural features that help to mark the changes in height of the mounds over time. These kinds of design elements help to emphasize the fact that while the manipulation of the landscape into a landfill took a relatively short period of time, the physical changes and effects of those changes will persist for a much longer period of time since the decomposition of the garbage occurs at a slow rate. The sculptural features are also quite large to further emphasize the overwhelming scale of the site as a whole.

Figure 6.6 Illustration of sculptural pieces to emphasize the change in height of mounds over time (illustration by author).

Contrast and Juxtaposition

One of the strongest characteristics of landfill sites is the inherent contrast and juxtaposition that exits in them. Emphasizing these elements will help designers make

these waste sites into intriguing places for visitors and will help bring out the sublime aspects of the site. In doing so, designers are helping to reveal the sublimity of the site so that visitors can experience for themselves the astonishing features of these landscapes. If designers do not address this facet of the site, then they risk creating yet another generic landscape where the intriguing elements remain hidden from the viewer's perception.

One of the inherent juxtapositions of landfills is that they are 'trashed' landscapes that are usually surrounded by a buffer zone that tries to lessen the impact of the site. Sometimes, as in the case of the Athens landfill, this buffer zone creates a

Figure 6.7 Views of entrance drive to Athens, GA landfill (photos by author).

pastoral scene (figures 6.7). The entrance drive provides a bucolic scene that gives no indication of the use of the site as a landfill. The only reminder of the reality of the place is the constant flow of garbage trucks driving on the road. Once the landfill is closed, the garbage truck traffic will cease, but the landfill landscape will still exist.

One way that designers can utilize this buffer zone is to maximize its effect of enhancing this contrast by creating pastoral scenes at various points. As visitors enter the site along the curvy road or path, they will be unaware of the scene that awaits them around the bend. If designers transform the landfill behind the buffer zone into an extension of this pastoral scene, then the site becomes just another charming landscape. In order to elicit the full sense of the sublime astonishment, designers should retain shocking elements of the reality of the site that become apparent as the visitors venture out of the buffer zone and into the main part of the landfill.

One approach that designers can take to maintain this surprise in the landfill park is to keep some of the equipment from the landfill activity on site. The bulldozers, compactors and trucks are important pieces of machinery to the life of landfills (figure 6.8). These machines eventually wear out and break down, but rather than tow them away, landfill managers can leave them in various places in the landfill park. These machines would then serve as follies in the landscape and would also remind visitors of their function in shaping that landscape. This kind of equipment is often kept off limits to spectators. If parts of this landfill equipment can become play structures for visitors as well, it will help to transform the park into an environment of exploration and fantasy.

Figure 6.8: Examples of equipment used at landfills (photos by author).

Another way that the landscape can have more contrasting elements is to invite artists to create installations for the park. The artists can create work that serves as a commentary about consumption and waste production. These installations do not necessarily have to be permanent features of the site. In fact, if the art pieces change, then visitors will find the park more engaging because of these unfixed elements. These art pieces can bring irony to the site by emphasizing the reality of the place (figure 6.9). They key is to make places within the park that occasionally 'jolt' the visitor back into the reality of the place as an enormous waste site. The idea that visitors will have a

Figure 6.9: Irony – Artistic sculpture of a tree in which the leaves are bags of leaf litter. (illustration by author).

variety of experiences while in the park. In some places, they will be enjoying scenic walks or playful excursions. Then as they venture to another area, they will be confronted with an unusual or authentic feature of the site that serves to create a more comprehensive experience of the park.

Signage throughout the park can also add more juxtaposition and awareness of the site as a used landfill. As mentioned previously, names of various areas in the park can remind visitors of the history of the site. But these names can also add contrast to the park. For instance, a walking trail which leads visitors through a more 'natural' part of the park could have a name that evoked a more artificial aspect of the place, i.e. 'The Rubbish Route."

Signage can also help reconnect visitors to the reality of the mounds of trash in the site and actual facts about the amount of garbage there. The signs should not be moralistic in telling visitors that American consumerism is bad, but rather present the facts about this consumption. Just as nature trails provide identification labels for plant species, there can be markers informing visitors about statistics of the garbage mounds (figure 6.10). This will help visitors to realize that this is what happens to their garbage when they place it at the end of their driveways each week. These signs can also help to emphasize the real dangers of these waste sites as well (figure 6.11).

Designers do not have to only rely on the visual impact of the landfill landscape. Smell is an important aspect to these kinds of waste sites. Smell is one of the most primitive senses that goes right to the brain stem (Condon 1998, p. 52). When most people think about garbage, the smell is often the first sensation they think about. Indeed the smell of rotting material is often overwhelming. Offensive smells do occur at active,

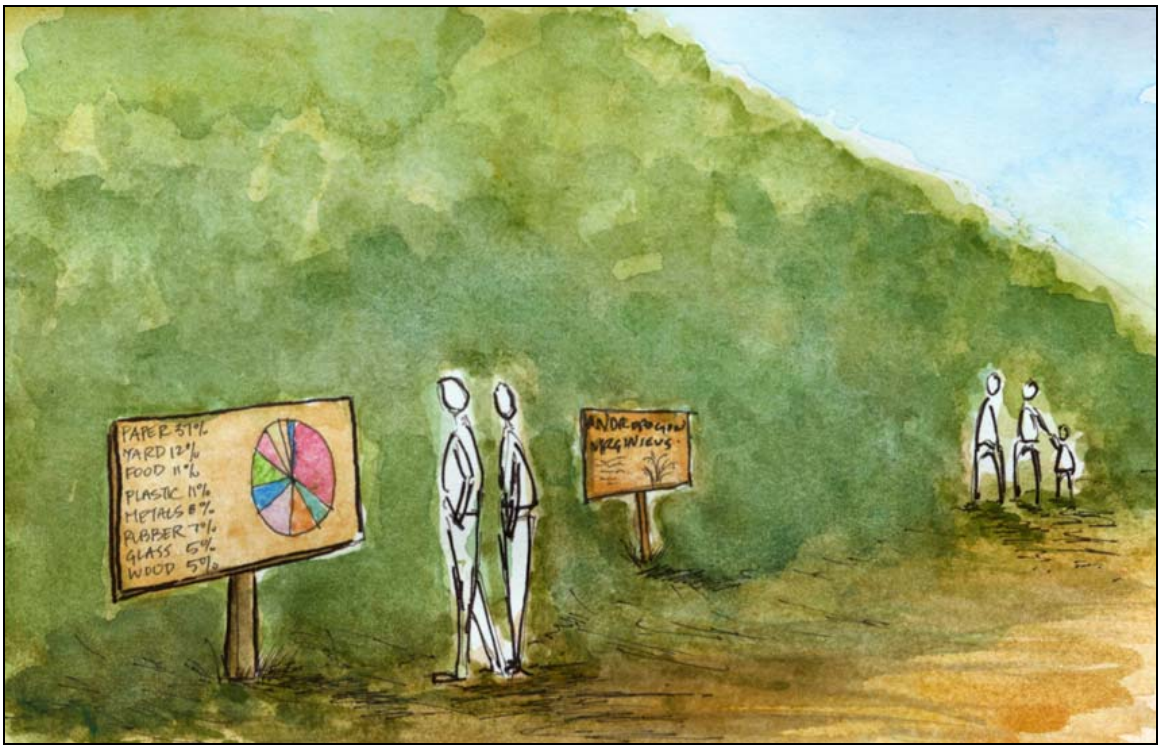

Figure 6.10 Statistics about mounds along the paths (illustration by author).

Figure 6.11 Signs can remind people of hazards of site (illustration by author).

open landfills, but the smell of fresh earth often mixes with it, creating a complex odor that is at once sweet, sour and earthy. Once a landfill is capped, however, the odious smells are covered. Designers can add elements to the landfill park which address the sense of smell, often creating contrasting kinds of smells. Some materials such as decaying wood or compost provide inoffensive, organic smells. The smell is distinctive and can lend to the atmosphere of decomposition associated with the landfill contents. Those kinds of smells can also be juxtaposed with the sweet smell of flowers and herbs which are often associated with regeneration. The layering of these different smells can therefore create an experience of the park that goes beyond normal visual elements.

Place Identity

Internal

The internal contents of landfills provide fascinating yet potentially putrid and disgusting glimpses into the nature of these sites. Designers can develop imaginative ways to increase the visitor's awareness of these contents in a way that is not completely repulsive. The contents of these landfills are the result of people's decisions to discard items. Designers can use design elements to demonstrate the cyclical nature of the value of these items.

One way of exploring the changing value of waste is through recycling and landfill reclamation. Landfill reclamation is the process of excavating landfill mounds to retrieve materials that can be resold and recycled (EPA Landfill Reclamation 1997, p. 1). Landfill reclamation and recycling both take materials and items that people determined to be waste and reassess the value of those items. Showing this process can make visitors

aware that the trash that they throw away may not necessarily be as worthless as they assume.

Archaeological projects like William Rathje's garbology project are one way to delve into the contents of landfills. Landfill core samples can demonstrate changes in lifestyles by showing the different layers of trash according to the time periods in which the trash was buried. This can be useful in making people aware about their habits as consumers. For example, there has been a steady increase in the amount of paper in municipal solid waste sites over the past fifty years (figure 3.6). Part of this is the result of computers. At first computers were seen as the way to enter a paper free world, but in reality they have given people their own printing presses. Generating copies of documents is as easy a pushing a button. Revealing landfill contents can help show this change in lifestyle.

Another way to show people about the contents of the trash is to create a 'garbage museum' at the park. This is where the core samples of the landfill can be displayed. This museum can also display some of the common items that are in the landfill. The display should show not only the mostly intact items, but also some of the gritty reality of the contents after being buried for decades. One way to make visitors see the connection between their own lifestyle and the landfill is to display the landfill contents in a way that expresses that 'this is your life.' It should not be moralistically didactic, but rather just a depiction of the typical items found in that community's landfill. This will also help to reconnect visitors with the reality of waste generation and the realization that even though their garbage disappears from their curb each week, the trash is simply relocated to another place.

Every person in this country has contributed to the landscape of landfills by discarding trash. Another way to help reestablish the connection between each visitor's own actions and the formation of the landfill is to have the visitors participate in creating time capsules. The garbage cans throughout the park can serve as these time capsules. Each piece of trash that the visitor throws into the garbage can becomes an item in this time capsule. The bags of trash can then be put on display to reveal some of the items that are commonly disposed, or they can be put in an actual time capsule to be opened at a much later date.

External

The external form of landfills is an important aspect of the landscape. Viewsheds should be maintained in areas to allow visitors to experience the landscape as a whole. Yet designers should also find ways to emphasize the form of the mounds. Designers such as Nancy Holt and George Hargreaves alluded to Native American burial mounds in their designs. The landfill mounds are very much like those burial mounds. Their steep 33% grade slopes often serve as clues that these features are not natural. Designers can work with engineers to try to make the mounds even taller or larger in order to really exaggerate their topographic features. This will also add to some of the sublime character of the landscape.

Designers can devise other ways to further emphasize this unique topography of the landfill. One way is to add elements which highlight the geography of the mounds, much in the way that fencerows and hedgerows in rolling hills draw attention to the topography of the land. Designers can use vegetation to bring about the same visual effect. Another element designers can use is lighting, especially if the park is to be open

at night. Methane flares can be placed in the landfill in lines that accentuate the shape of the mounds (figure 6.12).

Figure 6.12 Methane flares on landfill can emphasize topography (illustration by author).

It is important that designers provide access to the tops of some of the mounds as well since they serve as visual monuments and destination points in the landscape. Designers can make the journey to the top part of the educational experience of being in the park. As the visitor climbs to the top of the mound, he/ she is climbing up various points in history entombed in the mound. Designers can make the journey to the top of the mound into a timeline of the site by labeling the dates of each level of the mound's formation along the path (figure 6.13). This will serve as another reminder of the history of the site. Another way to interpret the configuration of the landfill is to have park structures reflect the formation of the landfill. For instance, the landfill is made up of cells of trash that have been layered next to and on top of each other. A children's play structure can mimic that same form (figure 6.14). It would allow the children a chance to

climb through a physical representation of the landfill itself and help people understand the construction of the site.

Figure 6.13 Pathway leading to top of landfill marks dates of landfill formation (illustration by author).

Figure 6.14 Children's play structure inspired by form of landfill (illustration by author).

New Metaphors and Interactions

Historical Narrative

It is important that designers transform landfill sites into enjoyable places for visitors to spend a pleasant afternoon, but they should also seek to create places that are intriguing and invite visitors to explore and learn about the use of the site as a landfill. The use of the design elements described in this chapter will help visitors see new kinds of metaphors for these waste sites. These places are rich in history and reflect the values of American consumer society. The landscape of landfills is replete with stories. Each object that is embedded in the ground has a history of use and connection to people. Design elements can help to tell these stories by engaging visitors in these stories. Park managers and educators can encourage further interaction with this history through outreach and educational programs. Creative signs and posters can bring a greater awareness to these stories (figure 6.15). By maintaining this connection to the past, designers will create a place that provides a multi-layered experience for visitors.

Waste Processes

It is important that the landfill park reconnects visitors with an awareness of waste processes. Once again, educational elements in the design can help bring about this awareness. Waste production is a necessary part of every living system. Yet current practices tend to emphasize the 'out of sight, out of mind' attitude. If people are aware of exactly how much waste their community is producing, then perhaps they will be motivated to develop ways to reduce their waste production or more innovative ways to manage the waste. Different features in the landfill park such as the signs that identify

Figure 6.15 Example of poster that can help tell landfill stories (illustration by author).

landfill mounds and their contents and the garbage museum can help visitors understand how their own habits affect the larger system.

Renewed Pride

Many citizens see landfill sites as blights in their communities. No one wants to have a landfill built in his/ her back yard, yet our current society deems it an acceptable way to dispose of trash. When landfills are closed, designers can help transform this negatively viewed landscape into one that communities regard as an asset. It is important that the landfill parks serve many different desires including recreation and ecological restoration. Reusing the landscape in this way demonstrates the way that a degraded landscape can be readapted to serve human and environmental needs. Additionally, designers can help transform these landscapes into places that encourage exploration into the landscape. Design elements in the landfill park can also help generate dialogue about current practices regarding waste and perhaps will lead to better ways to address the problems associated with waste production and disposal.

CHAPTER 7

CONCLUSION

This thesis demonstrates how negatively viewed waste sites such as landfills are actually landscapes rich with meaning. Viewing these kinds of places with a different perspective can help lead to more innovative and integrative approaches when designing both the use and end-use of the waste site. The thesis focuses on the sublime elements of landfills as well as their ability to express place identity. However, other interpretations exist and should be explored in order to fully comprehend the potential of these sites. Landfills, as they exist in the post-modern view of the world, are richly layered with meanings and serve as palimpsests of our culture's attitudes about waste and material goods. As we move into the next century, newer views and attitudes will help to shape additional interpretations of these sites.

There is still a lot that we need to learn about landfill sites. While earlier landfills certainly helped solve public health issues, there are many environmental and public health concerns that have resulted from their placement, especially in wetlands. Attitudes about them have changed rapidly as well because of knowledge about their hazardous nature. While they do keep potentially hazardous and undesirable substances secured in large mounds, they have also become huge concentrations of toxic materials, and the full effects of them may not be known for decades. The public has become somewhat skeptical about new technologies because of the *unknown potential* damage to the

environment and public health they may cause (Tarr 1996, p.30). Landfill managers and designers must work hard to ensure the safety of these places or else the public will continue to have negative and fearful attitudes towards them.

As new landfills are being built, designers should work with engineers to help determine an end-use scheme for the landfill before the ground is even broken to begin building the landfill. By doing so, designers can help to shape the overall form of the landscape to make the landscape even more sublime or amenable to human interaction. Additionally, designers must collaborate with many different people such as artists, scientists, educators, historians and community members when trying to adapt landfill sites to new needs. A team approach is necessary in order to deal with all of the complexities of the site.

The management and design of capped landfill sites should also be adaptive to the changes in community desires as well as changes in environmental conditions. Change is inevitable with any kind of landscape. Designers should allow for changes to occur in the site by letting natural processes gradually reclaim the landscape. Yet they should help make the site's history evident the as well. It is a balancing act of letting the site continue on and change naturally through time, but also of revealing the stories that are imbedded in the artificiality of the landforms.

The designs presented in the previous chapter focus on revealing the history of the site. Additionally they attempt to reveal the sublime qualities of the landscape of landfills. This approach brings into question whether or not sublime landscapes can be consciously designed or whether or not simply revealing certain aspects of places can make them appear more sublime. This thesis explores the way in which a twentieth

century landscape can have sublime qualities and will hopefully lead others to investigate the meaning of the sublime as we head into the twenty-first century.

This thesis also brings into question the meaning of the word *waste*. As discussed in chapter two, waste is not a definitive characteristic, it fluctuates according to attitudes and needs. According to architect William McDonough, we should be moving toward a society in which we "eliminate the concept of waste, [and] evaluate and optimize the full life-cycle of products and processes, to approach the state of natural systems, in which there is no waste" (William McDonough Architects 1992, p. 6). While it may seem impossible to have a system which creates no waste, this approach will perhaps lead to better ways to handle the problems inherent in waste disposal practices and may one day help to reshape the landscape created by landfills.

Landfills are certainly places that conjure up repulsive and disgusting images. The serve as a foil to the other aspects of our germ-phobic society, but they are themselves subject to strict regulations. Yet there are positive aspects to landfills that can help designers and communities see these places in a new light. Until our society drastically improves source reduction and recycling, landfills will continue to be the main method for handling solid waste. These landscapes are the result of our own actions, and we must now recognize their importance, not just as a place for waste disposal but as a meaningful place in the community. Hopefully having a different understanding of the meaning of landfills will allow communities to reclaim these landscapes while at the same time helping them to recognize the importance of the history buried within and how that history is intimately connected to their own lives.

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