

2013

Of Dirt and Decomposition: Proposing a Place for the Urban Dead

Katrina M. Spade

University of Massachusetts Amherst, katrinaspade@gmail.com

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Of Dirt and Decomposition:
Proposing a Resting Place for the Urban Dead

A Thesis Presented

by

KATRINA MOGIELNICKI SPADE

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

MASTER OF ARCHITECTURE

May 2013

Department of Art, Architecture, and Art History
Architecture + Design Program

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Approved as to style and content by:

Kathleen Lugosch, Chair

Max Page, Member

Carey Clouse, Member

William T. Oedel
Chair, Department of Art, Architecture
and Art History

Dedication

To Rania.

*I bequeath myself to the dirt to grow from the grass I love,
If you want me again look for me under your bootsles.*

- Walt Whitman

ACKNOWLEDGMENTS

Thank you Max Page, Kathleen Lugosch and Carey Clouse for your gentle and thoughtful guidance throughout.

Thank you Mom and Dad for your support and your steadfast belief that this is a project worth pursuing.

Thank you Garth Schwellenbach for being my Best School Friend and for really appreciating my eyeballing skills.

Thank you Rye and Kale for letting me have as much screen time as I want, and for your lively perspectives on death, dying and decomposition.

Thank you Rania Spade, I LITERALLY don't know what I would do without you.

ABSTRACT

OF DIRT AND DECOMPOSITION: PROPOSING A RESTING PLACE FOR THE URBAN DEAD MAY 2013

KATRINA MOGIELNICKI SPADE, B.A., HAVERFORD COLLEGE
M.ARCH, UNIVERSITY OF MASSACHUSETTS AMHERST
Directed by: Professor Kathleen Lugosch

The intent of this thesis is to challenge our society's existing options for the care and processing of the deceased, and to design a space and a ritual which are both deeply meaningful and ecologically beneficial. The community for whom this architecture is designed currently lacks the religious or cultural rituals which would otherwise guide them through the process of laying of their loved ones to rest. For this community, both traditional burial and cremation are devoid of meaning and culturally irrelevant ways of dealing with the deceased, in addition to being unnecessarily wasteful processes. Likewise, the community for which I am designing is decidedly urban, and made up of people for whom the city is the chosen site for living. This city dweller loves the bustling, complicated, concrete and steel metropolis reality. I posit they would find a deep comfort in becoming part of the city after dying. However, it is my position that a deep connection to the cycles of nature is critical in order for the dead to rest peacefully, and for the living to properly grieve. Therefore, I propose that the space I am designing – and its processes within - will be deeply rooted in the cycles of nature, for it is only by truly comprehending our part in these cycles that we can grieve and heal.

Death, disposal, deceased, sustainable, funeral practices, compost, soil, decomposition, ecological, green, urban, architecture, design.

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CHAPTER 1

THE STATE OF OUR DEAD

The chief lesson is that the world displays a lovely order, an order comforting in its intricacy. And the most appealing part of this harmony, perhaps, is its permanence - the sense that we are part of something with roots stretching back nearly forever, and branches reaching forward just as far. Purely human life provides only a partial fulfillment of this desire for a kind of immortality...the earth and all its processes - the sun growing plants, flesh feeding on these plants, flesh decaying to nourish more plants, to name just one cycle - gives us some sense of a more enduring role.

-Bill McKibben, author of *The End of Nature*

Left to the forces of nature, our mortal remains have a relatively short existence. Hours after we die the bacteria in our gastrointestinal tracts begin to devour our bodies, and depending on the specifics of the environment we will fully decompose within 2 to 12 months.¹ At that time our physical bodies – all but the bones – have become fully integrated with the environment from whence they came. Flesh becomes soil, ready to nourish new living beings.

If the preservation of our corpses is the goal, then using the tactics of the modern funeral industry is a good strategy. Hours after death, the body is transported to a funeral home, where its blood is drained and internal organs are removed. Both are replaced by embalming fluid, comprised primarily of formaldehyde, a chemical compound which is very effective in slowing the decomposition process. The anus, vagina, and throat are stuffed with cotton, to prevent leakage, bloating, or “burping” of the body during viewing.² Once a body has been embalmed, it

¹ Weaver, Michael. 'What Happens to the Human Body After We Die?' *MadSci Network*, April 25, 2005. <http://www.madsci.org/posts/archives/2005-04/1114460899.Gb.r.html>.

² Harris, Mark. *Grave Matters: a Journey Through the Modern Funeral Industry to a Natural Way of Burial*.

can remain unrefrigerated for several weeks. In the case of certain corpses, such as Eva Peron, the remains may last for decades.³

More than half of Americans choose to have their bodies embalmed when they die, staving off the natural process that will, ultimately, return them to the earth. The following paper is a philosophical exploration of the reasons for this disconnect, as well as a design proposal for a space in which we might re-discover our connection to the cycles of nature. The following three statements provide the framework for this investigation:

- Many Americans lack a guiding force like religion or cultural tradition to provide us with rituals or customs to help us deal with death.
- Dirt is crucial to our survival as a species, and yet we have lost touch with our ability to nurture it.
- We love our cities at the same time that we long for a deeper connection to the earth's systems and cycles.

As a person who grew up in the rural northeast, I feel a real bond with the cycles of growth and decay that are fundamental to our existence. The comfort and familiarity I have with the rural landscape has sometimes played tug-of-war with the powerful desire I feel to live and work in an urban setting. And that's just the point: when I need to feel more connected to the earth, I leave the city. In his book *Human Nature*, James Trefil writes that there is "no essential conflict between our need for technology and our need to seek renewal in its absence"⁴

New York: Scribner, 2007, p. 16.

³ Schwartz, Margaret. *An Iconography of the Flesh : Media, Representation, and the Embalmed Corpse of Evita Perón*, 2008.

⁴ Trefil, James. *Human Nature: A Blueprint for Managing the Earth--by People, for People*. Holt Paperbacks,

That is reassuring to me – it means that I can dearly love the city at the same time that I acknowledge my need for a connection to the earth’s ecosystems. Because no matter how much we love our cities – the diversity of people, marvelous anonymity, constant new sights and ideas, and the vivid sense of being alive that they give us – we humans cannot truly feel whole unless we also maintain a connection to the systems of nature.

Nature is deeply important to us as humans – there are plenty of examples around us. Practitioners of ecopsychology theorize that many modern psychological ailments (depression, anxiety disorders) are caused by a lack of connection to natural cycles, and by a subconscious grief over the state of the earth’s ecosystems in the modern world.⁵ We see proof that city dwellers want a closer relationship to their food (and to the natural cycles that produce it) in the recent proliferation of urban agriculture and community gardens. And cities like Seattle are popular in part because it is so easy to get beyond their limits and into the wilderness for a quick fix.

Central to my thesis is an understanding that many people choose to leave the city one final time, as well. This isn’t just because of the dearth of space in city cemeteries, it is also because those natural settings resonate in a way that cities just don’t. Typically, when our loved ones die, we bring them *out* of the cities, to be scattered in some bucolic setting or buried in a country cemetery. No doubt, the destination chosen to be most appropriate and meaningful varies greatly by

2005, p.5.

5 Conn, Sarah. “Living in the Earth: Ecopsychology, Health and Psychotherapy.” *The Humanistic Psychologist* 26, no. 1-3 (1998): page 181.

individual. But the common thread linking our final resting places is the existence of nature, in varying places on the wild/manufactured spectrum. Whether we choose, for example, the ocean's coast (where nature's cycles are arguably most palpable), the arboreal cemetery, or the garden of one's childhood home, nature provides us with a direct connection to the larger cycles of life and death, which in turn remind us that we are, in the end, still a part of something grand.

Even though I love my cities, I can understand the draw to leave them. If I found out I was going to die next week, I'd ask to be cremated and scattered in one of two places, and neither of them is within city limits. This is not simply because those two places are special to me, it is also because our cities lack an adequate alternative. And so, I am proposing that there is a design solution which would bring the cycles of nature into the city in a deep and meaningful way, so much so that to end up there would be divine.

CHAPTER 2

LIFE SUPPORT

Our motive for protecting the soil is our certainty that it is fragile. It does not have the same unchanging character as a mountain or a river; it is a recent and ephemeral product. We owe it our lives and our energy, and the bodies we give it back are not payment enough.

- William Bryant Logan, author of *Dirt: Ecstatic Skin of the Earth*

The world is covered in a living breathing skin. Grassy plains, evergreen forests, sprawling savannahs, fertile farmlands - even Monsanto monocultures - all owe their existence to it. This incredible substance, each spoonful a unique mix of minerals, nutrients, and organic matter, supports all of the plants and animals that live on land. Needless to say, without dirt, humans wouldn't exist. Everything we depend on – from our food to our building foundations to the microbes in our guts – comes from this incredible stuff. And yet we are violently mistreating the dirt beneath our feet through our agricultural, logging and development methods. Soil degradation is the direct cause of famine and drought, and the indirect cause of war and human misery, but most Americans are unaware of this fact.¹

Our mistreatment of soil epitomizes the widespread lack of respect for the natural world that western society has had for at least the past few hundred years. This is not the place to make the claim that humans continue to destroy the world around us; we will take that for granted here. I am proposing, however, that we realize that the very basis of nature *is* dirt. And so, in order to find harmony

¹ Some scientists define “dirt” as the minerals and physical mix (clay, sand, etc) of the stuff under our feet, and “soil” as dirt plus organic material. For the purposes of this paper, I will use them interchangeably.

between the technological/cultural marvel we call cities and the natural world that supports them, we are going to have to embrace the dirt beneath our feet. To start, we'd better understand just exactly what it is, and what it does for us.

Our language confirms our disrespect for dirt. Its bad reputation has been around for centuries. The Oxford English Dictionary (OEM), has numerous definitions for "soil," and their dates are telling. "To defile or pollute with sin or other moral stain" traces back to the middle of the thirteen century, while the tamer "the earth or ground; the face or surface of the earth" goes back only as far as 1400 A.D.² Dirt's etymology is even more negative in tone. Its two main entries include "unclean matter, such as soils any object by adhering to it; filth; esp. the wet mud or mire of the ground, consisting of earth and waste matter mingled with water" starting in 1300 A.D. and "to make dirty or foul; to defile or pollute with dirt; to dirty, to soil" from the middle of the sixteenth century.³ These definitions may be accurate, but they are also soaked in negativity. What's missing from each is a definition that reads more like an ode, something to describe the mysteries of soil and dirt, and the fact that we owe them our very existence.

An acre of soil may contain up to 900 pounds of earthworms, 2400 pounds of fungi, 1500 pounds of bacteria, 133 pounds of protozoa, and 890 pounds of arthropods and algae.⁴ In other words, it is alive. No doubt, this is something that farmers have known for a long time. As far back as 400 B.C., agricultural advice

² "Soil." *Oxford English Dictionary*, 2012.

³ "Dirt." *Oxford English Dictionary*, 2012.

⁴ Pimentel, D. et al. 1995. Environmental and economic costs of soil erosion and conservation benefits. *Science*. Vol. 267, No. 24. p. 1117-1122.

included the edict “to be a successful farmer one must first know the nature of the soil.”⁵ Today, however, farming strategies are going two very separate ways. On the one hand, there are those who are reliant on input-heavy methods of agriculture including the use of synthetic fertilizers, fossil fuel burning machinery, and monoculture.⁶ On the other, there are those who are building on knowledge gleaned over generations, planting rotations of nitrogen-fixing species to provide nutrients to their crops, and experimenting with no-till methods and sheet mulching to reduce erosion and create topsoil. Put simply, one method destroys healthy soil, the other creates it. Unfortunately, of the almost 300 million people in the United States, less than 1% now claim farming as an occupation.⁷ And, as fewer and fewer farms produce the food that we eat, large-scale mechanization, commercial fertilizers, and pesticides are increasingly used to keep up with demand.⁸ This trend means that our soil continues to be subjected to the farming practices which erode, degrade, and deplete it. The U.S. loses 2 billion tons of topsoil (the stuff with the highest concentration of organic matter) each year.⁹

We know that our soil is precious, though our actions don’t often show it. Technically renewable, soil is still considered by many to be a finite resource, since the time it takes to regenerate goes well beyond a human timescale (it takes a minimum of 500 years to form one inch of topsoil.)¹⁰ But we still don’t know ev-

5 Xenophon, *Oeconomicus*, Socratic dialogue, Greece, 400 B.C.

6 Coincidentally, low-release nitrogen fertilizers were developed by combining urea and formaldehyde, the principle chemical used to embalm dead bodies. Sartain, JB. ‘Food for Turf: Slow Release Nitrogen.’ *Grounds Maintenance*, 2002. http://www.grounds-mag.com/mag/grounds_maintenance_food_turf_slowrelease/.

7 US EPA, Agriculture. “Ag 101 – Demographics on Farms, September 10, 2009. <http://www.epa.gov/agriculture/ag101/demographics.html>.

8 US EPA, Agriculture.

9 Sanders, Scott Russell. “Lessons from the Land Institute.” *Audubon* (April 1999): p.75–79.

10 Schueller, Gretel. “Eating Locally.” *DISCOVER Magazine* (May 2001): Online.

everything about dirt. We don't really know its origins, (though some speculate it came from exploding stars), and we don't know everything about its make-up. As Leonardo DaVinci famously said, "we know more about the movement of celestial bodies than about the soil underfoot." Not only that, but we also don't know everything dirt does *for* us. We know that dirt supports the living planet and all of the food that we grow, serves as the foundation for our entire built environment, filters and recycles our water, dead bodies, and waste, *and* acts as a carbon sink, but we are finding out still more.¹¹ Just recently, researchers at Brigham and Women's Hospital completed a study supporting the hygiene hypothesis, which posits that the exposure of young children to germs, symbiotic microorganisms and parasites, (i.e. stuff found in a handful of living soil,) helps create a balanced immune system and prevent allergy and diseases like asthma and colitis later in life.¹² So that fat baby playing in the dirt isn't just communing with the cycles of nature, it is also gaining physical strength directly from the soil.

But, scientific studies notwithstanding, most American parents would prevent their children from eating a handful of dirt. Although we know, on a technical level, that we need dirt to survive, as a society we have a real aversion to it. With the invention of domestic labor-savings devices in the 1920's, the standards of cleanliness rose, and the expectation of a home free of dirt and germs became the norm.¹³ Today, the typical supermarket devotes an entire aisle to cleaning

¹¹ US EPA, OAR. 'Frequent Questions | Carbon Sequestration in Agriculture and Forestry | Climate Change | U.S. EPA' October 1, 2009. <http://www.epa.gov/sequestration/faq.html>.

¹² 'When Germs Are Good for Us | Hygiene Hypothesis | Brigham and Women's Hospital | HealthHub | Brigham and Women's Hospital Health Blog', <http://healthhub.brighamandwomens.org/who-knew-that-germs-might-sometimes-be-good-for-us>.

¹³ Kendall-Tackett, Kathleen. "The Fascinating History of Womens Domestic Work in America." *The Hidden Feelings of Motherhood: Coping with Mothering Stress, Depression and Burnout*. Oakland, CA: New Harbinger, 2001.

products, many of which, we are slowly realizing, are toxic to humans.¹⁴ And scientists are studying whether our fear of dirt, as illustrated by our use of antibacterial soaps, could actually harm us in the long run, by allowing the emergence of drug-resistant bacteria.¹⁵ It's clear that there is a conflict here, between our society's distaste for dirt and our reliance on it. It stems, in part, from western society's fear of decay and decomposition, processes inherent to the creation of soil.

14 Researchers have found that many common household cleaners contain endocrine disruptors and asthma-related compounds, and that the labeling of these products does not always disclose this fact. Dodson, Robin E., Marcia Nishioka, Laurel J. Standley, Laura J. Perovich, Julia Green Brody, and Ruthann A. Rudel. "Endocrine Disruptors and Asthma-Associated Chemicals in Consumer Products." *Environmental Health Perspectives* (March 8, 2012). <http://ehp03.niehs.nih.gov/article/info:doi/10.1289/ehp.1104052>.

15 Aiello, Allison. "Antibacterial Cleaning and Hygiene Products as an Emerging Risk Factor for Antibiotic Resistance in the Community." *The Lancet Infectious Diseases* Volume 3, Issue no. 8 (August 2003): p. 501–506.

CHAPTER 3

FEAR OF DECAY

I am against nature. I don't dig nature at all. I think nature is very unnatural. I think the truly natural things are dreams, which nature can't touch with decay.

- Bob Dylan

The cheeses lining the aisle of the local supermarket in my town are tightly wrapped in plastic. A technical article on food safety and preservation from Clemson University states that it is best to “double-wrap cheese and place it in a sealed container after each use.”¹ This types of (false) information is driven by Americans’ fear of contamination and decomposition, to the consternation of cheese enthusiasts. Peter Dixon, of Vermont’s Dairy Foods Consulting, says that treating cheese that way is “like putting your cheese in a body bag” where it can’t “live and breathe anymore.”² Aside from the contradiction of metaphors, Peter makes a great point. Cheese is alive in the same way that soil is.³ Cheeses are best when wrapped in wax paper, so that the organisms that make them up can breathe. If you’re not ready to eat a piece within a few days of purchase, refrigeration will slow the decomposition process, and, either way, a little mold on your cheese won’t hurt.⁴ More and more Americans (and grocery stores) are starting to understand that cheese should be handled like it is alive. But the handling of cheese underscores a bigger issue, which is that our society is deathly afraid of

1 Schmutz, Pamela. “Handling of Cheese for Safety & Quality: Extension: Clemson University: South Carolina,” June 2008. http://www.clemson.edu/extension/hgic/food/food_safety/handling/hgic3506.html.

2 Bauer, Kathleen. “Wrap Party — Buying and Storing Cheese :: Culinate,” October 24, 2007. <http://www.culinate.com/search/q,vt=top,q=formaticum/33195>.

3 Martinez, Laura. ‘Keep Your Cheese Alive - Cheese’. *Cheese at Home*, February 15, 2009. <http://www.netplaces.com/cheese/cheese-at-home/keep-your-cheese-alive.htm>.

4 There are many different opinions on the best way to store cheeses. Some people say that cheese should never be refrigerated — it is best to let it come up to room temperature before eating it.

decay.

This fear of decay is illustrated in other ways, as well. Our obsession with youngness has led to a proliferation of anti-aging creams, formulas, and exercise regimes, all claiming to halt the ceaseless march of aging. A quick google search for “anti-aging” turns up more than 15 million results, and the top hits include anti-wrinkle serums, hormone therapies, and anti-aging diets. Whether they work, (and they don't,) doesn't matter here. What matters is that there is demand, and lots of it, to stop any visible proof of the aging process. We don't want to grow old, because as we age we can see – literally – our bodies' decline. And our bodies' decline reminds us of our impending death. Watching our children grow, seeing new wrinkles in the mirror, and experiencing deterioration in our joints and creakiness in our bodies all serve to remind us that time marches on. And time leads to one thing for all of us.⁵

Americans' fear of decay is also illustrated by the reluctance most have towards composting. The majority of Americans don't compost their food waste, because composting is, by its very nature, a dirty process, whose main aim is decay and decomposition. In fact, composting *is* decomposition, exactly like that which happens on the forest floor when leaves and fallen trees turn into dark brown soil. No doubt, American's hesitancy to embrace composting is compounded by the fact that many are ignorant about the importance of building soil, which composting does really well. The composting process occurs when materials which are

⁵ In cultures where old age is/was associated with wisdom and old people were valued precisely *because* of it, there was likely a parallel respect for the process of decay. And if old age was something to look forward to, perhaps the fear of death was lessened.

high in nitrogen are mixed with materials which are high in carbon, encouraging bacteria and fungi to break them both down.⁶ Carbon rich materials (“browns”) include wood chips, sawdust, and newspaper. Nitrogen rich materials (“greens”) include food waste, grass clippings, and manure. The result of this mixture of nitrogen, carbon, oxygen and bacteria is compost, an earthy, organic matter which adds nutrients and volume to existing soils.

Americans are beginning to embrace composting, due in no small part to our increasing awareness that the world is in peril. The ecological movement’s efforts include a good deal of education about the importance of soil. At its core, this is an education about the natural cycles of which we are a part. Food waste turns into soil, new food grows in that soil, we eat the food, and the food waste again turns into soil. An egg hatches and a chicken is born, we eat the chicken and later we die, our bodies turn into soil which grows wheat, a chicken eats that wheat and lays an egg...and on and on...cycles are everywhere! Children grasp this preponderance of cycles quite quickly, perhaps because in their youth they more unabashedly remember their part in the birth-death continuum or perhaps because it is a great game to play: to figure out the cycles that exist in everything we see, eat, and touch.⁷

People are (re)discovering the relationship of dirt to the food we eat. The University of Massachusetts now boasts a ¼ acre permaculture garden, designed

6 Trautmann, Nancy, and Elaina Olynciw. ‘Compost Microorganisms’. *Cornell Waste Management Institute*, Cornell University, (1996). <http://compost.css.cornell.edu/microorg.html>.

7 This is a common game at bath time in our house. It is amazing to watch the little ones grasp that we are a part of everything, and that everything we do effects many other things. It is also wonderful to see that the composting of human bodies doesn’t have to be frightening. We talk about it quite simply, and so do the kids.

and built by students using strategies that build soil without fossil fuel use; this same group was recently invited to the White House to talk about the practices of growing food. The goal is not just to provide fresh produce and perennial crops to the dining commons on campus, but also to educate other colleges and universities about how to take back our food system from large agribusinesses and unsustainable means of production. Composting is a critical tool for permaculture (and other types of organic farming) practices, so education about soil is necessary in order to convert people to these types of food production. At a recent UMass event, more than one hundred students came together for an evening to learn about vermicomposting in their dorm rooms. This type of engagement with the process of decay and soil building is heartening.

CHAPTER 4

CURRENT PRACTICES IN DEATH

*Above-Ground. The Clean Burial.
Not Underground with Earth's Disturbing Elements.*

- Ad for a Mausoleum, the Hour Newspaper, Norwalk, CT, 5/25/1993

It makes sense that we would be afraid of decay and decomposition. They remind us of death, they destroy our buildings and our built environment, and they go against everything we've been taught this past century about germs and the importance of cleanliness.¹ But our reaction to this fear is definitely not natural. On the contrary, our fight against decay leads us to create all sorts of chemicals, plastics, and polymers to keep things from falling down or getting stinky. The most salient examples of this can be found in our burial practices. The modern practice of embalming was invented during the Civil War, when surgeons began experimenting with the ancient strategy of preserving the dead in order to send slain soldiers home to their families. When Abraham Lincoln died, he was embalmed and taken on a trip from the White House to Oak Ridge Cemetery in Springfield, Illinois. Along the way, more than one million people viewed his body.² This trip is thought to be the birth of modern embalming practice, and today, the majority of Americans are embalmed. During the embalming process, the blood is drained and internal organs are removed, and both are replaced by a chemical solution which is tinted pink so that the skin maintains a "healthy glow." Embalming fluid is comprised primarily of formaldehyde, which has been proven

¹ Because cleanliness, of course, is next to godliness.

² Montgomery, David R. *Dirt: The Erosion of Civilizations*. 1st ed. University of California Press, 2007, p. 45.

to cause cancer, and although manufacturers have started marketing embalming fluids that are less toxic, the funeral industry has deemed these products to be less effective overall and avoided their use. (As one funeral director put it, the new safer solutions don't give dead bodies that "everlasting effect."³)

There are notable exceptions to this practice – the Jewish religion proscribes embalming precisely because it inhibits the body's return to the earth. Muslims bury their dead as soon as possible so as to avoid the need for embalming, which is seen as disrespectful. The popularity of green burials - which views the practice of embalming as unnatural and unnecessary - is increasing. And 33% of Americans are cremated, a figure which is steadily rising.⁴ But that leaves more than half of Americans who choose to be embalmed and casketed after they die in order to delay the inevitable decay and decomposition of the human body.

Embalming and casketing practices are specifically formulated to defend against natural processes which are ultimately unavoidable. And yet, as nonsensical as the processes sound, they are *preferred* by many to the idea of a loved one decomposing; our society's fear of decay is that deep. The funeral industry, increasingly consolidated into one of five corporations, caters to that fear.⁵ Casket choice further illustrates our society's fear of decay, and the irrational notion that we might prevent our bodies from it. Caskets range in price from \$500 to \$10,000

3 Martin, Andrew. "Despite Cancer Risk, Embalmers Stay With Formaldehyde." *The New York Times*, July 20, 2011, sec. Business Day. <http://www.nytimes.com/2011/07/21/business/despite-cancer-risk-embalmers-stay-with-formaldehyde.html>.

4 Yalom, Marilyn. *The American Resting Place: 400 Years of History Through Our Cemeteries and Burial Grounds*. First edition, first printing. Houghton Mifflin Harcourt, 2008, p.39.

5 Of course, funeral directors have every reason to shroud the gory details of the embalming process, as makes up a good percentage of the average funeral price tag of \$10,000. (Harris, Mark. *Grave Matters: a Journey Through the Modern Funeral Industry to a Natural Way of Burial*. New York: Scribner, 2007, p. 10.)

or more, and the more you pay, the more protected your loved one will be. Metal caskets are advertised as continuous weld with “completely sealed bottoms;” and wood versions all have “locking mechanisms.” Although it is illegal for a funeral director to say that a casket will prevent a body from decomposing, a good salesperson will use phrases like “if protection of a loved one against water and soil is important, a *sealed* casket might be best.”⁶

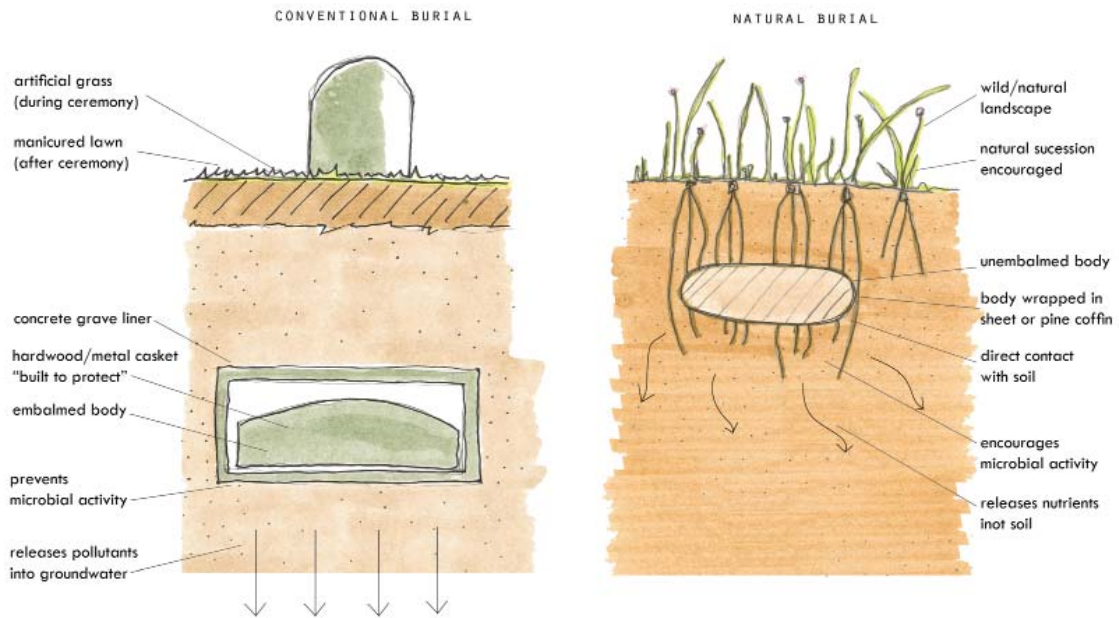
The process of embalming has taken the task of dealing with dead bodies away from the families of the deceased, and turned it over to an \$11 billion funeral industry.⁷ Author Mark Harris writes that, with parallels in the move from small family farms to huge agri-businesses, “the once simple act of laying our dead to rest has been transmogrified into a large-scale industrial operation that, like any other manufacturing process, requires the inputs of vast amounts of energy and raw materials and leaves a trail of environmental damage in its wake.”⁸ Our reliance on the funeral industry is relatively new: until the late nineteenth century, most Americans died in their homes and were prepared for burial by their families.⁹ Without romanticizing the past, it’s worth considering how the heart-wrenching acts of cleaning the body, digging a hole in the earth, and lowering the body into the ground, would be an important part of the grieving process. Not coincidentally, laying a loved one into the earth would provide an immediate connection with the cycles of the earth, a connection which the typical funeral process thwarts.

6 Harris, Mark, p. 12.

7 Choi, Amy S. “Entrepreneurs Reinvent the Funeral Industry.” *BusinessWeek: Online Magazine*, June 20, 2008. http://www.businessweek.com/magazine/content/08_66/s0806044892758.htm.

8 Harris, Mark, p. 5.

9 Yalom, Marilyn, p. 48.



1 Conventional vs Natural Burial Methods

And the pendulum is starting to swing the other way again. Just as the surge in home births illustrates the reclamation of death's sunny counterpart, so the rise in popularity of hospice, living wills, and green burials tells of our desire to become closer to our death experience. The New York Times reported a growing trend in "home funerals," with individuals who assist the families of the deceased labeled "death midwives"¹⁰ There is a movement afoot to own our own deaths and to simplify them.

Not everybody chooses to be buried when they die. Cremation - the method chosen by almost a third of Americans - became popular in America after the Civil War, when it was heralded as a sanitary and spiritual movement.¹¹ At that time,

¹⁰ Zezima, Katie. 'Home Burials Offer an Intimate Alternative.' *The New York Times*, July 21, 2009, sec. US. <http://www.nytimes.com/2009/07/21/us/21funeral.html>.

¹¹ Yalom, Marilyn, p. 271.

graveyards were becoming overcrowded and medical authorities spoke of the “noxious vapors” that hovered around cemeteries and made the living sick. The furnaces of modern crematoriums (called “retorts”) were heralded as efficient machines appropriate for the emerging industrial age.¹² Today, most cite “low cost” and “simpler” as reasons for choosing cremation.

Americans today are asked to choose between funerals, memorial services, burials, cremations, caskets, urns, and more. When a loved one dies, there are many choices we must make about how to deal with the body, at arguably the worst time, from an emotional standpoint, to be making them.

¹² Harris, Mark, p. 55.

CHAPTER 5

GREEN BURIALS AND GARDEN CEMETERIES

Say that the leaves are harvested when they have rotted into the mold. Call that profit. Prophesy such returns. Put your faith in the two inches of humus that will build under the trees every thousand years.

-Wendell Berry

Even if you believe in life after death, which a staggering seven in ten Americans do, the event of death is so grand, so *final*, that it begs ceremony.¹ The question of the physical body, and what to do with it, is a significant part of this ceremony, as our bodies are the last concrete connection we have to the living life. In the olden days, you didn't have to consider what to do with your beloved deceased, you simply followed the traditions of your culture. Today, in times of grief, a person's official religion still provides the necessary guidance, even for those who consider themselves lapsed practitioners. Marylin Yalom writes:

Many people who do not necessarily call upon a priest or minister or rabbi at the birth of a child or for a wedding turn to a religious leader at the moment of death. At a time of great sorrow, when the angel of impermanence casts its shadow over life, people look to traditional rites for consistency and comfort.²

But there are plenty of Americans for whom this statement doesn't ring true. Ask my father if he is religious and he will point to the forest behind our house and say "that's the closest I've ever felt to the divine." It's no coincidence that he has notified us kids that his end-of-life plan is to walk into the woods on a frigid night;

¹ Yalom, Marilyn, p. 277.

² Yalom, Marilyn, p. 278.

he is a doctor, and understands that death by freezing would be painless, even euphoric. John Burroughs wrote “we use the word Nature very much as our fathers used the word God and, I suppose, back of it all we mean the power that is everywhere present and active, and in whose lap the visible universe is held and nourished.”³ For people like my father, another option is becoming more and more popular. Green (or “natural”) burials are being embraced by those who find conventional practices to be “overly commercialized, spiritually decadent, and environmentally incorrect.”⁴ Similar to the Jewish practice of burial in a plain pine box, green burials encourage the body to immediately engage with the processes of decomposition. Buried bodies are not embalmed, and are often only wrapped in a sheet or shroud of natural material. Most proponents of natural burials cite respect for the environment as a major motivation for their choice and some speak of their “spiritual connection to the earth as a sacred trust, just as more traditional religious believers speak of their relationship to the divine.”⁵

Natural burials have been practiced for all of human history, and today they are completely legal in every state in the country. From an environmental perspective, they are a vast improvement over the conventional. The annual tally of buried materials in U.S. cemeteries is more than 30 million board-feet of hardwood and 90,000 tons of steel in coffins, 17,000 tons of steel and copper in vaults, 1.6 million tons of reinforced concrete in vaults, and more than 750,000 gallons of formaldehyde-laden embalming fluid.⁶ Additionally, bodies that are

3 Burroughs, John. *Gospel of Nature*. Applewood Books, 1989.

4 Yalom, Marilyn, p. 295.

5 Yalom, Marilyn, p. 296.

6 Seliger, Susan. “Alternatives to the Traditional Funeral.” *NY Times Blog: The New Old Age*, February 14, 2012. <http://newoldage.blogs.nytimes.com/2012/02/14/alternatives-to-the-traditional-funeral/>.

embalmed and casketed actually harm the earth, rather than giving back to it. At six feet under, the decomposition of the body is slowed by a lack of microorganisms (which live primarily towards the surface of the soil.) Couple that with an air-tight casket and a few gallons of formaldehyde, and the end result (it may take years, but rest assured it will happen), is not rich organic material but rather a soup of putrefied toxic liquid. In an ironic twist, the parting act of most Americans is to pollute the very soil to which they owe their lives.

In a natural burial, the body is buried just 3-4 feet down in the earth, allowing plant roots to assist in its break-up and decomposition, and for nutrients from the body to be used by those plants.⁷ Many natural burial grounds are meadows, and their future ecological succession (from meadow to shrubland, woody grove to mature forest) is an important part of the concept. The landscape of a conventional cemetery experiences little change beyond the weathering of gravestones and the growth of its individual trees. The bare earth around the casket at a freshly dug grave is customarily draped with artificial grass, as though to mask the fact that the person inside will ultimately end up in the soil. For a conventional burial, in other words, nature is decoration rather than participant. Many natural cemeteries, on the other hand, embrace of the cycles of nature by allowing change to occur over time. Meadows grow, forests take their place, soil is built as plant and human materials decompose.

Many green cemeteries prohibit the use of grave markers, and use GPS coordi-

⁷ Bechhoefer, Rachel. 'Urban Ground: An Urban Natural Burial Guide + Site Sustainability Study'. Conway School of Landscape Design, Spring 2009, p. 2.

nates to help visitors locate the spot where a body is buried. The experience of visiting a loved one is thus less about visiting the body (or remnants of the body), and more about visiting the *place* which has absorbed the body. Quite literally, the person lives on. The physical remains are taken in as nourishment for this tree, or that grove of wildflowers, and when those plants die back they too will become nourishment for another. In this way natural burial grounds acknowledge the deep flow of time and “give us some sense of a more enduring role.”⁸ Land reserved for natural burials is becoming more common; the Natural Burial Co-operative lists twenty-three such places in the United States.

So, if green burials exist, why do I find it necessary to create an alternative method of treatment for the dead? The Conway School of Landscape Design has done a beautiful site suitability study for a natural burial ground as part of an expansion for the Mount Auburn Cemetery in Cambridge, Massachusetts. The concept is to turn a nearby contaminated brownfield site into a green cemetery, making it one of the first major “urban burial grounds” to do so.⁹ But the truth is that the Mount Auburn Cemetery is not really *urban*. Located west of downtown, with only a small sliver within the city limits, it is essentially a large park nestled in the suburban-esque surrounding area. While it is possible to catch a glimpse of framed views of the skyline from certain vantage points in the cemetery, a visit to the site is not an urban experience.

This is purposeful. The de-urbanization of American cemeteries has been

⁸ McKibben, Bill. *The End of Nature: Tenth Anniversary Edition*. 10 Anv. Anchor, 1997, p. 73.

⁹ Bechhoefer, Rachel, p.1.

happening for more than a century; they are not meant to feel like part of the urban fabric. In New York City, for example, internments within city limits were largely prohibited by 1853, when graveyards on the edges of cities started to replace “the cramped urban necropolis with miniature Gardens of Eden on the city’s outskirts.”¹⁰ The rationale for the move from urban to semi-rural included the belief that corpses were a source of contagion for the living, as well as the fact that cities no longer had any space for the dead. Mount Auburn Cemetery, founded in 1831 with help from the Massachusetts Horticultural Society, was the first to be formally known as a “garden cemetery,” and by 1861 there were garden cemeteries in scores of cities around the country. These cemeteries served as a sort of compromise “between civilization and the wilderness,” and they were the precursors to city parks.¹¹ Today, city parks provide a little bit of nature for millions of urban dwellers who otherwise wouldn’t have any real connection to the cycles of the earth.

¹⁰ Yalom, Marilyn, p. 83.

¹¹ Yalom, Marilyn, p. 47.

CHAPTER 6 NATURE IN THE CITY

Imagine the design that makes all oxygen, sequesters carbon, fixes nitrogen, distills water, provides habitat for hundreds of species, accrues solar energies as fuel, makes complex sugars in food, and creates microclimates and self-replicates.

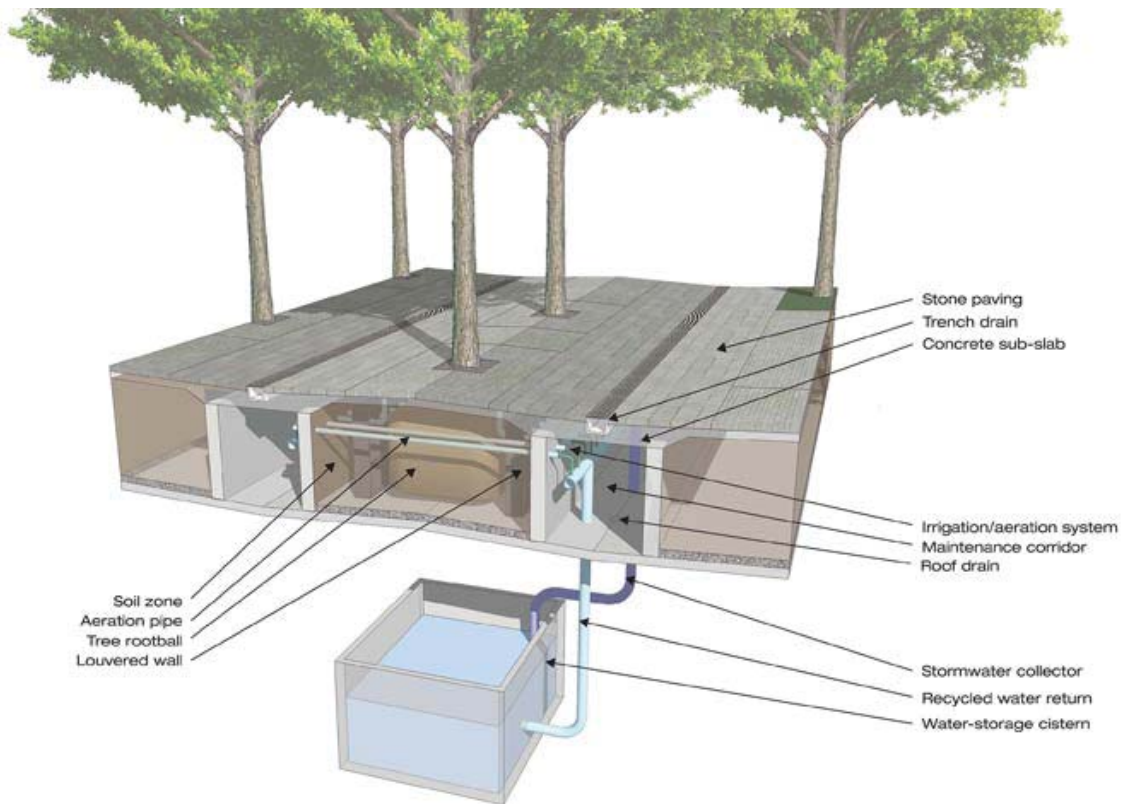
- William McDonough

The grounds of the 911 memorial are home to hundreds of trees on life support. An underground matrix contains an irrigation and aeration system, water storage cisterns and intricate drainage pipes, as well as maintenance shafts so that workers can access the parts when these systems malfunction. Each tree's root ball sit on a concrete sub-slab and receives its nutrients through an elaborate network of pipes and tubes. Designed by landscape architect Peter Walker, the trees were chosen to "add texture, bring things down to a human scale and lend a sense of life and comfort."¹ But whatever comfort they may provide (shade in the summer months?), these trees do not connect inhabitants of the space to the cycles of nature. The trunks dive cleanly into gravel-filled containers, as if to reinforce the reality that they are not truly connected to the earth. Planted in an orthogonal grid, the trees reflect the city streets around them, and the strict regularity of their form (due to a rigid pruning schedule) is the antithesis of the diversity of natural ecosystems.

Contrast this to a tree that is specifically quite dead, yet teems with life. The Neukom Vivarium, an installation by artist Mark Dion, contains a Western

¹ Shinn, Meghan. '9-11 Memorial Trees'. *Horticulture: The Art + Science of Smart Gardening*, no. <http://www.hortmag.com/plants/9-11-memorial-trees> (n.d.).

Hemlock that was brought into the city of Seattle from the forest where it fell a few years ago. The 80 foot long tree is called a “nurse log,” because as it decays on the forest floor it provides nutrients and protection to new forest life.² Covered in moss, with ferns and saplings growing out of its nooks and crannies, the tree lays at the edge of the Seattle Sculpture park in climate controlled greenhouse, where it is encouraged by the high-moisture setting to continue to decompose. Visitors to the display are given magnifying glasses to view the decay and the life arising from it. It is a fascinating melding of a highly technological, manufactured experi-



2 911 Memorial Tree Life Support System

ence and the occurrence of natural cycles, synthesized but uninhibited.

² Montagnini, Florencia, and Carl F. Jordan. *Tropical Forest Ecology: The Basis for Conservation and Management*. 1st ed. Springer, 2005.

This is to say that sometimes, what we deem to be “life” is actually fairly dead, and that the reverse is true as well. If, as I am suggesting, a space for the dead should resonate with nature, then getting a grasp on what does and does not constitute “nature” is critical. I am not proposing to design a park-like cemetery in the city. A park in a city doesn’t necessarily evoke a deep connection to the natural world. Most city parks - being that they are for frisbeeing and lounging and dog-pooing as well as for nature-enjoying - are covered in neatly trimmed lawn.³ The nature I hope to connect people with has more to do with a dead nurse log, and less to do with a perfectly manicured tree.



3 Nukoum Vivarium by artist Mark Dion

It is worth noting that the scale of nature in the city can be quite small, and still

³ Lawns aren’t doing it for a lot of people. A campaign is spreading to get rid of residential lawns altogether, especially in the Southwestern part of the United States where water is scarce. Far from being naturally benign, lawns use up more than their fair share of resources, and contribute to pollution. 67 million pounds of pesticides are used each year on lawns. (General Accounting Office (GAO), *Lawn Care Pesticides: Risks Remain Uncertain While Prohibited Safety Claims Continue*, RCED-90-134. 1990, p. 8.)

allow the cycles of birth and death to shine. The concept of urban agriculture resonates with so many because it allows us to experience nature on a scale that fits into the density of city living. My 3'x 4' raised bed filled with compost created from my family's food scraps is enough to connect me to the wonders of the ecological systems of which I am a part. Year after year, seeing the first tiny greens poking up from the rich soil is like witnessing a miracle. Food! Growing! Here! Contained in that small space are the wonders of death and decay, life and growth. Give me a slice of earth to cultivate and I am content.

CHAPTER 6

CONCEPTUAL DESIGN

To die would be an awfully big adventure.

-Peter Pan

At this point in my research, I had explored the options which currently exist for us when we die, and confirmed that no existing alternative felt quite right to me. I had written an ode to dirt, and realized that there is a richness to the processes of decomposition and decay that embody the cycles of nature quite beautifully. In designing a resting place for the urban dead, then, I wanted to draw deeply on those processes, and give dirt the place of honor which it has been denied for so long.

Site Considerations

On considering a design my first thought was about what kind of city would be best. For a few reasons, New York was the most appropriate. First, it is quite dense, which makes it feel more urban, and the whole point of the design is to allow urban dwellers to remain so after they die. Second, New York City is lacking nature. As Max Page put it, “the experience of urban tree planting...may have helped establish the truism that nature cannot survive in Manhattan.”¹ While I don’t agree that nature *can’t* survive there, it is true that it has a tough time of it. For that reason, a resting place for the urban dead that manages to bring nature’s cycles into the city in a deep and meaningful way would be all the more meaningful in New York.

¹ Page, Max. *The Creative Destruction of Manhattan, 1900-1940*. 1st ed. University Of Chicago Press, 2000, p. 215.

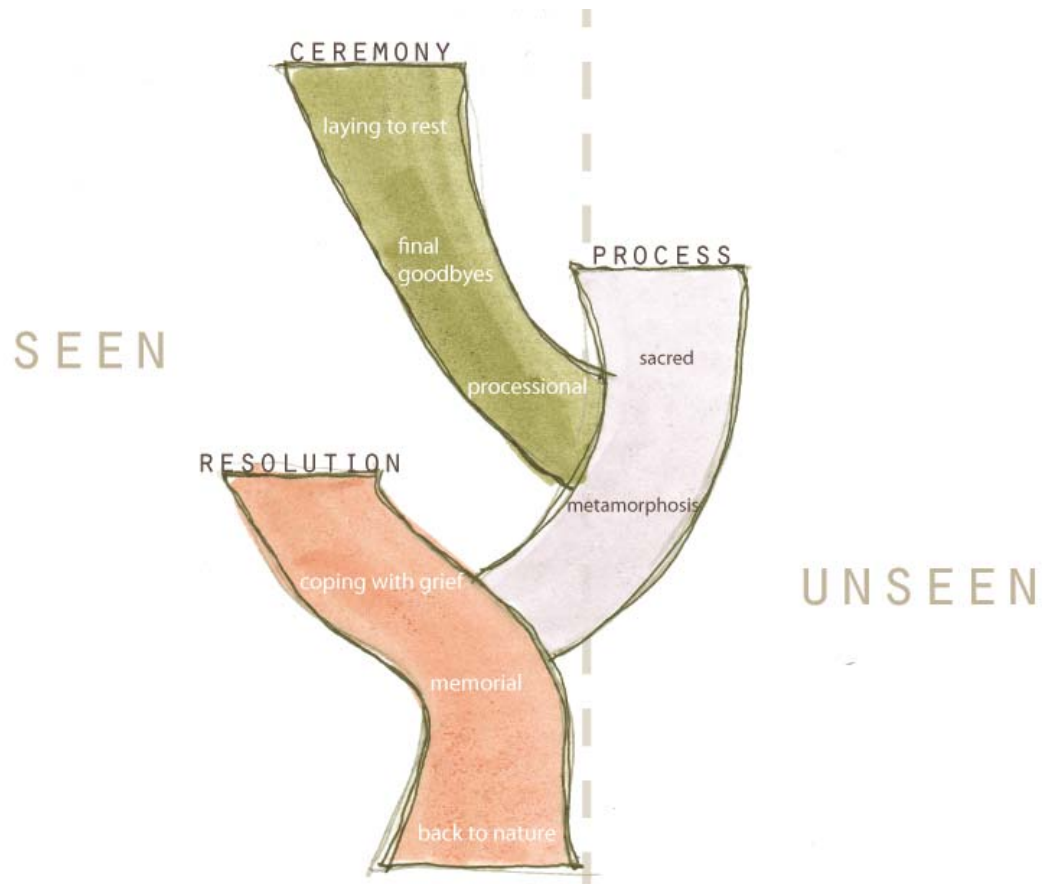
As for the specific site, I was looking for a particular street that was *alive*, not only as a metaphorical contradiction to the bodies within, but also because a place for the dead should not be dead itself, if “dead” is to mean “barren,” “obsolete,” or “stagnant.” Rather, in being laid to rest within a dense, animated city block, the long term inhabitants will be comforted to know that their final resting place will not be on a deserted street somewhere. Furthermore, I saw the block as being rather typical, instead of a notable, “showcase” site, so that people might happen upon it in their daily wanderings, perhaps walk through on their lunch break, or visit for an evening.

I saw the building nested on its chosen city block. My initial thought was that it should be very inward-looking, because tranquility and quiet will be critical on the inside. In contrast to the steel and concrete caskets that “protect” the dead in conventional funeral practices, I did not plan to protect the bodies, rather, their return to the nature around them would be encouraged. That said, it must be noted that this place would be as much (or more) for the living as for the dead. The building, then, should protect the living, in whatever ways (emotional, for one) they need protecting.

Early Diagramming - Program

I began diagramming the potential program areas, expecting that the transformation of the physical body would be a major part of the design. The diagram below shows the three major categories of program I envisioned early on. Both

“ceremony,” where the deceased is laid to rest, and “resolution,” where people can experience the outcome of the transformation, are programs that should be *seen*. The “process” part of the program should be *unseen*: it is, arguably, the most



4 Early Process Diagram

sacred.

Early Design Thoughts

In the Ceremony Space, families say goodbye to their loved ones. This space will be solemn, although it must allow for memorial services that are structured to be celebrations of the deceased’s life, as well. I imagine it to feel dark, quiet and safe, and that light will play a large role in creating its environment. The

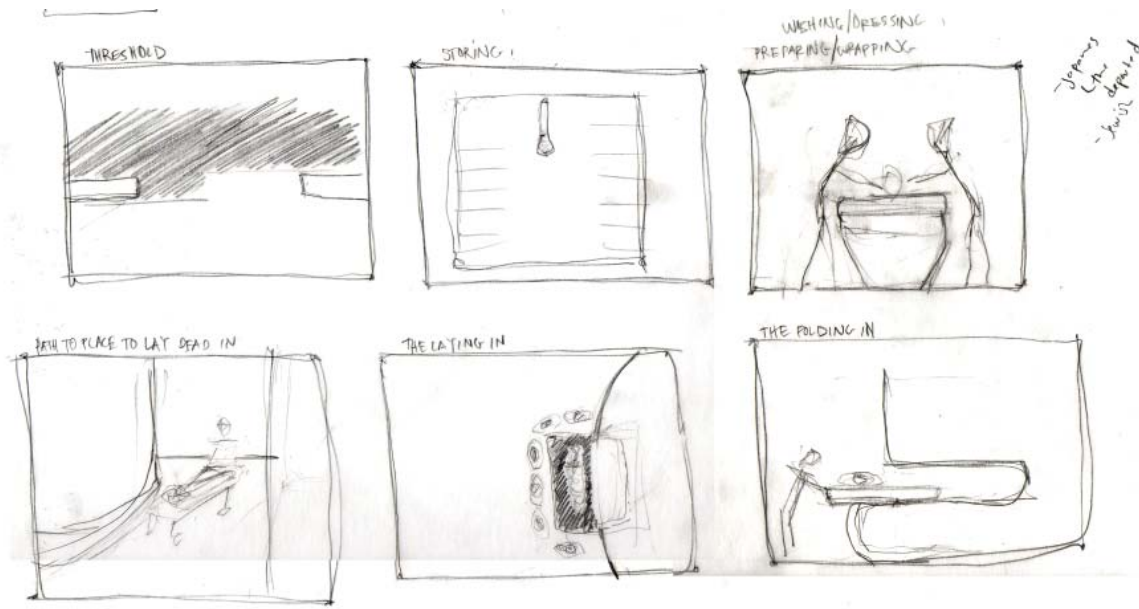
Ceremony Space may include some type of processional, so that families can mark the passage of the deceased with movement.

In the Process space, bodies turn to soil. Although the process itself is quite incredible, even sacred, it is also one that our society has difficulty confronting. For this reason, this space will be hidden to visitors. However, it is important that the process space is not simply a back-of-house area, rather, it will be designed as a sacred space. In addition, this space will need to be designed from a technical standpoint to accommodate and encourage the process of decomposition.

Finally, there is the Resolution Space, where the end product of the process of decomposition will be revealed and celebrated. This space will function as memorial to the deceased, a place where people will come to visit and remember. Where the Ceremony Space will be quiet and dark, the Resolution Space might, at times, be boisterous and light, just like the city itself.

Storyboards

As the concept for the space developed, I started thinking deeply about the inhabitants of the space. I considered the dead and the living, both those deep in the throes of grief and those just passing by. On the subway in New York I imagined what it would be like to go to the space, traveling over and under the city's grid, to put a loved one to rest. The resulting storyboards get at the nature of this journey for two different inhabitants of the space: the dead and the living



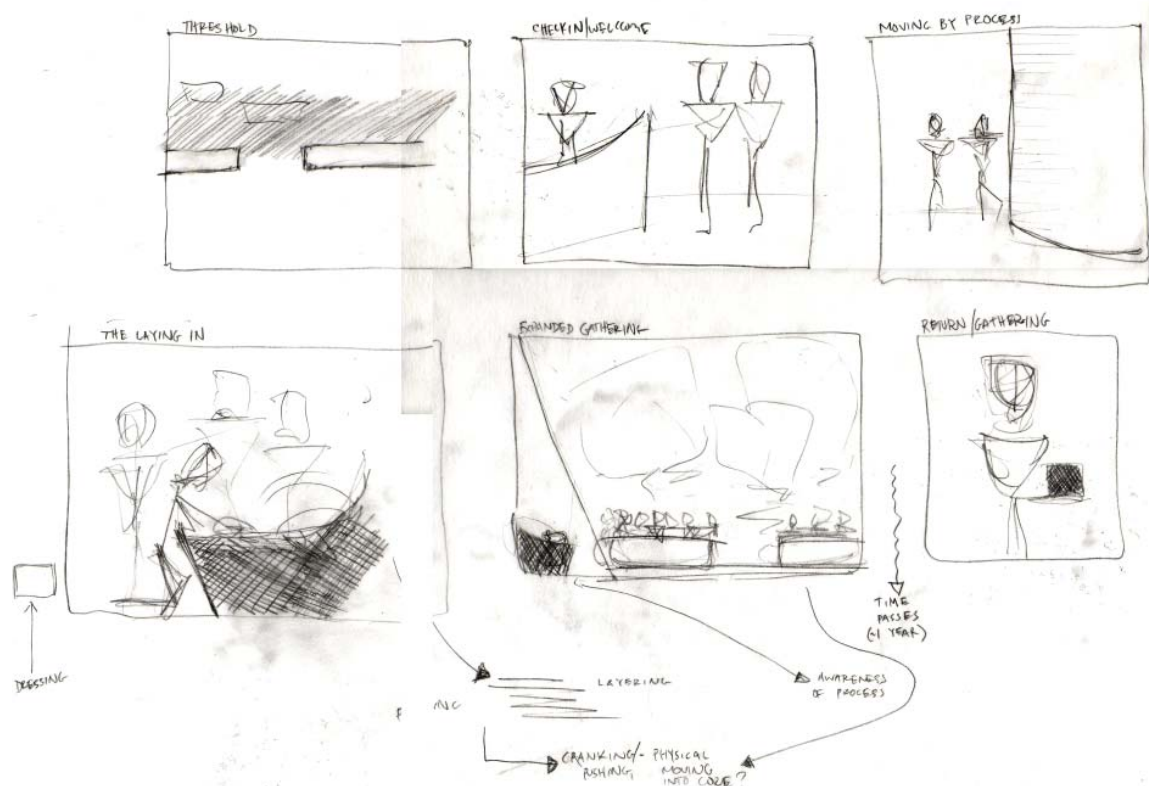
5 Storyboard: the Dead

(those closest to the deceased).

A path for the dead began to emerge from the sketches of the storyboards. A threshold would be crossed, the body would be stored (here, the importance of temperature, both as a design element and for technical reasons, started to emerge), it would be dressed, and moved, and finally, covered over.

The most important and weighty moments along the paths traveled by the living began to emerge as well. Washing or dressing one's loved one to prepare for the covering, the journey to the space where the body is finally laid to rest, the emergence from the darkness out into the light, these experiences emerged as critical, and emotional, and beautiful moments of the design.

Sketching the storyboard for the path of the living closest to the deceased included the moment where they would join death midwives to dress the body before the ceremony. Since the process of decomposition creates a great deal of heat, the core would be warm to the touch, and this concept began to be developed as well. Finally, the idea that the mourners would return to the site and



6 Storyboard: the Living (closest to the deceased)

be able to take away a part of their loved ones - literally, the compost that their bodies had become - emerged.

CHAPTER 7
PRECEDENTS
The Earth Room

Designer: Walter de Maria
Location: West Village, NY
Date of Completion: 1977

The Earth Room by Walter de Maria was a big influence in my design. Most importantly, it is a sacred space that is non-religious. Even in its current state - filled with “dead” dirt, devoid of life after 30+ years indoors - the work has a calm, holy presence. Earth Room is a simple, beautiful reminder that soil is deeply meaningful and should be celebrated.



7 Earth Room by Walter de Maria

St. Ignatius Chapel

Designer: Steven Holl

Location: Seattle, WA

Date of Completion: 1977

I think that architecture serves as a kind of vessel, a space for reflection, and I think that in cities we need these spaces more than ever.

-Steven Holl

While visiting Seattle, I walked downtown to the Chapel of St. Ignatius by architect Steven Holl. I had heard of this chapel many times, and wanted to see what all the fuss is about. After first catching sight of it sitting rather wart-like beyond a large parking lot, I went inside.

The experience was...holy. As the big doors closed the city noises receded. What remained was not exactly silence but a quietness. The baptismal font murmured. I was alone in the space. As if on cue, the clouds outside shifted and a rare slice of sunshine altered the colored light filtering through the translucent apertures. I sat in the small sub-chapel with beeswax walls, and wrote some words down to try and describe the experience: weighty, heavy, substantial, warm, quiet (murmur), natural, scented, human, holy, personable, kind, soft, expansive, purposeful, timeless.

As a distinctly non-religious person, I thought about what it was about that incredible building that allowed me to feel sacred. The architecture encouraged a certain type of emotion and reflection. The weightiness of the space (embodied by the concrete floors and walls, and in the feel of the moist, still air inside) immediately implied a significance beyond the ordinary. Holl doesn't rely on size or

grandeur to shape the experience. The chapel is human-scaled, personable, and – somehow – kind. The materials (rough textured plaster walls, beeswax, blond wood pews) have a natural feel to them, and everything seems touchable. As a place for prayer and reflection, it is a complete success.



8 St. Ignatius Chapel

During his Ted Talk, Alain de Botton said “religions know that we’re not just brains, we are also bodies.” Holl - who told the Jesuits at Seattle University that he was “pagan if anything” before they hired him to design their temple – obviously knows this as well. The light he so carefully crafted, the scent of the beeswax walls, and the roughness of the plaster walls all combine to bring the body directly into the experience. And this is important. It is as though our awareness of our bodies helps our minds (soul?) to snap to attention, so that we can open up to something larger than ourselves.

Igulada Cemetery

Designers: Enric Miralles + Carme Pinos

Location: Igualada, Spain

Date of Completion: 1994

In order to design a resting place for the urban dead, it is important to consider what is out there that works to bring beauty and meaning to the process of laying the dead to rest. Though not urban, the Igulada Cemetery by Enric Miralles and Carme Pinos is a beautiful example of a built environment for the dead. Lacking lawns or gravestones, it is less a cemetery than a landscape, and its engagement with the earth is a big part of what makes it so successful.



9 Igulada Cemetery Main "Street"

Miralles and Pinon envisioned their design as a "city for the dead", which the living could visit to reconnect with their deceased loved ones. The cemetery is carved deeply into the land so that it is quite clear to the visitor that the earth has been excavated. This exaggerated excavation achieves two objectives. One, it obstructs the visitor's vision from the surrounding landscape and means that only

the sky is visible to them when they are walking among the mausoleum burial plots. Two, it allows visitors to feel as though they are walking among the dead: literally, within the earth.

The long processional leading down into the Igulada Cemetery can be understood as both a river and a street. Understood by the architects as the river of life, the path moves “from a wide open expanse in the Catalonian hills to a secluded memorial space” below the horizon. Moving among the “city of the dead”, with individual mausoleum burial plots like row after row of tiny apartments, the path is also a street, where the living can mingle and visit with the dead. The materials that the architects used in the design are natural and weighty. A set of cor-ten steel crosses lay on their sides at the entrance of the cemetery, serving as a gate and a threshold. Gabion walls surround the main burial area that is sunken into the landscape, and the chapel walls are thick, rough, unfinished concrete. The “street” weaving through the “city” is paved with stones, with aged wooden railroad ties inset along the way. In contrast to these heavy materials, the architects designed a wandering line of slender deciduous trees through the cemetery. Their airy lightness reminds the visitor that life goes on, even in times of grief.

The Highline

Designers: Diller Scofidio + Renfro
Location: Manhattan's West Village
Date of Completion: 2009



10 The Highline

This project inserts nature into the city in such an elegant way. I love that it is a park above the city, yet completely part of the urban fabric. Rather than encourage visitors to “get away,” it allows them to experience a slice of nature at the same time that it accentuates the urban experience around it. It is a love letter to the surrounding city.

Duisburg-Nord Landscape Park

Designers: Latz + Partner

Location: Duisburg-Nord, Germany

Date of Completion: 1991

This park was designed around and between an abandoned coal and steel production plant. The idea was to heal from and understand the past, rather than obliterate it. The landscape architect allowed polluted soils to remain in place and be remediated through phytoremediation, in effect emphasizing past injury to the ecosystem and illustrating the healing process.



11 Duisburg-Nord Park

Urban Farming

Designers: Various

Location: Various

Date of Completion: Various

Nowhere is our disconnect with the earth more pronounced than in our food systems. Urban farming has become more and more popular in the past few years, signaling our need to be a part of the processes of growth and decay. As architects and urban planners get on board, we will see urban farming inserted into the building environment more and more creative ways.



12 Urban Farm in Brooklyn, NY.

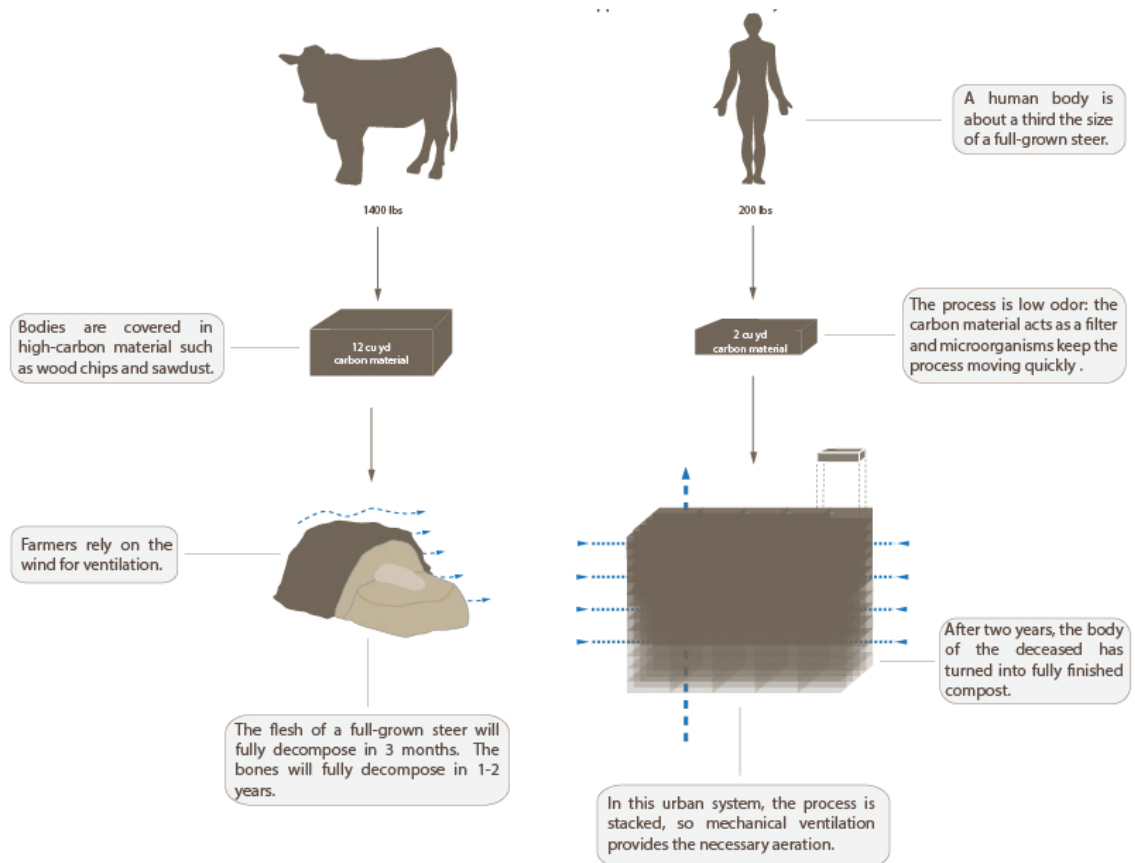
In many ways, the issues of urban food systems are similar to those for the disposal of the urban dead. Solutions for these issues are more important than ever, as half of the world's population now lives in cities. Likewise, as the population grows, the amount of arable land is in constant decline. This design addresses these issues by creating a space-saving, sustainable urban solution, where dead bodies are turned into nutrient-rich, soil-building material.

CHAPTER 8

SCIENTIFIC PRECEDENT

Static Pile Livestock Composting

Compost is organic matter that has been decomposed and recycled as a fertilizer and soil amendment. Compost can help replenish the topsoil that we are so rapidly depleting. This design utilizes the power of decomposition to turn our bodies into nutrient-rich compost, so that our parting gesture can support the creation of a healthy and sustainable planet. Cornell University and others have proven that composting is a safe, effective and sustainable method for disposing of dead livestock. The same science can be applied to the human body on an urban scale.



Sources:
Cornell Institute of Waste Management
Minnesota Department of Agriculture

13 Diagram of composting method.

CHAPTER 9

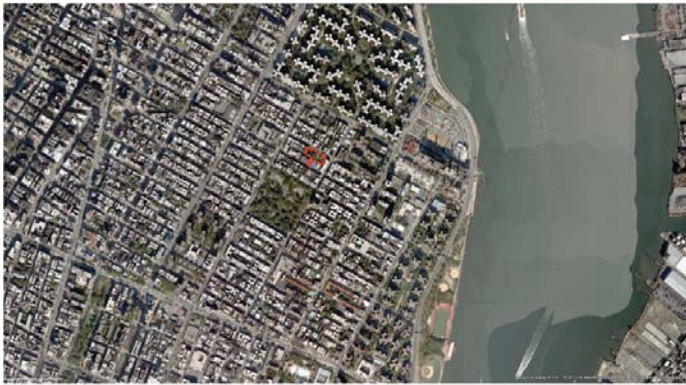
SITE SELECTION

I chose my site for its thoroughly urban setting, its mix of residential and commercial, and its humble quality. Located in Manhattan, on 11th and C, it backs up to a poorly designed public park and a well-designed community garden.

The site's "front" faces Northwest, and is a narrow 50' wide slot between two residential buildings of five and seven stories respectively. It's "back" opens up to a large park (shown with the front in dotted lines), which spans about a quarter of the back of the block and is under-utilized and minimally designed. Adjacent to the park is a community gardens (red square) which is lush, functioning, and



14 Site showing adjacent community gardens.



527 east 11th street
manhattan

beautiful.

The goal was to create a building that completed the street front by filling in the 50' slot on 11th Street, and to create a park for strolling and viewing and taking away the resultant compost material created by the deceased bodies. Another goal was to open up the flow between the project and the community gardens, without re-designing the gardens themselves.

15 Site photographs

CHAPTER 10

A SPACE FOR THE URBAN DEAD

The basis of this project is a multi-story concrete core that contains the process of decomposition. Friends and family “lay in” the body of the deceased at the top of the core, and cover it with carbon-rich material such as wood chips and sawdust.

As the body decomposes, it settles lower in the core, and new material and bodies are layered on top. After eighteen months, the body – both bones and flesh – is completely composted, leaving behind a nutrient rich humus, much like you would find three inches down on the forest floor. Once it is finished, the compost is moved via a screw conveyor from the bottom of the core to a welcoming outdoor space. Here the compost – both its past and its potential – is experienced as sacred.

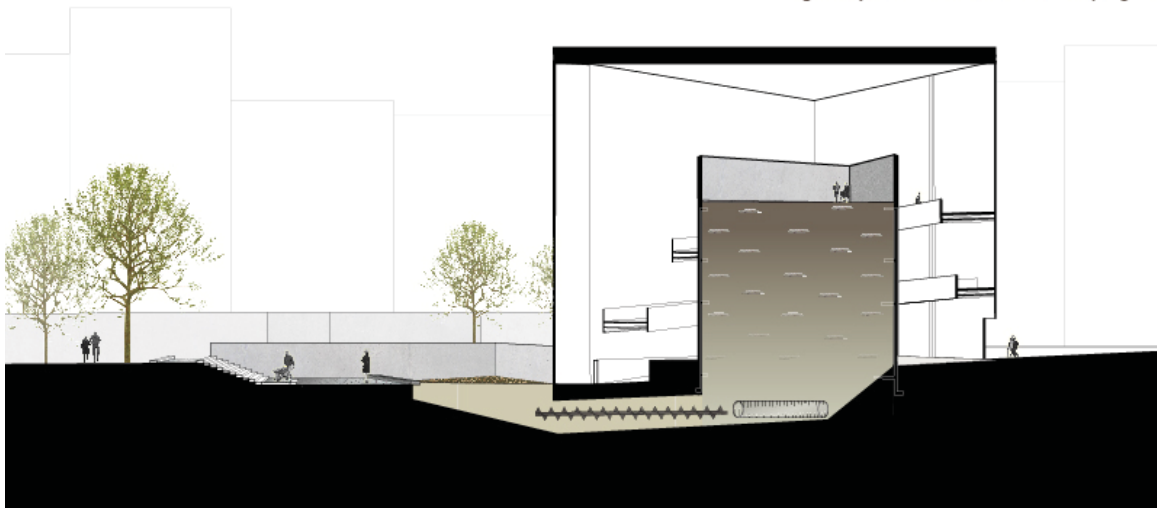
This exterior compost space is designed as a place where mourners and visitors may stop and reflect. The compost may also be taken away for use by members of the community, utilized for urban gardens.

This design offers a new model for the disposal of the urban dead, where bodies are composted and turned back into soil-building material. This project is both a space and a ritual, and its purpose is to connect us to the earth. In doing so, it helps to facilitate the grieving process, reminding us that we are a part of something much bigger than ourselves.



10 Friends, family, and the neighboring community take the compost to their homes and gardens. In this way, the dead are folded back into the **fabric of the city** and reborn to support new growth.

9 In the grove, friends and family contemplate the finished compost, a crucial building block of healthy soil. This **compost is sacred**, both its past and its potential.



8 As the materials settle and are removed, more wood chips and sawdust are added to the top of the core. The **process is continuous** - as bodies are laid into the material on top, finished compost is extracted below.

7 After 1-2 years, a **rich humus** has been created. At the bottom of the core, a rotary screen filters out any remaining objects and a screw conveyor pushes the compost out to the grove.

1 The deceased may be stored in a refrigerated space for up to three days before the ceremony begins. There is no embalming - **decomposition** is an important part of the design.

2 The closest few family members meet the deceased in the shrouding room, where they wrap the body in simple linen. **Death midwives** are on staff to help with this difficult process.

3 Mourners enter the facility and climb to the top of the core, where they will say goodbye to the deceased at the **laying in**.

4 At the top of the core, **friends and family** cover the deceased with a high-carbon mixture of wood chips and sawdust.

5 As bodies decompose, they settle down towards the bottom of the **core**, which is constructed out of concrete.

6 Due to the decomposition inside, the concrete core is **warm to the touch**, reminding visitors of the incredible process happening within.

16 Diagram of process.



17 Final model, from South.



18 Start of ramp.



19 Final model, from North.



20 Final model from above, roof removed.

CHAPTER 11

THE INHABITANT'S EXPERIENCE

Upon entering the building, visitors are confronted with a four-story core of smooth, polished concrete. Sturdy core-ten ramps wrap around the core. Friends and family of the deceased begin their climb just inside the front entrance.



21 Just inside the front entrance.

The body of the deceased is brought in the back door, where it may be kept cool for a few days before a ceremony takes place. On the day of the ceremony, the one or two people who are closest to the deceased join the body in the shrouding room. Death midwives are on staff to assist those people in cleaning and

wrapping the body in simple linen.

The mourners meet up with the body on the third level of the ramp. The body is

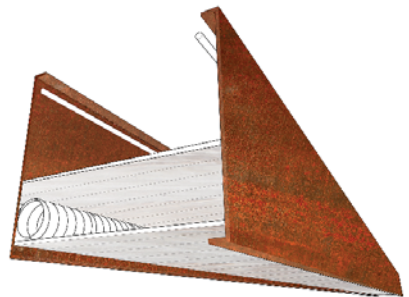


22 Carrying the body.

carried the rest of the way, winding up and around to the entrance of the core. This physical experience, the labor of climbing four stories around the core, is designed to be part of the ritual, and is an important aspect of the grieving process. For most of the journey, the ramps wind near to but not touching the core of smooth concrete. On the third level, just after the space where mourners meet up to carry the body, the ramp touches the core, allowing and encouraging visitors to touch its surface. Because of the process of decomposition

inside, the core itself is warm to the touch, and visitors can feel the heat on the smooth polished surface.

Once inside the simple concrete walls of the core, friends and family “lay the body in,” covering it with a mixture of sawdust and woodchips to encourage the decomposition process. This moment is an essential part of the ritual as it helps to frame the



23 Ramp section perspective.

grieving process. Staff is on hand to assist as mourners cover the body, and everyone is encouraged to help at whatever level they are able.



24 Inside the core, light-filled space beyond.

After the laying in, the mourners come out of the core into a light filled space, which is suspended over the lobby below. They descend via a simple stair, into which I designed a moment for resting and for viewing the site below. The stair (or elevator) brings them down to the lobby, where a memorial service can be



25 Lobby space for services and celebrations.

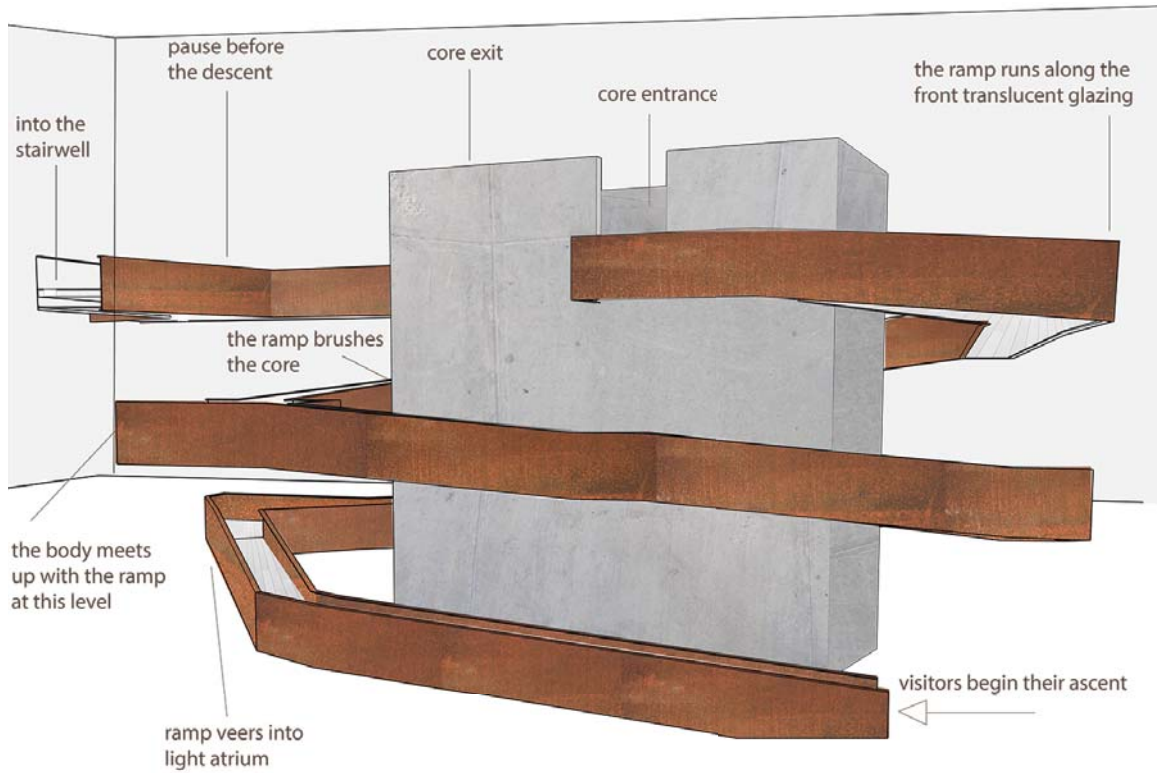
held, a celebration of the loved one's life.

Doors lead out through core-ten steel to the reflecting moment, a stair with ramp winding through it, and a simple grove of trees. Mourners and visitors sit on these steps and reflect, as the compost is taken by members of the neighborhood, or brought to the nearby community gardens.

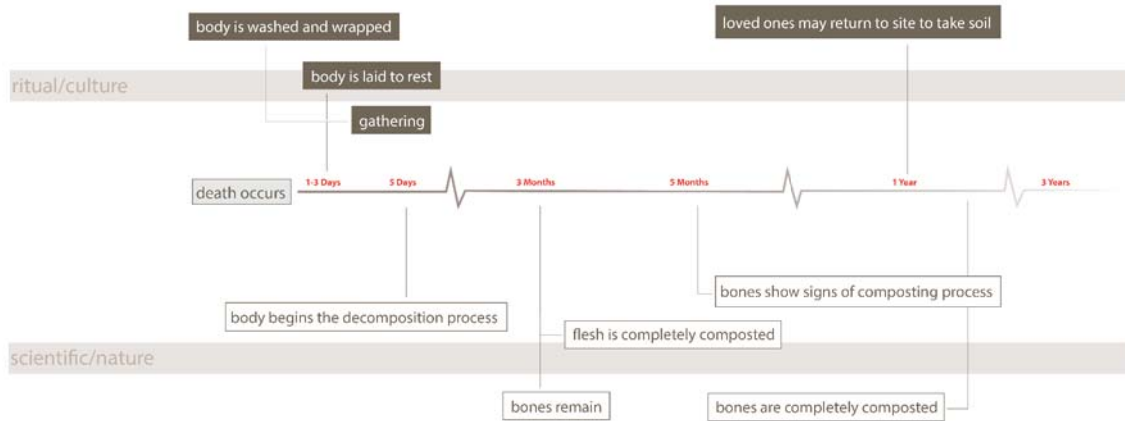
A year later, mourners may return to the site to remember their loved one. They may decide to take a container of the finished compost back to their homes, or run their hands over the rich, loamy humus, or simply to sit and take in the end result of the decomposition process.



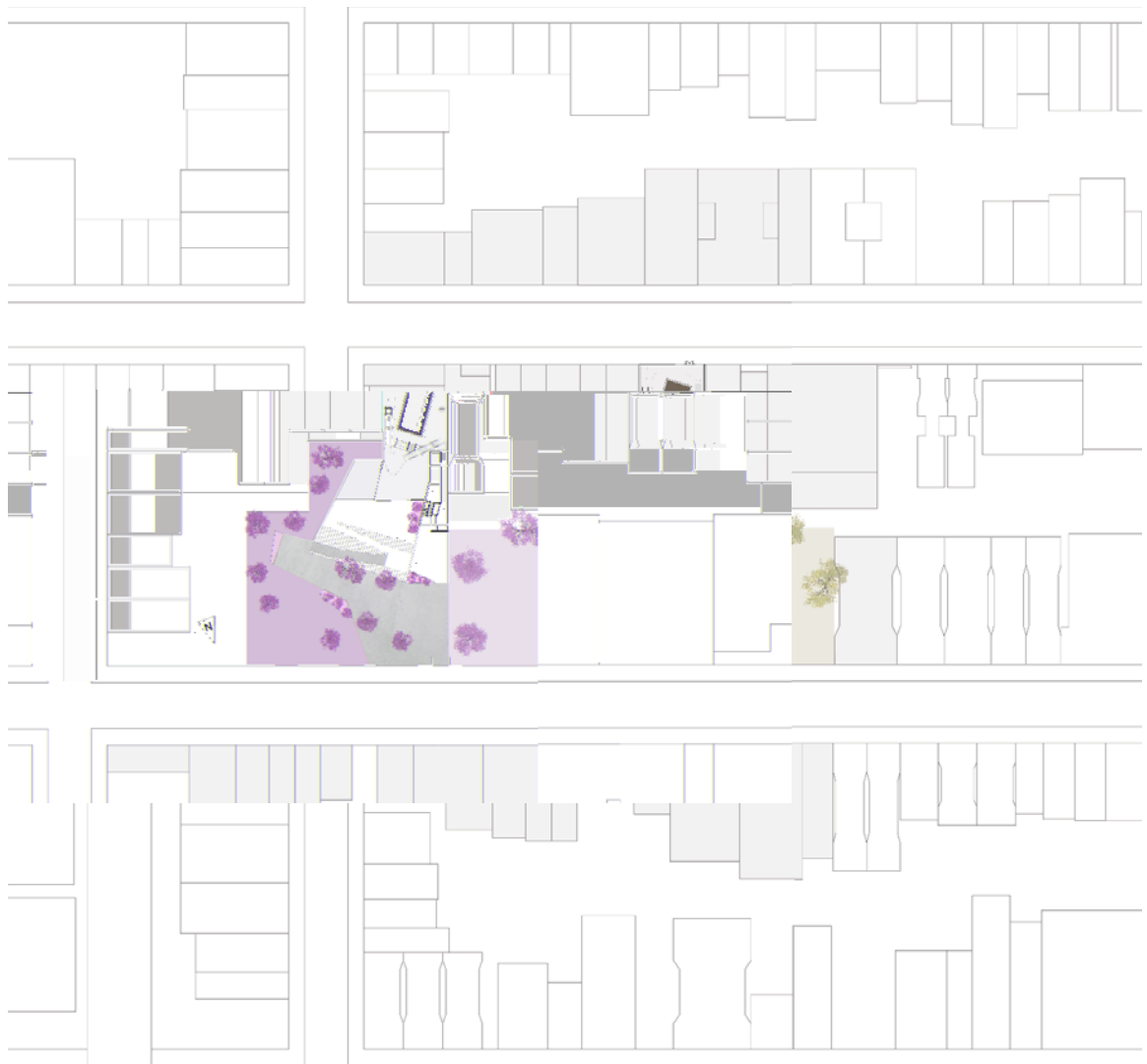
26 The community is encouraged to visit the space.



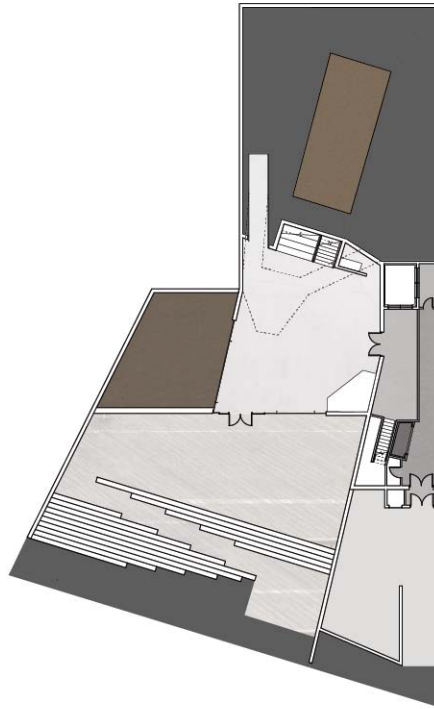
27 Ramp diagram depicting points along the path.



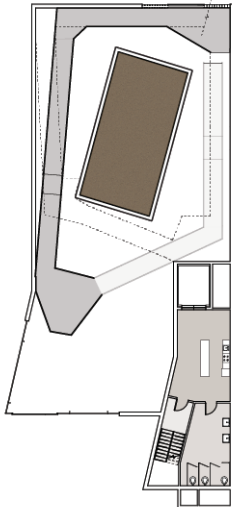
28 Timeline.



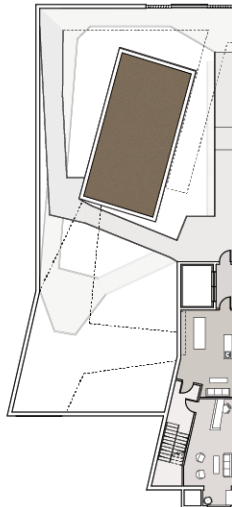
29 Grove level floor plan with surrounding city.



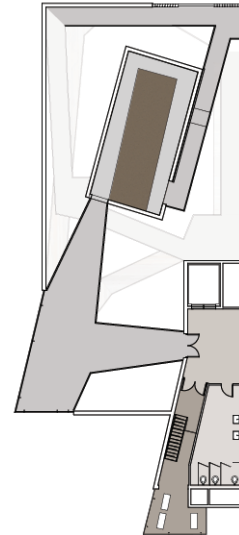
30 Dirt + lobby level floor plan.



31 2nd level floor plan.



32 3rd level floor plan.



33 4th level floor plan.

CHAPTER 12

CONCLUSION

The lifecycle of soil is beautifully cyclical. The entire natural world (which we alternately worship and destroy) is born from - and returns to - the dirt beneath our feet. Plants and animals that die and decompose improve the soil and make it easier for the next generation. Amid the millions of complicated relationships that make up our cultural experience, the cycle of birth-growth-death-decomposition-birth is refreshingly straightforward. If we allow it to guide us by embracing the fact that our own bodies are a part of this cycle, we may find peace during even the most difficult times.

This project challenges almost everything about traditional disposal practices in Western society by proposing a place and a ritual that embraces decomposition and harnesses the deceased human body for life-giving activities. It responds to a growing dissatisfaction with existing practices and an ongoing search for more meaningful transitions. Utilizing the science of livestock composting, this project applies the same process that is at work all around us to speed up the decomposition of our dead. Truly sustainable, the end product is a nutrient-rich compost - a beautiful final parting gift from the deceased and a gentle alternative to conventional practices.

APPENDICES

A. LITERATURE REVIEW: THE CITY WITHOUT US

The World Without Us (specifically Chapter 3: “the City without Us”) is a wildly imaginative yet scientifically factual journey through the abandoned City of New York. Author Alan Weisman researches what would happen to the built environment if humans were to disappear suddenly one day. In his vivid depiction, buildings and infrastructure fall prey to the natural forces of moisture, corrosion, gravity, and time. Decay and decomposition reign.

Natural forces are very powerful, and without humans to keep them at bay, the built environment is extremely vulnerable. Although it is frightening to consider, there is also an incredible beauty in the idea that the earth could take back the world we have toiled so hard to create. Despite all of the incredible things we humans have created, there is still a sense that we have destroyed much. Weisman lets us know that the natural environment is more resilient than we think, and that it wouldn't take long for the human-made built environment to be a distant memory.

I first read this book last July. For me, the effects of water to the surrounding environment are much more apparent during the hot, moist summer months – my garden is growing, plant matter is visibly decomposing, and mold can be an issue - and so the pages on water taking over NYC were particularly moving. I had begun thinking about my master's thesis and how I could write (and design) about death and decomposition, and somehow the book was a perfect fit for that

line of thinking.

This book was published in 2007, as our awareness of global warming was growing and we were becoming more aware of the dire situation we are in. Two main themes dominate: how the natural environment would react to the disappearance of humans and what of the built environment would be left behind once we were gone. In terms of a discipline, the book is a neat cross-over of what some call “speculative fiction,” environmental, and science journalism. The book is extremely accessible – no academic jargon or complicated language is used – and the topic is relevant to every living person.

The basic point of view in the Chapter titled “The City Without Us” is that nature would take over the entire city and the infrastructure that surrounds it in a very short time, relatively speaking. The essence of Weisman’s argument is that the world doesn’t need humans, that life would continue, and that nature is resilient. It is at once a haunting idea and a comforting one.

At its core, this book is about the urban built environment and decay, two themes that are strongly related to my emerging thesis topic. I’ve begun to diagram the various paths which my thesis might take, if it were to be “born” from Weisman’s book (see below).

From a scientific standpoint, some of the theories could certainly be tested. For example, it would be quite incredible to set up a mini city environment somehow

and then watch nature take it over. This would test Weisman's hypotheses of decay. It could also be a beautiful statement of real time, that is, it would remind us as we watched the decay of a tiny city that our human scaled cities would experience the same if we were to disappear.

Some examples of built work that embody the values espouse in the writing include:

Nekoum Vivarium by Mark Dion

Olympic Sculpture Park, Seattle

An entire redwood tree is installed in a manufactured and controlled environment and left to decompose. Visitors are encouraged to use microscopes and magnifying glasses to get closer to the decay and the miniature ecological scenes happening among the ferns and mushrooms.

Before I Die by Candy Chang

New Orleans

This public art piece consists of a chalkboard on an abandoned building and the words "Before I die _____." It makes the run-down building into a piece of art, and invites passersby to participate publicly in what is typically a private exercise.

The Highline by Diller Scofidio + Renfro

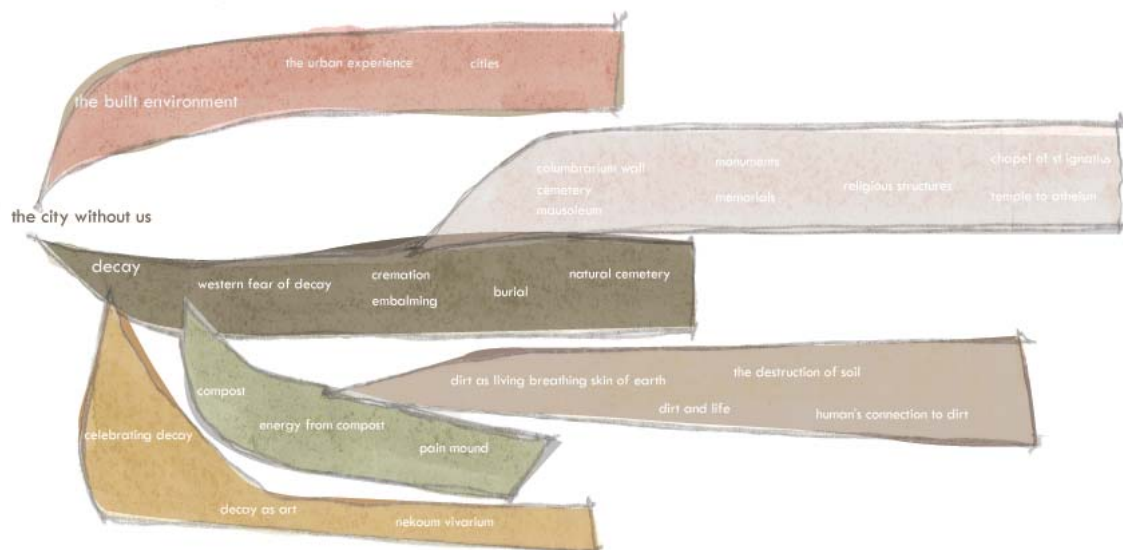
Lower Manhattan

The architects did a brilliant job of manufacturing/re-imagining nature's take-over of existing urban infrastructure. Critic Richard Lacayo says that the design is meant to remind visitors of the processes of decay and renewal which are basic to the metabolism of any city.

National Schools of Art

Cuba

These beautiful buildings were un-maintained for decades, and the invasion of natural species is quite breathtaking. The documentary "Unfinished Spaces" details their design as well as the ongoing quest to save them from complete ruin.



34 Diagramming the City Without Us

B. LITERATURE REVIEW: LIVING IN THE EARTH

Every act of healing has one obligation: it must create a pattern of health around itself...Our health is created by helping other systems become healthy.

“Living in the Earth: Ecopsychology, Health and Psychotherapy” is an article written by Harvard psychotherapist Sarah Conn about the relevance of the health of the earth’s ecosystems to our own psychological health. Published in 1998, the paper provides an overview of the field of ecopsychology, which grew from the work of Joanna Macy and others in the second half of the twentieth century.

Ecopsychology asks us to challenge the dominant Western paradigm where “the world is a collection of separate entities that are related mechanically if at all”. Instead, we are encouraged to recognize the deep importance of the surrounding world, its natural systems, and our broader interpersonal relationships, and to pay attention to the larger context in which we live. Only by doing that can we be psychologically healthy and whole.

I sought out this article because I wanted to learn more about our psychological connection to the earth and its systems. The concept is relevant to my thesis for a few reasons. One, I am interested in exploring the idea that we love our cities at the same time that we long for a deep connection to the earth. For example: many city dwellers are brought out of the city upon dying, often to have their ashes spread at the ocean or in a field or forest. If we love the city and truly

feel at home within it, then why would we want to leave when we die? Over the next few months, I want to craft my design question so that the answer will bring nature into the city in a way that is embedded and meaningful, allowing for inhabitants to be laid to rest within the borders of the place they most love.

The second reason that ecopsychology is relevant to my thesis is that many modern humans lack a guiding force like religion or cultural tradition telling us what should be done with our bodies after we die. It is because we lack this cultural directive that our connection to nature is especially important. As an atheist, I don't believe in God, but I do believe that the deep connections we have with the natural world are the closest that we have to the divine. By the ecopsychology model, the healthier our connections to the earth, the healthier our minds and souls. For my thesis, I will be looking at the grieving process, arguably one of the hardest psychological experiences out there. This process would be greatly assisted by a deeper understanding of the intertwining relationship between humans and nature, and I want to explore the potential for this in my proposed design.

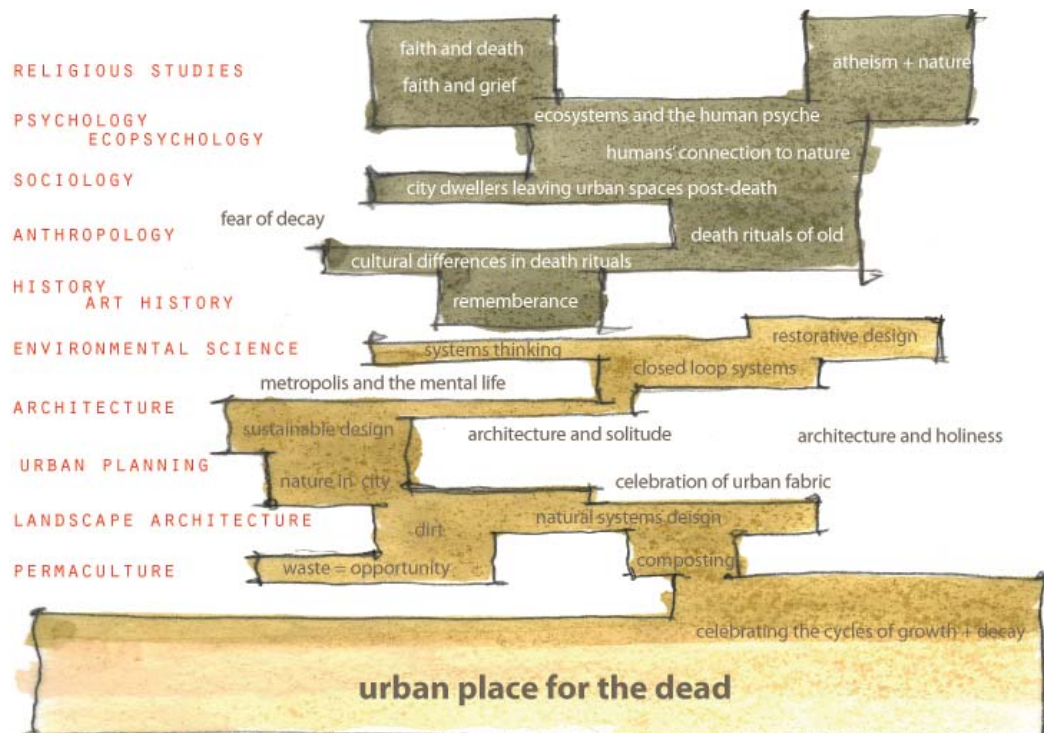
Ecopsychology suggests that we must also acknowledge that a "collective plight exists at some level of our consciousness". In other words, the earth is in big trouble, and this hurts us all deeply, whether we know it or not. The environmentally-based guilt that many of us feel on a day to day basis is proof of this collective plight, and that the earth's health affects our own psyches. For my thesis, I want to explore ways that we can begin to heal the natural ecosystems.

My design solution for the urban dead will address issues of air pollution (from current cremation practices), soil and water pollution (from embalming and the use of concrete during burial), and land management (lack of public green spaces in cities and the role of a place for the dead in creating more green space.) In addition, I plan to consider urban soil degradation and the potential for building soil using human remains. Needless to say, this type of treatment must be done very carefully, as the decomposition of human bodies is an incredibly sensitive topic. At the same time, however, no other method would honor the deep connection between humans and nature more directly.

Critics of ecopsychology say that its theories have not been scientifically tested. This is true, though it is not especially important for my own work. Interestingly, “the World Without Us” was written as what some people call “speculative fiction”, using science to imagine what a world without humans might be like. However, like ecopsychology, Weisman’s theories aren’t proven fact. There are some other interesting parallels between “the World Without Us” and the theories of ecopsychology. For example, while ecopsychology suggests that we cannot heal without the earth, “the World Without Us” shows us that the earth could indeed heal without us. In fact, it implies that it is only when humans have gone that the earth will have the chance to heal.

Weisman’s book comforts us by illustrating how the earth and its ecosystems would continue to live on and flourish even after we disappeared. Ecopsychology, on the other hand, “invites us to rediscover ourselves as dwellers within the earth

as a living system.” This difference is critical: one is asking us to work harder to understand and strengthen the connections between ecosystems and ourselves; the other suggests that nature must fight against (the remnants of) humanity, in other words, that we are opposing forces. But even Weisman’s book - complete with visuals of empty streets and collapsing cities – is hinting at the importance of the connection between humans and ecosystems. Critic Alanna Mitchell writes the “book [is] designed to help us find the how of survival by shaking us out of our passive dance with death.” “The World Without Us” can be viewed as a plea to break down the barriers between ourselves and the natural world; ecopsychology



insists that we must in order to survive emotionally.

The authors of these two works are from very different academic disciplines. In this diagram, I teased out some of additional disciplines useful to my work.

35 Diagramming disciplines.

C. DETAILS OF STATIC PILE LIVESTOCK COMPOSTING

By properly constructing the compost pile to allow for adequate natural aeration, mortality composting can be completed on intact animals without physically turning and mechanically aerating the pile.

Composting Process

The ideal C:N ratio for compost materials is in the range of 30:1 to 40:1.

Carcasses are very dense and high in nitrogen and moisture. Therefore, high-carbon, absorbent materials to surround the carcass are necessary to balance essential nutrients and provide the right environment for microbial growth.

Materials

Composting is an aerobic process, so air flow is critical. Lay 2' bed of bulky, absorbent organic materials containing sizable pieces (4-6 inches long). Utility and municipal wood chips work well.

Ensure the base is large enough to allow for 2' clearance around the carcass. (Another way to think about it is 10-12 cubic yards per adult carcass.)

Lay carcass in the center of the bed, and cover with dry, high-carbon material.

Layer mortalities with a minimum of 2 feet of carbon material between layers.

Pathogens

The degree and duration of temperatures achieved in static-pile composting are adequate to significantly reduce pathogen survival.

Timeframe

Let sit for 4-6 months, then check to see if carcass is fully degraded. Depending on materials and management, the entire process can take anywhere from four months to over a year.

Temperature

Monitoring of the pile is done mostly by checking temperatures. Internal compost pile temperatures affect the rate of decomposition as well as the destruction of pathogenic bacteria. The most efficient temperature range for composting is between 104F and 140F (40C and 60C). Compost pile temperatures depend on how much of the heat produced by the microorganisms is lost through aeration or surface cooling.

Bones

Bones from immature animals degrade very quickly, but bones from mature animals take several seasons to breakdown. The most important factor for bone management is exposure. If the bones are exposed to air and dry out, they will immediately begin to harden. Once bones have hardened, decomposition is very difficult and slow.

The bones that did not completely break down will add structure to the base material of the next compost pile for improved aeration.

Sources: Cornell Waste Management Institute - Department of Crop and Soil

Sciences, Washington State University - Center for Sustaining Agriculture and Natural Resources, and Minnesota Department of Agriculture - Agricultural Development and Financial Assistance Division

D. CEMETERIES, COMPOSTING, AND THE LAW

Definition: "Cemetery"

(d) A public mausoleum, crematory or columbarium shall be included within the term "cemetery".

5. The person in charge of the place of burial, cremation, or other disposition shall keep a record of all bodies interred or otherwise disposed of on the premises under his charge, in each case stating the name of each deceased person, place of death, date of burial or disposal, and name and address of the funeral director or undertaker, which record shall at all time be open to official inspection.

"Cemeteries and Crematories" by the New York State Cemetery Board

New York is the most populous of the six states (including, Connecticut, Massachusetts, Maine, New Jersey, and Wyoming) in which cemeteries are required to be operated only on a non-profit basis.

303.4 Assembly Group A-3.

Assembly uses intended for worship, recreation or amusement and other assembly uses not classified elsewhere in Group A including, but not limited to:

Community halls

Funeral parlors
Places of religious worship
Construction Type II-A
("Non-Combustible" i.e. Concrete + Steel, fire rating of 1 on most assemblies)
3 stories, 15,500 sf per story
Site is 4' x 90', or 4050 sf

- International Building Code

Regarding composting facilities:

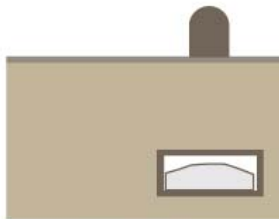
The minimum horizontal separation distance as measured from the facility to the nearest residence, place of business or public contact area must be 500 feet, except as provided below:

- (i) A facility without a pad and leachate collection system must maintain a minimum separation of 200 feet to a potable water well or surface water body and 25 feet to a drainage swale.
- (ii) the separation distance requirement from a public contact area may be reduced for totally enclosed facilities, if approved by the department
- (ii) Using the aerated static pile composting method or the within-vessel composting method, the temperature of the solid waste must be maintained at 55 degrees Celsius (131F) or higher for at least three consecutive days.

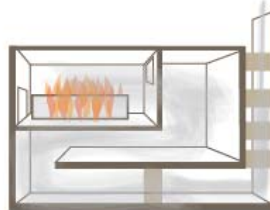
E. AN URBAN SOLUTION: VISION FOR THE FUTURE

an ecological urban solution?

Current practices for the disposal of the dead are either environmentally harmful, rural, or both. What is the ecological urban solution?



- conventional burial**
- 3.5 gallons of formaldehyde per body
 - 30 million feet of hardwood
 - 90,000 tons steel per year
 - 1.6 million tons concrete per year
 - limited space in urban locations

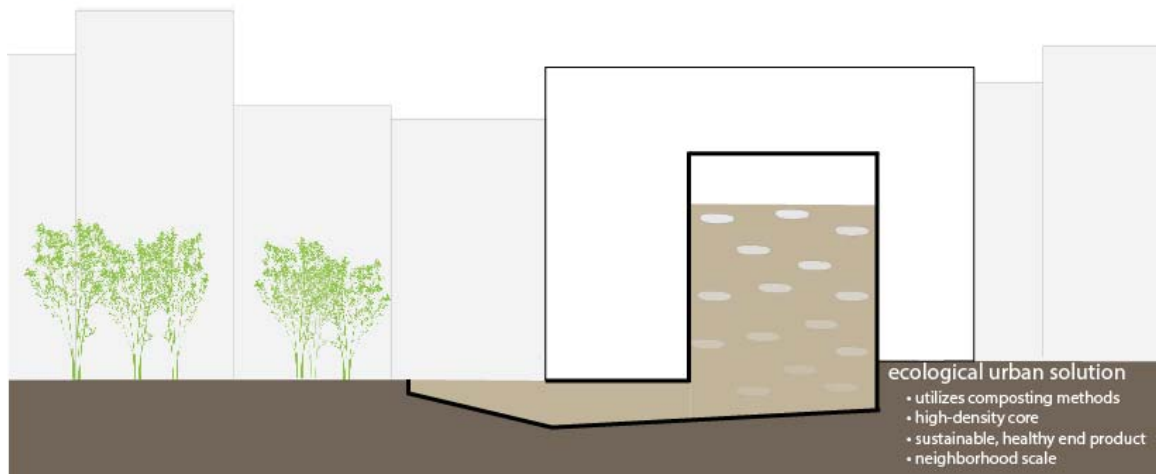


- cremation**
- 160kg of CO₂ per body, emitted into the atmosphere
 - 3 million btus per body
 - 30,000 cf natural gas per body



- natural burial**
- encourages microbial activity
 - direct contact with soil
 - nutrients released into soil
 - ecologically sensitive
 - rural settings only

This urban solution uses the composting process to safely and gently turn human bodies into nutrient-rich soil building material. It is both a new technology and a new ritual for the disposal of our dead in urban centers, where the living become closer to the inevitable process of death and to the cycles of nature. It is truly an urban solution, part of the city but deeply connected to nature.



- ecological urban solution**
- utilizes composting methods
 - high-density core
 - sustainable, healthy end product
 - neighborhood scale

36 Current practices and the urban solution.

urban fabric woven into the

Designing solutions for our urban dead is more important than ever - half of the world's population now lives in cities. Likewise, as the population grows, the amount of arable land is in constant decline. This design addresses these issues by creating a space-saving, sustainable urban solution, where dead bodies are turned into nutrient-rich, soil-building material. Envisioned as a place to honor the dead at a neighborhood scale, the project also supports a more sustainable city by engaging directly with the community.



Urban cemeteries are reaching their capacity.



Street Trees

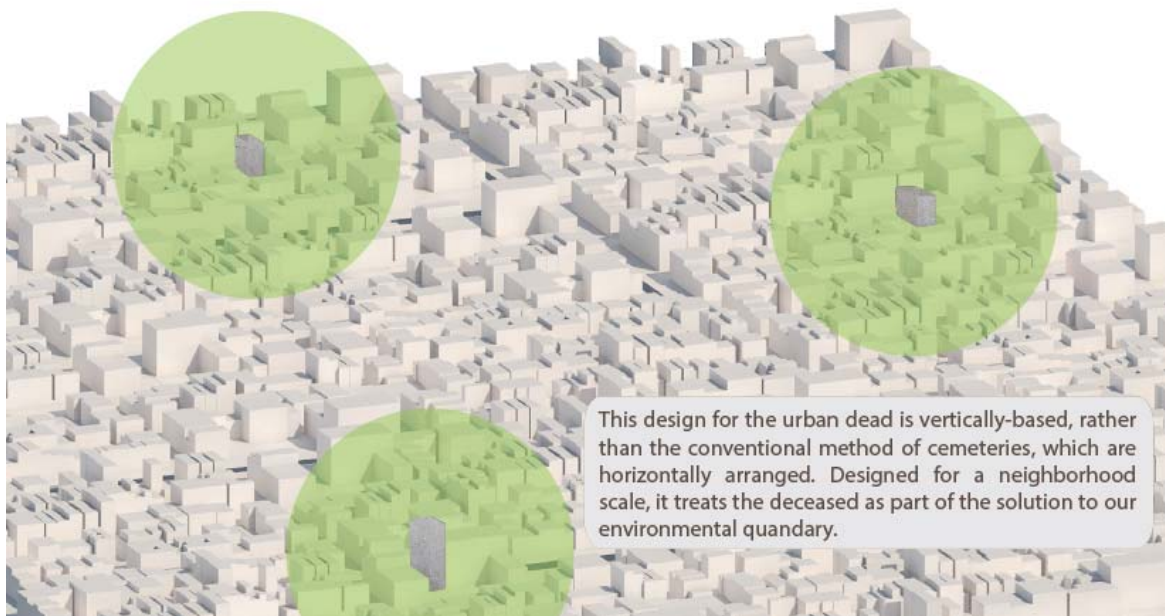


Community Gardens



Fire Escape Plantings

Community members use the finished compost to grow new life that becomes woven into the urban fabric.



37 Woven into the urban fabric.

F. INVESTIGATIONS

It is often said that architects must use our hands directly in our design work – that in order to bring forth spatial design from our brain and heart, we must wrangle it out by way of pencil, charcoal, clay or cardboard. Steven Holl is revered for his concept drawings, done in expressive watercolor, light and shadow embodied. Frank Gehry's animated scribbles turn into the actual form of his buildings. The physical act of making something is an investigation of form and emotion, and from this, ideally, a building is born.

I spent the summer of 2012 doing a series of investigations, to try and get at some of the critical issues for my proposed resting place for the urban dead. I believed that it was important for me to confront death, and more specifically, the decomposition of a physical body.

G. CASTS

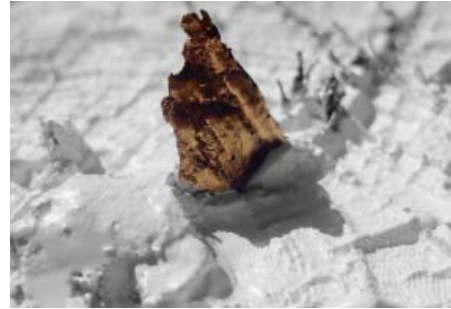
I began my summer investigations by casting a series of decomposing materials in plaster of paris. A large part of my thesis is about changing the way we think about decomposition, to try to embrace even our own physical body's decay. I wanted to capture the moments of transition when a material is leaving one state and becoming part of the earth again. I made a simple cardboard frame and poured plaster of paris over various materials – a rotting log, moss, compost, and soil. When the plaster had hardened, some of the material would stick to the cast – I washed off most of this but left the material that clung most tenaciously. I painted the whole cast white and then accentuated certain parts with gold paint.

In the example of the rotting log, the material that clung to the cast was further along in the decomposition process, (that's why it came loose so easily). I painted these pieces gold, and the result is an emphasizing of the void left when the pieces pulled out of the log.

At the same time, in casting and painting these decomposing materials, I have



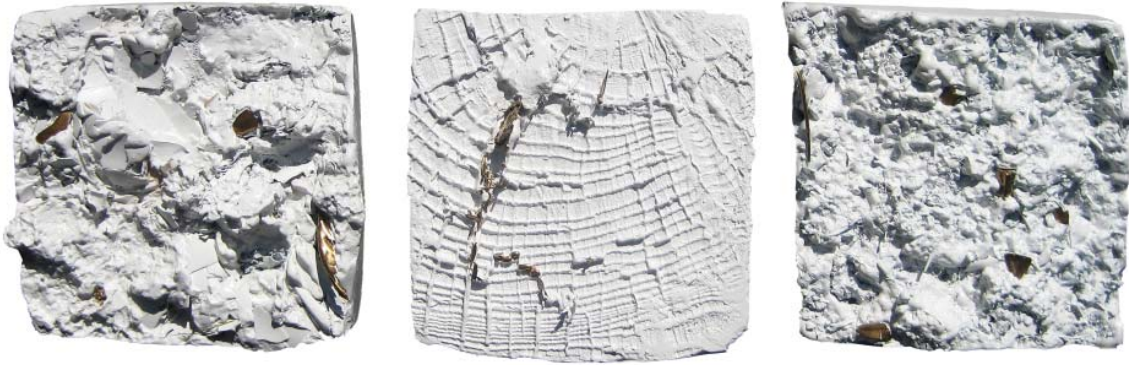
38 Cast of rotting log.



39 Detail of pulled wood, rotting log.

cleaned them up and made them more palatable. I've paused the decomposition process for those parts of the material that I painted – the oil-based paint would keep the wood for some time. I wondered more than once how different this process was from that of an embalmer preserving a body and I allowed this contradiction to be part of my investigation.

As a distinctly non-religious person with no clear impression of an afterlife to lean on, the thought of my own body decomposing after I die is comforting. A return to the earth by my physical body at least partly satisfies the need for an afterlife.



40 From left: compost, rotting log, potting soil.

H. BRIDGE AND BERM VIDEOS

All summer, I thought about what it means to live and then to die. I wanted to capture some of these thoughts, but I wasn't – and still aren't - sure they were evolved enough to put into words. In some ways, these thoughts were loops, a sort of repeating incredulity that our lives are lived and then end and then...what?

This video captures the essence of one of these “loops,” and brings forth various themes that have been repeating as the conceptual design of my thesis unfolds. It is a simple journey from one end of a bridge to another, filmed in the early morning in June. The bridge is steel trusses, rusty but strong, with wooden slats on the floor. It spans the Connecticut River, crossing the tip of an island in the middle. It is a quarter mile long.

During the film, sunlight streams from the east, and the viewer is confronted by the sun flashing as it flickers through the trees and trusses. Certain images are

continuous: the pattern of wooden slats on the ground, the pattern of trusses above, the handrail alongside, and a forward movement. The pattern of the sun as it quickly blooms onto the screen and then recedes behind a tree or vine is irregular. While it is beautiful, it is also somewhat disconcerting.

I have listened to the film more than once without watching it. The audible version



41 Still from bridge video.

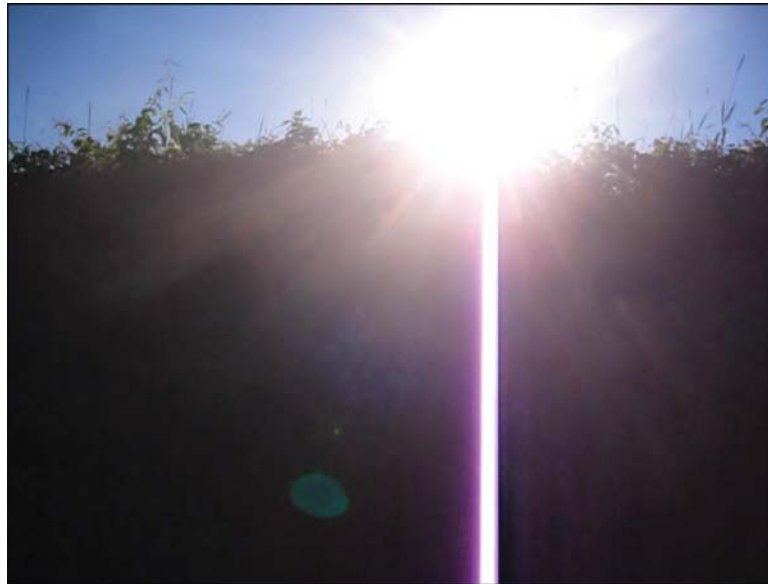
is also rife with patterns, although they are even less reliable than the visuals. The bike rattles and clacks, and the wind wooshes irregularly. In the background, birds sing off and on. The soundtrack, like the visuals, is slightly unsettling, though perhaps haunting is a better word.

The experience of the film with both sound and visuals is then a layering of

irregular patterns. The bloom-and-ebb of sunlight does not align with the clack-and-rattle of the bike, because the trusses and leaves above (which determine the sunlight patterning) do not correspond to the bumps on the bridge in any way. Likewise, the wind sounds are distinct from the sunlight and from the bike noises. This layering of patterns that are indeed connected (all part of the same short journey) but distinct makes the short film quite rich from a sensory point of view.

The berm film is a little less complicated. It is also a journey – also a quarter mile long. This time, the route is along a berm which protects nearby agricultural fields from the Connecticut River. The road alongside the berm heads almost due North, and the morning sun peaks over the berm to the right/east. It is impossible to see over the berm to the fields beyond.

In this film, the wind is the only sound, and its whooshing is fairly consistent. The



42 Still from berm video.

camera faces directly into the sun, which dips below the edge of the berm every so often in response to the road's elevation, the height of the berm, and the shaky camerawork. There is an overriding sense of not seeing, specifically, of not being able to see over the berm to what lies beyond. Likewise, the details of the vegetation are obscured by the bright sun. Finally, the destination is not seen – with the camera pointed to the side, what lies ahead is never revealed.

This overriding sense of obstruction creates a sense of discomfort for the viewer. A connection can be made between this sense of discomfort and the insecurity that comes from not knowing what will happen to us when we die. Perhaps - by creating a resting place for the urban dead that encourages our decomposition and return to the earth - I am attempting to provide some of the security currently lacking in this process.

I. CRITTERS

For my third summer investigation, I went back to the physical realm and the subject of decomposition. I wanted to investigate the death of a body. I had spent the previous two semesters reading about the various ways that cultures treat the bodies of the dead, from cremation to natural burial to the bizarre tradition of embalming, and I wanted to get a little closer to the process. I chose to work with small animals – birds, mice, and chipmunks – that I saw with some frequency on my bike to and from the campus. I found the first critter on the bike path, freshly dead. When I picked it up, its still-warmth shocked me, and I had the sudden sense – quite visceral – that I was holding a tiny infant in my hands. My

immediate thought was to save this body from the impending doom of decomposition, to memorialize it somehow, at the same time that I was conscious of the irony of this response.

In a way, the project that followed was a memorialization of these tiny bodies,



43 Casting process: robin.



44 Chipmunk hide, chipmunk cast.

more than it was an acknowledgment of their decomposition. The memorialization happens with casting of the void left by their bodies, and in the use of their bones (that which is left after the decomposition occurs) to remember their

physical existence.



45 Chipmunk jawbone, chipmunk spine, chipmunk rib

BIBLIOGRAPHY

"Agri Demographics (EPA)." Accessed March 29, 2012. <http://www.epa.gov/agriculture/ag101/demographics.html>.

Aiello, Allison. "Antibacterial Cleaning and Hygiene Products as an Emerging Risk Factor for Antibiotic Resistance in the Community." *The Lancet Infectious Diseases* 3, no. 8 (August 2003): p. 501–506.

Anderson, Elizabeth. *Memory, Mourning, Landscape*. Amsterdam ;;New York :: Rodopi,, 2010.

"Ashes to Ashes Dust to Dust." Accessed February 15, 2012. zotero://attachment/33/.

Bachelard, Gaston. *The Poetics of Space*. Boston: Beacon Press, 1969.

Bauer, Kathleen. "Wrap Party — Buying and Storing Cheese :: By Kathleen Bauer :: Culinate," October 24, 2007. <http://www.culinate.com/search/q,vt=top,q=formaticum/33195>.

Bechhoefer, Rachel. "Urban Ground: An Urban Natural Burial Guide + Site Sustainability Study." Conway School of Landscape Design, Spring 2009.

Becker, Ernest. *The Denial of Death*. New York: Free Press, 1973.

Benenson, Bill, Laurie Benenson, Tracy J. Brown, Eleonore Dailly, Christine Deitner, Tyler Harbour, Marisa Murgatroyd, Gene Rosow, Dileep Singh Rathore, and Lisa Yesko. *Dirt! The Movie*, 2010.

Bloch, Maurice, and Jonathan Parry, eds. *Death and the Regeneration of Life*. Cambridge University Press, 1982.

De Botton, Alain. *The Architecture of Happiness*. 1st American ed. New York: Pantheon Books, 2006.

Buelow, Deborah. "Altering the Landscape of Memory." MIT. *Urban Nature and City Design* (Fall 2009).

Burroughs, John. *Gospel of Nature*. Applewood Books, 1989.

Choi, Amy S. "Entrepreneurs Reinvent the Funeral Industry." *BusinessWeek: Online Magazine*, June 20, 2008. http://www.businessweek.com/magazine/content/08_66/s0806044892758.htm.

Conn, Sarah. "Living in the Earth: Ecopsychology, Health and Psychotherapy." *The Humanistic Psychologist* 26, no. 1–3 (1998): 179–198.

Conway School of Design. "Urban Ground: An Urban Natural Burial Guide + Site Suitability Study," Spring 2009.

"Culture and Design: A New Burial Concept in a Densely Populated Metropolitan Area." Accessed March 7, 2012. <http://www.jstor.org/stable/pdfplus/25223995.pdf>.

Darnall, Margaretta J. "The American Cemetery as Picturesque Landscape: Bellefontaine Cemetery, St. Louis." *Winterthur Portfolio* 18, no. 4 (December 1, 1983): 249–269.

"Death and the Cultural Landscape." Accessed February 18, 2012. <http://conferences.ncl.ac.uk/unescolandscapes/files/ROBINSONJoel.pdf>.

Dodson, Robin E., Marcia Nishioka, Laurel J. Standley, Laura J. Perovich, Julia Green Brody, and Ruthann A. Rudel. "Endocrine Disruptors and Asthma-Associated Chemicals in Consumer Products." *Environmental Health Perspectives* (March 8, 2012). doi:10.1289/ehp.1104052.

Goodman, Arnold M. *A Plain Pine Box: A Return to Simple Jewish Funerals and Eternal Traditions*. Augmented ed. Ktav Pub Inc, 2003.

Grandjean, P. "Serum Vaccine Antibody Concentrations in Children Exposed to Perfluorinated Compounds." *JAMA : the Journal of the American Medical Association* 307, no. 4 (January 25, 2012): 391–7.

Harris, Mark. *Grave Matters : a Journey Through the Modern Funeral Industry to a Natural Way of Burial*. New York: Scribner, 2007.

Heidegger, Martin. *Poetry, Language, Thought*. [1st ed.]. New York: Harper & Row, 1971.

Helfand, Duke. "Americans Becoming Less Religious, Study Shows." *Los Angeles Times Articles*, March 10, 2009. <http://articles.latimes.com/2009/mar/10/local/me-religion10>.

"Highfields Center For Composting." Accessed February 15, 2012. <http://highfieldscomposting.org/mortality-composting.htm>.

Iserson, Kenneth V. *Death to Dust: What Happens to Dead Bodies?* 2nd ed. Galen Pr Ltd, 2001.

Jacobs, Jane. *The Death and Life of Great American Cities*. [New York]: Random House, 1961.

Keller, Bill. "How to Die." *The New York Times*, October 7, 2012, sec. Opinion. <http://www.nytimes.com/2012/10/08/opinion/keller-how-to-die.html>.

Kendall-Tackett, Kathleen. "The Fascinating History of Womens Domestic Work in America." In *The Hidden Feelings of Motherhood: Coping with Mothering Stress, Depression and Burnout*. Oakland, CA: New Harbinger, 2001. <http://www.safemotherhood.org/domestic-work.html>.

Kroll, Andrew. "AD Classics: Iguada Cemetery / Enric Miralles & Carme Pinos | ArchDaily." *ArchDaily*, January 13, 2011. <http://www.archdaily.com/103839/ad-classics-iguada-cemetery-enric-miralles/>.

"List of Countries by Cremation Rate - Wikipedia, the Free Encyclopedia." Accessed February 19, 2012. http://en.wikipedia.org/wiki/List_of_countries_by_cremation_rate.

"Livestock Composting Washington State.pdf." Accessed September 26, 2012. <http://cru.cahe.wsu.edu/CE-Publications/eb2031e/eb2031e.pdf>.

Logan, William Bryant. *Dirt: The Ecstatic Skin of the Earth*. W. W. Norton & Company, 2007.

Lynch, Thomas. *The Undertaking: Life Studies from the Dismal Trade*. Penguin (Non-Classics), 1998.

Macy, Joanna. Interview by Karla Arens. *Wild Duck Review*, 1995. 11 (1) 1-3.

Martin, Andrew. "Despite Cancer Risk, Embalmers Stay With Formaldehyde." *The New York Times*, July 20, 2011, sec. Business Day. <http://www.nytimes.com/2011/07/21/business/despite-cancer-risk-embalmers-stay-with-formaldehyde.html>.

Martinez, Laura. "Keep Your Cheese Alive - Cheese." *Keep Your Cheese Alive*, February 15, 2009. <http://www.netplaces.com/cheese/cheese-at-home/keep-your-cheese-alive.htm>.

McKibben, Bill. *The End of Nature: Tenth Anniversary Edition*. 10 Anv. Anchor, 1997.

Meadows, Donella. *Thinking in Systems : a Primer*. White River Junction Vt.: Chelsea Green Pub., 2008.

"Michigan Funeral Directors Association | 517.349.9565 | Glossary of Terms." Accessed March 30, 2012. http://mfda.org/michigan_funeral_facts/glossary_of_terms.

Montagnini, Florencia, and Carl F. Jordan. *Tropical Forest Ecology: The Basis for Conservation and Management*. 1st ed. Springer, 2005.

Montgomery, David R. *Dirt: The Erosion of Civilizations*. 1st ed. University of California Press, 2007.

"naturalrenderingFS.pdf." Accessed March 27, 2012. <http://compost.css.cornell.edu/naturalrenderingFS.pdf>.
"Not Even Death Ends Anti-Pollution Crusade - New York Times." Accessed February 27, 2012. <http://www.nytimes.com/1991/08/27/news/not-even-death-ends-anti-pollution-crusade.html?pagewanted=all>.

Olszak, T., D. An, S. Zeissig, M. P. Vera, J. Richter, A. Franke, J. N. Glickman, et al. "Microbial Exposure During Early Life Has Persistent Effects on Natural Killer T Cell Function." *Science* (March 22, 2012). doi:10.1126/science.1219328.

Ouroussoff, Nicolai. "Shantytowns as a New Suburban Ideal." *The New York Times*, March 12, 2006, sec. Arts / Art & Design. <http://www.nytimes.com/2006/03/12/arts/design/12ouro.html>.

Pace, Gene. "Lewis Mumford: Megathinker and Master of the Metaphor" (n.d.).

Page, Max. *The Creative Destruction of Manhattan, 1900-1940*. Chicago: University of Chicago Press, 1999.

Pimentel, D. "Environmental and Economic Costs of Soil Erosion and Conservation Benefits." *Science* 267, no. 24 (1995): 1117–1122.

Reed, Bill. "A Regenerative Approach to Design: Becoming Whole in a Disconnected World." 2006.

Roach, Mary. *Stiff : the Curious Lives of Human Cadavers*. 1st ed. New York: W.W. Norton & Co., 2003.

Robinson, Joel David. *Life in Ruins: Modern Architecture and the Question of Death*. University of Essex, 2007.

Routledge. "When Modern Was Green: Life and Work of Landscape Architect Leberecht Migge (Paperback) - Routledge." Text. Accessed March 10, 2012. <http://www.routledge.com/books/details/9780415561396/>.

Ryn, Sim Van der, and Stuart Cowan. *Ecological Design, Tenth Anniversary Edition*. Anv. Island Press, 2007.

Sanders, Scott Russell. "Lessons from the Land Institute." *Audubon* (April 1999): 75–79.

Sartain, JB. "Food for Turf: Slow Release Nitrogen." *Grounds Maintenance*, 2002. http://www.grounds-mag.com/mag/grounds_maintenance_food_turf_slowrelease/.

Schama, Simon. *Landscape And Memory. First Thus*. Vintage, 1996.

Schmutz, Pamela. "Handling of Cheese for Safety & Quality : Extension : Clemson University : South Carolina," June 2008. http://www.clemson.edu/extension/hgic/food/food_safety/handling/hgic3506.html.

Schneider, Stephen H. *Primordial Bond : Exploring Connections Between Man and Nature Through the Humanities and Sciences*. 1st ed. Springer, 1981.

Schwartz, Margaret. *An Iconography of the Flesh : Media, Representation, and the Embalmed Corpse of Evita Perón*, 2008.

Seliger, Susan. "Alternatives to the Traditional Funeral." *NY Times Blog: The New Old Age*, February 14, 2012. <http://newoldage.blogs.nytimes.com/2012/02/14/alternatives-to-the-traditional-funeral/>.

Shinn, Meghan. "9-11 Memorial Trees." Horticulture: The Art + Science of Smart Gardening no. <http://www.hortmag.com/plants/9-11-memorial-trees> (n.d.).

Simmel, Georg. "The Metropolis and Mental Life." Urban Place and Process (1980).

Spengler, Oswald. The Decline of the West. New York: A. A. Knopf, 1926.

Swier, Gregory Morgan. "The Road to Necropolis: Technics and Death in the Philosophy of Lewis Mumford." History of the Human Sciences 16, no. 4 (November 1, 2003): 39-59. doi:10.1177/0952695103164003.

Tanner, Ralph, and Colin Mitchell. Religion and the Environment. Palgrave Macmillan, 2002.

"The Urban Cemetery and the Urban Community: The Origin of the New Orleans Cemetery." Accessed March 7, 2012. <http://www.jstor.org/stable/pdfplus/3514389.pdf>.

"Toward an Eco-Friendly Death." The L Magazine. Accessed March 22, 2012. <http://www.thelmagazine.com/newyork/toward-an-eco-friendly-death/Content?oid=1199688>.

Trautmann, Nancy, and Elaina Olynciw. "Compost Microorganisms." Cornell Waste Management Institute Cornell University (1996). <http://compost.css.cornell.edu/microorg.html>.

Trefil, James. Human Nature: A Blueprint for Managing the Earth--by People, for People. Holt Paperbacks, 2005.

US EPA, OAR. "Frequent Questions | Carbon Sequestration in Agriculture and Forestry | Climate Change | U.S. EPA," October 1, 2009. <http://www.epa.gov/sequestration/faq.html>.

Victorian Compost Society., and Albert Howard. The Compost Heap : the Principles and Practice of Making Compost by the "Indore" Method as Originated by the Late Sir Albert Howard. Melbourne: Victorian Compost Society, 1951.

Weaver, Michael. "What Happens to the Human Body After We Die?" MadSci Network, April 25, 2005. <http://www.madsci.org/posts/archives/2005-04/1114460899.Gb.r.html>.

Weisman, Alan. The World Without Us. Thomas Dunne Books, 2007.

"What Is a Burial Vault?" Hill Funeral Home | Wilbert Brand Vaults. Accessed March 30, 2012. <http://www.hillfuneral.com/vaults.html>.

"When Germs Are Good for Us | Hygiene Hypothesis | Brigham and Women's Hospital | HealthHub | Brigham and Women's Hospital Health Blog." Accessed March 29, 2012. <http://healthhub.brighamandwomens.org/who-knew-that-germs-might-sometimes-be-good-for-us>.

Worpole, Ken. Cemetery in the City. Demos, 1997.

Yalom, Marilyn. The American Resting Place: 400 Years of History Through Our Cemeteries and Burial Grounds. First edition, first printing. Houghton Mifflin Harcourt, 2008.

Zabalbeascoa, Anaxu. Igualada Cemetery : Enric Miralles and Carme Pinós. London: Phaidon, 1996.

Zeizima, Katie. "Home Burials Offer an Intimate Alternative." The New York Times, July 21, 2009, sec. US. <http://www.nytimes.com/2009/07/21/us/21funeral.html>.