The Architecture of Human Composting

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Abstract

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The much-anticipated arrival of the new funerary technology known as *human composting* is right around the corner, appearing March 1st of this year. With its arrival we are faced with the questions: What should the facilities that house this entirely new process look like, and how should they function? To date there is only one precedent in the United States, located in the SODO neighborhood in Seattle and will be discussed further in this document.

Because the architecture of human composting is still in its infancy, it has not yet undergone the evolution that all typologies must go through over and again in response to societal, religious, and political pressures. This is an exciting prospect indeed because there is no accepted “status quo” or “right” way to design for the new process.

Although there is a certain freedom to the space in which design for human composting exists, it should be acknowledged that at its core the space is defined by death, the definition of which *has* been around long enough for thorough (although constantly evolving) consideration from theoretical, spiritual, and scientific viewpoints.

Using prior investigation of death as a starting point with which to base this new architecture, this paper then considers the site where an example of that new architecture could be constructed, which is located at 508 N 36th Street in the Fremont neighborhood of Seattle, and most importantly; the Lushootseed people who once occupied that site. Research into pre-colonist Lushootseed culture revealed beliefs based on *their own* unique understanding of the cosmos because the technologies, beliefs and cultures of people beyond their neighboring tribes had not yet been introduced to theirs. Because of this lack of outside influence, these beliefs were instead largely informed by their surroundings, and could be summarized as *an inextricable connection of all things*.

The Lushootseed premise of connection lends itself well to the human composting process itself, wherein the body decomposes naturally and then nourishes life in its new form. This stands in stark contrast to the more common, contemporary funerary processes, hereafter known as *contemporary North American funerary practices,* which are dependent on fossil fuels and harmful chemicals, and highlights the need for a new contemporary understanding of death which is more fitting for a region with a well-established appreciation for nature. Moreover, by homing in on a new understanding of death and establishing new rituals for it, opportunities to address certain negative aspects of the experience of bereaved parties are revealed.

Finally, the paper will briefly analyze three structures whose form was influenced by death to find themes that can help inform a *new* architecture of death. By blending the

aforementioned cultural, regional, historical, and thematic aspects, the paper will suggest one design for a human composting facility in Fremont which accommodates the program requirements for a human composting facility, and is built using modern construction methods.

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Introduction

Thesis: On May 1st, 2020 *SB 5001 -2019-20 Concerning Human Remains* will officially be enacted and provide the people of Washington State with an alternative funerary practice known as *human composting*. Ultimately, the arrival of this new technology requires a need for an alternative understanding of death, and a new Architecture. Further, it presents an opportunity to establish a more eco-centric understanding of death, informed by elements of Native American tradition and the region's appreciation for nature.

North American Funerary Practices

The new technology of human composting introduces a new time frame, different treatment of the deceased, and ultimately a different result from that of the contemporary North American funerary practices, calling into question certain aspects of the existing North American funerary practices. Chief among these questions are: how do the existing processes impact the earth? And how do the bereaved experience those practices?

According to the National Funeral Directors Association, cremation has become the most popular funerary service in the United States and has seen the largest increase of consumers in Washington State. The change in trends reflects the values of a different generation that is less beholden to the religious traditions that value burial over cremation[1]. The new generation also prioritizes efficiency of time and resources,[2] and demands more environmentally friendly options than the previous generation.[3] Increased demand for sustainable services is a trend that should

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[1] Susan Scutti CNN, "Half of Americans Choose Cremation," CNN, accessed February 27, 2020, https://www.cnn.com/2017/08/09/health/cremation-tops-burials-in-us-study/index.html.
[2] James Barron, "In a Move Away From Tradition, Cremations Increase," *The New York Times*, August 10, 2017, sec. New York, https://www.nytimes.com/2017/08/10/nyregion/cremations-increase-in-a-move-away-from-tradition.html.
[3] "Cremation Is Here to Stay: Aging Baby Boomers Proved Catalyst in Shift Beyond Traditional Burial," accessed February 27, 2020, https://www.nfda.org/news/media-center/nfda-news-releases/id/4395/cremation-is-here-to-stay-aging-baby-boomers-proved-catalyst-in-shift-beyond-traditional-burial.

not be ignored as the next major consumer of funerary services will be Millennials who, according to MIT's Age Lab (Figure 1), are even more environmentally focused than the previous generation.[4] Moreover, market conditions support the fact that consumers want new, and interesting ways to remember their loved ones. Existing examples include pressing ashes into records[5], mixing ashes with concrete to create submergible frames for coral reefs[6], and tattooing ashes into one's body[7]. Therefore, it is not a jump to assume that this generation of consumers would be open to receiving their loved one's remains as compost.

This information may be crucial for funeral homes who need to find a replacement for the more lucrative service packages that people aren't buying and which used to be the money makers for the funerary industry.

Moreover, because human composting matches current demand for *new and interesting* funerary options, it could provide an opportunity for funeral homes to partner with investors in a symbiotic relationship where funeral homes bring their licenses, real estate, and operational experience to the table, and the other brings capital and business expertise. The prospect of this relationship is exciting because not only would it provide immediate support for the funeral industry, it would also allow them to compete with Washington's first human composting startup known as Recompose (mentioned further in the paper), who are already backed by private capital.[8]

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[4] Joseph Coughlin, "Greener Than You! Boomers, Gen X & Millennials Score Themselves On The Environment," n.d., 3.
[5] "AndVinyly," accessed February 27, 2020, http://www.andvinyly.com/.
[6] "Eternal Reefs » Living Legacies That Memorialize Our Loved Ones," Eternal Reefs, accessed February 27, 2020, https://www.eternalreefs.com/.
[7] "Engrave Ink™ | Ashes to Ink | Commemorative Tattoo Ink," accessed February 27, 2020, https://engraveink.com/.
[8] "INVEST," Recompose, accessed February 29, 2020, https://www.recompose.life/invest.

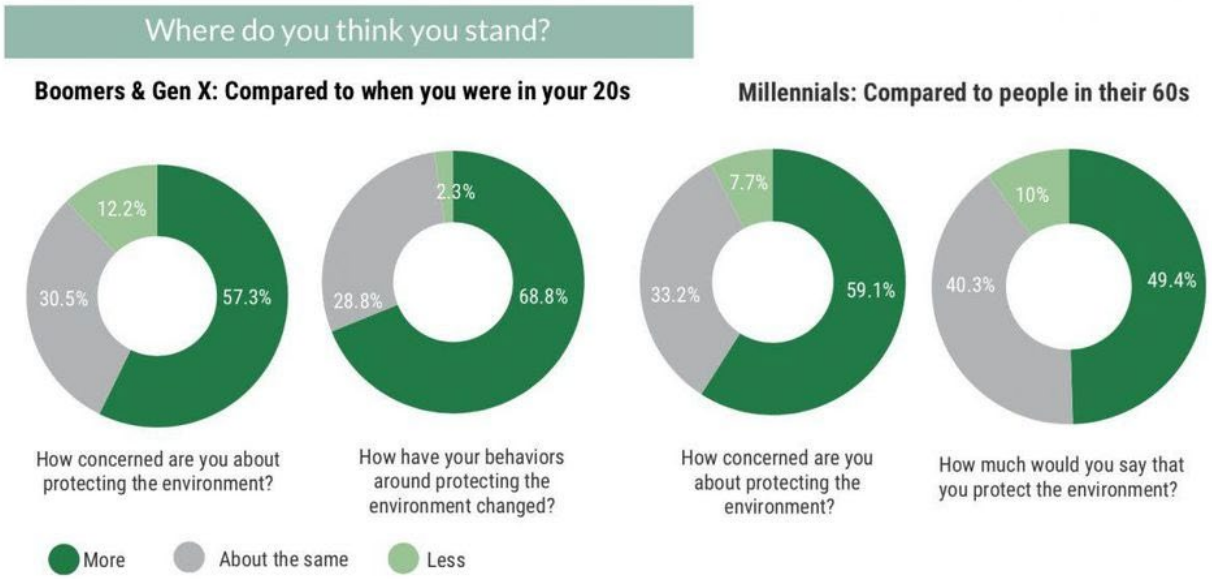

Figure 1. MIT Age Lab, Baby Boomer Gen X & Millennial perceptions of their commitment to the environment compared to other generations, (2018). Courtesy Forbes.com

Environmental impact

The environmental burden of contemporary funerary methods is high and growing. According to the advocacy group People's Memorial Association of Washington State, "78.3% of Washingtonians choose cremation compared to the national average of 53.1%", with the latter predicted to reach 78.8% by 2035.[9] This growth is worrying, as cremation operations are *already* estimated to contribute an annual 600,000,000 pounds of CO2 emissions into the atmosphere.[10]

The environmental impact of contemporary burial is just as alarming at that of cremation. According to Johns Hopkins Bloomberg School of Health, the embalming process "uses a swimming pool's worth of embalming fluid per cemetery which can leach into nearby water

[9] Brigit Katz, "Cremation Rates Reach All-Time High in the U.S.," Smithsonian Magazine, accessed February 27, 2020, https://www.smithsonianmag.com/smart-news/cremation-rates-reach-all-time-high-us-180964478/.
[10] "A Local Idea to Compost Human Bodies," *Forterra* (blog), accessed February 27, 2020, https://forterra.org/editorial/breaking-trail-2-human-composting.

tables".[11] Embalming fluid contains known carcinogens and other dangerous chemicals, which in addition to posing a health hazard, make it impossible for the body to break down, creating a potential toxic-waste pileup when cemeteries reach capacity. These facts make it hard to deny that the funeral industry, as it currently operates, is detrimental to human health and the environment. The solution is *not* to find similar alternatives to existing practices, like liquid cremation in place of cremation by combustion[12]; instead, we should look to nature to provide *new* solutions.

Human Composting

Many consumers of funerary services are heavily influenced by tradition, and in the United States this is especially true for people living on the East and Southern coasts where a greater percentage describe themselves as faithful to a religion. For some religious institutions, strict adherence to institutional values is demanded of their followers. For example, until recently, being anti-cremation was one of those values for the Catholic church, who regarded it as a "Brutal destruction of the body".[13] The shift in attitude by such a powerful and influential entity was part of a growth in demand for cremation services, and highlights an important point that it *is* possible for institutions to adapt to new ideas, a point which has again been proven by Washington State's recent approval of human composting.

Background and Process

The composting process functions by creating a contained environment that generates its own heat, killing pathogens while simultaneously creating ideal conditions for microbes which work

[11] "To Dust—Not to Steel or Embalming Fluid—You Can Return," Global Health NOW, accessed February 27, 2020, https://www.globalhealthnow.org/2018-08/dust-not-steel-or-embalming-fluid-you-can-return.
[12] "A New Way to Dispose of Corpses—With Chemistry!," *Wired*, accessed February 27, 2020, https://www.wired.com/story/alkaline-hydrolysis-liquid-biocremation/.
[13] Katz, "Cremation Rates Reach All-Time High in the U.S."

together to change the body's form, from bone and tissue, to soil. This environment is created by systematically rotating, and adding oxygen to a vessel that contains plant matter such as yard clippings or wood chips, and a human body. The entire process acts as a catalyst to naturally occurring decomposition, and yields one cubic yard of compost in a maximum of seven weeks.[i]

The composting process was championed by the Seattle based, human composting startup Recompose, and developed by Dr. Lynn Carpenter Boggs and her team at Washington State University. Dr. Boggs' research was a crucial step towards state legalization, which required proof that the process was safe, and conformed to standards and guidelines such as those set by EPA 40CFR Part 503 App B and WAC 173 350 220.[14]

Washington State regulators were not the only audience that Recompose had to convince however, as the release of prospective architectural designs for a machine-like structure that would contain the process of human composting, was met with skepticism by the well-known periodical Wired Magazine.

Washington State's First Human Composting Architecture: Analysis and Critique

One of the first ideas released to the public was a design for a monolithic composting structure by Olson Kundig, the main architecture firm working for Recompose. In this concept, *multiple* bodies are composted together in a large tower. The towers are accessible by the public, who can ascend the structure via exterior stairs (Figure 2). The tower creates an interactive experience that yields compost which can be easily extracted and sent to large land-owning partners[15], and extracted in smaller amounts for individuals who can take compost with them for use in their gardens to keep the presence of their loved one(s) alive. The concept is a great way to address

[14] "PILOT," Recompose, accessed February 27, 2020, https://www.recompose.life/pilot.
[15] "Recompose, the Human-Composting Alternative to Burial and Cremation, Finds a Home in Seattle's Sodo Area | The Seattle Times," accessed February 27, 2020, https://www.seattletimes.com/life/recompose-the-human-composting-project-finds-a-home-in-seattles-sodo/.

compost delivery to certain sites because the simple structure can be erected quickly at those sites. Wired Magazine wrote in its critique of the concept however, that in their opinion it will only be marketable to a small segment of consumers because in their words, "There is a deep rooted desire for families to have control over *individual* remains".[16] Although the functionality is a tried and tested method, employed in a similar way by the commercial composters found in the Bullitt Center building by the architecture firm Miller Hull; Wired magazine's criticism suggests that this design emphasizes function too much and needs to be re-worked to be more attentive to the individual consumers involved.

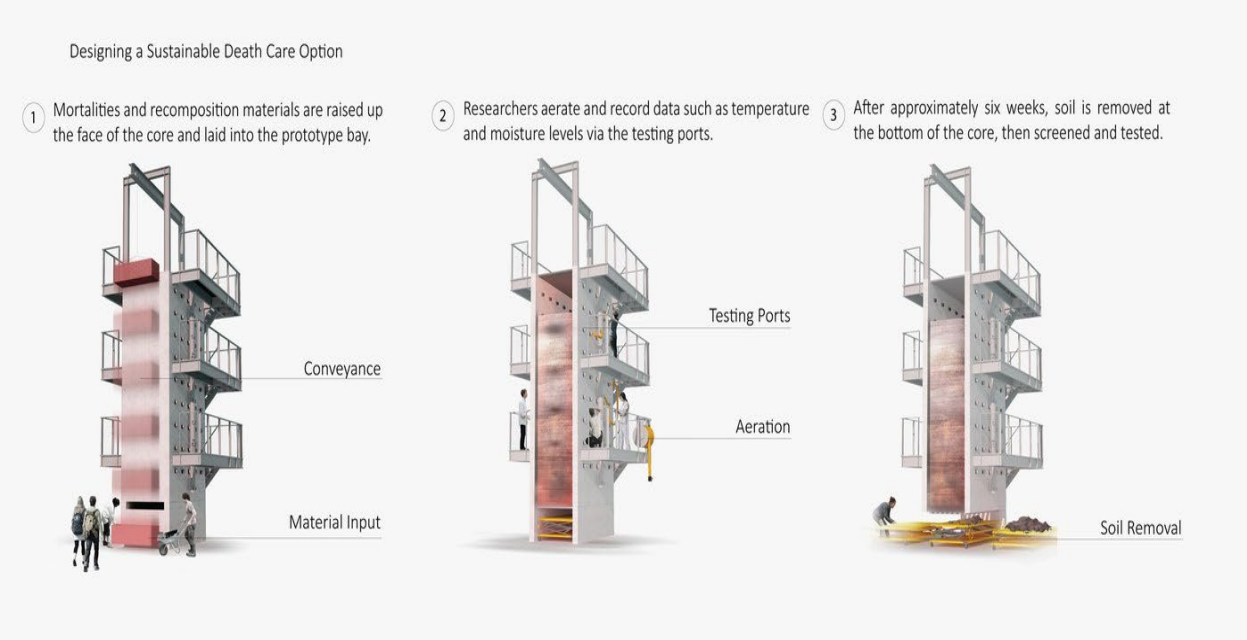

Figure 2. Olson Kundig, Compost Tower Concept, (2016). Courtesy Wired.com

Recompose Center

The second design by Olson Kundig is for Recompose's facility itself, which houses individual compost modules, preparation room, offices, space for a funeral service, and quiet outdoor

[16] Robyn Ross, "Inside the Machine That Will Turn Your Corpse Into Compost," *Wired*, October 25, 2016, https://www.wired.com/2016/10/inside-machine-will-turn-corpse-compost/.

spaces (Figure 3). The space reflects the warehouse character of SODO where it is located[17], and uses principles of Biophilic Design which echoes the composting process itself. All these elements make the design a comfortable place, appropriate for the site/program and more marketable to individual consumers than the tower concept. Ritual is also established in this design by laying a loved one to rest in a similar fashion to standard burial, where the deceased is carried to their resting place following a gathering.

Figure 3. Renderings of Recompose Center, (2019). Courtesy OlsonKundig.com

Although the design ideas are clear, functional and beautifully executed on the interior, design intent of the exterior seems absent or is unclear. It does have an interesting dome shape to the roof, but aside from this it is almost indistinguishable from the surrounding warehouse landscape (Figure 4). Because SODO is changing, and will soon be a metropolitan hub like the adjacent Seattle city center, it could be that a warehouse exterior falls short of communicating the

[17] "Recompose, the Human-Composting Alternative to Burial and Cremation, Finds a Home in Seattle's Sodo Area | The Seattle Times."

architecture's purpose and further; like the tower concept may overemphasize function and alienate potential customers.

Figure 4. Ken Lambert, Recompose Facility in SODO, (2019). Courtesy SeattleTimes.com

It should be noted however, that the Recompose facility and the Tower concept are the first of their kind. Olson Kundig and Recompose have laid the foundation for the new architecture of human composting, and by doing so have given us a starting point to question what this architecture should be.

The next step is to discover how the new architecture of human composting can convey ephemeral qualities of death and transformation on the *exterior*, in addition to the building's interior, and further, how the rituals and interactions that happen inside that architecture could be reconsidered to better suit the new technology within. Referring to the site of this paper's suggested design (to be discussed further), which is based in Seattle; we are presented with an

opportunity to use the region's Indigenous eco-centric traditions and spiritual beliefs surrounding death as guidelines to inform those new rituals and architecture.

Southern Coast Salish: The Lushootseed, and Twana Peoples

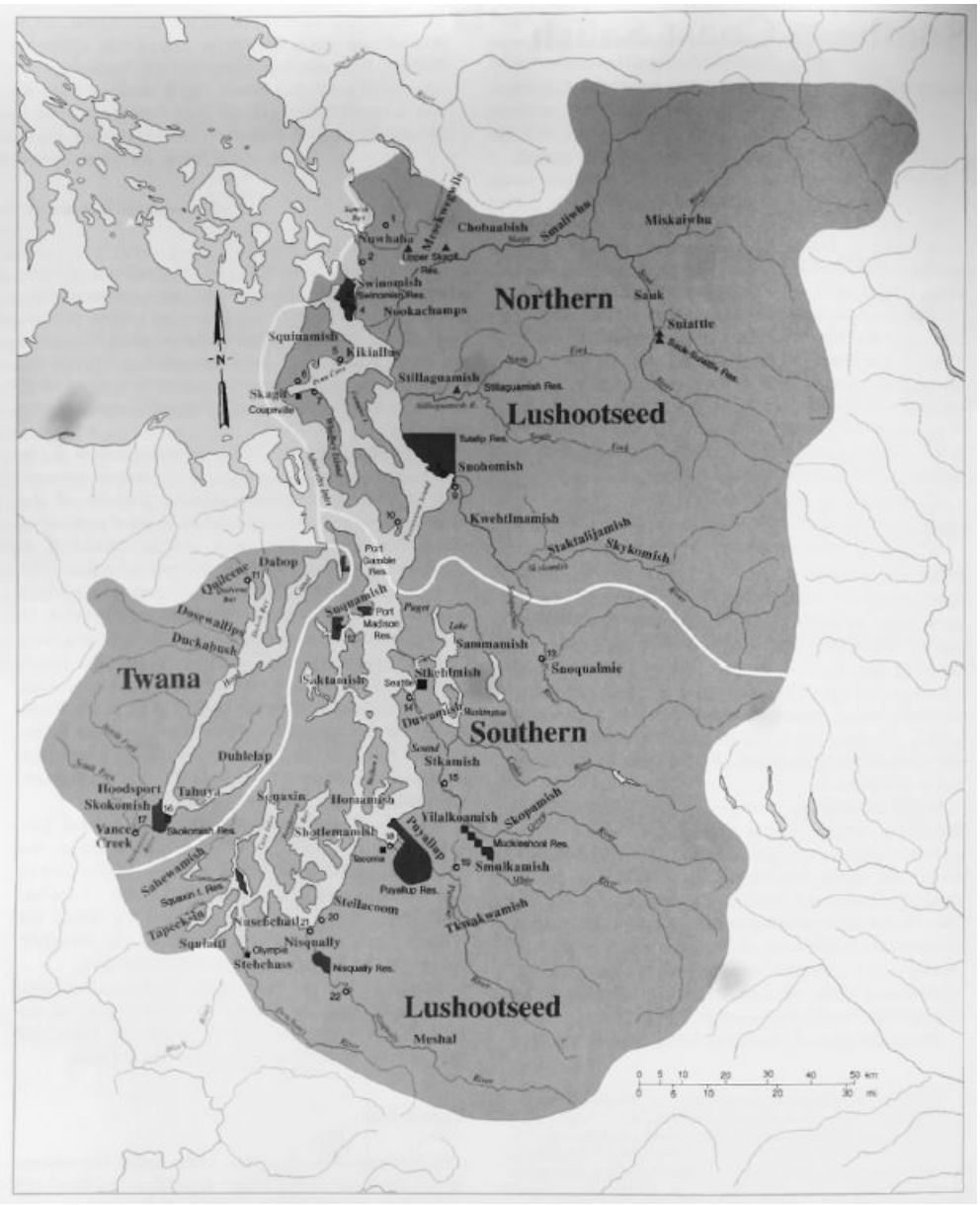

Figure 5. 19th Century Villages of the Southern Coastal Salish. From The Handbook of North American Indians Vol. 7 (1990).

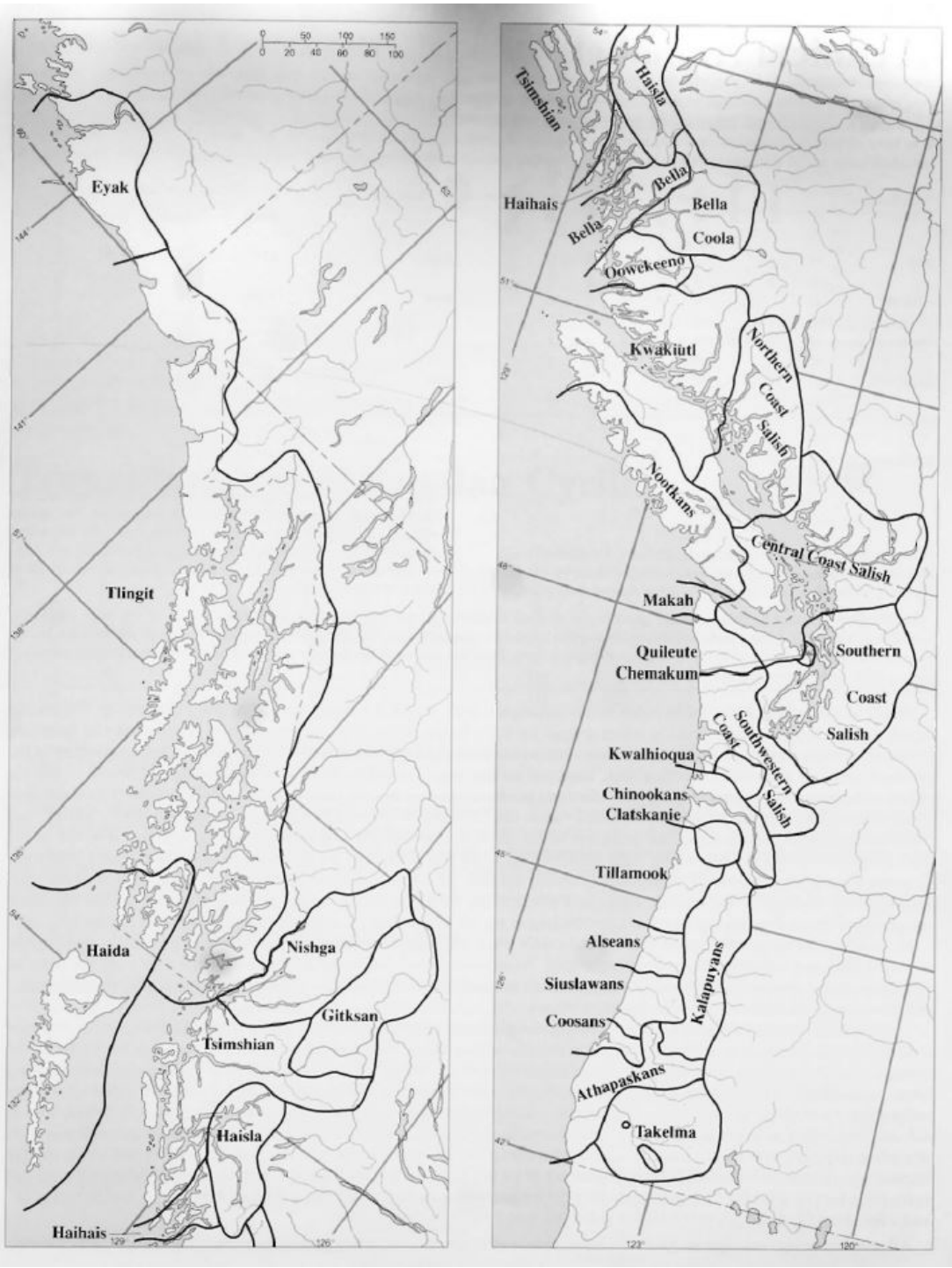

Figure 6. Southern Coast Salish Territory (right). From The Handbook of North American Indians Vol. 7 (1990).

Preceding Colonial settlers, the native people residing in Seattle were known as the Lushootseed. The Lushootseed, together with their Twana neighbors to the West (Figure 5), were known as the Southern Coastal Salish, hereafter called the Salish (Figure 6).[18] For these tribes, spirituality was the basis for their way of life which could be described as an inextricable connection of all things (Figure 7), and was based on the legend of their god who they called *Transformer* or *Changer*. In the legend of the Transformer, the entity provided knowledge and souls (spirits) to the (already) existing beings of the planet and instructed those beings to pass their knowledge on to humans when they appeared on earth. When they appeared, humans were taught to appreciate the earth and its beings for nurturing humanity. This story carried over into everyday life, culminating in a belief that all beings relied on one another for survival and purpose, and therefore that respect for the earth and its beings had to be incorporated into daily life for society to function.[19]

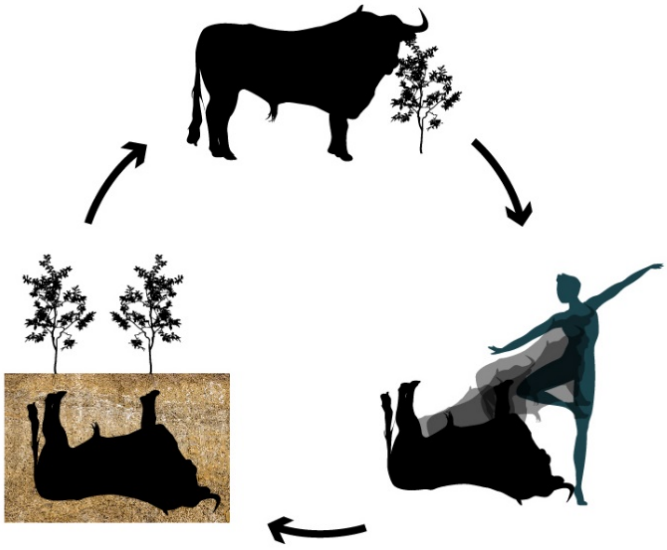

Figure 7. Will Devault-Weaver, Flora and Fauna nourish each-other and exchange spirits (2020).

[18] Barbara Lane and Wayne Suttles, *Handbook of North American Indians*, vol. 7 (Washington: Smithsonian, 1990), ix, 486.
[19] Suzanne J. Crawford, *Native American Religious Traditions*, Religions Of The World (New Jersey: Laurence King Publishing, 2007), 47–49.

Spirits

The Salish believed that spirits were everywhere, and inhabited all beings. There were different categories of spirits as well. These spirits were differentiated as *guardian spirits* which were animal and plant spirits who inhabited people, *unclassified spirits* which were either benevolent or malevolent, and *minor supernatural beings.* The former were mythical creatures such as dwarves, and the *fish people*. Spirits were differentiated again by exclusivity and powers bestowed on the host. The most common spirits were called *lay spirits* which gave the average villager a special skill that only they could perform to perfection such as canoe building or cadaver preparation. The more exclusive spirits were called *shaman spirits* and could be inhabited only by a shaman who would be bestowed with greater power than a layperson. Rarer still, were the *lost dog* spirits, which were *guardian spirits* that were inherited only by a family member from their deceased next of kin who had lost their host and was lonely.

Without becoming possessed, a person would be unable to truly connect with the universe or find their place in society, so children would begin training to quest for their spirit as young as five years old. The vision, or encounter between spirit and host would be initiated through deprivation and physiologically exhausting rituals.[20] Proceeding the initial encounter, the host had to forget the experience and wait till adolescence or pregnancy when they would take place in a ritual known as the *spirit dance* in which the host performed a ritual dance and the spirit sang through them. These *spirit dances* were the crucial final step of a lay person's possession and would re-ignite the connection with the spirit they encountered as children, binding them for the host's lifetime.[21]

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[20] William W. Elmendorf and A .L. Kroeber, *The Structure of Twana Culture* (Pullman, Washington: Washington State University Press, 1992), 485–99.
[21] Robert M. Torrance, *The Spiritual Quest* (California: University of California Press, 1994), 179.

After possession, the inhabiting spirit had to be honored or else it would become offended. The villages honored the spirits in several ways, such as by dancing the dances of their personal spirits, and through *Potlatch*, [22] which was a community gathering and ceremonial gifting of resources done in the name of that villager's spirit.[23]

Shamanism

The process of possession was different for would-be shamans, some of whom went through a particularly arduous process repeatedly throughout their life in order to be blessed with extraordinary powers. For the prospective shaman unlucky enough to be born without connection to a guardian spirit, it was believed that they had to subject themselves to near-fatal physical degradation. Further, it was believed that a prospective shaman must kill their spirit in combat before the powerful *shaman spirit* would imbue the shaman with their power and teachings. This battle would be waged to the point of death in some cases, which did not frighten the seeker because if they were to die and successfully come back from the dead, it would solidify their status in the village. The most powerful shamans had encounters with an immortal being who appeared to the prospective shaman in the form of a man, and imbued them with *regenerative power*, in addition to *shaman power*.[24] Moreover, it was crucial that shamans retained their spiritual power because only they could rescue souls from the land of the dead in order to heal the sick. [25]

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[22] Suzanne J. Crawford, *Native American Religious Traditions*, 51.
[23] Lane and Suttles, *Handbook of North American Indians*, 7:498.
[24] Jay Miller, *Shamanic Odyssey: The Lushootseed Salish Journey to the Land of the Dead* (Menlo Park: Ballena Press, 1947), 34.
[25] Robert M. Torrance, *The Spiritual Quest*, 180–83.

Spirit Canoe

In Southern Coast Salish culture, a person has two souls that are separate from their guardian spirit. These souls are the *heart soul*, which lived in one's heart, was mysterious in nature and could not be removed, and the *life soul* which was "A miniature image of its owner, about the length of a finger and of fog like consistency" ("The Structure of Twana Culture" 1992). The *life soul* lived in a person's head and was vulnerable to theft by lonely ghosts of family members because it was not locked to the body like the *heart soul*.[26] If ghosts were to steal a person's *life soul*[27] or their *guardian spirit*[28], that person would become deathly ill and could only be saved by a powerful shaman or group of shamans who would travel to the land of the dead and bring back that villager's soul. This practice was called a *Soul-Recovery* Ceremony, or *Spirit Canoe* Ceremony (Figure 8).

Figure 8. Douglas Leechman, Soul-Recovery Ceremony, (1932). From The Shamanic Odyssey (1947).

[26] William W. Elmendorf and A .L. Kroeber, *The Structure of Twana Culture*, 512–13.
[27] William W. Elmendorf and A .L. Kroeber, 516.
[28] Jay Miller, *Shamanic Odyssey: The Lushootseed Salish Journey to the Land of the Dead*, 34.

The *Spirit Canoe* ceremony would take up to three days to complete. To enter the land of the dead required a shaman with *regeneration power* in addition to *shaman power*, and took a minimum of three shamans, whose leader was chosen by the family of the sick villager. To prepare for the journey, the shamans scouted the path to the land of the dead to make sure there were no obstructions that would keep them from returning. When the path was clear, the shamans, their assistants, and the villagers would pack into someone's house, which would be known as a *spirit house* for the duration of the ceremony. Inside the house the Shamans gathered around an outline of a canoe, shaped by laying strips of cedar on the ground, and items representing construction materials and foraging tools were laid out along the edges of the canoe. Inside the canoe the shamans *spirit boards* were shoved into the dirt, so they stood upright. These boards were three-foot-wide by seven-foot-long and inscribed with symbols and faces representing each shaman's spirit. The *spirit boards* propelled the shamans through the spirit world and were shaken by the assistants when they needed to increase velocity. Also, in the circle, were small statues of spirits called *little earths* who themselves were known to steal souls but always appeared at the beginning of a voyage and were appeased by having their effigies included in the ritual. To begin the voyage, the shamans would sing their spirit songs and act out their voyage while the villagers watched silently. As the shaman entered the land of the dead they tracked down and attacked the spirits who were holding their villager's *guardian spirit* or *life soul* hostage, bursting into the spirits villages, kicking in doors and killing spirits in the process. Once they had confirmed that the *guardian spirit* or *life soul* of the villager had not eaten in the land of the dead, a shaman would lock the *guardian spirit* or *life soul* inside their chest, or tuck it underneath their cedar cloak for safe keeping on the journey back home. Once they returned to the village, the shaman holding the *guardian spirit* or *life soul* would retrieve it

with encouragement from the villagers and give it back to their patient. Once the *guardian spirit* or *life soul* was returned to its host, the patient would break into their *spirit song* indicating that they were cured.

Death Rituals

If a dying person could not be saved by a shaman, a different community member with a unique *guardian spirit* power called a *burier* would step in. *Buriers* were employed by the deceased's family and due to their powers, were the only ones able to perform all undertaking duties that involved physical contact with the cadaver. Because the *buriers* were members of the village, their profession was not considered taboo, and their powers were equally respected.

As with most situations in Southern Coastal Salish culture, a process of rituals and ceremonies were required when someone died. The process began with *buriers* coming to the home and preparing the corpse for an in-house wake that lasted for one evening after the family member passed. After securing the body by swaddling and binding with ropes, family members and friends were welcome to come pay their respects, bring gifts for the family and for the deceased to take to the afterlife, and would cry and tell stories about them. The next day the *buriers* would remove the body from the home, making sure to create a special opening in the side of the home so that the living and the dead would not share the same entry/exit.[29] The body was then carried to the grave site, where they were placed in a coffin-canoe with the body swaddled in the finest of the blankets gifted at the wake, and other gifts, money and possessions were placed on and around the body in the canoe. The canoe was supposedly the same model used in the *Spirit Canoe* ritual and was placed on a scaffold in a grove of trees close to the shore. Finally, as these proceedings were wrapping up, a master of ceremonies would announce the

[29] Lane and Suttles, *Handbook of North American Indians*, 7:496.

family's invitation to the *death feast*, where the deceased's possessions would be given away to family and as payment to the *buriers*. Money was given to guests as an alternative, as only family and *buriers* received family possessions.[30]

A New Understanding of Death

Contemporary North American funerary rituals and traditions are founded on the understanding of death and disposition methods prevalent at their inception, just as Salish rituals and traditions were born of theirs. Unfortunately, contemporary North American funerary rituals and traditions do not make sense for composting because they are based on an entirely different type of process, and often have specific religious principals at their core. Because composting is a transformation of the body into earth, and earth into life; it requires new rituals and traditions based on cyclical principles such as those of the Southern Coastal Salish. Further, the new time period of approximately 30 days for composting vs. one or two for a contemporary American funeral calls into question the experience of the bereaved during those shorter time periods; revealing an opportunity for new traditions and rituals to also improve the experience of the bereaved.

3 Principals for a New Understanding of Death

1. Death rituals and traditions should not be rushed. In contemporary North American funerals, the bereaved must endure the grief of loss, estate settling, financial pressure, and the stress of organizing people, all at the same time and in the matter of days. The bereaved should be allowed enough time to let go while taking care of funeral and family matters.

[30] William W. Elmendorf and A .L. Kroeber, *The Structure of Twana Culture*, 446–64.

2. Death is not oblivion. Decomposition can allow the body to live on in the beings it will nourish as soil. In that respect, funerary processes should be environmentally friendly as opposed to hazardous to the earth and the surrounding community.

3. Death rituals and traditions do not have to feel solitary. On the contrary, they should provide the bereaved an opportunity to belong to a unique community of people who are all going through the same unique experience. Even if a person is single, with no remaining friends or family, they should be able to effortlessly find their place within that new community based on shared commonality.

With these new principles, and Salish concepts in mind, the next step is to incorporate those things into a new architecture, and use them to create the new traditions and rituals that will take place within that architecture.

Memento Mori: Cadaverine Architecture in 3 Projects

Memento Mori is a Latin term that means "Remember Death". *Memento Mori* is also known as the ornamentation of a building or place with images, sculpture and/or writings about death. Prominent examples of *Memento Mori* are the 16th century decaying corpse sculpture titled "Statue of Death" by Germain Pilon and the 17th century funerary chapel by Jean-Charles Delafosse. Both the sculpture and the chapel ornament were meant to shock the viewer into accepting the reality of death, and portray the human fascination with death.[31] The chapel was adorned with sculptures of skulls above the door and skeletons partially recessed into the walls, which appropriately conveyed the building's use as a place that facilitated passage of the dead. However, this type of facade would appear like an amusement park funhouse were it to be replicated in a contemporary building.

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[31] Richard A. Etlin, *The Architecture of Death: The Transformation of the Cemetary in Eighteenth Century Paris* (Cambridge: MIT Press, 1984), 1–6.

Discussed further in this paper, *Memento Mori* also appears in one project as the integration of *actual* human remains into its structure, a feat which is powerful in that circumstance but would be imprudent to replicate in a modern metropolitan structure. This highlights an important point that one of the challenges faced by ecological disposition is that although modern metropolitan communities may be receptive to the idea of sustainability, they may oppose the idea of exposure, actual or perceived, to the process itself.

The challenge, therefore, is to design a building that expresses death, or elements of death without appearing kitsch, offending the public, or breaking the law. There are, however, structures that do achieve some, or all those goals, and this paper will next examine three such works: Towers of Silence by Thomas Heatherwick, the Prince Felipe Science Museum by Santiago Calatrava and La Sagrada Familia by Antoni Gaudi. In doing so, strategies for incorporating *Memento Mori* via *the tectonics* of each building will come to light.

Towers of Silence

Humans are genetically wired to be averse to death. When a body begins to break down it releases the aliphatic diamines: putrescene and cadaverine which humans react to neurologically, causing us to experience feelings of repulsion.[32]This is an interesting paradox, because although our bodies tell us to distance ourselves from the deceased, our emotions tell us to hold on, as this body that we now fear could have recently belonged to someone we loved. Further, the individual cultures and social structures of our world often dictate specific treatment of the dead, restricting the ability to leave the body to nature, and let nature run its course. Therefore, physiological and social pressures can lead to ecologically damaging practices such as embalming which was discussed prior.

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[32] Ashiq Hussain et al., "High-Affinity Olfactory Receptor for the Death-Associated Odor Cadaverine," *Proceedings of the National Academy of Sciences of the United States of America*, November 26, 2013, 19579–84.

For those reasons, it is interesting to investigate the Zoroastrian tradition of *Sky Burial*, an ancient practice still employed today, which uses buzzards and the sun to dispose of cadavers. Architecture is the stage for this process. As shown in plan and section below (Figure 9), bodies are placed in specific locations in the *Dakhma* structure, which is open to the sky to allow buzzards to dispose of tissue and the sun to dry the bones.[33] When only bones remain, they are placed in the center well, becoming a focal point as the well fills. In this way bones become *fully integrated* with the architecture of the *Dakhma.*

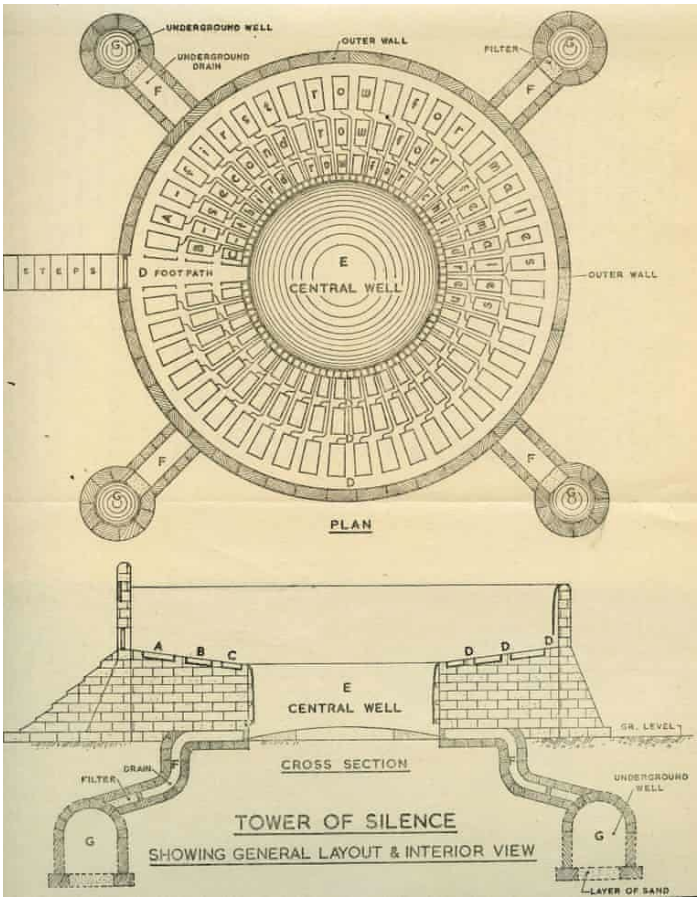

Figure 9. Sapur F Desai, Layout and cross section of a Dakhma. From History of the Bombay Parsi Panchayet (1860-1960). Courtesy The Guardian.

[33] Bachi Karkaria, "Death in the City: How a Lack of Vultures Threatens Mumbai's 'Towers of Silence,'" *The Guardian*, January 26, 2015, sec. Cities, https://www.theguardian.com/cities/2015/jan/26/death-city-lack-vultures-threatens-mumbai-towers-of-silence.

Although the tradition of *Sky Burial* is an established part of the Zoroastrian (Parsi) faith, the process led to an unfortunate cultural clash. As a growing city center expanded to the edge of Parsi land, developers erected towers putting the *Dakhmas* in full view of those building's occupants. Recognizing that they needed to find a solution to this problem, the Parsi community employed the architecture firm Heatherwick Studio, to re-design their funerary compound. Thomas Heatherwick brought a compelling solution to the table which was to enclose the Dakhmas and buzzards within a giant aviary (Figure 10), supported by large commemorative pillars reminiscent of the famed pillars of Ashoka (Figure 11). This allowed some visual cover, and contained the buzzards so that they would breed, and dispose of corpses faster.[34]

Figure 10. Heatherwick Studio, Tower of Silence (Dakhma) within Aviary in Mumbai Centre, (2010). From Projects. Courtesy heatherwick.com.

[34] Thomas Heatherwick, *Thomas Heatherwick: Making* (New York: Monacelli Press, 2015), 124–28.

Figure 11. An Ashokan Pilar Across from a Stupa at Kolhua near Vaishali in Bihar. From The Story of India (2008). Courtesy pbs.org.

La Sagrada Familia

Possibly the most memorable of the façades on Gaudi's La Sagrada Familia is *La Pasion*. This façade depicts the horrors endured by Christ during his crucifixion by emulating the forms of large human bones as columns supporting the ornamented awning above, which is itself comprised of (smaller) bone forms (Figure 12). Gaudi spoke of his intentions for the passion façade to appear "Hard, bare, and (as if) made of bone",[35] and said of the design that "I wanted it to inspire fear."[36]

[35] Leah Lawrence, "Inspired by Gaudi," *Oilweek* 64, no. 2 (2013): 43–44.
[36] Guillaume De Laubier and Jacques Bosser, *Sacred Spaces The Awe-Inspiring Architecture of Churches and Cathedrals* (New York: Abrams, 2018), 101.

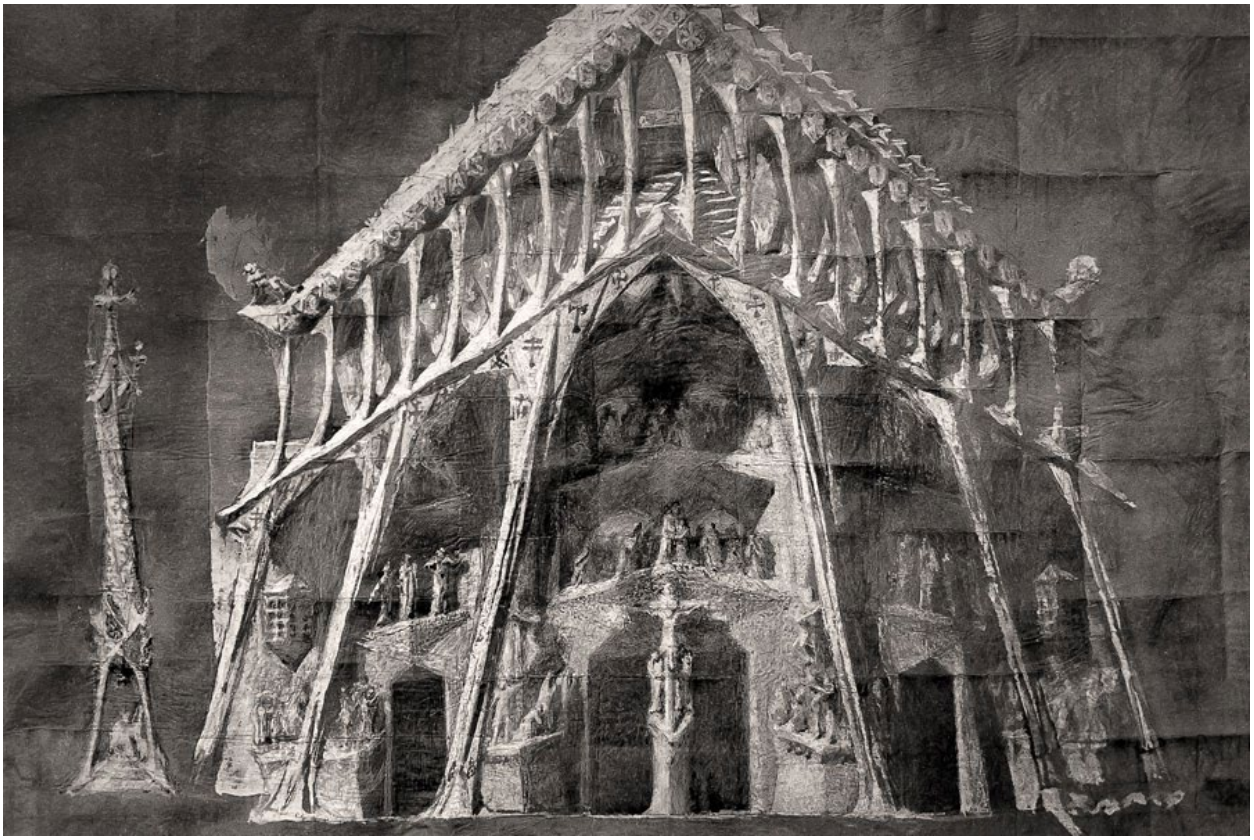

Figure 12. Antoni Gaudi, La Pasión Facade Charcoal Rendering, (1900). originally from The Designs and Drawings of Antoni Gaudi (1983). Courtesy RMIT university.

Prince Felipe Science Museum

Nature is truly amazing in its ability to generate complex shapes in response to physical forces. Being a trained structural engineer, Santiago Calatrava has a unique insight into nature's power and mimics its forms in his designs. In the Prince Felipe Science Museum (Figure 13) Calatrava employs the use of bone-like forms which appear to be from an animal due to their tapering and thinness. Overall, the composition mimics the skeleton of a whale or the remains of, as one photographer puts it, "A particularly beautiful beast-its ribs, underbelly, horns, etc."[37]

[37] "Santiago Calatrava's City of Arts and Sciences Through the Lens of Photographer Sebastian Weiss," ArchDaily, April 9, 2017, http://www.archdaily.com/868774/santiago-calatravas-city-of-arts-and-sciences-through-the-lens-of-photographer-sebastian-weiss.

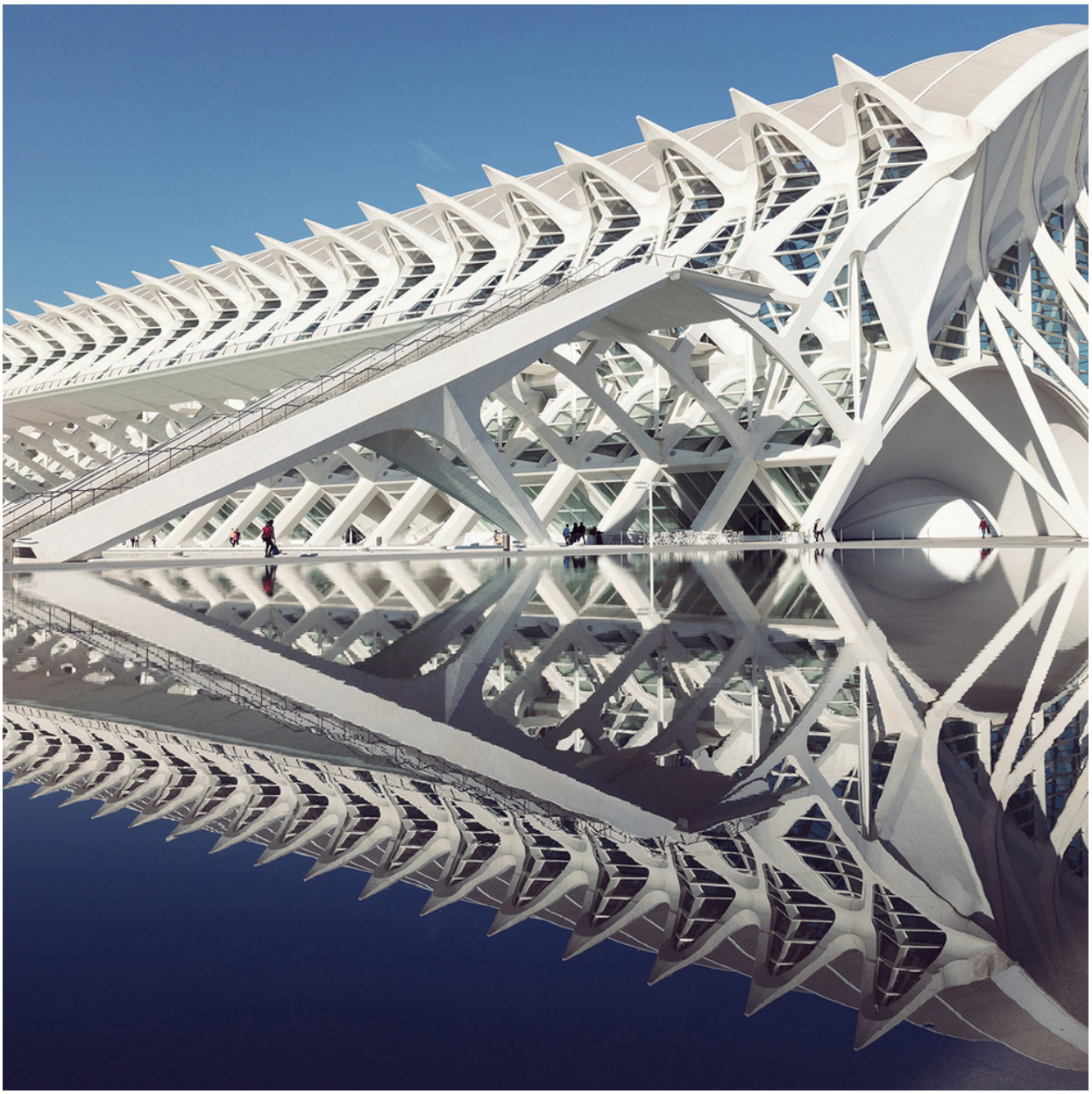

Figure 13. Sebastian Weiss, Museo De Las Ciencias Principe Felipe, 2017. From White sculptures (2017). Courtesy le-blanc.com

The power of being face to face with the force of death, a force so powerful that it can fell so great a beast, is an awe inspiring experience indeed, which may explain part of the intrigue behind popular museum skeleton exhibits such as the whale exhibit at the University of British Columbia (Figure 14).

Figure 14. Shanna Baker, The blue whale skeleton is an arresting sight along the University of British Colombia's main mall, 2016. From The Art of Bones (March 2016). Courtesy hakaimagazine.com.

The New Architecture of Human Composting

Based on the aforementioned research, the following proposed design will seek to create a space where a new, eco-centric community of human composting can grow. The space will be geared towards helping the user(s) let go over the 4-7 week composting period by providing a place the bereaved can come to not only visit their loved one, but also to involve themselves in their loved one's journey of transformation. Such a space would allow the bereaved to regain control of their grieving process, and provide them with optional assistance in the form of an on-site Death Doula. Offering services beyond that of a contemporary Death Doula, this staff member would be trained to guide the *surviving* family member through the process of finding placement for

their loved one's compost, assist with ceremony planning, and help to navigate any thoughts and feelings that could arise at any stage of the experience.[38] Finally, the overall composition of the building will employ modern construction methods to incorporate aspects of Southern Coastal Salish culture and cadaverine architecture.

Functional Organization and Site Design

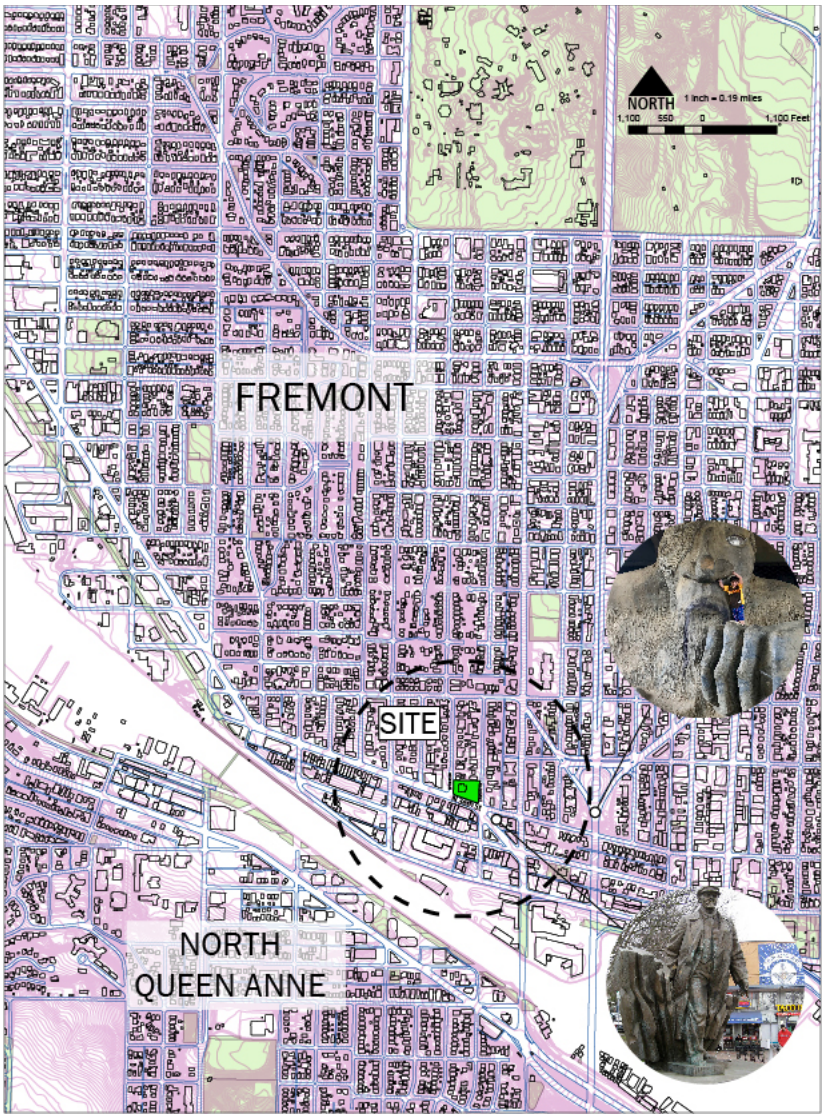

Figure 15. Will Devault-Weaver, Site Map with Fremont Troll & Lenin Statue, 2020.

[38] Cecilia Saixue Watt, "End-of-Life Doulas: The Professionals Who Guide the Dying," *The Guardian*, November 6, 2019, sec. Society, https://www.theguardian.com/lifeandstyle/2019/nov/06/end-of-life-doulas-the-professionals-who-help-you-die.

Fremont is funky. A giant sculpture of a Troll lurks beneath the Fremont Bridge, and a massive statue of Lenin welcomes visitors to Fremont center. Entering Fremont center, one is presented with small shops, tattoo parlors and clandestine bars. The subject parcel at 508 N. 36th Street sits in the heart of this alternative neighborhood, across the street from the Lenin statue, and is occupied by an old funeral home. Fremont's funky environment coupled with the funeral industries need for capital creates an opportunity for a new funerary partnership and a new composting facility which can be just as expressive as its surroundings (Figure 15).

Figure 16. T.T. Waterman, Spirit Board, From The Handbook of North American Indians Vol. 7 (1990).

Site Design

When looking for patterns and shapes indicative of Salish culture to influence site design, the spirit boards stand out as an ideal precedent. This is because spirit boards represent the journey to the spirit world and have evocative designs on their faces such as the dots which represent

songs taught to the shamans by their spirits (Figure 16)[39]. Adapting the shapes depicted on the board, and the overall shape of the board itself, the urban design takes on the shape of a large spirit board and a smaller one, supporting their structures above (Figure 17), with the spirit songs represented in form as meditation rooms that border the main composting center.

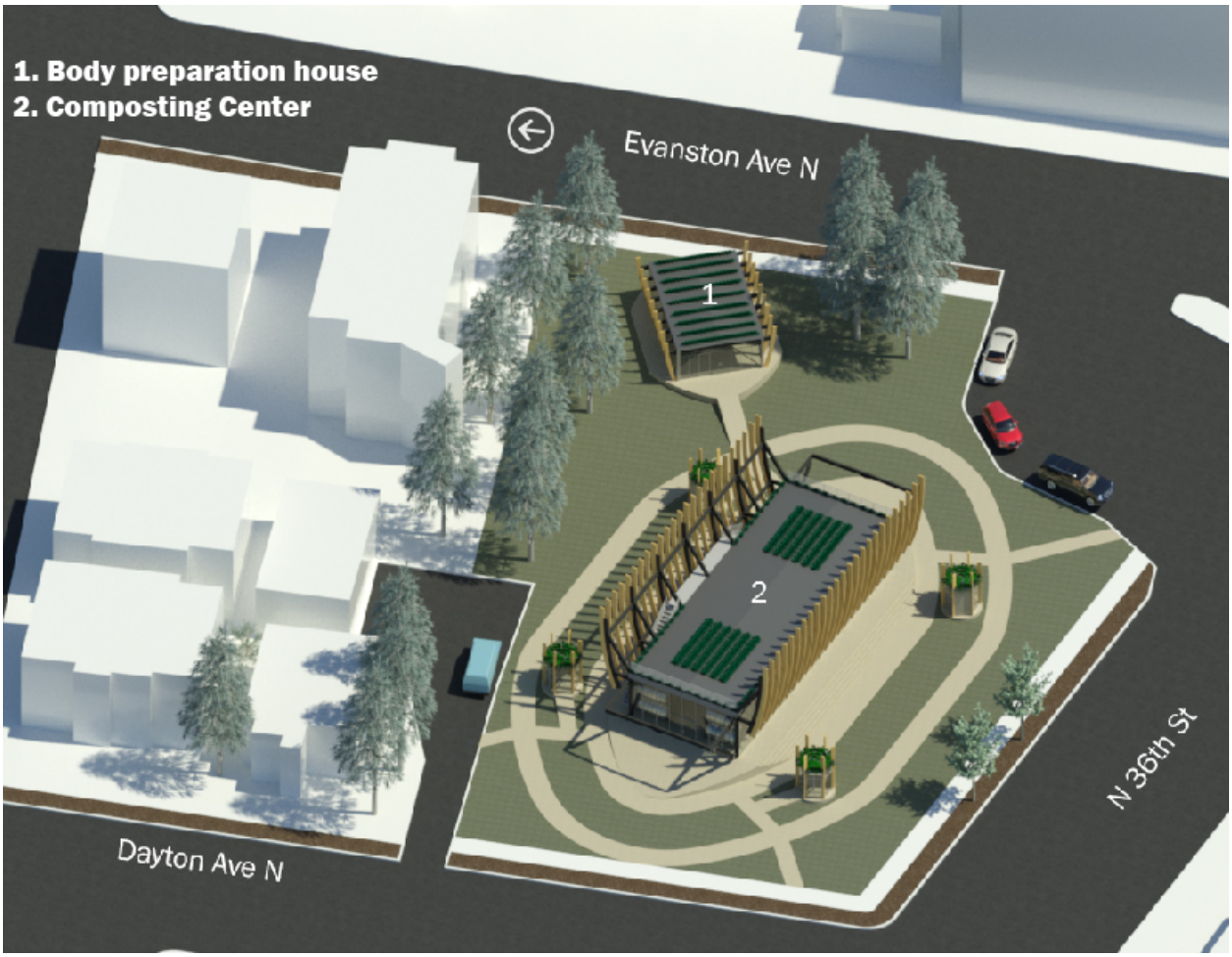

Figure 17. Will Devault-Weaver, Site Design Influenced by Spirit Board Form and its Imagery, (2020).

[39] Lane and Suttles, *Handbook of North American Indians*, 7:498.

Meaning of Building Forms, Their Tectonics, and Facades

It was customary in Salish culture to lay their dead to rest in burial canoes in a grove of trees, ideally close to water (Figure 18, 19). This site would have been perfect for a Salish canoe burial ground, and this fact coupled with the program of human composting makes a canoe inspired form ideal for these structures.

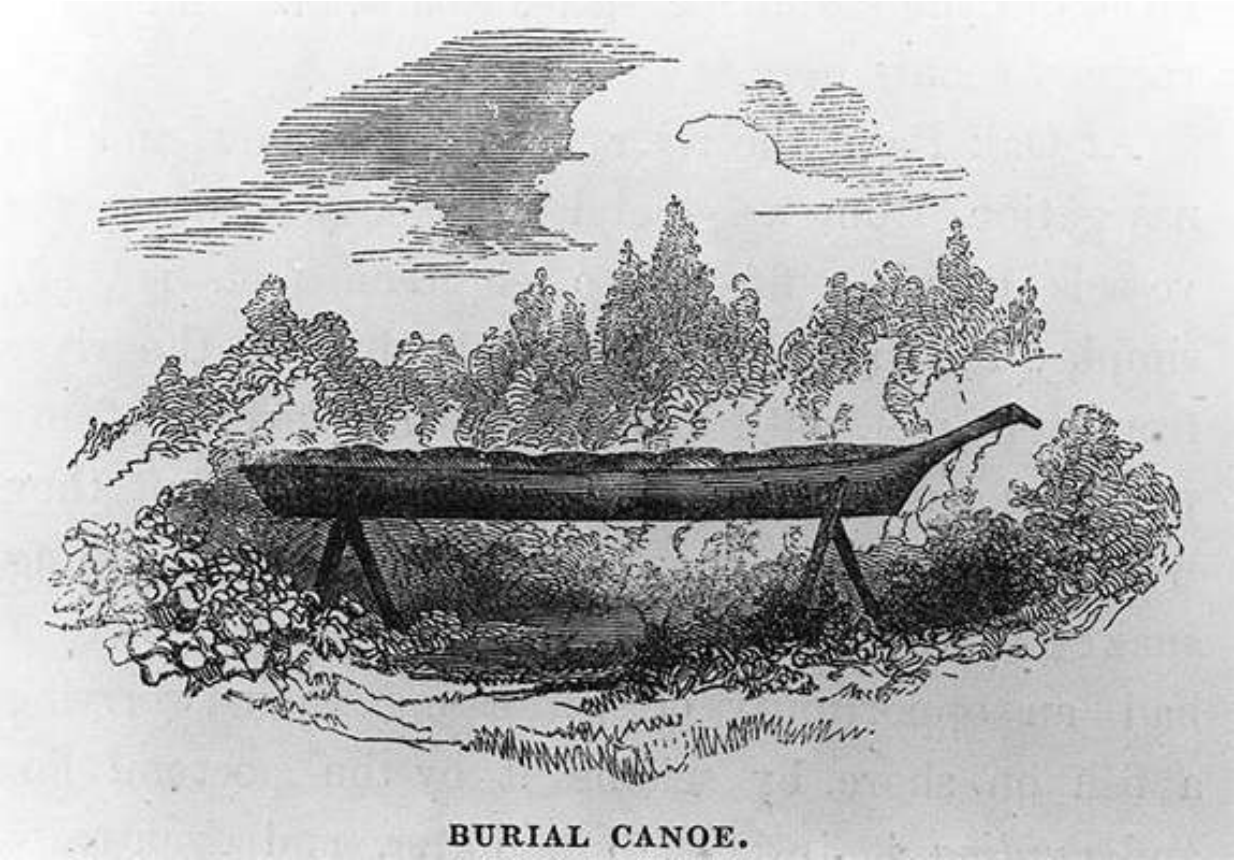

Figure 18. Edward Belcher, Burial Canoe at the Mouth of the Columbia River, 1843. From Narrative of a Voyage Around the World (1843). Courtesy Washington.edu

Figure 19. Henry J. Warre, An Indian Burial Canoe, 1848. From Sketches in North America and The Oregon Territory (1848). Courtesy Washington.edu

As mentioned prior, the canoe is a powerful object to the Salish community. It provides a means of travel, facilitates fishing, and is a portal to the death dimension much like the Zoroastrian Towers of Silence. The burial canoes were often painted black and were made from trees that in life sustained other beings, and in death once again sustained other beings as they broke down. Considering the degenerative nature of both cadaver and vessel in an outdoor canoe burial ground, the *visibility* of steel tectonics makes a strong statement about decay in a manner similar to that of La Pasion façade by Gaudi, and the Prince Felipe Museum by Calatrava. In the façade of the compost center buildings, the spacing of the glulams suggest lathing beginning to split away from the hull of a wooden canoe and provide some solar mitigation as well (Figure

20). Overall, the strategy of expressing decay through facade *in addition* to building mass adds to the drama and power of the entire campus.

Figure 20. Will Devault-Weaver, Decaying burial canoe and body sketch, (2020).

Materials & Methods

The Coast Salish tradition of woodworking is a matter of cultural importance and can inform our choice of materials for the new structure [40]. Moreover, because we are dealing with a new technology there is a need to represent modernity that can be represented by modern materials, in this case steel and glass, which pair well with wood. With respect to any treatment of the

[40] Lane and Suttles, 7:489.

exterior, green roofs can be used to represent earth processes overtaking the structures, just as earth processes overtake the bodies inside. These green roofs also serve to mitigate storm and grey water, thereby emphasizing the sustainability of human composting.

Building 1: Body Preparation House

When a body arrives for composting, it's transportation vehicle parks at the front of the building and the bodies are brought to the preparation house for prep and placement in the vessel. People meet out front and walk the vessel in procession, into the main building. Preparation of the body is deliberately given a separate space to provide privacy to the deceased and their families, and to make the main facility more welcoming for field trips and tourism (Figure 21, 22).

Figure 21. Will Devault-Weaver, Body Preparation House, (2020).

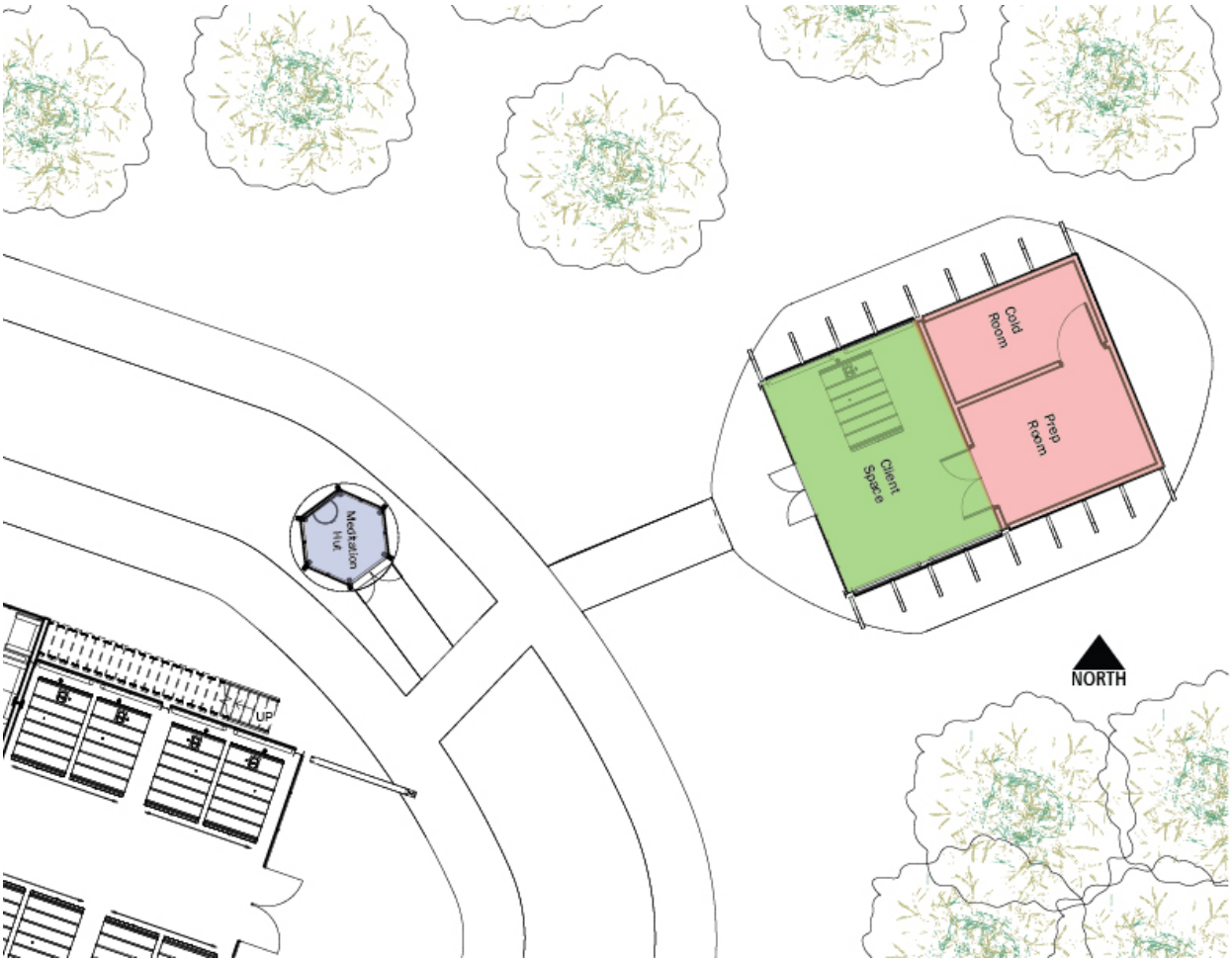

Figure 22. Will Devault-Weaver, Body Preparation House Plan, (2020).

Building 2: Composting Center

Figure 23. Will Devault-Weaver, Composting Center, (2020).

Exposing some of the vessels to view from the main street N 36th, celebrates the facilities function and creates some intrigue to draw people in (Figure 23). Spaces are informed by the New Understanding of Death, in addition to preparation/housing/extraction requirements for compost vessels, and of course, the experience of the bereaved (Figure 24). Within, the integration of modern technology as an interface between the living and the dead is used to facilitate that connection, and speaks to the idea of ancient processes in the modern age (Figure 25).

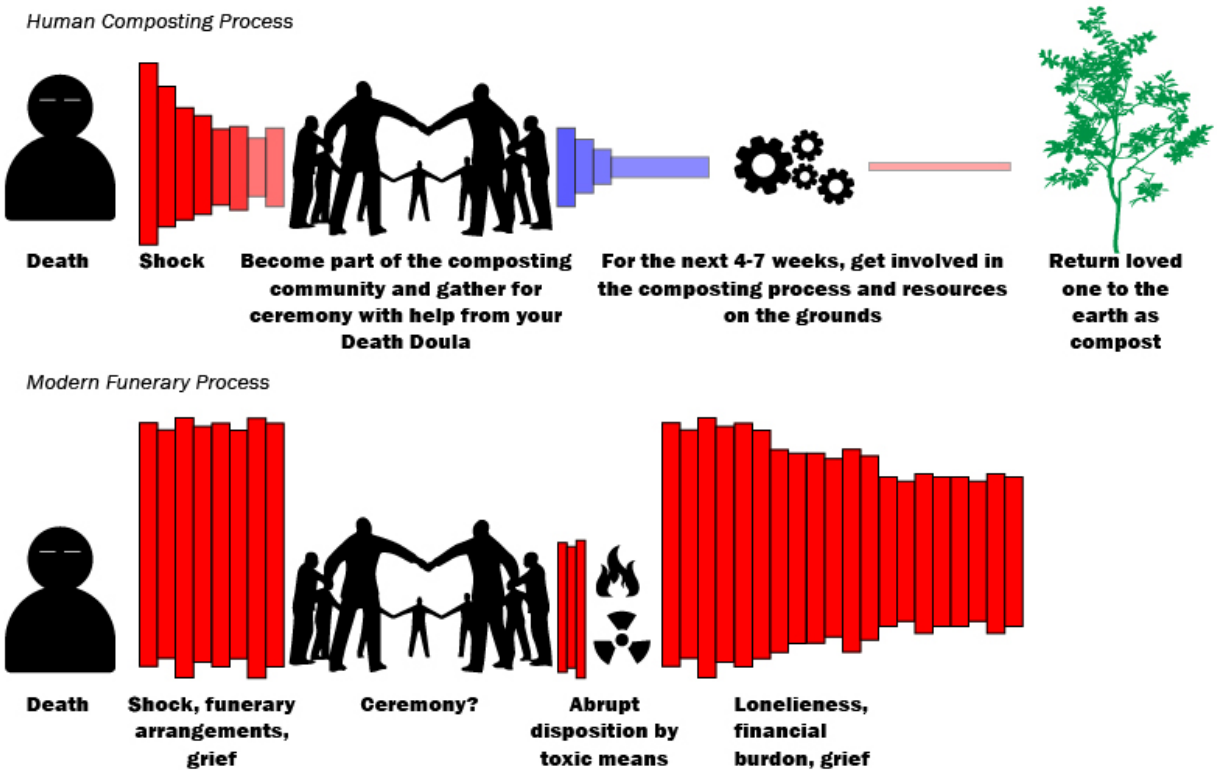

Figure 24. Will Devault-Weaver, Ideal function of composting process and its facility compared to popular modern methods, (2020).

Even if you are single, no friends or family but the one you just laid to rest; you can come to the center and engage in community by mixing in the same space with the vessels of yours and others loved ones surrounding. People can interact with their family's vessel by activating the digital interface system in front of the vessels. By logging in and executing a command, an individual has the power to make a vessel rotate, thereby giving them the ability to help their loved one compost (Figure 25). If a person would like to be on the grounds but in a private space, this can also be accommodated via use one of the four meditation huts made available exclusively to those who have purchased services at the compost center.

Adjacent to the mixing space is the office of the Death Doula who helps plan funerary services, and can provide counseling if requested. There is ample square footage in that Mixing

Space for a service, or anywhere on the grounds including the rooftop deck. When the compost is ready to go to the location the family has picked out, which could be a national park, land preserve, or some other meaningful location, transportation backs into the parking lot at the northwest corner of the campus and vessels are wheeled out the west entrance. Some of the compost from generous donors nourishes the site, the rest goes to those predetermined locations. (Figure 26).

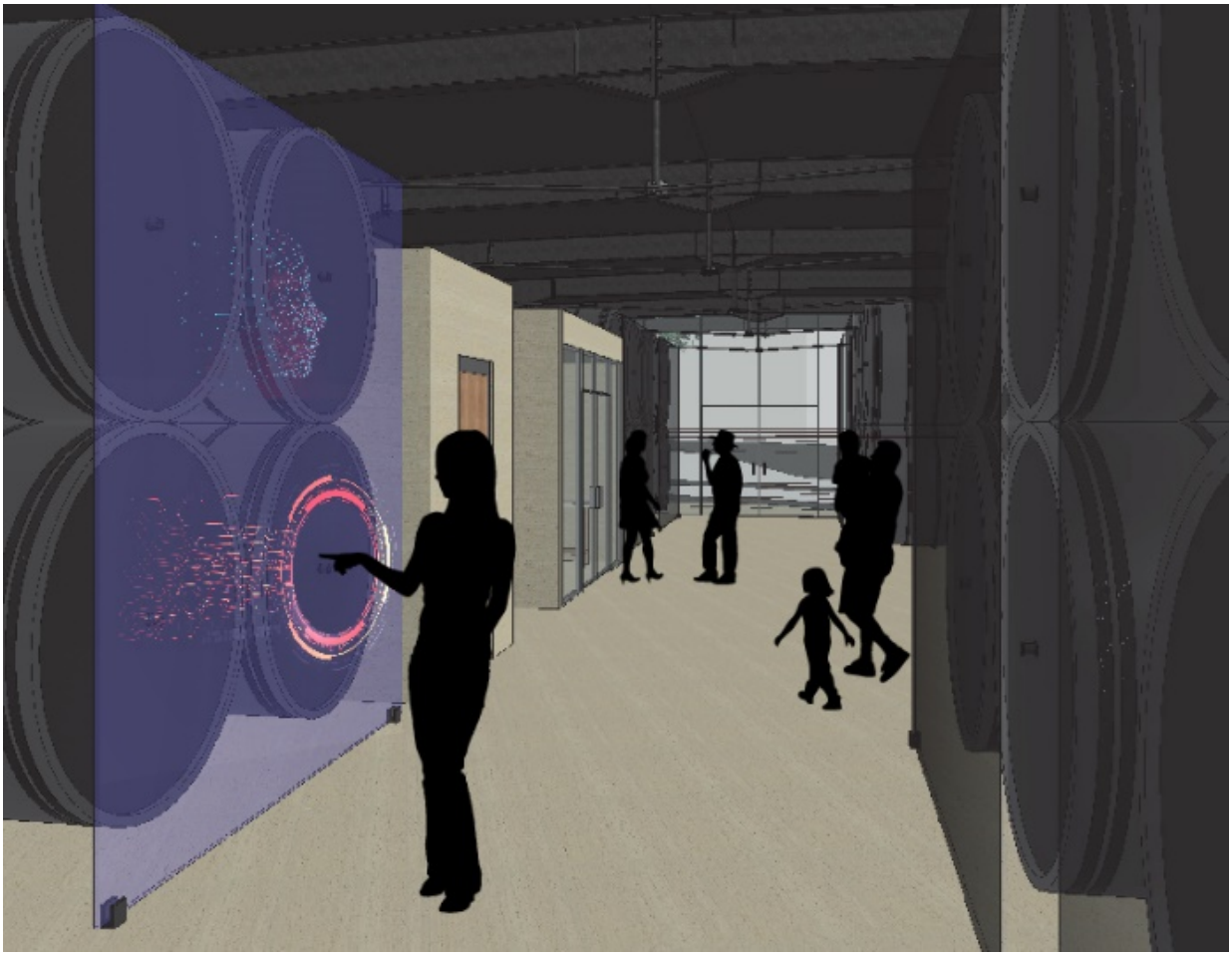

Figure 25. Looking into Community/Mixing Space from West Vessel Wing, (2020).

Figure 26. Will Devault-Weaver, Composting Center Plan, (2020).

Conclusion

Human composting is coming. We must respond to this technology with a new mindset surrounding death, and a new architecture. The new architecture must be guided by the context of its site, both historic and modern, and reflect the characteristics of the death-services offered inside. It should also create spectacle, add value to the neighborhood, and respond to the needs of a new generation of funerary clients.

At the same time, the funeral business needs to adapt to keep their occupation alive. Acknowledging the fact that the industry has already changed to offer cremation, the funerary business needs to find new ways to become competitive as demand continues to shrink for

current offerings. If employed in the right way, human composting is a technology that can solve these problems, and provides an avenue for architects and planners to design ecologically.

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[i] Although the summary of laboratory studies on the Recompose website report that the time necessary to reach the highest state of decomposition is seven weeks, the FAQ section of their website claims the process takes 30 days.