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Green Burial: The Natural Way to Go

Death is a touchy subject. It seems intuitive that such an inevitable process as dying would be incorporated into our awareness that we are connected to the natural world, and yet in America, our fear and uncertainty of death discourages its prevalence in our culture. Such aversion of death tends to limit our investigation into post-mortem practices. Many people do not realize the wide range of possibilities open to them concerning the disposal of the physical body after death. In most circumstances, families of the deceased leave the body to be dealt with by morticians and cemetery workers who constitute the $20 billion dollar mortuary industry[1]. While in many ways it might seem natural to let the funeral home professionals deal with the disposal of the human body, today's standard burial practices can result in significant environmental detriments. In light of this information, I encourage readers to include natural, "green" burial in their funeral and burial considerations.

The practice of green burials first was initiated in 1988 with the establishment of Ramsey Creek Cemetery in North Carolina. The 33-acre site welcomed applicants who wished to have their bodies laid to rest in a pristine location without significantly disrupting the surrounding ecosystem[2]. A novel idea at the time, the concept garnered more and more attention as the years progressed. Eventually, in 2005, the Green Burial Council (GBC) was founded by Joe Sehee[3]. The GBC now serves as the sole entity that certifies burial sites and products as "green." According to GBC standards, a burial may only qualify as "green" if it "furthers legitimate environmental and societal

[1] "The Final Stop for Land Trusts"
[2] "Memorial Ecosystems"
[3] "Green Burial Council"

aims such as protecting worker health, reducing carbon emissions, conserving natural resources, and preserving habitat.[4]" Given that this is a fairly broad definition, the GBC provides several more specific stipulations that a burial must meet in order to become fully certified. These stipulations are shown in full on the GBC website[5]. The entire criteria are complex, but the basic concept of a green burial is fairly easy to understand. The most important aspects are that only biodegradable materials are used, toxic embalming fluids are omitted, and the deceased are buried in a scenic and natural area without the erection of a traditional burial monument.

By eliminating foreign, potentially toxic materials, green burial ensures that any certified green cemetery will remain in a natural state without incurring significant ecological damage. In fact, the unobstructed decomposition of the body will provide nutrients to the surrounding earth, acting as a fertilizer for future growth. Not only does such a process benefit the environment, it appeals to many individuals who find comfort in the knowledge that their death will advance other life cycles.

Today, most traditional cemeteries require that caskets are placed in cement vaults to prevent the ground above the casket from settling as the coffins decompose. This practice reduces cemetery management costs and prevents headstones from becoming skewed. However, cement vaults are made of 1.6 tons of reinforced concrete and inhibit the natural decomposition of the corpse[6]. In addition, since the cement industry is the most energy intensive of all manufacturing industries, this practice has significant climate change impacts.

Modern caskets are not made for efficient decomposition. Rather, nearly all of them are constructed of metal and treated wood, both of which require decades to fully decompose[7]. It may

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[4] Ibid

[5] I encourage all readers to visit the Green Burial Council's website at www.greenburialcouncil.org. Green burial standards and much more can be found there. A few minutes of perusing on this site will give you all of the information on green burials you could possibly want!

[6] "Green Burial Council"

[7] Fun fact: When the first sealed coffins were made, several of them exploded due to pressure caused by anaerobic decomposition. The problem has since been resolved.

seem sensible to keep treated materials and a formaldehyde infused body enclosed within a concrete container, but the vault does not prevent hazardous effluents from seeping into the surrounding soil due to the porous nature of cement. In fact, the reinforced concrete itself may contribute to the toxicity of a traditional burial. In a study by the World Health Organization in 1998 on the ecological impacts associated with standard cemeteries, researchers asserted that "the quantity of decay products from buried people and wood, fabrics and plastics used in coffins is directly influenced by the age and number of the human corpses decaying in the cemetery at any one time. Ideally, coffins should be made of materials that decompose rapidly and do not release persistent chemical by-products into the environment[8]." In order to avoid such chemical by-products, coffins made for green burial are constructed of untreated pine or another comparable wood, allowing the body and coffin to decompose compatibly, leaving behind only a nutrient-rich soil after 20 year's time[9]. People may also choose to be buried in a shroud made of a burlap-like material, which decomposes even more quickly than wood. Rather than using a traditional polished headstone, green burial candidates often choose to have their life memorialized with a natural monument, such as a tree or a native rock. This practice further reduces the amount of foreign material introduced to the grave site. As mentioned above, the density of bodies in a given cemetery is also correlated with the health of the surrounding ecology. A typical cemetery site contains up to 1000 bodies per acre, while green cemeteries generally do not exceed 100 bodies per acre[10]. Green cemeteries, with their lower body densities have a greater natural capacity for decay and decomposition processes.

The embalming of bodies is perhaps the most environmentally detrimental practice involving burials. Embalming is a process in which two gallons of formaldehyde-based preservation

[8] Ucisik and Rushbrook, "The Impact of Cemeteries on the Environment and Public Health"
[9] Bodies lose all moisture to the surrounding earth in 6 weeks, soft tissue fully decays in two years, and bones decompose after 20 years. - "Green Burial Council"
[10] Stephen F. Christy, "The Final Stop for Land Trusts"

fluid is pumped into a corpse in order to maintain the deceased's appearances for public viewing[11]. The aim of an embalmer is to make the body look peaceful, as though the individual were sleeping rather than dead. This is meant to take the edge off of death and to allow loved ones to say goodbye to the person they have known. Embalming also allows the burial process to be prolonged, enabling friends and family to plan ahead for the viewing and funeral ceremonies. There are certainly benefits to this system, but embalming practices are ultimately toxic and unnecessary. A study conducted by the Journal of the National Cancer Institute proves that formaldehyde is a carcinogen, stating that those who have worked in the mortuary industry for a substantial period of time have a higher risk of contracting myeloid leukemia[12]. It isn't only embalmers that are at risk. When an embalmed body decomposes, formaldehyde is released into the surrounding soil, allowing for contamination of potable water due to seepage through the soil.

Lynn Roberts Reed, owner of Knowlton Hewins Roberts Funeral Home and Cremation Services in Winthrop, Maine, acknowledges the dangers of embalming. However, while Lynn is eager to employ a non-toxic embalming method, she has yet to find an alternative preservation fluid that works as effectively as formaldehyde. Today, there is only one embalming fluid that is certified as "green" by the GBC, though hopefully that number will increase as green burials become more popular.

Coffin-maker Chuck Lakin of Waterville, ME encourages families to consider freezing the body as an alternative preservation method. As co-founder of the website "Last Things: Alternatives at the End of Life," Chuck has plenty of experience consulting with mourning families about body disposal methods[13]. He states that decomposition will not take place until six hours after a body is

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[11] Stephen F. Christy, "The Final Stop for Land Trusts"

[12] Hautmann et al., "Mortality From Lymphohematopoietic Malignancies and Brain Cancer Among Embalmers Exposed to Formaldehyde"

[13] Check out "Last Things" at www.lastthings.net. The website outlines alternative burial methods, and educates readers about their post-mortem options rather than compelling them to take a particular route.

taken from the freezer, leaving plenty of time for a viewing service. However, Lynn worries that keeping a body on ice for too long could become problematic. At her funeral home, bodies are frozen to prepare for embalming, and while the freezing certainly postpones decay, internal decomposition processes are still taking place at a relatively quick rate. Therefore, Lynn suggests that a green burial should take place soon after the death of the individual.

Prior to the Civil War, embalming was a non-existent practice except in the realm of Ancient Egypt. In colonial America, when a family member passed the body would be propped up in the corner for a day or two as family and friends came around to say goodbye. The body would then be disposed of, either in a local cemetery or on the property of the deceased. Death was very much a part of life, and families and neighbors would take sole responsibility for the disposal of their loved one's body.

During the Civil War, soldiers were often killed far from their homes and therefore their families would not have the opportunity to say goodbye to the body in person. This all changed when Dr. William Beatty pickled the body of a young naval officer so it could be returned to his family. Embalming was derived from this act, and as medicine began to advance, so too did the mortuary industry. Disposal of corpses became a much more clinical and removed process, leaving families to mourn as professionals prepared and disposed of their loved ones. This cultural shift propelled the mortuary industry to reach the level of success that it has today[14]. In Chuck Lakin's experience, it is still the case that the "majority of the population of the US does not want to talk about the [dying] process." Chuck asserts that the only reason the mortuary industry exists is because they provide the one service that families cannot do on their own: embalming.

Cremation, another popular form of burial, can also be evaluated for its "environmental friendliness." Cremation now accounts for 75 percent of all funerals that Lynn's funeral service

[14] Stephen F. Christy, "The Final Stop for Land Trusts"

performs. Incinerating a body allows one's ashes to be spread in scenic, meaningful areas, or be used in creative ways, such as in "reef balls" and jewelry[15]. Because it takes up little to no cemetery space, cremation is thought to be a very ecologically friendly process. Unfortunately, this isn't entirely the case. While cremated remains do not pollute the environment directly, the process required to incinerate a human body to a fine ash is very energy intensive. The burning takes multiple hours at high temperatures and uses up to thirty gallons of propane per body[16]. Additionally, if the corpse has been embalmed for viewing purposes or has any mercury fillings or other such toxic contaminants, those compounds are released into the atmosphere along with a significant amount of carbon dioxide.

Chuck Lakin and his associates at "Last Things" advertise on their website a method known as "alkaline hydrolysis," a cremation alternative that uses 10-15 percent of the energy used in cremation. However, alkaline hydrolysis is currently legal in only 13 states, and there are very few facilities available for use, including only one in New England.

Green burial has ecological merits when compared to standard burial methods. However, the limited number of local green cemeteries could prove to be a major obstruction to those who wish to be buried naturally. As of now, there are only two green cemeteries in the entire state of Maine. Cedar Brook Burial Ground was the pioneer green burial site in the state, founded by Peter McHugh in Limington, Maine. Peter has since passed and been buried within the Cedar Brook Burial Ground, but the 3.5 acre cemetery is still operating under the private ownership of Joyce Foley, Peter's wife. I had the opportunity to speak with Joyce about her experience with the cemetery, and I only heard positive remarks. "The way we dispose of our deceased is definitely the best way for the earth," said Joyce after explaining her cemetery management methods. Joyce works

[15] Grave Matters. Reef balls are made of cement infused with one's ashes. The ball is dropped into the ocean above an existing coral reef and provides habitat for coral and other marine life.
[16] Stephen F. Christy, "The Final Stop for Land Trusts"

diligently to provide a satisfying experience for her customers. She monitors her land to ensure that the green burial process is up to code. While a lot of work has been put into the cemetery, Joyce and Peter were able to legalize their land as a burial ground fairly easily. The state of Maine has few standards that a burial site must meet. All someone must do to legally bury a body on their own property is make sure that the corpse is at least 250 feet from a potable water source, send in cemetery plans to the town, register with their local town registration office, and survey the land being used. Thus, with the right resources, a new green cemetery could be established with few legal roadblocks.

Ellen Hillis, founder of Rainbow's End Green Cemetery in Orrington, Maine, was motivated to create a green cemetery for reasons other than simply providing a natural area for people to be buried. Inspired by an article about Ramsey Creek in AARP Magazine, Hillis realized that she could utilize a cemetery as a conservation strategy. By creating a cemetery, she guaranteed that her ten acres of land would be protected in perpetuity from development since Maine laws prevent future construction on a burial site. Furthermore, she could use the funding from the burials to maintain the property[17]. Ellen Hillis undertook this endeavor as a private landowner, but conservation agencies such as the Mount Grace Land Trust and the Georgia Piedmont Land Trust have chosen to use green cemeteries as a source of funding for their organization. Not only is green burial an effective fundraising opportunity for conservation organizations, it also provides a cost-effective method of burial for families who have lost a loved one. According to 2004 statistics, standard funerals cost anywhere between $6,500 and $10,000, and the price has only risen since then[18]. Traditionally, families pay for a casket, embalming, a beautician, attire for the deceased for a viewing, a viewing service, the funeral service, a hearse to transport the body from place to place, a plot of

[17] Harris, "Grave Matters - A Journey Through the Modern Funeral Industry to a Natural Way of Burial: A Natural Cemetery Preserves a Small Green in Maine"
[18] Stephen F. Christy, "The Final Stop for Land Trusts"

land in a cemetery, expenses for digging the grave, a cement vault and associated labor costs, a headstone, a written obituary, and floral arrangements. Many of these expenses could be reduced or eliminated with green burial, leaving an average cost of $2,000 per green burial (highest estimate currently $5,000)[19].

While many families are willing to pay large sums to ensure that their loved one has a fitting funeral, alleviating financial pressure in times of mourning is certainly a benefit of green burial. Additionally, if the burial takes place on a conservation property, families can find solace in the knowledge that their funeral expenses are supporting land conservation work in their communities.

The Kennebec Land Trust (KLT) is considering a green cemetery initiative. Such a project would require a substantial amount of time and commitment, but if an appropriate site were found in the near future, KLT is willing to evaluate the feasibility of partnering with a private or public entity to create and manage a green cemetery. Like Ramsey Creek, funeral expenses from the green cemetery could be dedicated to cemetery management and future conservation projects. The burial process would still be handled by willing funeral homes, but the service would take place soon after death, allowing the embalming process to be skipped.

Siting is also an important consideration, for certain landscapes are better than others for burial sites. Warm, acidic soil is preferred to aid in neutralizing any potentially harmful bacteria found in the buried body. The soil should also be well-drained, yet not too coarse or large-grained so as to prevent rapid seepage into groundwater[20]. According to the Green Burial Council, the best soils for burial are "well drained soils with some clay content to absorb organic compounds, and an active biological presence of bacteria are ideal for promoting efficient decomposition. This allows

[19] Stephen F. Christy, "The Final Stop for Land Trusts"
[20] Ucisik and Rushbrook, "The Impact of Cemeteries on the Environment and Public Health"

for aerobic decay, followed by anaerobic decay, resulting in rich soils high in nitrogen content and organic compounds.[21]"

Fortunately, most decomposition products found naturally in the human body are almost identical to those found in soil, so the risk of contamination should be fairly low. Dave Roque, Maine State Soil Scientist, provided information that further supported the environmental merits of green burials. Dave noted that the biological activity of the soil decreases with depth, meaning that decomposition will be slower the deeper the burial. A standard grave site is approximately six feet deep, well below where biological activity normally occurs, while a green cemetery site is only three and a half feet deep, allowing for more biological activity, yet deep enough to be beyond the smell range of scavenging animals[22]. Dave also mentioned that areas with bedrock close to the surface can be contaminated more easily due to quick permeation of seepage water into bedrock fractures and then into the groundwater table. A green cemetery should be located above a relatively deep water table to eliminate risk of potable water contamination. Density of root systems should also be investigated when researching a potential green cemetery site, since digging through tree roots can be both challenging and impactful to tree health.

KLT could also easily link a green cemetery project to its ongoing Local Wood WORKS initiative. Most green caskets are made of pine, an abundant forest resource in Maine. Local woodworkers also could supply locally harvested and crafted coffins[23], and area funeral homes could ensure that every aspect of the funeral goes smoothly. A KLT green cemetery site could lead an investigation into the efficacy of compost burial, a method suggested by Dave Roque that quickens the rate of decomposition and eliminates any malodor or threat to the groundwater table as leachate is absorbed by the compost material. Compost speeds up the decomposition process by supplying

[21] "Green Burial Council"
[22] Ibid
[23] Take a look at Chuck's creative coffin designs at www.lastthings.net

large quantities of microbes. While KLT seems well positioned to create a beautiful community green cemetery, there are still many factors to consider before the Trust initiates a green cemetery project. In order to develop and maintain a functioning green cemetery, KLT must first establish a partner who would be willing and able to run a cemetery. Additionally, a new, appropriately sited property must be purchased or donated along with sufficient funding to start a green cemetery. Community support, member involvement, local interest in green burial, and general logistics are also factors that must be considered prior to the creation of a green burial site. Despite potential roadblocks, it seems as though the Kennebec Land Trust is poised to add to the growing momentum of green cemeteries nationwide by creating a picturesque green burial site.

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