### Title
Life of the death system: shifting regimes, evolving practices, and the rise of eco-funerals




### Journal
Sustainability Science Practice and Policy, 19(1)

### ISSN
1548-7733



### Author
Slominski, Elena M



### Publication Date
2023-12-08

### DOI
10.1080/15487733.2023.2243779

SUSTAINABILITY: SCIENCE, PRACTICE AND POLICY
2023, VOL. 19, NO. 1, 2243779
https://doi.org/10.1080/15487733.2023.2243779

Taylor & Francis
Taylor & Francis Group

RESEARCH ARTICLE

OPEN ACCESS Check for updates

# Life of the death system: shifting regimes, evolving practices, and the rise of eco-funerals

Elena M. Slominski

School of Social Ecology, University of California, Irvine, Irvine, CA, USA

**ABSTRACT**

Despite growing awareness of our environmental footprint in life, the ecological impact of death is rarely considered. Yet conventional funeral practices pose a risk to both human and environmental health by polluting the earth and contributing to climate change, thus calling for more sustainable methods of body disposal. Although various eco-funeral options have been gaining momentum in the United States, they have not yet been adopted into mainstream culture. Drawing on empirical data from participatory site observations and semi-structured interviews with funeral professionals, this study examines the factors that are driving or hindering widespread uptake of eco-funerals in the country. A multilevel panarchy framework is then used to situate these evolving funeral practices within the broader historical context. This article offers two important contributions: 1) it adds a novel frontier to the understanding of sustainable social practices by exploring death practices, and 2) it furthers theoretical and practical insights into the dynamic interactions between micro-level practices and macro-level developments within system transitions.

**ARTICLE HISTORY**
Received 13 February 2023
Accepted 28 July 2023

**KEYWORDS**
Eco-funerals; green burial; natural organic reduction; panarchy model; regime shifts; social practices; system transitions

## Introduction

Death awaits us all. Yet what happens after we draw our final breath remains largely unseen and unspoken, hidden behind the opaque doors of hospital morgues and funeral homes. In the United States, the dominant postmortem customs of embalming, casketed burial, and cremation consume vast amounts of resources, contribute to climate change, and contaminate the soil, air, and water with hazardous pollutants. The 3.46 million annual deaths in the country (Xu et al. 2022) thus pose a substantial burden on the environment. The impact of funerals will surge dramatically in the coming years as 73 million baby boomers approach the end of their lives (USCB 2019). The urgency of this matter has been further compounded by the outbreak of COVID-19, which became the third leading cause of death in 2020 (Xu et al. 2022). With each new death, the environmental toll of funerals continues to grow. Is there a way of handling our current dead without compromising future life?

The norms, customs, and rituals around death in a society constitute part of what Kastenbaum and Aisenberg (1972) term a societal *death system*. Such a system prescribes the socially sanctioned practices around death for members of that society, such as the "right" way of grieving, the "appropriate" amount of money to spend on a funeral, and the "proper" ways of disposing dead bodies. These practices can vary widely between countries and cultures (Nordh et al. 2021). Although death systems can undergo decades of stability, they are not static. Given their socially constructed nature, funeral practices evolve alongside the socio-cultural and technological fabric of society (MacMurray and Futrell 2021). Thus, under certain circumstances, the culturally accepted ways of handling death in a society can change, as demonstrated by the gradual turn from burials to cremations over the past decades.

Recent years have also seen an upswing in old and new *eco*-funeral practices, including green burials, conservation burials, water cremation, and human composting. Despite their environmental benefits, these practices have largely remained outside of mainstream culture in the United States, raising a critical question that will be taken up in this study: What factors are driving or impeding the widespread adoption of eco-funerals? Drawing on empirical data from participatory site observations and semi-structured interviews with funeral

**CONTACT** Elena M. Slominski emslomin@uci.edu School of Social Ecology, University of California, Irvine, 5300 Social and Behavioral Sciences Gateway, Irvine, CA 92697, USA

professionals, this study investigates the factors that either are helping or hindering the uptake of eco-funerals in American society. The article then situates these developments within a broader historical context to illustrate the multi-level dynamics of change and stability in funeral practices. Finally, the outlook for a more sustainable trajectory in the death system is discussed.

## A grave mistake: the environmental impacts of "traditional" ground burials

Over the course of human history, 117 billion people have lived and died on earth, including the nearly 8 billion people alive today (Kaneda and Haub 2022). At some point, the Earth will run out of space for all those bodies (see Podoshen 2016). Indeed, several crowded regions in Asia have already exhausted land space to bury their deceased (Aveline-Dubach 2012). While many European nations reuse burial plots after a certain resting period (Nordh et al. 2021), the United States uses perpetual burial plots, thereby filling cemetery capacities more rapidly. Out of 171,450 designated burial places that permanently occupy land space in the country (USGS 2021), many are already full or abandoned (see Coutts et al. 2018).[1] Once graveyards reach their capacity, local developers must decide between expanding them or establishing new ones (Monaghan 2009). Allocating adequate space for both the living and the dead is especially challenging in densely populated urban areas (Bennett and Davies 2015).

Although cemeteries can offer restorative and even recreational spaces (Nordh, Evensen, and Skår 2017; Grabalov 2018), there are numerous reasons people may wish to avoid *living* near them, often leading to fierce "not-in-my-backyard" (NIMBY) resistance within communities (Bennett and Davies 2015). Cemeteries represent "a particular kind of landfill" (Fiedler et al. 2012, 96) that can contaminate the soil and groundwater, thereby posing potential health threats to nearby communities (Oliveira et al. 2013; Zychowski 2012). Every year, Americans bury more than 16.2 million liters of highly carcinogenic embalming fluid in the ground (Coutts et al. 2018), causing elevated levels of arsenic and formaldehyde in the soil (Fiedler et al. 2012; Zychowski 2012).[2] Other toxic substances in graveyard soil range from the varnish lacquered onto caskets (Canning and Szmigin 2010) to the vast amount of pesticides used for grounds maintenance (Fournier 2018). In addition, synthetic fibers such as polyester in the lining of the casket and in the clothing of the corpse can contain microplastics, leach toxic gases, and may take hundreds of years to decompose (Fiedler et al. 2012).

While Keijzer (2017) argues that the environmental impact of funerals does not warrant societal concern, these findings are based on Dutch funeral practices which differ significantly from American practices.[3] Although the environmental footprint of an individual's funeral may pale in comparison to their lifetime activities (Keijzer 2017), the aggregate impacts of 3.46 million funerals in the United States each year do warrant concern. Moreover, funerals can have far-reaching environmental impacts beyond their local community. From the global deforestation involved in the mass-production of hardwood caskets to the 1.45 billion kilograms (kg) of concrete used for cement burial vaults every year (Coutts et al. 2018; MacMurray and Futrell 2021), the full ecological impact related to the production, distribution, and material consumption of "traditional" American burials remains largely obscured.

## Going up in smoke: the environmental impacts of cremation

The practice of cremation has long been advertised as an environmentally friendly option since it avoids some of the ecological issues of "traditional" casketed burials. However, cremations carry a large carbon footprint due to the input of fossil fuels and the output of harmful emissions during incineration (Canning and Szmigin 2010).[4] The burning process takes two hours or more, operating at approximately 800°C and emitting between 115–150 kg of carbon dioxide ($CO_2$) per body (Herring 2019).[5] With over two million cremations in the United States in 2022 (CANA 2023), the average annual emissions from cremations exceed 250 million kg of $CO_2$, which could power 31,500 homes for a year, and would take 1.2 billion square meters ($m^2$) of forest every year to offset (USEPA 2023). While a single cremation equates to 620 km driven by an average gasoline-powered passenger vehicle, the total number of cremations in the country is equivalent to driving to the moon and back 1,300 times every year (USEPA 2023). The climate impact of cremations is expected to continue growing worldwide as many societies transition toward cremation over ground burials (NFDA 2022).

Beyond $CO_2$, the two-stage combustion process of cremation also emits other harmful gases, including nitrogen oxides (NOx), carbon monoxide (CO), sulfur dioxide ($SO_2$), polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/Fs), as well as harmful particulate matter (Herring 2019; Mari and Domingo

2010). When released into the atmosphere, these substances can pollute the air and bioaccumulate in the food chain, posing risks to human and ecological health (Mari and Domingo 2010). Mercury, which is commonly found in dental fillings of corpses, poses a particular risk due to its high toxicity and ability to travel long distances in the atmosphere (Monaghan 2009). Longitudinal studies have demonstrated increased rates of stillbirth and birth defects in communities near crematoria (see Mari and Domingo 2010).

After a body is burned, the remains are collected and pulverized into a fine dust ("ashes"), which contains not only the ground-up bone mass but also the scorched clothing and the container the body was burned in. As cremation is only a reduction process and not a final disposition method, the remains still require a permanent storage solution. If the urn is buried in a cemetery, it will take up land space, albeit less than a "traditional" grave. If the cremated remains are scattered in nature or in bodies of water, they may damage nearby flora and fauna due to their high pH levels and high sodium content (Herring 2019).

### *Pushing up daisies: the rise of eco-funerals*

In vivid contrast to conventional funeral customs in the United States, eco-funerals offer environmentally friendly alternatives that not only avoid harming nature but may even *restore* it. Although simple, environmentally benign burials have been practiced throughout human history (especially in Jewish and Islamic communities), the modern-day concept of *green burials* (also termed "natural burials") originated in the UK in the 1990s before taking root in the United States (Clayden et al. 2015). Green burials facilitate the natural decomposition of the body, thereby returning its nutrients to the Earth. Bodies must remain unembalmed, and only biodegradable materials may be placed into the ground (i.e., coffins made of pine, wicker, bamboo, or cardboard, and burial shrouds made of cotton or linen). No grave liners or burial vaults may be used. In lieu of commercial headstones, local rocks and native plants may be used to mark the gravesite. Green graves are typically dug by hand and are shallower than conventional graves (approximately one meter deep).[6] The increased oxygen and microbial activity at this soil level break the body down more efficiently, enriching nearby plants in the process (Herring 2019).

In 1998, the first conservation burial ground opened in Westminster, South Carolina, and in 2005 the Green Burial Council was established as a nationwide nonprofit organization that oversees, certifies, and advocates for the expansion of green burials and green cemeteries. Today, there are over 400 green burial grounds across North America, including fully natural burial grounds, hybrid burial grounds, and conservation grounds (NHFRE 2023).[7] Yet despite their environmental benefits, cost-effectiveness, and the psychological benefits of having a more healing, hands-on funeral experience (Herring 2019), green burials have not yet seen widespread adoption into mainstream American culture.

In recent years, several other eco-funeral options have emerged as well, including alkaline hydrolysis ("water cremation" or "aquamation") and natural organic reduction (NOR; "human composting"). Aquamation uses a liquid solution of water and alkaline substances to dissolve the soft tissue off the body in a pressurized vessel. Once the liquid is drained, the skeleton is pulverized into "ashes" just like with fire cremation. NOR uses organic materials (wood chips, straw, alfalfa) and microbes to accelerate the biological decomposition of the body inside a heated vessel. After 1–2 months, the body is transformed into nutrient-dense soil that can be used in a garden. Although the various types of eco-funerals have been gaining momentum and attracting increased media attention in recent years, they currently remain niche practices in society.[8] The great majority of Americans still opt for cremations or "traditional" casketed burials (NFDA 2022).

Table 1 offers an overview of conventional and green funeral practices, as well as the environmental and human-health concerns associated with each practice. To understand the multi-level influences that either hinder or facilitate the adoption, diffusion, and normalization of emergent eco-funerals, the following section introduces an integrative conceptual framework.

## Conceptual framework

Although an individual's death and funeral arrangements may seem deeply personal, funeral practices are inherently influenced by their socio-cultural milieu. This study thus takes a social ecological approach (Becker and Jahn 2006; Berkes, Colding, and Folke 2002) by embedding funeral practices within a wider context. To illustrate the dynamics of change and stability within the death system, the conceptual working model proposed in this article draws heavily on the panarchy framework (Gunderson and Holling 2002; Gunderson, Allen, and Garmestani 2022) and social practice theory (Reckwitz 2002; Shove, Pantzar, and Watson 2012; Tuomela 2002), while borrowing complementary concepts from the multi-level perspective

**Table 1.** Potential impacts on human health and the environment associated with conventional and eco-friendly funeral practices.

| Funeral practice | Materials/resources used | Environmental and human health impacts |
|---|---|---|
| Embalming | • Embalming fluid (contains formaldehyde, methanol, ethanol, and other chemicals) | • Groundwater contamination<br>• Soil contamination<br>• Occupational health hazard for morticians (carcinogen) |
| "Traditional" casketed burial | • Casket (wood/metal; synthetic lining)<br>• Headstone (granite/marble)<br>• Burial vault (metal/cement)<br>• Water for irrigation at cemetery<br>• Chemical pesticides at cemetery<br>• Machinery (backhoe) for grave digging | • Groundwater contamination<br>• Soil contamination<br>• Permanent use of land space<br>• Deforestation for caskets and cemetery space<br>• Resource-intensive manufacturing and distribution of caskets, headstones, and vaults |
| Fire cremation | • Container for burning (wood/cardboard)<br>• Cremation retort<br>• Fossil fuels for incineration | • Climate impact (115-150 kg $CO_2$ per body)<br>• Air pollution (toxic gases and particulate matter)<br>• Health risks (including birth defects) from contamination of air and food chain<br>• Ecological damage if ashes are buried or scattered |
| Green burial/ Conservation burial | • Biodegradable coffin (bamboo/wicker/pine/ cardboard)<br>• And/or biodegradable shroud (cotton/linen) | • Net-positive impact on environment<br>• Nourishes soil and plants<br>• May contribute to land conservation efforts (conservation burials) |
| Natural organic reduction (NOR; "human composting") | • Organic materials (wood chips, alfalfa, straw)<br>• Composting vessel<br>• Uses 1/8 of the energy compared to conventional funerals | • Net-positive impact on environment<br>• Produces nutrient-dense soil for use in garden or donated for land conservation |
| Alkaline hydrolysis ("aquamation" or "water cremation") | • Alkaline solution (95% water + 5% alkaline chemicals)<br>• Heated, pressurized vessel<br>• Water consumption (approximately 1,000 liters/cycle) | • Reduced environmental impact (75% smaller carbon footprint compared to fire cremation)<br>• Produces sterile effluent (safe for drain disposal) and ashes |

Note: Embalming is typically included before a "traditional" casketed burial and may also be included before a cremation, thus the impacts can be additive.

(Geels 2010, 2011, 2019). This nascent working model is intended as a useful tool for identifying and describing cyclical patterns in the death system and may prompt further research and theoretical developments.

In this model, the death system is divided into multiple nested levels, from individual funeral practices at the micro-level to the broader socio-cultural and historical settings in which these behaviors occur. The framework thus integrates funeral *practices* into the death *system*, as systems can exist and transform "only through the flow of practices… which comprise them" (Watson 2012, 492).[9] In other words, funeral practices and the death system co-evolve. Table 2 provides a brief overview of each level in the conceptual working model.

The *macro-level* sets the broad historical, socio-cultural, economic, and political stage. Factors at the macro-level that affect funeral practices include population demographics (e.g., the aging population in the United States), historical events (e.g., pandemics, wars), the economy, funeral laws, consumer markets, cultural beliefs and traditions, and available technologies. The *meso-level* is situated within the macro-level and represents the incumbent *funeral regime* (i.e., the normalized ways of handling death in a population).[10] The regime encompasses places (e.g., funeral homes, cemeteries), actors (funeral professionals, customers), materials (e.g., caskets), as well as the dominant societal

**Table 2.** Nested levels in the death system.

| Nested levels in the death system | |
|---|---|
| MACRO-LEVEL | Exogenous factors that influence the funeral regime (e.g., socio-cultural context, historical events, economy, population demographics, available technologies, consumer markets, infrastructure, politics, traditions, laws, environments). |
| MESO-LEVEL (REGIME LEVEL) | The normalized ways of handling death in society, largely dictated by the professionalized funeral industry. Changes at the macro- and micro-levels may shift the funeral regime. |
| MICRO-LEVEL | Individual/familial funeral practices that collectively constitute funeral norms in a society. |

Note: This table offers an overview of each level in the death system, from the individual funeral practices (micro level) that collectively comprise the funeral regime (meso level), to the wider socio-cultural environment (macro level) in which the regime exists.

funeral practices (embalming, "traditional" burial, and cremation). The *micro-level* embodies individual funerals, which can be seen as the disaggregated practices of the meso-level. In other words, individual funerals collectively constitute the funeral regime, like a thick rope woven together of individual strands. Hence, the funeral regime is continuously formed and reformed both by conditions at the macro-level *and* by behaviors at the micro-level.

Under stable conditions, a regime can persist for decades, locked in place by external controls (e.g.,

institutions, regulations; see Geels 2019) and internal mechanisms (e.g., social conventions including religion, social norms, and family traditions). In such a "conservation phase" (Gunderson and Holling 2002), societal funeral norms are kept intact through continuous repetition of these practices at the micro-level (Figure 1, Block A). When people make funeral arrangements, they tend to follow social conventions, thereby perpetuating these norms (see Tuomela 2002). For example, if most people within a family, church, or community choose a "traditional" casketed burial with embalming, the other members typically orient themselves around this norm as well. Each funeral that follows this mold further strengthens the fabric of the regime. In this way, the funeral regime is continuously upheld by the repetition of conventional funeral practices.

Nonetheless, the funeral regime can also transform over time, adapting to changes at the macro- and micro-levels. How and why such *regime shifts* happen depends on the speed (rapid or slow), the direction (top-down or bottom-up), and the result (temporary disruption or permanent modification). At the macro-level, sudden external shocks (Geels 2019) such as wars, economic crashes, or disease outbreaks may trigger a rapid "release phase" (Gunderson and Holling 2002), causing major disruptions to the funeral regime (Figure 1, Block B). The ensuing "reorganization phase" (Gunderson and Holling 2002; Figure 1, Block C) may produce temporary changes in funeral practices, like the emergency storage of bodies in trucks and pop-up morgues during the COVID-19 pandemic, before returning to the former status. Alternatively, this phase may also generate *permanent* changes in funeral practices, such as the use of embalming following the Civil War in the United States (1861–1865), potentially giving rise to a new funeral regime.

Regime shifts may also emerge slowly, causing the death system to gradually evolve in a new direction. For example, former burial conventions began unraveling with the incremental adoption of cremation, thereby loosening the threads of the previous regime

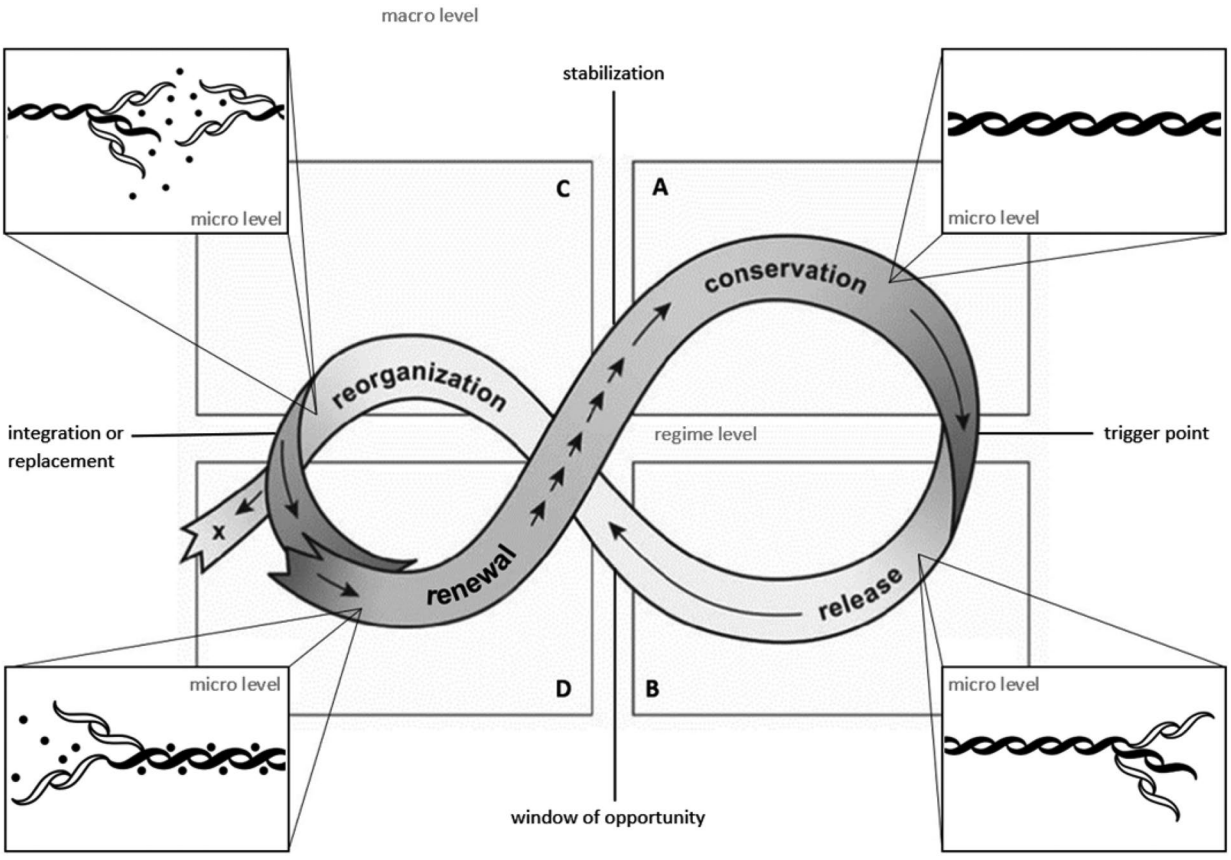


**Figure 1.** Dynamics of change and stability in the death system (adapted from Gunderson and Holling 2002, 34).

Note: In this model, the funeral regime undergoes various phases of transition, shaped both by the micro-level practices which constitute the regime, and by the macro-level environment in which it exists. Block A shows the funeral regime in a stable conservation phase, held intact by the continuous flow of conventional funeral practices at the micro level. In Block B, the regime is disrupted by macro- and/or micro-level events, causing societal funeral practices to fray, and opening a window of opportunity for alternative practices to flourish. During the reorganization phase (Block C), the regime is temporarily or permanently restructured, potentially integrating niche (non-mainstream) practices into the system. Block D illustrates the renewal process, in which the revised regime is reinforced and stabilized, either as a total replacement of the former regime or as a blended regime that combines old and new elements.

(Figure 1, Block B). As cremation continued spreading among growing "communities of practice" (Lave 2019) at the micro-level, it incrementally reorganized the regime (Figure 1, Block C). Some practices (such as green burials) originate at a niche-level outside the dominant funeral regime. However, for niche practices to be integrated into the regime, the system must have already undergone a disruption (Figure 1, Block B), opening a "window of opportunity" for novel practices to flourish and potentially reorganize the regime (Geels 2010).

During the reorganization process (Figure 1, Block C), new practices are either woven into the extant system alongside old practices, resulting in a *blended regime* (like cremation being offered alongside casketed burials), or, alternatively, a novel practice may create an entirely new *replacement regime* (like computers replacing typewriters). The newly configured regime then undergoes a phase of accelerated growth during which the novel practice continues spreading among expanding networks at the micro-level. With increased uptake of a new practice, it is progressively normalized in society, thereby reinforcing and stabilizing the new regime (Figure 1, Block D). Meanwhile, the macro-level also adapts to the new regime over time (Geels 2019), for example by passing new funeral laws, thus bolstering the system. The new regime may then exist in a stable "conservation phase" for many years before collapsing again, triggering another "adaptive cycle" (Gunderson and Holling 2002).

This section has sketched out a rudimentary conceptualization of the principles and mechanisms that construct, sustain, and restructure the death system, including the continuous flow of funeral practices as well as internal and external triggers that may redirect or reconfigure the funeral regime. Approaching this topic with a multi-level framework allows for contextual analysis of funeral practices, the funeral regime, and the broader social, cultural, and environmental context in which they co-evolve.

## Materials and methods

### Study design

To gain an in-depth understanding of funeral practices, this study used a multi-method, qualitative approach, drawing on participatory site observations and semi-structured interviews with funeral professionals. Such methodological triangulation (Seale 2018) allowed for more robust data collection while also helping to ensure the validity of the findings. Site visits involved multi-hour observations and conversations, which allowed for immersive engagement in the field (O'Leary 2017) and granted behind-the-scenes access to morgues and other spaces typically hidden from public view. These "micro-ethnographies" (see Bryman 2012) were substantiated through existing literature.

### Fieldwork setting

Fieldwork was conducted at two separate time points (Summer 2019 and Winter 2019–2020) primarily in the state of North Carolina in the United States, with supplementary visits to the neighboring states of Virginia and South Carolina. The southeast region of the country offered a diverse setting for the study of funerals, from deeply rooted religious traditions to state-of-the-art eco-funeral sites, including the first conservation burial ground and the first full aquamation facility in the nation. Site visits were conducted at two funeral homes (including access to a crematorium, an aquamation chamber, and the embalming rooms at both locations), a small woodland-burial ground, a hybrid cemetery with conventional graves and a wooded green burial area, two conservation burial grounds, and a funeral history museum. In addition, participatory observations at two real funerals (a "traditional" casketed burial at a cemetery and a conservation burial in a forest) offered rich insights into the proceedings of both funeral types.

### Participants

Six of the twelve interviews were conducted in conjunction with site observations at funeral homes or burial grounds and two took place via Skype or Zoom. Apart from one funeral "client," all other respondents dealt with funerals professionally, including among them two funeral directors, a cemetery manager, a home-funeral guide, and the manager of a casket company. Most informants worked with eco-funerals in some capacity, including some hybrid settings that offer both eco-funerals and traditional services. The initial fieldtrip in the summer of 2019 served primarily for networking with vital gatekeepers who then recommended further connections through snowball sampling (Seale 2018). The sample for this study was thus purposive, with each informant carefully selected for their particular expertise and potential contribution to the project.

### Procedure

During site visits, data were collected via field notes, audio recordings, and photographs. An interview guide served as a rough outline for the interviews.

Questions were posed in a value-free and open-ended manner to allow informants to share their own thoughts. With the explicit written consent of each respondent, interviews were audio recorded whenever feasible, and later transcribed for analysis. The program Nvivo was used to perform both inductive and deductive thematic content analysis.

### Ethical considerations

In adherence with the research protocols at the University of Oslo, this project was approved by the Norwegian Center for Research Data (NSD) before beginning data collection. All interviewees received a printed information sheet about the project and signed a consent form. All photographs and audio recordings were produced with the explicit written consent of informants, and all identifying information was erased. To ensure anonymity, the names of respondents have been omitted from this article.

## Results

The following section presents the main findings from the interviews and micro-ethnographies, revealing a non-exhaustive list of the psychosocial, institutional, legal, cultural, and environmental factors that are currently driving or hindering the adoption of eco-funerals.

### Fear, avoidance, and misinformation around death

During the fieldwork, several informants commented on the paradoxical relationship Americans have to death. On one hand, Americans voluntarily face daily exposure to death in movies, videogames, and popular murder series on television. Thoughts of one's *own* mortality, on the other hand, are suppressed at all costs (see Becker 1973 on the universal "denial of death"). Given the unsettling nature of the task, many people avoid preparing for their funeral in advance, instead leaving the responsibility to their family when the time comes. One of my informants who has spoken with dozens of people about their final wishes stated that a common response to the topic is "well, I never really thought about it…gee, I guess just cremate me."

In the absence of clear directives, family members must make onerous funeral decisions while emotionally distressed (see Canning, Szmigin, and Vaessen 2016; Canning and Szmigin 2010). Because families often lack awareness of their rights, options, and the laws around funerals (Kopp and Kemp 2007), they generally follow the standardized steps they assume must be taken after a death occurs, such as having the body immediately removed and taken to a funeral home. Yet there is no legal requirement to use a funeral home or funeral director in most American states.[11] If desired, families may legally keep the body at their own residence and care for it themselves (what is called a "home funeral"). Still, people commonly fear dead bodies and prefer outsourcing all the "dirty work" to professionals who handle everything "out of sight." This fear is partly due to widespread assumptions and misinformation about dead bodies, which often drive environmentally damaging funerary practices.

For example, many people falsely believe that dead bodies transmit diseases and that embalming reduces this risk. Contrary to this prevalent misconception, unembalmed corpses are not contagious. With basic hygiene measures in place, handling dead bodies does not pose a risk of infection or disease except in rare cases such as AIDS, cholera, or tuberculosis (Beit-Hallahmi 2012; WHO 2020).[12] Many people also assume that embalming is legally required. However, embalming is not mandatory except in particular cases (e.g., postmortem transportation across certain state lines in the United States). Nonetheless, many funeral homes require embalming through their own policies to protect their liability before open-casket viewings.[13] One informant lamented that people oftentimes fail to ask questions and simply assume that embalming is a public-health requirement.

Furthermore, many people believe that embalming and the use of vaults will permanently protect bodies from decaying. However, embalming generally keeps a body "fresh" only for a few days until the funeral (Fontana and Keene 2009), and no type of airtight container can permanently prevent decomposition. According to a funeral director I spoke with, "perfect preservation *can* happen, but the general public thinks it *always* happens." If it is necessary to postpone the funeral, refrigeration can preserve a body for several weeks without embalming. Still, many people choose embalming because it has become "the normal thing to do." As one informant noted, "people like to do what other people do," pointing to the strong influence of social norms on funeral behaviors.

### Embracing eco-funerals

Another pervasive barrier to the widespread adoption of eco-funerals is that most people are not even aware of these practices. Throughout the fieldwork, the lack of education about alternative funeral

options was a frequently-cited reason why eco-funerals have not become more mainstream yet. People generally follow the social norms of embalming, casketed burial, and cremation because these are the practices with which they are familiar. However, when they do learn about eco-funerals, they are often intrigued. The manager of a hybrid cemetery, which offers both conventional and green funerals, shared the following reflection during our interview.

> I find that when people know about green burial, a lot of people like it; a lot of people…thought their only options were cremation or embalming [and] casketed, vaulted burial. [If] they know there's an alternative that's more Earth-friendly than either of those, then they choose to do this.

She added that "some people just like the idea of going back to the earth naturally." Hence, an eco-funeral "appeals to people who really love nature and those who are more environmentally conscious." Several other informants echoed this sentiment, pointing to the importance of place attachment in choosing a final resting spot. Green burials and especially conservation burials in the woods may appeal to those who wish to be visited and remembered in a natural, peaceful setting. After all, as one respondent poignantly noted, "the legacy we leave behind can also include how we treat the environment."

Another distinctive feature of green burials is their hands-on nature, which invites more active participation in the funeral, for example by hand-digging the grave, decorating the coffin with personalized messages, or planting native plants around the gravesite. In addition, eco-funerals are frequently combined with home funerals, in which the family prepares the body for the burial themselves (see Shove, Pantzar, and Watson 2012 on *bundled* practices). While the idea of handling a dead body seems outlandish and repulsive to many people today, this was the norm throughout most of history. One informant who serves as a home-funeral guide described the step-by-step process of how to clean, dress, and cool a body. Other respondents who have been involved in home funerals shared countless stories of people who overcame their initial resistance and discomfort to actively engage in the burial preparations of their departed, finding it to be a positive, healing, cathartic experience. This is because slowing down, maintaining guardianship of the body, and participating in its care offers families a more intimate chance to say goodbye to their loved one.

The active engagement and the nature-based setting make green burials and home funerals particularly cathartic, creating a more healing space for grieving families. Nonetheless, the concept of an eco-funeral is still foreign to many people. Some may feel ambivalent due to the mental image of "being eaten by bugs." Yet after witnessing a green burial firsthand, people overwhelmingly express positive sentiments about the experience and oftentimes choose this option for themselves. One informant shared the story of a funeral guest who initially rejected the idea of a green burial for her friend, but after attending the woodland ceremony, she exclaimed with tears in her eyes, "this is the most beautiful service I've ever been to. This is what I want; this is what everyone should do." Other respondents shared similar stories of people approaching them after the ceremony saying, "I didn't know you could do this!" or, "I want my funeral to be this way." Experiential learning (see Lave 2019) thus plays a major role in the gradual spread of eco-funerals. The more people become exposed to eco-funerals, the more these seeds are planted in their minds, which may eventually take root.

## *Aging baby boomers as pioneers of funeral reform*

One demographic group has undeniably stood at the forefront of the eco-death movement: the baby-boomer generation. Although people of all ages, backgrounds, and religions choose eco-funerals, the baby-boomer generation has been "much more receptive [to these practices] than the previous generation," according to several informants. Not only are baby boomers the prime target market for funerals, but they tend to plan their funerals in advance and are often well-researched in their options. Having grown up during the environmental movement of the 1960s, many baby boomers are also eco-conscious, and they are not afraid to speak up for social change.

For many years, cremation was sold as an environmentally-friendly option, and baby boomers led the societal turn toward cremation. Now they are pioneering the transition toward eco-funerals. One respondent noticed that most of her green burial clients had originally planned for cremation, indicating that cremation-oriented folks may be open to eco-funerals since they are less rooted in traditions (see CANA 2023). Another informant noted that cremation-oriented people also generally display interest in aquamation. Thus, for those who dislike the idea of burials, aquamation may provide a viable eco-option. The hardest group to convince, according to several interviews, are those who are intent on a "traditional" burial with embalming.

### Fragmented access to eco-funerals

A simple green burial (especially when done as a home funeral) can cost a mere fraction of a "traditional" burial, though some cemeteries charge a premium price for green burial plots to increase their revenue. Overall, eco-funerals are either cheaper than conventional funeral options or competitively priced, making them financially viable for consumers.[14] Still, accessibility remains a crucial barrier to the mainstream adoption of eco-funerals. Although there are over 380 green burial grounds across the United States (including hybrid, natural, and conservation burial grounds), fewer than 100 of these are currently certified by the Green Burial Council (GBC 2023). Moreover, green burial grounds are not equally distributed across the country, raising important questions about social and environmental justice (see also Rugg 2022).[15] As one informant aptly noted: "If we don't make it available, nobody has a choice."

Other eco-funeral options such as aquamation and NOR are currently even less accessible than green burials. Although aquamation has been a popular choice for deceased pets for years, it has slowly gained ground for humans since it was first legalized in Minnesota in 2003. Since then, 28 states have legalized aquamation, but only 11 states currently offer the service (McGee 2023).[16] Because aquamation machines cost upward of US$160,000, funeral homes are often reluctant to invest in this technology – especially if they already offer fire cremations.

NOR was legalized for the first time in Washington State in 2019. Since then, it has become a lawful option in Colorado, Oregon, Vermont, California, New York, and Nevada, with possible expansion into additional states in the future.[17] NOR thus seems to be gaining more rapid traction than aquamation, possibly due to increased media coverage and public support. Although there are several aquamation and NOR facilities currently operating, neither technology is widely accessible across the country yet. Hence, some families travel far distances by car or airplane for a green funeral if their preferred method is not locally available, thereby potentially undermining its sustainability.

### Resistance to change by the funeral industry

Even as eco-funerals have been spreading, most of the activity has been happening in a niche setting *outside* the mainstream culture, promoted by an eclectic group of eco-death advocates (EDAs) including laypeople, scientists, entrepreneurs, home-funeral guides, death doulas, artisans, and activists (MacMurray and Futrell 2021; Olson 2018). This countercultural movement has been largely unsupported by the professional funeral industry. Although a study by Beard and Burger (2017, 57) describes funeral directors as "open-minded to change," those who benefit from the current funeral regime have a vested interest in maintaining the status quo. Many funeral directors and other industry professionals have thus stubbornly resisted changes in funeral practices, seeing eco-funerals as a "threat to [their] industry."

However, not only are many funeral directors critical of the eco-death movement, EDAs are often cynical about the funeral industry as well. This friction hinders collaborative efforts between the two "sides," which may slow the societal uptake of eco-funerals. Nonetheless, several of my informants pointed out that eco-funerals are here to stay, so the funeral industry "can either be part of it or…can resist it." A few respondents also noted the generational difference between "old school" funeral directors, who fervently reject eco-funerals, and younger, more progressive ones, who may be more open to alternative practices. During our interview, one informant highlighted the importance of becoming *allies* rather than enemies, as funeral directors have substantial leverage in the proliferation of eco-funerals.

Indeed, some funeral homes and cemeteries around the United States are eagerly embracing these ideas. Three of the funeral professionals I spoke with offer both traditional services *and* eco-options. Rather than a threat, these businesses view eco-funerals as a profitable opportunity to expand their service repertoire. For example, while visiting a funeral home with an aquamation facility, the owner repeatedly emphasized the importance of diversifying one's business to stand out among the competition. Eco-funerals thus offer a way of setting a funeral business apart while also catering to clients' pro-environmental values.

### Greenwashing and eco-death consumerism

As interest in eco-funerals grows, the risk of greenwashing also becomes more prevalent.[18] This issue was raised numerous times throughout the fieldwork, with many informants warning about products and services in the funeral industry that may *appear* sustainable but are merely "venture capitalists trying to…make money on a wave of interest." Several popularized "green" funeral enterprises are scientifically unfounded, including mushroom burial suits, egg-shaped tree burial pods, and efforts at freeze-drying bodies ("cryomation"). According to

several experts I spoke with, these products are neither evidence-based nor logistically feasible. The market is also ripe with biodegradable urns that are buried in the ground with a tree planted on top, as well as artificial coral reefs made from ashes. However, if not properly diluted, ashes are harmful to nature, as is the cremation process itself.[19] Moreover, the carbon-intensive manufacturing of cement for artificial coral reefs may offset their sustainability, and thus also warrants careful consideration.

The benefit of these popularized products is that they may spark initial conversations about funeral planning and alternative funeral options beyond a "traditional" casketed burial or cremation. However, as several of my informants emphasized, consumers should be critically aware of "lies" and "gimmicks" within the funeral market.[20] The most eco-friendly option is a simple conservation burial at a nature preserve, followed by a regular green burial. NOR offers the next best option with net-positive impacts on the environment, though it still uses energy and requires special equipment. Finally, aquamation heavily reduces the carbon footprint of fire cremation but also requires special equipment and consumes energy as well as large amounts of water.

## Discussion

### *Skeletons in the closet: the dark history of American funeral "traditions"*

Understanding modern-day funeral norms requires an appreciation of the social and historical context in which they developed. In early American funerals, women prepared the body inside the home before a simple, community-led burial took place (Wells 2000). The American Civil War (1861–1865) then marked a dramatic turning point for funeral practices, forever redirecting the trajectory of funerals in the United States. This section offers an overview of evolving funeral norms from the mid-1800s to the recent emergence of eco-funerals, using the conceptual working model presented above as a framework for analysis.

Although it had been used in medical schools for the preservation of cadavers before then, embalming was not a common practice in the United States until the mid-1800s (Sanders 2010). When the Civil War erupted, thousands of soldiers needed to be transported far distances on trains after dying in battle, requiring some form of preservation in the sweltering heat. While earlier attempts to slow the decay of bodies had failed, scientific advances during this time allowed for innovative embalming techniques with new chemical compounds containing arsenic, mercury, and zinc (Beard and Burger 2017). As fallen soldiers were embalmed on a massive scale for postmortem transportation, social acceptance of embalming spread rapidly during and following the war (Fontana and Keene 2009; Kastenbaum 2007).[21] Hence, the macro-level trigger of the Civil War enabled the practice of embalming to flourish. The widespread adoption of embalming, in turn, enabled the rise of the modern-day funeral regime.

### *The body shop: turning death into a profitable industry*

Following the Civil War in the United States, embalming became the standard practice in the country, regardless of the need for preservation (Wells 2000). Initially, physicians performed the embalming while undertakers built coffins and assisted in the transport of bodies (Beard and Burger 2017). In the late 1800s, entrepreneurial undertakers began embalming bodies themselves, seizing an economic opportunity for a new business model (Olson 2016). They traveled to homes by horse and carriage with an embalming kit and a coffin, preparing the body inside the house. Over time, ornate, mass-produced metal caskets supplanted the handmade wooden coffins of the pre-industrial era as the growing middle class came to see lavish funerals as a status symbol (Fontana and Keene 2009; Sanders 2010).

In the pursuit of professionalism and social status, mortuary-training programs for aspiring undertakers increased in popularity, and by the 1880s, the profession of licensed "funeral directors" was established (Beard and Burger 2017).[22] The widespread practice of embalming thus sparked the dawn of an entirely new profession, which faced numerous hurdles in its early years, including World War I (1914–1918) and the 1918 flu pandemic. The massive scale of death from these overlapping events quickly overwhelmed the budding funeral industry as morgues overflowed, public-funeral gatherings were banned, and bodies were dumped in mass graves (Harra 2022; Schoch-Spana 2000).

After the "Great War" and the horrors of the influenza virus, old Victorian mourning customs were shed and new, more privatized funeral customs were adopted (Harra 2022). In the 1920s, modern funeral homes were established, completing the transition of funerals from a family-led affair into a professionalized, monetized service (Herring 2019). This transition was possible due to several broader, macro-level shifts in society around this period, including medical advancements, urbanization, consumer culture, sanitary concerns, and the invention

of automobiles. The professional funeral regime was born at the intersection of these developments.

Around the turn of the twentieth century, advancements in modern medicine and public health led to the eradication of some diseases as well as increases in life expectancy (Beard and Burger 2017). Death progressively moved away from the family home and into hospitals (Harra 2022). Meanwhile, widespread acceptance of germ theory and sanitary science further legitimized the need for embalming to "disinfect" corpses (Farrell 1980). Although they lacked any medical training, morticians routinely positioned themselves on par with doctors by comparing embalming to surgery, and by "aggressively marketing" it as a sanitary issue (Farrell 1980; Herring 2019, 75). The ubiquitous claim that dead bodies spread diseases has invariably benefited the funeral industry, solidifying its role in society and perpetuating industry-led practices such as embalming and the use of burial vaults to this day.[23]

Concurrently, urban crowding in the early 1900s meant there was no longer space to store a body inside the home after a death occurred. Funeral businesses began offering to keep bodies in their own "parlor" instead, thereby taking full and immediate custody of the dead (Wells 2000).[24] Moreover, as motorized vehicles proliferated, funeral directors could more easily transport bodies, thereby consolidating their work into a centralized, professional setting. From the 1920s onward, death was hidden behind closed doors and the public became convinced that it must be handled by "specialists" (Olson 2016). As death became increasingly medicalized, sanitized, and professionalized, American society became increasingly disconnected from it (Mellor and Schilling 1993).[25]

Once funeral homes were established as a lucrative business model, the industry rapidly blossomed throughout the twentieth century, as did its influence on the "proper" way of handling death. With continued expansion into an US$18 billion regime in the United States (Statista 2022), the prevalent funeral industry has little incentive to change. While funeral packages are offered at varying price points, the median cost of a "traditional" casketed burial in the country was US$9,420 in 2021 (NFDA 2021).[26] Such a funeral, consisting of transportation, embalming, open-casket viewing, a metal casket, and a burial vault, remained the standard in the United States for nearly a century – until recently.

## Burying the past? Cremation takes over funeral norms

After decades of stability and "cookie cutter" funerals, the former funeral regime became destabilized as cremation gained in popularity during the second half of the twentieth century. Although cremation was first introduced in the United States in 1876, it was regarded as an unorthodox method for nearly a century, remaining a niche practice in society. Both the Catholic Church and the "traditional" funeral industry saw cremation as a threat and strongly opposed the practice. In the early decades, cremation was thus offered only through independent crematoria *outside* the funeral industry (Fontana and Keene 2009).

However, in the post-World War II era, several macro-level developments prompted major societal changes, including loosened religious ties. Economic prosperity and increased mobility also led to lifestyle changes with more relaxed geographic ties. People with lower place attachment and with no religious affiliation increasingly embraced cremation (see Casal, Aragonés, and Moser 2010; CANA 2023). The environmental movement of the 1960s also played a key role in the transition toward cremation, as it was believed to be an eco-friendly method of body disposal. During this same era, Mitford's ([1963] 2000) groundbreaking book *The American Way of Death* offered a humorous yet sharply critical glimpse at American funeral practices, inspiring many to shed the expensive, wasteful "traditions" and instead embrace "simple," cheaper cremations.

These myriad developments intertwined with one another to open a window of opportunity that enabled cremation to flourish from a niche-level practice into a cultural norm. When a practice first emerges in society, it begins in small circles that may eventually ripple outward as more people adopt it. With each new cremation, the community of practice grew, and the method became more and more normalized in society (Figure 2). By 1972, cremation rates reached 5% in the United States, and they have been accelerating ever since (CANA 2023). Eventually, the funeral industry had to adopt cremation into their business model to remain competitive, finding ways to make it a profitable business expansion.[27]

While geographic patterns indicate lower cremation rates in highly religious, tradition-oriented states, the overall trend has been moving away from casketed burial and more toward cremation (CANA 2023). As lifestyles have evolved, the demand for cheaper, quicker, and more "convenient" funerals has increasingly grown.[28] In 2015, cremation rates surpassed ground burials for the first time in American history (NFDA 2022), symbolizing a major tipping point in the evolution of funeral practices. By 2022, cremation rates reached 59% (CANA 2023). Over time, cremation has become well integrated into the

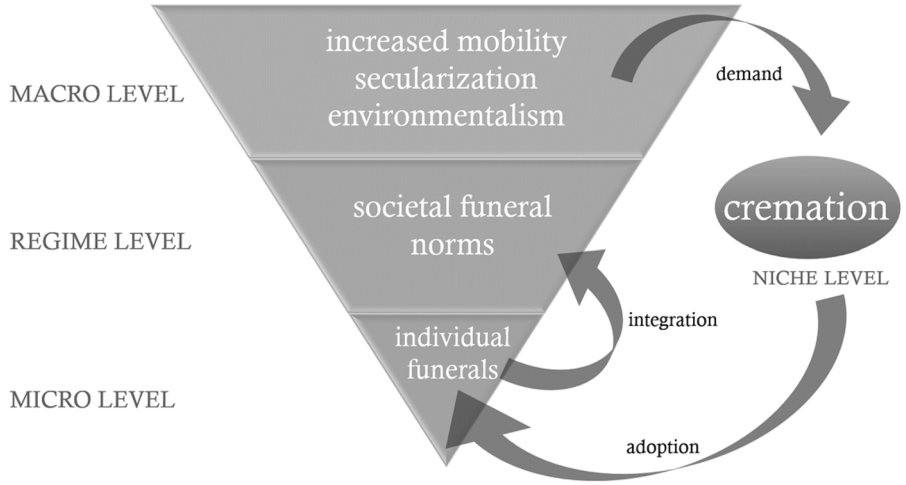


**Figure 2.** Integration of cremation into the funeral regime.

Note: This figure illustrates the multilevel process by which a (formerly) niche practice was gradually integrated into societal funeral norms. A changing socio-cultural milieu at the macro level led to increased demand for cremation, which had long remained a niche practice outside of mainstream culture. Widespread adoption of cremation at the micro level then gradually shifted funeral norms, eventually integrating cremation into the funeral regime.

regime that was formerly built around "traditional" casketed burial, resulting in a *blended regime* (Figure 3). By 2040, cremation rates are projected to reach nearly 80% (NFDA 2022), which would essentially supplant old funeral traditions and create a *replacement regime* based primarily around cremation.

### *Turning a new leaf: bringing eco-funerals to life*

After decades of continuity, the fabric of the professionalized funeral regime is once again beginning to fray as several trends are jointly reshaping the American death system today, including 1) more personalized funerals; 2) more advance funeral planning; 3) the shift toward cremation; 4) the digitization of funerals and memorials; 5) an upswing in female funeral directors; and 6) the shift toward eco-funerals (NFDA 2020). Many of these trends are driven by the demands and preferences of baby boomers, who have considerable leverage in steering the future trajectory of funeral practices. How the death system will continue to unfold remains to be seen. However, past developments may reveal clues about the future evolution of funerals. The historical accounts of embalming and cremation have each exemplified how a niche practice can grow into a cultural norm, eventually reconfiguring the whole system.

Although eco-funerals are still a niche practice in the United States, they may reroute the direction of the funeral regime once again, from a cremation-oriented system toward a more sustainable system. Indeed, these shifts seem to already be happening at an accelerated pace. While it took nearly 100 years for cremation rates to reach the 5% mark in the United States (CANA 2023), a recent survey by the National Funeral Directors Association found that 11.5% of people indicated green funerals as their preference, and 60.5% of consumers expressed an interest in exploring eco-funeral options (NFDA 2022). Although the advent of eco-funerals in the country was only 25 years ago, the intensifying climate crisis at the macro-level has escalated the urgency around environmental action, opening a window of opportunity for eco-funerals to flourish. Historical practices such as green burials and home funerals are being revived, and innovative practices such as NOR and aquamation are gaining traction.[29]

As this research has shown, many people are first exposed to these ideas when they attend an eco-funeral themselves, which can plant a seed in their mind for future consideration. As eco-funerals are gradually taken up by broader segments of the population, a feedback loop can emerge in which the spread of eco-funerals at the micro level leads to normalization of these practices, potentially creating a cascading effect in society (Figure 4). In other words, the more people hear about, witness, and choose eco-funerals, the more "normal" they become, which in turn further amplifies their uptake in society. In this way, sustainable practices that start out small can eventually gain enough momentum to alter the existing funeral regime – just like cremation did.

While individuals have the power to make informed choices about their own funeral, communities may set more lasting changes into motion by implementing or expanding natural and conservation burial grounds, lobbying elected officials for legalization of NOR and aquamation (particularly in dense urban areas), and educating the public about eco-funeral options. Moreover, individuals and communities can support

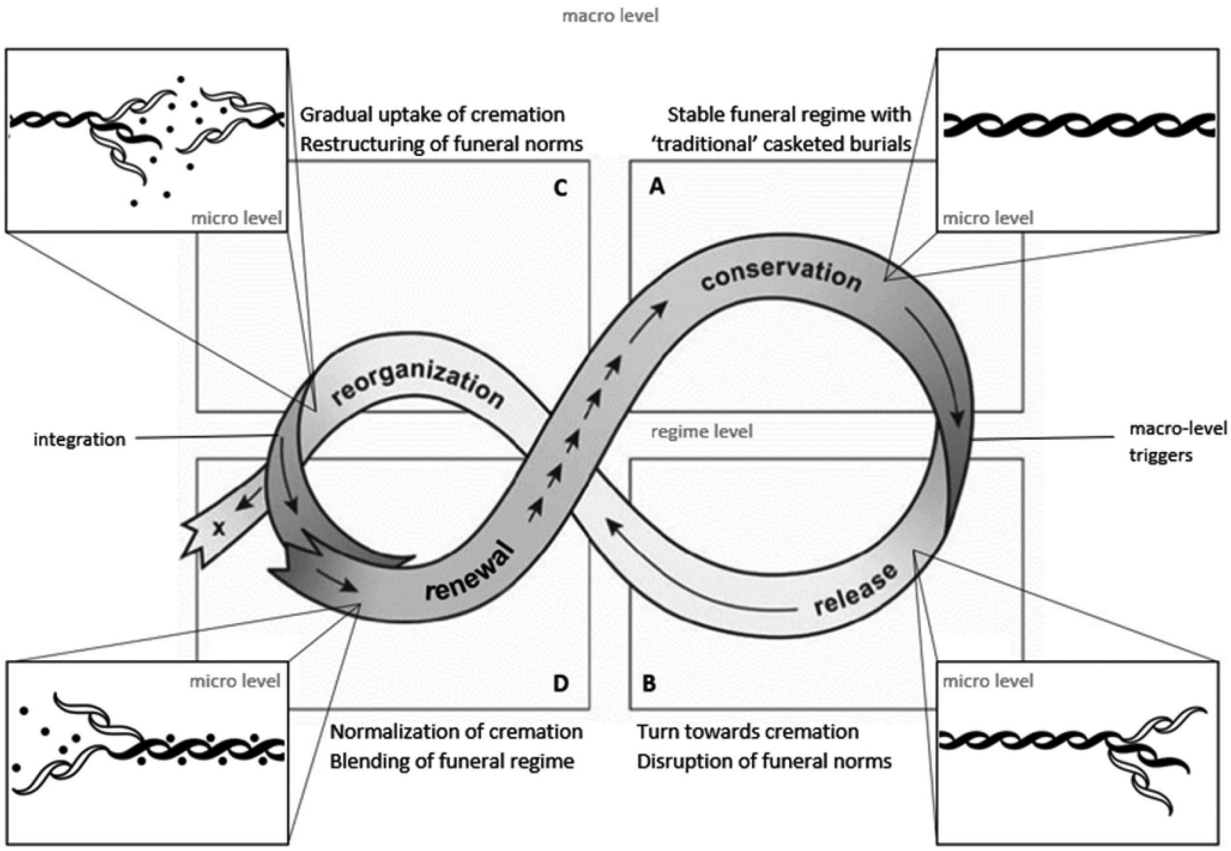


**Figure 3.** Regime shift from "traditional" ground burials to cremation (adapted from Gunderson and Holling 2002, 34).

Note: This model illustrates the transition from a stable funeral regime based on "traditional" casketed burials to a blended regime of casketed burials and cremation. For decades, the "traditional" funeral regime remained stable (Block A) until it was disrupted by societal changes (Block B), allowing the practice of cremation to flourish. As cremation continued to spread, it became incorporated into funeral norms (Block C). Finally, with increasing normalization of cremation, the practice paralleled (and eventually overtook) casketed burials, leading to a renewed funeral regime (Block D). In the future, the regime is expected to continue tilting toward cremation, which may eventually lead to a replacement regime, rather than the current blended regime.

local craftsmanship of biodegradable, artisanal coffins and shrouds over mass-produced and imported goods. Finally, eco-death advocates must bridge across communities to expand this movement, while striving to forge collaborative alliances with supporters in the funeral industry.

Notably, moving from a niche practice to the mainstream may also bring unintended consequences (Augenstein et al. 2020). Scaling up eco-funerals at a mass level to meet the current and future demand for funerals would require widespread commercialization and commodification of eco-funerals, which may invite further greenwashing. While more and more showrooms and online retailers are featuring "eco" caskets, the mass-production and long-distance shipping of these products partly undermines their sustainability. Furthermore, funeral businesses may artificially inflate the cost of eco-funerals to maintain a profit. Hence, the mainstreaming of eco-funerals also carries the risk of exploitative appropriation by the capitalist funeral industry. Nonetheless, as key stakeholders in death care, the funeral industry plays a vital role in the transition to a greener death system.

Supportive funeral professionals, including the ones interviewed for this study, are actively leading the way toward increased integration of eco-funerals into the funeral regime, which could eventually create a blended regime of conventional funerals (predominantly cremation) and eco-funerals. Catering to local needs and preferences while diffusing awareness and accessibility of eco-funerals through trans-local networks may help to forge a more sustainable trajectory for funerals from the ground up (see Loorbach et al. 2020). In time, this "modernized mixture" of funeral practices may then "point the incumbent system in a more sustainable direction" (Monaghan 2009, 1041). Such a locally embedded, network-based approach thus allows for a more gradual, pluralistic, and context-specific transition of the death system.

## *The nail in the coffin: limitations and future directions*

While this project offers some novel insights into the changing nature of funeral practices, certain limitations

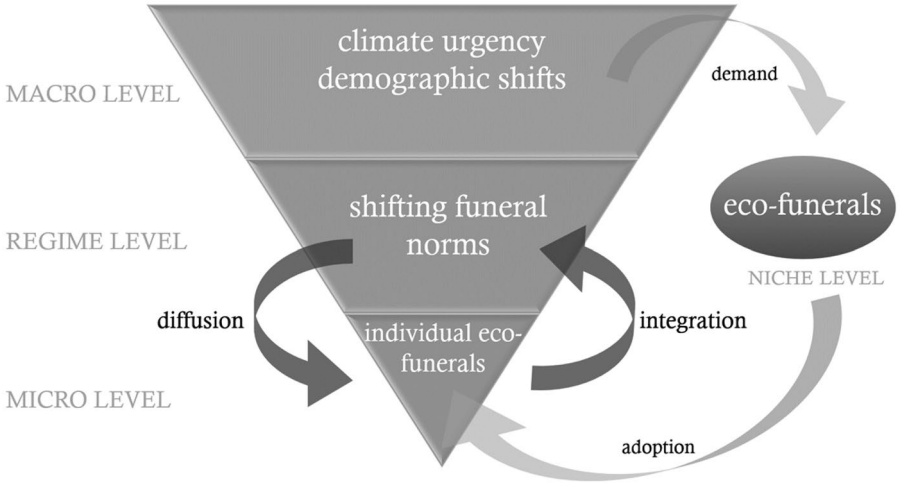


**Figure 4.** Feedback loop of eco-funeral normalization.

Note: As eco-funerals are adopted by an expanding network of individuals at the micro level, these practices become more normalized in society. The gradual integration of these niche practices into mainstream society drives a shift in funeral norms. This shift in norms then amplifies the diffusion of eco-funerals, further normalizing and integrating these practices in society, thereby creating a positive feedback loop.

of the study should be noted. First, the project was confined to interviews with funeral professionals, apart from one green burial "client." However, because these professionals work so closely with families every day, they were able to consolidate the stories and experiences of numerous people into a single interview. Second, the majority of informants interviewed for this project felt favorably toward eco-funerals, potentially introducing a "green bias." These perspectives were partly counterbalanced by the inclusion of one staunchly "tradition-oriented" professional as well as three "hybrid" professionals who work with both conventional funerals *and* eco-funerals. Finally, while qualitative work allows for depth and richness, it cannot be generalized to a wider population, and is inherently interpretive. These limitations were addressed by triangulating the collected data with the wider literature, and by engaging in the field to the point of saturation to ensure thoroughness of data collection.

Future work may expand on the current findings by conducting consumer-focused interviews or focus groups to reveal the complexity of decision-making around funerals and the firsthand experiences of those choosing eco-funerals. In addition, future surveys could assess levels of public awareness of eco-funerals, while longitudinal follow-ups could reveal changes in funeral preferences. Finally, geographic mapping of funeral trends might offer crucial insights into the localized uptake and spatial distribution of eco-funerals as they continue spreading.

## Conclusion

Transitioning to more sustainable systems is neither linear, quick, nor easy (Geels 2011, 2019; Hof et al. 2020). As this research has shown, several barriers continue to impede the transition toward a sustainable death system, including the lack of awareness about eco-funerals, widespread fear and misguided assumptions about dead bodies, ongoing opposition by the funeral industry, fragmented access to eco-funeral options, and greenwashing in the industry. These are the obstacles that policy makers, funeral professionals, eco-death advocates, and engaged citizens must target to facilitate the shift toward a greener death system in the United States.

Still, changes in the death system are undeniably underway as eco-funerals increasingly take root. Macro-level developments such as the worsening climate crisis and other societal shifts have enabled a window of opportunity for baby boomers to lead the turn toward eco-funerals. In addition, the COVID-19 pandemic caused a sudden rupture in the existing funeral regime. As countless families had to limit, alter, or delay funerals for their loved ones during the pandemic, it may spark a shift in our collective consciousness about the meaning and management of death in our society. The pandemic may thus act as a catalyst for more rapid change in the coming years.

Of course, forecasting complex system behavior poses a challenge (Rocha et al. 2022). Thus, the direction in which the death system will continue to evolve remains open. Yet, as one informant mused during our conversation, death "can either bring out the best or the worst" in us. As societies begin rebuilding after the global pandemic and start to combat climate change in earnest, there will be many challenges ahead, but

also many opportunities. Everything that we will leave behind currently still lies ahead. Thus, we now find ourselves at a rare junction in history that allows us to reimagine our ways of living – *and dying*.

## Notes

1. Even Arlington National Cemetery outside of Washington, DC in the United States is expected to reach capacity in the next 20 years (Philipps 2018).
2. Formaldehyde is categorized as a human carcinogen and is linked to a higher risk of leukemia in morticians due to prolonged exposure to embalming fluids (Ferreira et al. 2017; NCI 2011)
3. For example, Dutch burials include neither embalming nor perpetual gravesites. Crematoria in the Netherlands also have stricter emissions standards than they do in the United States. Recycling of metals and other materials in this study further reduced the environmental impact assessments. Finally, it should be noted that the Keijzer (2017) report was partly funded by a major funeral corporation.
4. Notably, the United States Environmental Protection Agency does not regulate crematoria in the country (USEPA 2005; Mari and Domingo 2010).
5. The combustion process and subsequent emissions depend on the size and weight of the corpse (CANA n.d.). As obesity rates continue to rise in the United States (CDC 2022), the emissions from cremations will arguably also continue to increase.
6. Including half a meter of soil cover to act as a "smell barrier" against wild animals.
7. Natural burial grounds can be cemeteries, wooded areas, or other natural environments that permit only green graves. Hybrid burial grounds offer green graves in a separate section of a conventional cemetery. Conservation burial grounds are on land protected in perpetuity by a conservation land trust. Proceeds from conservation burials are used to further land conservation.
8. Since the opening of the first NOR facility in the United States in December 2020, only 250 bodies have been composted there (Recompose 2023). This represents a mere fraction of the approximately seven million total deaths in that timeframe.
9. See also Hargreaves, Longhurst, and Seyfang (2013), Hof et al. (2020), Keller, Sahakian, and Hirt (2022) on the integration of practices and systems.
10. The terms "regime" and "system" are oftentimes used interchangeably in the literature and represent similar meanings. For the purpose of this article, *funeral regime* refers specifically to the incumbent regime, whereas the *death system* subsumes all three levels of the framework, including multiple evolving, successive regimes at the meso-level.
11. For an overview of funeral-consumer rights in the United States, see https://funerals.org/?consumers=your-funeral-rights.
12. In fact, embalming is often not recommended or even permitted in such cases, since it places the mortician at risk of coming into contact with bodily fluids of the deceased.
13. Religious exemptions may be granted to these rules. If embalming is necessary, some funeral homes also offer "green embalming" which avoids harsh chemicals.
14. For example, NOR costs between US$5,000–7,000, which is comparable to a cremation with viewing (NFDA 2021).
15. For a map of green burial locations in the United States, see https://www.greenburialcouncil.org/interactive-maps.html.
16. The state of New Hampshire legalized aquamation in 2006 and then repealed the law in 2008. A new bill was introduced in the state in 2013 but failed to pass.
17. At the time of this writing, legislative bills in the United States have been introduced in the states of Connecticut, Illinois, Massachusetts, Maryland, Maine, Minnesota, New Mexico, New Jersey, Rhode Island, and Virginia.
18. The term "greenwashing" describes advertising tactics that deceive potential consumers about the sustainability of a product or service through false or misleading claims about being "green" or "eco-friendly."
19. To minimize the ecological impact, a body could be aquamated instead of cremated, and the ashes should be diluted with a specialized soil additive before they are scattered or buried. Some bio-urns include their own soil additive to protect the tree roots.
20. As consumers increasingly seek more personalized funerals, the funeral market has exploded with novelties in recent years, such as ashes incorporated into jewelry, toys, and art. Some companies even offer to shoot ashes into outer space, which drastically increases the environmental footprint.
21. After his assassination, President Abraham Lincoln's embalmed body was seen by millions as he was transported across the United States. The widespread viewing of the president's body also helped to popularize embalming (Herring 2019).
22. In 1882, the National Funeral Directors Association (NFDA) was established. At the first convention, a debate erupted over the name of the new occupation. In an attempt to elevate the professional status of undertakers, the term "funeral director" was selected (Farrell 1980).
23. Although grave robbing for the purpose of anatomical research had largely ceased by the turn of the twentieth century, the *fear* of grave robbing remained prevalent long after, aiding in the sales of heavy burial vaults around caskets (see Fontana and Keene 2009). In addition, vaults were marketed as an added layer of protection to preserve the corpse underground. The true purpose of burial vaults is to maintain a level ground at cemeteries for the ease of mowing.
24. Before this time, families would lay out their deceased in the formal parlor of their home for several days while visitors came to pay their respects. Bodies were either embalmed at the house by local undertakers or cooled with ice.
25. Anthony Giddens (1991) describes the "sequestration of experience" in modern society, which systematical-

ly and institutionally conceals madness, sickness, death, criminality, nature, and sexuality from everyday life. This phenomenon is part of the overarching time-space "*distanciation*" of social organization.

26. This estimate varies by region and includes a burial vault but does not include cemetery fees, flower arrangements, obituary announcements, or a gravestone. The total costs for a "traditional" funeral often exceed US$10,000.
27. For example, funeral directors often encourage a viewing ceremony before a cremation, which also requires embalming and either the rental or purchase of a "presentable" casket, thereby increasing their revenue.
28. The median cost of a cremation with embalming in 2021 was US$6,970. This estimate assumes outsourcing to a third-party crematory rather than an in-house service. Additional costs (e.g., final interment or flowers) are not included (NFDA 2021).
29. For example, since the program was launched in 2020, over 1,300 people have made pre-arrangements for future body composting through the leading NOR company Recompose (Recompose 2023).

## Acknowledgements

This article is based on the author's Master's thesis at the University of Oslo (UiO), which can be accessed at https://www.duo.uio.no/handle/10852/79252. Earlier conceptions of this work were presented in 2022 at conferences of the American Psychological Association (APA Division 34: Society for Environmental, Population and Conservation Psychology) and the International Association for People-Environment Studies (IAPS). I would like to thank Ulrikke Bryn Wethal and Arve Hansen at the Centre for Development and the Environment at UiO for their guidance throughout the original research project. I would also like to thank Daniel Stokols at the University of California Irvine as well as the anonymous reviewers at *SSPP* for their comments on earlier versions of this manuscript.

## Disclosure statement

The author declares that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

## References

Augenstein, K., B. Bachmann, M. Egermann, V. Hermelingmeier, A. Hilger, M. Jaeger-Erben, A. Kessler, et al. 2020. "From Niche to Mainstream: The Dilemmas of Scaling up Sustainable Alternatives." *GAIA* 29 (3): 1–19. doi:10.14512/gaia.29.3.3.

Aveline-Dubach, N., ed. 2012. *Invisible Population: The Place of the Dead in East Asian Megacities*. Lanham, MD: Lexington Books.

Beard, V., and W. Burger. 2017. "Change and Innovation in the Funeral Industry: A Typology of Motivations." *Omega – Journal of Death and Dying* 75 (1): 47–68. doi:10.1177/0030222815612605.

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

Becker, E., and T. Jahn. 2006. *Soziale Ökologie: Grundzüge einer Wissenschaft von den Gesellschaftlichen Naturverhältnissen [Social Ecology: Outline of a Science of Societal Relations to Nature]*. Frankfurt/Main: Campus Verlag.

Beit-Hallahmi, B. 2012. "Fear of the Dead, Fear of Death: Is It Biological or Psychological?" *Mortality* 17 (4): 322–337. doi:10.1080/13576275.2012.734986.

Bennett, G., and P. Davies. 2015. "Urban Cemetery Planning and the Conflicting Role of Local and Regional Interests." *Land Use Policy* 42: 450–459. doi:10.1016/j.landusepol.2014.08.011.

Berkes, F., J. Colding, and C. Folke. 2002. "Introduction." In *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change*, edited by F. Berkes, J. Colding, and C. Folke, 1–29. Cambridge: Cambridge University Press.

Bryman, A. 2012. *Social Research Methods*. 4th ed. Oxford: Oxford University Press.

Cremation Association of North American (CANA). n.d. *Cremation Process*. Wheeling, IL: CANA. https://www.cremationassociation.org/page/CremationProcess

Cremation Association of North American (CANA). 2023. *Industry Statistical Information*. Wheeling, IL: CANA. https://www.cremationassociation.org/page/IndustryStatistics.

Canning, L., and I. Szmigin. 2010. "Death and Disposal: The Universal, Environmental Dilemma." *Journal of Marketing Management* 26 (11–12): 1129–1142. doi:10.1080/0267257X.2010.509580.

Canning, L., I. Szmigin, and C. Vaessen. 2016. "Consumer Acceptance of Radical Alternatives to Human Disposal: An Examination of the Belgian Marketplace." In *Death in a Consumer Culture*, edited by S. Dobscha, 228–241. London: Routledge.

Casal, A., J. Aragonés, and G. Moser. 2010. "Attachment Forever: Environmental and Social Dimensions, Temporal Perspective, and Choice of One's Last Resting Place." *Environment and Behavior* 42 (6): 765–778. doi:10.1177/0013916510367412.

Centers for Disease Control and Prevention (CDC). 2022. "Adult Obesity Facts." Atlanta, GA: Centers for Disease Control and Prevention. https://www.cdc.gov/obesity/data/adult.html

Clayden, A., T. Green, J. Hockey, and M. Powell. 2015. *Natural Burial: Landscape, Practice and Experience*. London: Routledge.

Coutts, C., C. Basmajian, J. Sehee, S. Kelty, and P. Williams. 2018. "Natural Burial as a Land Conservation Tool in the US." *Landscape and Urban Planning* 178: 130–143. doi:10.1016/j.landurbplan.2018.05.022.

Farrell, J. 1980. *Inventing the American Way of Death, 1830–1920*. Philadelphia: Temple University Press.

Ferreira, J., L. Rezende, A. De Souza Barbosa, P. De Carvalho, N. De Lima, and A. Carvalho. 2017. "Economic, Human and Environmental Health Benefits of Replacing Formaldehyde in the Preservation of Corpses." *Ecotoxicology and Environmental Safety* 145: 490–495. doi:10.1016/j.ecoenv.2017.07.072.

Fiedler, S., J. Breuer, C. Pusch, S. Holley, J. Wahl, J. Ingwersen, and M. Graw. 2012. "Graveyards – Special Landfills." *The Science of the Total Environment* 419: 90–97. doi:10.1016/j.scitotenv.2011.12.007.

Fontana, A., and J. Keene. 2009. *Death and Dying in America*. Cambridge: Polity Press.
Fournier, E. 2018. *The Green Burial Guidebook: Everything You Need to Plan an Affordable, Environmentally Friendly Burial*. Novato, CA: New World Library.
Green Burial Council (GBC). 2023. Cemeteries. https://www.greenburialcouncil.org/cemeteries.html
Geels, F. 2010. "Ontologies, Socio-Technical Transitions (to Sustainability), and the Multi-Level Perspective." *Research Policy* 39 (4): 495–510. doi:10.1016/j.respol.2010.01.022.
Geels, F. 2011. "The Multi-Level Perspective on Sustainability Transitions: Responses to Seven Criticisms." *Environmental Innovation and Societal Transitions* 1 (1): 24–40. doi:10.1016/j.eist.2011.02.002.
Geels, F. 2019. "Socio-Technical Transitions to Sustainability: A Review of Criticisms and Elaborations of the Multi-Level Perspective." *Current Opinion in Environmental Sustainability* 39: 187–201. doi:10.1016/j.cosust.2019.06.009.
Giddens, A. 1991. *Modernity and Self-Identity: Self and Society in the Late Modern Age*. Cambridge: Polity Press.
Grabalov, P. 2018. "Public Life among the Dead: Jogging in Malmö Cemeteries." *Urban Forestry & Urban Greening* 33: 75–79. doi:10.1016/j.ufug.2018.01.027.
Gunderson, L., and C. Holling, eds. 2002. *Panarchy: Understanding Transformations in Human and Natural Systems*. Washington, DC: Island Press.
Gunderson, L., C. Allen, and A. Garmestani, eds. 2022. *Applied Panarchy: Applications and Diffusions across Disciplines*. Washington, DC: Island Press.
Hargreaves, T., N. Longhurst, and G. Seyfang. 2013. "Up, Down, Round and Round: Connecting Regimes and Practices in Innovation for Sustainability." *Environment and Planning A: Economy and Space* 45 (2): 402–420. doi:10.1068/a45124.
Harra, T. 2022. *Last Rites: The Evolution of the American Funeral*. Boulder, CO: Sounds True.
Herring, L. 2019. *Reimagining Death: Stories and Practical Wisdom for Home Funerals and Green Burials*. Berkeley, CA: North Atlantic Books.
Hof, A., D. van Vuuren, F. Berkhout, and F. Geels. 2020. "Understanding Transition Pathways by Bridging Modelling, Transition and Practice-Based Studies: Editorial Introduction to the Special Issue." *Technological Forecasting and Social Change* 151: 119665. doi:10.1016/j.techfore.2019.05.023.
Kaneda, T., and C. Haub. 2022. *How Many People Have Ever Lived on Earth?* Washington, DC: Population Reference Bureau. https://www.prb.org/articles/how-many-people-have-ever-lived-on-earth/
Kastenbaum, R. 2007. *Death, Society, and Human Experience*. 9th ed. Boston: Pearson/Allyn and Bacon.
Kastenbaum, R., and R. Aisenberg. 1972. *The Psychology of Death*. New York: Springer.
Keijzer, E. 2017. "The Environmental Impact of Activities after Life: Life Cycle Assessment of Funerals." *The International Journal of Life Cycle Assessment* 22 (5): 715–730. doi:10.1007/s11367-016-1183-9.
Keller, M., M. Sahakian, and L. Hirt. 2022. "Connecting the Multi-Level-Perspective and Social Practice Approach for Sustainable Transitions." *Environmental Innovation and Societal Transitions* 44: 14–28. doi:10.1016/j.eist.2022.05.004.
Kopp, S., and E. Kemp. 2007. "Consumer Awareness of the Legal Obligations of Funeral Providers." *Journal of Consumer Affairs* 41 (2): 326–340. doi:10.1111/j.1745-6606.2007.00083.x.
Lave, J. 2019. *Learning and Everyday Life: Access, Participation, and Changing Practice*. Cambridge: Cambridge University Press.
Loorbach, D., J. Wittmayer, F. Avelino, T. von Wirth, and N. Frantzeskaki. 2020. "Transformative Innovation and Translocal Diffusion." *Environmental Innovation and Societal Transitions* 35: 251–260. doi:10.1016/j.eist.2020.01.009.
MacMurray, N., and R. Futrell. 2021. "Ecological Death Reform and Death System Change." *Omega – Journal of Death and Dying* 83 (4): 859–883. doi:10.1177/0030222819869485.
Mari, M., and J. Domingo. 2010. "Toxic Emissions from Crematories: A Review." *Environment International* 36 (1): 131–137. doi:10.1016/j.envint.2009.09.006.
McGee, A. 2023. "Where is Aquamation Legal? Which States Have Legalized Aquamation or Bio Cremation?" US Funerals Online. https://www.us-funerals.com/where-is-aquamation-legal-which-states-have-legalized-aquamation-or-bio-cremation
Mellor, P., and C. Shilling. 1993. "Modernity, Self-Identity and the Sequestration of Death." *Sociology* 27 (3): 411–431. doi:10.1177/0038038593027003005.
Mitford, J. 1963. *The American Way of Death Revisited*. Reprint, 2000. London: Virago Press.
Monaghan, A. 2009. "Conceptual Niche Management of Grassroots Innovation for Sustainability: The Case of Body Disposal Practices in the UK." *Technological Forecasting and Social Change* 76 (8): 1026–1043. doi:10.1016/j.techfore.2009.04.003.
National Cancer Institute (NCI). 2011. *Formaldehyde and Cancer Risk*. Bethesda, MD: NCI. https://www.cancer.gov/about-cancer/causes-prevention/risk/substances/formaldehyde/formaldehyde-fact-sheet.
National Funeral Directors Association (NFDA). 2020. *Trends in Funeral Service*. Brookfield, WI: NFDA. https://www.nfda.org/news/trends-in-funeral-service
National Funeral Directors Association (NFDA). 2021. *2021 NFDA General Price List Study Shows Funeral Costs Not Rising as Fast as Rate of Inflation*. Brookfield, WI: NFDA https://nfda.org/news/media-center/nfda-news-releases/id/6182/2021-nfda-general-price-list-study-shows-funeral-costs-not-rising-as-fast-as-rate-of-inflation
National Funeral Directors Association (NFDA). 2022. *2022 NFDA Cremation & Burial Report*. Brookfield, WI: NFDA. https://californiahealthline.org/wp-content/uploads/sites/3/2022/09/2022_Cremation-and-Burial-Report.pdf.
New Hampshire Funeral Resources and Education (NHFRE). 2023. "Green Burial Cemeteries in the US and Canada." Holderness, NH: NHFRE. https://www.nhfuneral.org/green-burial-cemeteries-in-the-us-and-canada.html
Nordh, H., K. Evensen, and M. Skår. 2017. "A Peaceful Place in the City – A Qualitative Study of Restorative Components of the Cemetery." *Landscape and Urban Planning* 167: 108–117. doi:10.1016/j.landurbplan.2017.06.004.
Nordh, H., D. House, M. Westendorp, A. Maddrell, C. Wingren, S. Kmec, K. McClymont, et al. 2021. "Rules, Norms and Practices – A Comparative Study Exploring Disposal Practices and Facilities in Northern Europe." *Omega – Journal of Death and Dying*. Published online September 8. https://doi.org/10.1177/00302228211042138
O'Leary, Z. 2017. *The Essential Guide to Doing Your Research Project*. 3rd ed. London: Sage.
Oliveira, B., P. Quinteiro, C. Caetano, H. Nadais, L. Arroja, E. da Silva, and M. Matias. 2013. "Burial Grounds'

Impact on Groundwater and Public Health: An Overview." *Water and Environment Journal* 27 (1): 99–106. doi:10.1111/j.1747-6593.2012.00330.x.

Olson, P. 2016. "Custody of the Corpse: Controlling Alkaline Hydrolysis in US Death Care Markets." In *Death in a Consumer Culture*, edited by S. Dobscha, 75–88. London: Routledge.

Olson, P. 2018. "Domesticating Deathcare: The Women of the U.S. Natural Deathcare Movement." *The Journal of Medical Humanities* 39 (2): 195–215. doi:10.1007/s10912-016-9424-2.

Philipps, D. 2018. "Arlington Cemetery, Nearly Full, May Become More Exclusive." *The New York Times,* May 28. https://www.nytimes.com/2018/05/28/us/arlington-cemetery-veterans.html

Podoshen, J. 2016. "Examining Death and Learning about Life." In *Death in a Consumer Culture*, edited by S. Dobscha, 316–318. London: Routledge.

Reckwitz, A. 2002. "Toward a Theory of Social Practices: A Development in Culturalist Theorizing." *European Journal of Social Theory* 5 (2): 243–263. doi:10.1177/13684310222225432.

Recompose. 2023. "Recompose Opens $5M Community Raise, Celebrates Expansion of Human Composting." https://recompose.life/2023/recompose-opens-5m-community-raise

Rocha, J., L. Luvuno, J. Rieb, E. Crockett, K. Malmborg, M. Schoon, and G. Peterson. 2022. "Panarchy: Ripples of a Boundary Concept." *Ecology and Society* 27 (3): 21. doi:10.5751/ES-13374-270321.

Rugg, J. 2022. "Social Justice and Cemetery Systems." *Death Studies* 46 (4): 861–874. doi:10.1080/07481187.2020.1776791.

Sanders, G. 2010. "The Dismal Trade as Culture Industry." *Poetics* 38 (1): 47–68. doi:10.1016/j.poetic.2009.08.001.

Schoch-Spana, M. 2000. "Implications of Pandemic Influenza for Bioterrorism Response." *Clinical Infectious Diseases: An Official Publication of the Infectious Diseases Society of America* 31 (6): 1409–1413. doi:10.1086/317493.

Seale, C., ed. 2018. *Researching Society and Culture*. 4th ed. London: Sage.

Shove, E., M. Pantzar, and M. Watson. 2012. *The Dynamics of Social Practice: Everyday Life and How It Changes*. London: Sage.

Statista 2022. "Market Size of Funeral Homes in the United States From 2015 to 2022." *Statista.* https://www.statista.com/statistics/883227/revenue-of-funeral-homes-in-the-us

Tuomela, R. 2002. *The Philosophy of Social Practices: A Collective Acceptance View*. Cambridge: Cambridge University Press.

United States Census Bureau (USCB) 2019. *By 2030, All Baby Boomers Will Be Age 65 or Older*. Washington, DC: USCB. https://www.census.gov/library/stories/2019/12/by-2030-all-baby-boomers-will-be-age-65-or-older.html

United States Environmental Protection Agency (USEPA). 2005. "Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Other Solid Waste Incineration Units." *Federal Register* 70 (241): 74870–74924. https://www.govinfo.gov/content/pkg/FR-2005-12-16/pdf/05-23716.pdf

United States Environmental Protection Agency (USEPA). 2023. *Greenhouse Gas Equivalencies Calculator*. Washington, DC: USEPA. https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator.

United States Geological Survey (USGS). 2021. "Landmarks and Government Buildings: Cemeteries" (Dataset). United States Geological Survey/Esri U.S. Federal Datasets. https://hub.arcgis.com/datasets/fedmaps::landmarks-and-government-buildings/about?layer=0

Watson, M. 2012. "How Theories of Practice Can Inform Transition to a Decarbonized Transport System." *Journal of Transport Geography* 24: 488–496. doi:10.1016/j.jtrangeo.2012.04.002.

Wells, R. 2000. *Facing the "King of Terrors:" Death and Society in an American Community, 1750-1990*. Cambridge: Cambridge University Press.

World Health Organization (WHO). 2020. *Infection Prevention and Control for the Safe Management of a Dead Body in the Context of COVID-19: Interim Guidance*. Geneva: WHO. https://www.who.int/publications/i/item/infection-prevention-and-control-for-the-safe-management-of-a-dead-body-in-the-context-of-covid-19-interim-guidance

Xu, J., S. Murphy, K. Kochanek, and E. Arias. 2022. *Mortality in the United States, 2021: NCHS Data Brief No. 456*. Hyattsville, MD: NCHS. https://www.cdc.gov/nchs/data/databriefs/db456.pdf.

Żychowski, J. 2012. "Impact of Cemeteries on Groundwater Chemistry: A Review." *Catena* 93: 29–37. doi:10.1016/j.catena.2012.01.009.