The Sustainability Crisis of Deathstyles: A Specific Look at Ontario

Adan Amer

On January 1st of 2020, a new Vancouver by-law will allow customers of Mountain View Cemetery to share burial rights with complete strangers (Pauls, 2019). In other words, a grave site may be shared among non-family members, or people who may not even know each other. This change in legislation occurs in the wake of a land scarcity crisis. Due to an ageing population and limited resources, cemeteries are filling up, especially Mountain View, the only cemetery in Vancouver. Despite efforts to expand the property multiple times, the manager at Mountain View expects the cemetery to reach full capacity in five years. This is a result of gravesites being sold in perpetuity. Normally in Canada, individuals or families can buy rights to a gravesite "forever", such that the provider cannot resell the site once it was purchased. However, Mountain View is one of the only cemeteries in Canada that allows graves to be reused for additional family members, albeit after a duration of 40 years. The practice of grave-sharing and reuse is advertised as both environmentally sustainable and economically friendly as a result of being less resource intensive. Despite these benefits, unconventional funeral practices still cause a level of unrest for the public. On the other hand, cremation is another option for reducing land-use which is widely accepted. In fact, the Cremation Association of North America (2019) estimates that 77% of Canadians will opt for cremation by 2023. However, a crematorium in Ontario was recently exposed for producing emissions that contained harmful pollutants (Environmental Registry of Ontario, 2019). These pollutants include particulate matter, polycyclic hydrocarbons, dioxins and furans. The effects of these chemicals range from respiratory aggravation and increased risk of lung cancer, to the acidification of lakes and damages to forests (World Health Organization, 2013; Environmental Protection Agency, 2018).

These stories are instances of a bigger problem at hand: the issue of sustainability in the funeral and cremation industry. With an estimated seven million Canadians expected to die in the next 25 years, it is increasingly important to look at viable deathstyles which can sustain themselves (Pauls, 2019). The term "deathstyle" in this case refers to the way a person wants their body to be treated after their death, or "the ways in which we perform practices around death" (Christensen & Gotved, 2015, p. 5). In Ontario, the political instrument that governs funerary practices is the Funeral, Burial and Cremation Services Act (FBCSA) which regulates cemeteries, funeral establishments, and crematoriums, as well as outlines consumers' rights regarding these services. The Bereavement Authority of Ontario (BAO) controls provisions for the FBCSA on behalf of the Ministry of Government and Consumer Services (BAO, 2019, p. 3). Interestingly, there is no standard set of by-laws that governs all bereavement services in Ontario. Instead, operators of cemeteries or crematoriums must create their own set of by-laws that comply with the FBCSA (BAO, 2017).

Given this information, we come to the topic of inquiry: what does this sustainability crisis entail for Canadians, particularly those in Ontario? What are some viable options for sustainable deathstyles, and do current policies accommodate or obstruct them? Aside from politics, what other barriers are in place that could resist a transition towards these new funerary practices? Finally, how can we approach the regulation of these deathstyles given the significance they hold to people? To answer these questions, this paper will delve into the topics of funerary practices and social sciences by taking a look at the relevant lit-

erature surrounding sustainable death practices such as green burials, alkaline hydrolysis, and scattering. Current policies from the FBCSA and BAO will also be analyzed to see if they can accommodate these practices. The first section will review the conventional forms of burials, its alternatives, potential risks that need to be considered, and how current Ontario policies assess these alternatives and risks. The second section will do the same but with respect to conventional forms of cremation. The third section will be dedicated to addressing the social barriers to these deathstyles, particularly people's attitudes towards the dead and the resulting grieving process. In the final section, we will consider any tangible changes that could be made to current Ontario regulations such that they accommodate or promote sustainable death practices.

Burials in perpetuity, potential alternatives, and their risks

As mentioned in the Vancouver case, traditional casket burials have become increasingly burdensome due to land scarcity. This issue isn't local to Canada either. The competition for land between the living and the dead happens all over the world, from England (Woodthorpe, 2011), to Hong Kong (Hernandez, 2015), Singapore and Namibia (Kong, 2012). This makes sense since the earth has limited resources, land being one of them, yet burial rights are sold in perpetuity. Alternatives to the casket burial include grave-sharing, grave reuse and green (natural burials). While there isn't much information on the procedure of grave-sharing for Mountain View Cemetery, Rugg and Holland (2017) offer their own take: "graves contain more than one body, with coffins located one above the other, separated by six inches of earth between each, and at least two feet of earth above the final interment" (p. 2). After a sufficient amount of time, when the remains have reached an advanced state of decomposition, the grave can be reused (p. 2). On the topic of reuse, the practice is more common in European countries (Rugg & Holland, 2017, p. 2), along with Australia and New Zealand (Coutts, Basmajian, Sehee, Kelty, & Williams, 2018, p. 130). Essentially the premise is that graves can be reused indefinitely given that the remains have sufficiently reduced in size. Lastly, green burials (or natural burials) encompass a wide array of burial styles with the main characteristics being that the body is not embalmed and it must be buried in a biodegradable casket, container, or shroud with no vault (Coutts et al., 2018, p. 131). Green burials are often advertised as a new form of green spaces, with a plethora of environmental benefits: microclimate regulation, solar radiation protection, wind-speed alterations, increased pollination, and support bioindicator species like lichens (Quinton & Duinker, 2019, p. 257).

Despite the benefits of these burial forms in reducing land use, there are substantial public health risks associated with the interment itself. According to Oliveira et al. (2013), parameters such as interment depth, geological formation, water table depth, interment density, soil type and climate must be considered when assessing the pollution potential for burials (p. 99). If these factors are not taken into account, the decomposing remains could result in a saline contamination cloud that slowly spreads throughout the cemetery and potentially spread waterborne diseases through direct or indirect contact with contaminated water or disease vectors (p. 103). While these risks also exist for traditional burials, the coffin slows down the dispersion of the cloud (p. 101). Moreover, the act of burying the remains also contributes to this risk because shovelling and backfilling increases the soil's porosity and permeability and disrupts the diffusion of gas and water. This favours the accumulation of water and air near the grave, which consequently encourages the saline plume (p. 101).

Formaldehyde from the embalmment of corpses also poses health and environmental risks (p. 104), yet neither the FBCSA, nor the BAO, hold restrictions on the preparation of embalming fluids or the permissible amount for each corpse. These risks are relevant to the proposed burial alternatives for two reasons. First, the reuse of graves ensures numerous excavations, burials and backfilling which would cause the accumulation of water. Secondly, both the theoretical (Rugg & Holland, 2017) and practical (Pauls, 2019) cases for grave-sharing fail to mention the presence or absence of embalmment. This could mean that a large amount of toxic fluids would be present in a smaller volume of space, leading to environmental degradation at a worse rate if the entire cemetery has this layout. This is especially concerning since the Vancouver case mentions the use of shrouds instead of containers, so there is less of a

barrier between the body and any groundwater that could percolate.

A review of current Ontario legislation was done in the hopes that some of these laws could prevent such catastrophes. Indeed, the BAO states that neither embalming, nor caskets, are required by law (BAO, 2019, p. 11). The FBCSA also states that cemetery operators should ensure that the cemetery has a proper drainage system (O. Reg. 30/11, s. 157). However, the other policies in place either obstruct some of these alternative deathstyles, or they ignore the risks associated with the ones that are currently allowed. For instance, the FBCSA states that no one can disinter any human remains unless they had prior consent from the interment rights holder, or prior notification was given to a medical officer (O. Reg. 30/11, s. 162 (3)). This challenges the reuse of graves because the interment rights holder could be a family member who opposes this practice, or they could be unable to give consent (for example, if they are already deceased); and inquiring about the disinterment with a medical officer could be burdensome if the request for reuse is frequent. One the other hand, the issue of water pollution for natural or shared burials is not acknowledged in the FBCSA, or by the BAO. In Canada, cemeteries or natural burials can acquire certification from the Green Burial Society of Canada (GBSC). The requirements for a certification includes the absence of embalmment or vaults; the use of a biodegradable container, casket or shroud; a maximum depth of 1.2 m; and the omission of pesticides, herbicides, non-organic fertilizers, and irrigation systems (GBSC, p. 3). Yet, there is no restriction on the location or land type of a burial, which means that a green burial could be placed near or within a sensitive habitat, and potentially lead to groundwater pollution.

Cremation, columbaria, potential alternatives, and risks

Although the practice of cremation solves the issue of land scarcity via the physical reduction of human remains, the combustion of carbon-based materials contributes directly to air pollution (Coutts et al., 2018, p. 131). The pollutants resulting from this combustion, along with other trace elements, includes: nitrogen oxides (NO_x), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter (PM), heavy metals, dioxins, and volatile organic compounds (VOCs) (Coutts et al., 2018; Mari & Domingo, 2010; Xue et al., 2018). Dioxins and heavy metals raise particular concern because of their toxicity and ability to bioaccumulate in the fatty tissue of organisms (Mari & Domingo, 2010, p. 131). Additionally, if the height of the chimney is low, which is usually the case, the pollutants disperse closer to the ground, which further increases the risk of these chemicals entering the food chain or sensitive habitats (Xue et al., 2018, p. 2).

Fortunately, there are some manufacturing changes and cremation alternatives that can reduce these risks. First, the use of a flue gas post-treatment system can reduce the concentrations of PM, CO, SO_2, and VOCs by 97.6, 19.6, 85.2 and 70.7% respectively (p. 1). Furthermore, the emission of dioxins can be reduced by keeping the temperature of the main chamber at 800°C and lowering the temperature of the dust collector (Mari & Domingo, 2010, p. 134). Next, an alternative which does not require the use of combustion is alkaline hydrolysis. This is a process of dissolving the dead body through a mixture of water and potassium hydroxide, along with heat and pressure, which reduces the body to fluid and bone fragments. The fluid can be recycled at a wastewater treatment facility or be used as agricultural fertilizer, while the bones can be dried and reduced to 'ashes', and be given to the family (Rumble, Troyer, Walter, & Woodthorpe, 2014, p. 249). This process is less resource intensive compared to cremation (Keijzer & Kok, 2011, p. 34).

However, there is a caveat with these cremation options. The storage of ashes in columbaria, niches, or burials establishes its own scarcity issue. In fact, Hong Kong has been experiencing this problem for a while as columbaria have become crowded, and private niches exceed $16 000 CAD in price (Hernandez, 2015, p. 1). This is an extreme example due to Hong Kong's high population density, and it may be less likely to occur in Ontario, but the assessment of viable deathstyles should involve the consideration of their long-term impacts. Indeed, the storage of cremated remains, as opposed to intact bodies, only delays the point where we reach capacity (Coutts et al., 2018, p. 134). As a result, the scarcity issue that plagued cemeteries has reached the cremation industry. Thus, further measures must exist to reduce the space taken up by the dead. Scattering cremated

remains or transforming them into condensed states are possible solutions. Governments in Hong Kong, and throughout China, have established campaigns to promote the scattering of ashes, either in the sea, on parkland, or on designated scattering grounds (Kong, 2012, p. 418). If families do not want to disperse their loved one's remains, they can have it condensed into forms that are easier to locate. For example, reef ball interment involves the mixing of cremated remains into a concrete form that can be placed on the sea floor; the purpose of these balls is to mimic reef formation and provide a habitat for coral and other wildlife (Nations, Baker, & Krszjzaniek, 2017, p. 406). The potential risks to consider with these options is mainly the effect of large amounts of cremated remains on water quality (Dwivedi, Mishra, & Tripathi, 2018).

Similar to burial alternatives, the relevant policies acknowledge some of the sustainable alternatives to cremation, while also restricting others. The BAO acknowledges the practice of alkaline hydrolysis and scattering in its consumer guidebook (BAO, 2019, p. 13). Moreover, it states that cremated remains can be scattered on private property with written consent from the landowner, or on unoccupied Crown lands and water if there are no signs prohibiting it (p. 12). However, there are no regulations for the emissions or resource consumption of crematoriums in the FBCSA, despite the fact that the purpose of the Act is to regulate the operations of these facilities. In fact, emissions seem to be dealt with on a case-by-case basis through the Ministry of Environment, Conservation and Parks. While this is still better than nothing, it seems counter-intuitive for the FBCSA to not have regulations on all the operations of a crematorium, especially for a significant operation such as the disposal of waste gases.

Social Barriers

The ways in which we treat the dead has immense social implications, both religious and non-religious. For religions such as Hinduism and Buddhism, cremation holds great cosmological and eschatological significance (Hadders, 2018). On the other hand, burials are required for those in the Islamic and Jewish community (Pauls, 2018). So, it is apparent that there would be resistance when pushing certain deathstyles that are counter to these communities' beliefs. Meanwhile, the non-religious barriers that hinder the acceptance of unconventional deathstyles include attitudes towards the dead, and components of the grieving process. To start, people's attitude toward the dead and reverence for their ancestors is a strong factor as to why they may be opposed to unconventional funeral practices. This concern for the deceased is shown through regular interactions between the living and a fresh corpse: the face of a body is covered immediately after an accident, corpses are not displayed in an undignified manner (such as being undressed or posed inappropriately), and efforts are made to divert public gaze from the dead body of identifiable individuals (Rugg & Holland, 2017, p. 8). These attitudes could stem from the desire to let the dead 'rest in peace' by leaving them undisturbed (p. 4). This inherently establishes a notion of sentience for the dead, which promotes a moral obligation to take care of their remains (p. 9). This may explain the sense of discomfort regarding grave-sharing and grave reuse, as the former disrupts the notion of peace and isolation, while the latter involves directly disturbing the resting place of the deceased. In addition, this perceived sentience delays the grieving process because the bereaved continue to attach an identity to the corpse. For Nations et al. (2017), detaching the two is the first step in the consolation process. For some people, this step requires the person to say goodbye to the actual body (p. 409). This may explain sentiments in favour of embalming since this prolongs the state in which the bereaved can identify and interact with their loved ones. Another phase of consolation is the transfer of the deceased's identity from the body to a tangible substitute (p. 410). As the body decomposes, it becomes unidentifiable and almost inauthentic. As a means of avoiding this inauthenticity, people partake in rituals that bridge the manifestation of their loved ones to tangible objects, such as photos, possessions, cremated remains, and gravesites (p. 414). These objects become the new target of sentiments with the additional benefit of appearing timeless, unlike living beings. The act of anchoring a loved one's identity to ashes and gravesites may explain why people do not support grave-sharing, grave reuse, green burials, or scattering. A shared gravesite would need a memorial that contains multiple names, which may alter the authenticity attached to it by the bereaved. The purpose of one permanent memorial is made redundant in the case of grave reuse, which removes the perception of its timelessness. The absence

of large, identifiable borders and memorials in green burials makes it harder for people to attach meaning to the gravesite. Finally, the dispersal of remains through scattering and sea burials removes the ability to locate and care for the remains to the same degree as urns and columbaria. Overall, the ways in which we think about death and our deceased loved ones influences our support for some funerary practices and our rejection of others.

Possible steps towards sustainable deathstyles in Ontario

In the end, what does this issue mean for Ontario? What is a pragmatic approach to regulating deathstyles in the face of a sustainability crisis? This paper proposes two plans. First, changes should be made to the FBCSA to accommodate funerary practices that are eco-friendly, while restricting those which are harmful. This means following the steps taken in Vancouver to allow grave-sharing and reuse with a shorter buffering period. The Act should also include mandatory land assessments for any potential burials to avoid sensitive habitats. Likewise, the GBSC should include this requirement in its certification process. Furthermore, through the FBCSA and BAO, crematoriums should be required to meet emission standards, as well as install post-treatment systems. Secondly, consumer rights practices should adapt to these new processes as a means of quelling fears or unrest that may arise. This means that the BAO should take extra precautions to ensure that consent is received from those who want to partake in the practice; while also assuring those who oppose it that their (or their loved one's) remains will be undisturbed.

Conclusion

In conclusion, funerary practices are not free from the grasps of sustainability discourse. In fact, the inevitability of death, along with an ageing population, should prompt immediate concern for sustainable deathstyles. Given the significance of funerary practices to society, especially for certain religious groups, it would be problematic to suggest a best option overall. There are countless options available as alternatives to the conventional casket burial and cremation, only a few of them have them mentioned in this paper. For those who want to be interred, a properly maintained green burial site or grave-reusing service would be ideal, as long as the site is located away from any sources of drinking water. A memorial wall may help the bereaved in anchoring their loved ones to a site. With regards to cremation, alkaline hydrolysis appears to be the most environmentally friendly option. The loved ones of the deceased should have jurisdiction over the use of the ashes. However, the most sustainable uses in the long-term are scattering grounds and reef balls as long as they also do not affect sources of drinking water. Regardless, current political instruments and social barriers hinder the possibility of adopting these new practices. It is beyond the scope of this paper to address all of these barriers and posit solutions. Nonetheless, increasing public awareness about this issue, showcasing possible alternatives, and pushing revisions for the FBCSA all serve as potential starting points for tackling this sustainability crisis in Ontario.

Author Biography

Adan is a student at McMaster University. She is entering her fourth year of a Combined Honours in Arts & Science and Mathematics. She wrote her paper for an Environmental Policy Inquiry course. The motivation behind the paper was to open sustainability discourse to unconventional topics such as death practices.

Works Cited

Bereavement Authority of Ontario. (2017). *Sample Cemetery By-Laws*. BAO. Retrieved from https://thebao.ca/Documents/For Prof - Cem Crem/Sample Documents/BAO-Sample-Cem-By-Laws-Nov2017.pdf

Bereavement Authority of Ontario. (2019). *A Guide to Death Care in Ontario: Everything you need to know*. Retrieved from https://thebao.ca/Documents/BAO_CIGforwebsite.pdf

Christensen, D. R., & Gotved, S. (2014). Online memorial culture: an introduction. *New Review of Hypermedia and Multimedia*, 21(1-2), 1–9. doi: 10.1080/13614568.2015.988455

Coutts, C., Basmajian, C., Sehee, J., Kelty, S., & Williams, P. C. (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

Cremation Association of North America. (2019). Cremation Growth Trends: Speed and Velocity. Retrieved December 1, 2019, from https://www.cremationassociation.org/page/IndustryStatistics.

Dwivedi, S., Mishra, S., & Tripathi, R. D. (2018). Ganga water pollution: A potential health threat to inhabitants of Ganga basin. *Environment International*, 117, 327–338. doi: 10.1016/j.envint.2018.05.015

Environmental Protection Agency. (2018, June 20). Health and Environmental Effects of Particulate Matter (PM). Retrieved December 1, 2019, from https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm.

Environmental Registry of Ontario. (2019, October 31). United Crematorium Inc. - Environmental Compliance Approval (air): Environmental Registry of Ontario. Retrieved December 1, 2019, from https://ero.ontario.ca/notice/019-0827.

Funeral, Burials and Cremation Services Act, O. Reg. 30/11

Green Burial Society of Canada. (n.d.). *Approved Provider Criteria*. Retrieved from https://www.dropbox.com/s/d7xmho4tblljfcg/2018_04_03_GBSC%20Approved%20Provider%20Criteria.pdf?dl=0

Hadders, H. (2017). Establishment of electric crematorium in Nepal: continuity, changes and challenges. *Mortality*, 23(1), 19–34. doi: 10.1080/13576275.2016.1274298

Hernandez, J. C. (2015, October 23). Trying to Redefine Final Resting Place. *The New York Times*, pp. 1–3. Retrieved from http://www.nytimes.com.libaccess.lib.mcmaster.ca/

Keijzer, E. E., & Kok, H. J. G. (2011). *Environmental impact of different funeral technologies. Environmental impact of different funeral technologies.* TNO. Retrieved from http://www.petmemorialcenter.ca/aquamation/TNO_report_Environmental_impact_of_different_funeral_technologies.pdf

Kong, L. (2011). No Place, New Places: Death and its Rituals in Urban Asia. *Urban Studies*, 49(2), 415–433. doi: 10.1177/0042098011402231

Mari, M., & Domingo, J. L. (2010). Toxic emissions from crematories: A review. *Environment International*, 36(1), 131–137. doi: 10.1016/j.envint.2009.09.006

Nations, C., Baker, S. M., & Krszjzaniek, E. (2017). Trying to keep you: how grief, abjection, and ritual transform the social meanings of a human body. *Consumption Markets & Culture*, 20(5), 403–422. doi: 10.1080/10253866.2017.1367678

Oliveira, B., Quinteiro, P., Caetano, C., Nadais, H., Arroja, L., Silva, E. F. D., & Matias, M. S. (2012). 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

Pauls, K. (2019, November 2). Would you share a grave? Vancouver cemetery has ground-breaking solution to graveyard real estate crunch — CBC News. Retrieved December 1, 2019, from https://www.cbc.ca/news/canada/british-columbia/grave-sharing-1.5341491.

Quinton, J. M., & Duinker, P. N. (2019). Beyond burial: researching and managing cemeteries as urban green spaces, with examples from Canada. *Environmental Reviews*, 27(2), 252–262. doi: 10.1139/er-2018-0060

Rugg, J., & Holland, S. (2016). Respecting corpses: the ethics of grave re-use. *Mortality*, 22(1), 1–14. doi: 10.1080/13576275.2016.1192591

Rumble, H., Troyer, J., Walter, T., & Woodthorpe, K. (2014). Disposal or dispersal? Environmentalism and final treatment of the British dead. *Mortality*, 19(3), 243–260. doi: 10.1080/13576275.2014.920315

Woodthorpe, K. (2011). Sustaining the contemporary cemetery: Implementing policy alongside conflicting perspectives and purpose. *Mortality*, 16(3), 259–276. doi: 10.1080/13576275.2011.586125

Xue, Y., Cheng, L., Chen, X., Zhai, X., Wang, W., Zhang, W., ... Wei, T. (2018). Emission characteristics of harmful air pollutants from cremators in Beijing, China. *Plos One*, 13(5). doi: 10.1371/journal.pone.0194226