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Webstract

Problem: Concurrent with the dramatic increase in the nation's elderly population in the coming decades will be an increased need to dispose of our dead. An issue with religious, cultural, and economic salience, disposal of the dead is not typically considered a planning problem. Deciding how to handle the deceased spans a set of public issues that planners are well equipped to confront. While cremation rates are on the rise, burial is, and is projected to remain, the preferred alternative for a majority of the US population. The reality of cemeteries competing for urban space will likely make the disposal of the dead a significant issue for many communities.

Purpose: We outline the key issues related to cemeteries and burial planners are likely to face and that planning researchers should investigate. We then describe a number of alternatives to the traditional cemetery and how planners might intervene in planning for the dead.

Methods: Literature review based issue discussion.

Results and conclusions: Alternatives to the cemetery are emerging but remain limited. Laws and public perceptions will need to change. There is a need for detailed case studies that explore how the design of burial grounds can be transformed to better integrate the landscapes of death and burial into existing communities and research that explores how ordinances can be rewritten to permit the introduction of alternative methods of disposal.

Takeaway for practice: As population demographics change and environmental concerns intensify in the coming years, demand for space that can sensitively balance a diverse set of social, cultural, and environmental expectations will make local land use decisions an important part of death and burial. Solutions to the challenge of interring the dead are found in a handful of alternatives: Natural burials, mausolea, columbaria, multiple-use cemeteries, and the reuse of existing burial sites. This paper provides planners with information about each of these alternatives, examples of how mortality and burial can be incorporated into the planning process, suggestions for avoiding environmental externalities, and ideas for better integrating the landscapes of death into community life.

Keywords: Cemeteries, planning, land use, burial, death

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Introduction

The certainty of our mortality guarantees the need for a procedure to—sometimes gracefully, other times not—dispose of our mortal remains. In the United States, death has mostly ended with burial, but since the late 1960s other methods have become more common (Prothero, 2001; Rugg, 2000). The aging of the Baby Boomer generation portends a dramatic increase in the elderly population in the coming years, which will invariably produce a spike in demand for cemetery space (Smith, 1996, p. 366). Yet the ethno-religious diversity of the Boomer generation will also need to be met by a range of other after death treatments, including mausolea¹, columbaria², natural burials, and perhaps hybrid, multi-functional cemetery greenspaces. Moreover, the future landscapes of the dead must include options more environmentally friendly than the sprawling, lawn-park burial grounds prevalent during the better part of the 20th century (Harris, 2007).

Death practices in the U.S. are largely governed by religion and culture, with little input from government. One effect of the lack of government oversight is the absence of detailed and coordinated information about how and where Americans are buried or otherwise disposed of after death. The demographics of the departed are difficult to obtain, and estimates of the dimensions of this problem are virtually absent from the planning and geography literature (Price, 1966; Zelinsky, 1994). In spite of their relative invisibility in scholarly writings about land use and urban space, death and burial are an important public issues for planners (American Society of Planning Officials, 1950; Whyte, 1968).

Though individual spaces created by after-death rituals vary widely, together they form broad geographic patterns (Jackson & Vegara, 1996; Rugg, 2000; Sloane, 1991; Walter, 2005). While

¹ A free-standing structure in which a casket or caskets are interred.

² A structure similar to a mausoleum but within which cremated remains are interred.

most cemeteries are privately owned, they occupy critical community space (Pattison, 1955). As a result of their function and extent, there are several reasons why cemeteries are a public issue needing planning intervention. One, their sensitive contents and relative size make burial grounds essentially permanent land uses. Two, burial facilities are often perceived as nuisances when proposals are brought forward to expand an existing cemetery or construct a new one. Three, both burial and cremation produce a range of environmental externalities, some of which should be encouraged, some of which need to be mitigated. Four, the absolute number of Baby Boomer deaths in the coming decades stands to complicate how communities accommodate death and burial. For these reasons, planners almost assuredly will have a hand in allocating and managing the space needed for the growing variety of interment options. The purpose of this paper is to outline and explore the key demographic, environmental, and land use issues related to the disposition of human remains that planners are likely to face and that planning researchers should consider.³ As cities of the living are planned, so must be cities of the dead.

An Understudied Geography of Death

At the beginning of *The City in History*, Lewis Mumford notes that “soon after one picks up man’s trail in the earliest campfire or chipped stone tool one finds evidence of interests and anxieties that have no animal counterpart; in particular, a ceremonious concern for the dead, manifested in their deliberate burial” (1961, pp. 6-7). The cultural-historical dimensions of death and burial have since been well studied, particularly in Western Europe⁴ and the United States (Aries, 1981; Bloch & Parry, 1983; Laderman, 1999; Sanders, 2008).

³ Federal cemeteries, owned and operated by the Veteran’s Administration, while important parts of the national landscape of death, are planned at a scale beyond the influence of local and state governments (Backhus, 1998). Although we address the role of the federal government in existing regulations later in this paper, we have limited our focus to the private and municipal burial facilities that planners are likely to encounter.

⁴ Presently, the University of York in the UK houses a Cemetery Research Group that supports research focusing on cemeteries, burial, and the death industry.

In the several centuries between the first European contact and the early 19th century, American cemeteries tended to be small and informal. Though townships, counties, and cities usually maintained potters' fields for burial of the indigent, most cemeteries were maintained by church congregations and families (Sloane, 1991, p. 13). But beginning in the mid 19th century, a series of design and management innovations permanently transformed American burial grounds.

In 1831, the structure of cemeteries in the US underwent its first major change when Mt. Auburn opened on the outskirts of Boston (Bender, 1974; Linden-Ward, 1989). The archetype of what would come to be known as rural cemeteries, the formal, picturesque design of Mt. Auburn sparked a boom in the development of rural cemeteries on the fringes of cities across the country, and ultimately proved to be a major influence on the design of urban parks and suburbs (Bender, 1974; Jackson & Vergara, 1996; Schuyler, 1986; Sloane, 1991). Later in the 19th century, the structure of cemeteries changed for the second time. Adolph Strauch transformed Spring Grove Cemetery in Cincinnati into a pastoral lawn-park in the late 1850s by shrinking gravestones to create an open, unobstructed view of the rolling landscape, a move that also made maintenance easier and cheaper (Sloane, 1991, p. 99).

In 1913, Hubert Eaton opened Forest Lawn Memorial Park in Glendale, CA. Representing the third major change in cemetery structure, Forest Lawn marked the emergence of modern memorial-park cemeteries, which married efficiency and profit to a highly commercialized expression of sentiment (McNamara, 2002; Sloane, 1991, pp. 159-160). Using aggressive sales techniques, subsequent proprietors of the lawn-park and memorial-park cemeteries learned to both generate a market for their products and to satisfy the demands of the emerging urban middle class for burial space that matched their worldly aspirations (McNamara, 2002; Rugg,

2006; Sloane, 1991, p. 159; Yalom & Yalom, 2008). The 20th century for-profit cemetery thrived on self promotion, restrictiveness, and often a marriage of faith, business acumen, and elaborate decoration (Llewellyn, 1991, p. 28; Walter, 2005, p. 179). By the middle of the 20th century, burial in the US had become a specialized (and satirized) part of a larger industry of death, employing modern marketing to attract buyers, adopting new technology to streamline operations, developing economies of scale, and forming industry trade groups to promote the interests of cemetery owners in the political arena (Bowman, 1959; Mitford, 1963; Sanders, 2008; Sloane, 1991, p. 218; Walter, 2005; Waugh, 1948).

In delimiting modern burial practices, researchers have debated what defines a cemetery (Curl, 1999; Rugg, 2000), explored the history of cemetery and monument design (Jackson & Vergara, 1996; Sloane, 1991), and examined the rise of cremation (Prothero, 2001). But in spite of the recognized importance of death and burial as social, cultural, and economic phenomena, the urban spatial issues associated with cemeteries have been vastly understudied (Capels & Senville, 1994; Francaviglia, 1971; Pattison, 1955; Rugg, 2006). As Zelinsky (1994, p. 30) noted, the few existing studies of cemetery geography have usually been limited to considerations of burial conditions in “specific localities or at best subnational regions,” of which Pattison’s (1955) study of Chicago cemeteries stands as perhaps the best example. More recent examples are scarce (Harvey, 2006). Planners have been conspicuously silent on the issue.

With approximately 2.5 million Americans dying every year (CDC, 2008) and the demographic bubble of Baby Boomers moving into higher mortality age cohorts over the next three decades, the nation will be forced to confront a significantly greater need for space in which to inter its dead (Frey, 2007). The death industry may be planning for this inevitability. But with the growth of land use regulations over the last four decades, responsibility will also

fall to states and municipalities to decide where their deceased should be placed.

The dearth of scholarly, or even popular, literature focused on the issue of planning for burial does not reflect the potential severity of the dilemma. The cultural aversion toward publicly discussing death and burial inhibits conversations about whether cemeteries and burial grounds could be used to serve other important ecological and social functions. Unlike many of the things we plan for, mortality is a certainty and the disposal of the dead an unavoidable if not macabre task.

Planning future interment space presents an odd assortment of challenges. There exists almost no standardized information available to guide planners in understanding the dimensions of future demand for cemetery space.⁵ While models exist for projecting a variety of dimensions of community development, no recent source provides clear information about how mortality will impact land use, or how to project demands for burial space (American Society of Planning Officials, 1950; Nelson, 2004). The environmental impacts of managing space in which the deceased are housed, while long conjectured, are just beginning to be taken seriously, and indeed may turn out to be significant (Dent, Forbes, & Stuart, 2004; Prothero, 2001; Spongberg & Becks, 2000; Trick et al., 2004). Existing cemeteries frequently possess local historical and cultural significance worth preserving, but properly maintaining those grounds can saddle private owners and municipal governments with difficult maintenance and repair expenses (Brown, 2008; Capels & Senville, 2006; Meierding, 1993). While the graves of notable fallen figures could become attractions, the less notable still represent an emotional landscape most communities consider important enough to maintain. Yet proposals for new or expanded

⁵ Only two Planning Advisory Service (PAS) reports regarding planning for the deceased have been published. The first in 1950, *Cemeteries in the city plan*, and the second in 1972, *The multiple use of cemeteries*. The 1950 PAS report is still a useful resource as it outlines the many issues associated with cemeteries such as eminent domain, perpetuity, and projections of need. The data are hopelessly out of date, but the issues and methods are still very relevant.

cemeteries often face community resistance, especially from would be neighbors who recoil at the idea of living next to a burial site (Lewis, 2001; Nurse, 2001).

Demographics, Burial Space, and Place

As the demographic bubble of the World War II (1936 to 1945) and Baby Boom (1946 to 1964) generations ages, a surge in demand for burial space appears imminent, even assuming that cremation rates continue to rise. The combined size of these generations, and the sheer number of deaths set to occur, will likely overwhelm existing interment capacity in the absence of careful planning. Higher density burial facilities, mausolea, and columbaria will accommodate some of the increased demand without necessitating a dramatic increase in space, but many boomers will continue to expect embalmed burial and spacious lawn-cemetery plots. As we will describe, the popularity of alternatives to traditional burial vary considerably by state and region (Kellaher, Pendergast, & Hockney, 2005; Prothero, 2001). In some cases, planners may temper these challenges by adapting the function of cemeteries to also serve the living. Indeed, careful planning can help cemeteries satisfy competing demands for space, environmental preservation, and economic activity.

Historically, mortality and fertility have followed a distinct pattern: as mortality rates rose, fertility rates did as well; when mortality began to decline, fertility followed (Lee, 2003; Zelinsky, 1971). But in the two decades immediately following the Second World War, the US experienced a momentary hiccup in the historic relationship between births and deaths. Fertility jumped dramatically, while at the same time mortality fell precipitously. This produced a demographic bump, and a generation considerably larger than any one that preceded it was born – the Baby Boomers (Easterlin, Schaeffer, & Macunovich, 1993). Advances in life expectancy and survival among the huge Boomer generation, coupled with the improved survival of the

preceding World War II generation, points to a substantial increase in the total number of deaths over the next thirty years (Frey, 2007; Grow, 2003; Lee, 2006; Smith, 1996).

In the art of population forecasting, calculating a reasonable measure of how many deaths are likely to occur in a specific town or county is challenging because of population mobility (Zelinsky, 1971). In general, the likelihood of an individual making a residential move varies over the life course. Moving rates tend to go up and down between ages five and 64, with a peak in the 18 to 30 year old range. Past age 65, when individuals usually leave the labor force and enter a higher mortality cohort, mobility rates usually drop, but recent surveys have shown that a not insignificant 20% of individuals aged 65 and over report having moved within a five-year period (He & Schachter, 2003). Such sustained levels of population movement have made predicting where a given individual will die and be interred complex.

Gains in life expectancy and quality of life may further change late life mobility patterns. A few demographers and planners have begun to argue that just over the horizon lies a huge new demand for communities more amenable to age diversity, communities that will enable people to live and age and die in place while still having all their needs met (Frey, 2007; Frey, Berube, Singer, & Wilson, 2007). In theory, lifelong communities will make forecasting the spatial dimensions of mortality clearer. If the boomers age into retirement and die in the places they live their productive years, the geography of burial should simply reflect the geography of life. Yet unforeseen mobility and migration factors could counteract this expectation, complicating our understanding of future locational demands for burial (Frey, Berube, Singer, & Wilson, 2007). In practical terms, this means that the likelihood of individuals dying and being buried in the same place they were born remains unknown, which makes the task of figuring out where to expand or build cemeteries quite difficult (Capels & Senville, 2006; Smith, 1996, p. 366-368).

Complicating the picture further, families leaving shrinking cities like Detroit have even begun to take their long deceased with them (Clickondetroit.com, 2009).

Setting aside concerns over the intra-national location of future deaths, a purely illustrative calculation of the amount of land needed for the dead can be done in the following manner. Considering an average plot size of four by twelve feet and accounting neither for space between plots nor the area devoted to roads, trees, and other landscape design features, a total of 907 plots can be squeezed into an acre (43,560 sq feet in 1 acre/48 sq feet per plot). Imagining for a moment that all of the over 76,000,000 Boomers who will reach the average life expectancy of 78 years between 2024-2042 choose to be interred in a traditional burial plot, the land area required to meet this challenge will be approximately 130 sq miles ($(76,000,000/907 \text{ plots per acre})/640 \text{ acres per sq mile}$). Again, this assumes dense side-by-side plots with no roads or other significant landscape features present.

Estimates suggest that by 2025 somewhere between 43% and 51% of all deaths will end in cremation (Cremation Association of North America, 2005; National Funeral Directors Association, 2005). Taking the high end of the range, the total land area needed for internment becomes 64 sq miles ($(76,000,000 * .49 \text{ not cremated})/907 \text{ plots per acre})/640 \text{ acres per sq mile}$). Although it would seem that we could certainly spare 64 sq miles from the US land mass to accommodate the projected internments, these deaths are almost certain to occur disproportionately in urban areas where most people live (and die) and where space for burial is most limited. The land area needs become greater when cemetery design is introduced into the equation. Considering the roads and natural features that take up 25% of the plot space of cemeteries (American Society of Planning Officials, 1950, p. 13), the projected national need, cremations included, increases by 16 sq miles. Yet the problem of not knowing how much space

is currently available in US cemeteries persists, which makes these projections tenuous. How these projections vary by region due to variations in cremation rates is discussed in the *Current Methods of Sending Off the Dead* section.⁶

Existing Regulations and Examples from Practice

While the days of haphazard church graveyards and potters fields are gone, the rules and regulations governing burial remain fragmented between cities, regions, states, and the federal government. The regulation of cemetery development and burial practices that most directly affect land use remains largely decentralized. In most places, cemetery owners retain considerable latitude in how they plan, build, and operate their burial grounds.

Not surprisingly, states display wide variability in the focus and breadth of their regulations. More surprising is the lack of detail in local government regulations. Depending on the state, cemetery statutes regulate everything from the kinds of corollary services cemetery owners can provide, to the structure of endowment care trusts to ensure long term financial solvency, to the size, depth, and materials of graves and urns (Harrington & Krynski, 2002; Iowa Cemetery Act, 2005; Llewellyn, 1998, appendix B; Sloane, 1991, p. 196). Local governments, however, tend to rely on a rather consistent set of basic standards that simply describe the zoning categories in which cemeteries can be built and specify minimum lot sizes and setbacks. Burial grounds are considered conditional uses in most cases, and conditional uses are generally approved or rejected by governing councils based on perceived compatibility with the surrounding area (Mandelker, 1997, p. 263).

Local government

Local governments are the gatekeepers of the zoning process, the public power that most

⁶ The aforementioned 1950 PAS report, *Cemeteries in the city plan* (No. 16), summarizes the litany of factors that need to be considered when projecting local needs for cemetery space.

directly influences the location of burial facilities. Cities, counties, towns and villages vary in how they use zoning to regulate cemeteries. Most treat them as conditional uses. Some jurisdictions strictly limit the location of cemeteries, while others permit them almost everywhere. Regardless of zoning, cemeteries almost always must meet minimum lot size requirements. This can vary from as little as two acres to ten acres or more. Several examples are presented to illustrate the range of local regulations.

The town of Waverly, IA, a small college town, allows cemeteries as conditional uses only in agricultural zones, which are reserved for agriculture production related activities and extremely low density residential development. Cemeteries must be at minimum 10 acres (City of Waverly, 2007, Sec. 100.5.02). This virtually ensures that any new burial grounds will remain on the fringe. Other municipalities allow cemeteries almost anywhere. Naperville, IL, an affluent Chicago suburb, permits cemeteries in three low-density zoning districts as long as they are two acres or larger (City of Naperville, 2009). Bellevue, WA, a large Seattle-area edge city, permits cemeteries in 21 out of a total of 27 different zoning districts. The only part of the city where burial grounds are absolutely prohibited is downtown, which has its own special set of development codes (City of Bellevue, 2003). Baltimore, MD falls somewhere in the middle with a code that permits cemeteries in most residentially zoned districts, but restricts them from office and commercially zoned areas (City of Baltimore, 2009).

Local regulations of crematoria, columbaria, and mausolea tend to follow cemeteries. In Baltimore, crematoria, columbaria, and mausolea are considered accessory uses within cemeteries as well as stand alone facilities. While they are permitted in the same set of residential districts as cemeteries, in the instance of free-standing crematoriums and mausolea, minimum lot size and front, back, and side yard setbacks are determined by the Zoning Review

Board on a case by case basis (City of Baltimore, 2009, §4-207). Bellevue regulates crematoriums more strictly than cemeteries. Like funeral homes, crematoriums are conditionally permitted only in districts zoned for office use. Mausolea receive no mention in the city's code. Waverly on the other hand, includes no provisions for crematoria, mausolea, or columbaria, and in fact makes no mention of alternatives to burial anywhere in the city ordinance. Generally, zoning ordinances treat burial facilities as conditional uses, no matter where they are allowed.

State Government

Most states have laws that oversee the operation of cemeteries, but the breadth of the laws varies significantly. Some states have comprehensive rules that govern everything from licensing of cemetery operators to the placement of vaults. Others regulate only a few essentials, mostly concerned with the long-term financial stability of cemetery corporations and the qualifications of cemetery and crematory operators.

Iowa, a state with a long tradition of public ownership of cemeteries, possesses a cemetery act that is one of the nation's more comprehensive and coherent pieces of legislation governing interment. Signed into law in 2005, the act regulates a wide range of burial details. It specifies the size of new cemetery spaces, the quality and type of materials that can be used in underground crypts, and how internal cemetery space should be subdivided (Iowa Cemetery Act, 2005, sections 5231.313, 5231.314A, 5231.701). Iowa's act also stipulates rules for investigations of violations of the act, disclosure requirements for the sale of interment rights, and requirements for establishing perpetual care trusts (Iowa Cemetery Act, 2005, sections 5231.202, 5231.301, 5231.801). Crematoriums, mausolea, and columbaria are included in the act, and regulated by the same set of guidelines as cemeteries. Ultimately, Iowa's law sharply limits the authority of local governments and cemetery operators.

Cemetery regulations in California are split among several different sections of state code. The state's Code of Regulations stipulates the composition and responsibilities of the state cemetery board, as well as licensing requirements for operators, fines for rules violations, and annual endowment care reports (California Code of Regulations, 2009, Title 16, Division 23). The California Health and Safety code also regulates certain cemetery functions, including rules for disinterment, requirements for burial, and the rights of plot owners (California Health and Safety Code, 2009, Division 7). California's Business and Professions code includes rules for cemetery owners and managers (California Business and Professions Code, 2009, Chapter 19). While the state's cemetery codes are fragmented, the thrust of California's interest lies in regulating operations, not physical space. Planning and construction details are left to local governments, or more frequently, to cemetery operators themselves (California Health and Safety Code, 2009, Sections 8115, 8300).

This is also evidenced in Chapter 497 of the State of Florida Statutes. In Florida, where a significant share of the nation's elderly are living out their golden years, there are extensive regulations covering the licensure and rules of operation for the death care industry but little policy covering the physical details of cemetery planning and management. Local governments, and an assortment of religious, non-profit, and family columbaria, mausolea, and cemeteries, most between two and five acres, are left to their own devices to create and manage spaces to handle the dead.

Federal Government

Historically, federal regulation of cemeteries has been limited. Aside from federal ownership of veteran's cemeteries, it was not until the late 20th century that federal legislation addressing mortuaries and burial practices was adopted. In 1984, the Federal Trade Commission (FTC)

introduced the Funeral Trade Rule, which was designed to protect consumers from fraudulent behavior on the part of funeral industry representatives and cemetery agents. The Funeral Trade Rule requires “funeral directors to give you itemized prices... and also requires funeral directors to give you other information about their goods and services.” (Federal Trade Commission, 2000, p. 5) The funeral service provider giving consumers a clear, itemized list of goods and services accomplishes this. The regulation was intended to ensure that surviving family members had a fair chance to compare goods and services between different providers. The trade rule also prohibits funeral service providers from misrepresenting legal requirements for cremation or interment and from requiring the purchase of one service as a precondition for receiving another service (Federal Trade Commission, 2000).

Since its first ruling on funeral trade practices, the FTC has made minor revisions to the rule only once, in 1994. The Funeral Trade Rule remains focused on maintaining proper disclosure regarding funeral services and pricing. Cemeteries themselves continue to escape review. Other federal agencies have stood silent on the issue. While restrictions on dishonest business practices are of considerable importance to the consumer, especially since many consumers face these decisions in a moment of profound crisis, the rules offer little guidance to a community faced with figuring out how to allocate land for future burial or other forms of disposal.

Current Methods of Sending Off the Dead

Traditional Burial

In 2007, 70% of deaths in the US were casketed accompanied by some type of ritual or ceremony (National Funeral Directors Association, 2007). Although most Americans are buried after death the estimates of cemetery space are speculative at best. One estimate puts the number of known, named cemeteries in the US above 100,000. Yet the distribution of cemeteries is quite

uneven: From 31 in Hawaii to over 12,000 in Tennessee (Zelinsky, 1994). These numbers do not include the abandoned, unnamed, or simply forgotten, which usually come to light only when threatened by development (Copeland, 2000).

Named cemeteries vary considerably in size. The single largest federally owned cemetery is Arlington National in northern Virginia, which covers over 600 acres and contains 300,000 graves. Large private cemeteries include Spring Grove in Cincinnati, OH, at 730 acres, Rose Hills in Whittier, CA, at 1,500 acres, Green-Wood in Brooklyn, NY, at 478 acres and 560,000 graves, and Forest Lawn in Glendale, CA, which occupies 300 acres but houses upwards of 250,000 graves. Smaller private and municipal cemeteries, in the 5 to 100 acre range, are far more common. Though the dimensions of unnamed cemeteries remains unknown, it is reasonable to assume that they are primarily family graveyards, potters fields, and church yards, burial grounds that typically occupy small footprints and are thus easily forgotten (Paumgarten, 2009).

Cremation/Columbaria

For the final disposition of human remains, the most popular alternative to embalmed interment by far remains cremation (Prothero, 2001). Though on a global scale cremation is old and quite symbolic, in the US the practice has been mired in controversy since its emergence in the 19th century (Davies, 1996; Prothero, 2001; Sloan, 1991; Walter, 2005). As recently as the 1950s, only around 4% of Americans chose cremation over burial (American Society of Planning Officials, 1950, p. 12). But beginning in the 1960s, cremation began to lose some of its stigma and its popularity as a replacement for embalmed burial began to grow (Sanders, 2008). By 1990, more than 15% of all deaths ended in cremation. Only 10 years later, the number of people cremated nationally reached nearly 25%. The proportion of deaths ending in cremation is

projected to rise to 36% of total deaths in 2010 and somewhere between 43%-51% by 2025, but the geography of cremation will likely remain uneven (Cremation Association of North America, 2005; National Funeral Directors Association, 2005). Much like the aforementioned burial practices, the acceptability of cremation varies by region (Table 1). Aggregation of individual state cremation rates reveals continuity between the Midwest, Northeast, and South. The West remains the outlier.

[Table 1 about here]

Table 2 provides a closer look at the states within these regions where cremations ranged from a high of 65% in Nevada to under 10% in Mississippi. Within states, race, ethnicity, and religion alone play a role. While about 40% of Hispanics and Whites claim they would choose cremation, African-Americans and those of the Baptist faith are far less inclined to do so.

[Table 2 about here]

Of those choosing cremation, 24% planned to place the remains in a cemetery (Cremation Association of North America, 2005) leaving the remaining 76% likely occupying no spatial footprint with their cremated remains spread or stored on the mantle. Although cremated remains placed in cemeteries occupy an extremely small spatial footprint, the energy demands and air pollution associated with the operation of crematories cannot be overlooked as potentially serious impediments to the long-term sustainability of the practice. Research on the problem thus far is minimal; much remains to be done (Hylander & Goodsite, 2006; Santarsiero, Cutilli, Cappiello, & Minelli, 2000).

Mausolea

The planning mantra of densifying by going up rather than out also applies to disposal of the dead. Briefly popular in the US in the mid-19th century, mausolea re-emerged in the 1950s as

additions to existing cemeteries because they offered a simpler, cheaper, more compact form of embalmed burial that could blend easily into the both the open landscape design of the lawn-park and the more ornate monument and memorial park cemeteries (Sloane, 1991, p. 220). In places where cremation remains unpopular for religious or cultural reasons, mausolea have provided needed high density burial space. While mausolea do not eliminate chemical-based mortuary practices, by storing the dead vertically they reduce significantly the amount of open land necessary for interment. They can create extra capacity for existing cemeteries and can reduce the amount of land needed for new cemeteries (Keister, 1997). Such is the case of Green-Wood Cemetery in Brooklyn, one of the nation's oldest burial grounds. Facing dwindling space, a recently completed mausoleum and columbarium has added nearly 5,200 burial spaces and 8,000 niches for cremated remains, potentially extending the cemetery's life for another quarter century (Dunlap, 2002).

The incidence of mausolea is not reflected in counts of existing cemeteries. Projections of future demand for burial space rarely mention how much of that demand will be met by mausoleum space vis-a-vis in-ground burial. If state regulations can be taken as a reflection of reality, then most mausolea are accessories or additions to existing cemeteries. If this is the case, then distinctions between interment in the ground and interment in a mausoleum crypt may be internal to individual cemeteries. Thus counts of the total number of graves per cemetery may obscure the cemetery's physical organization as well as its potential capacity.

Emerging Methods of Sending Off the Dead

In addition to the continued demand for new cemeteries and the modification of existing cemeteries to house mausolea and columbaria, a variety of alternatives to standard embalmed burial have begun to emerge. Whether grave recycling, natural burials, or some combination

thereof, the plurality of alternatives has sparked a wide ranging discussion of how to manage death and burial. Even without aggressive regulatory intervention, the lawn cemetery that has dominated post-war burial may indeed be on the retreat. Changing demographics and environmental concerns will modify after death practices in rather profound ways. The following sections outline several emerging burial practices.

Decentralized burial

One potential change in burial practices may be the return to a more fragmented set of cultural, religious, and ethnic burial sites, reminiscent of the 19th century (Meyer, 1993). While segregation based on religious or cultural affiliation has long been witnessed both within large cemeteries and between smaller cemeteries, the frequency may again be on the rise (Sloane, 1991, p. 187). While different notions of how remains should be handled have always shaped burial practice, the absolute size and diversity of the Boomer generation suggests that the incidence of different styles of burials will rise significantly in the future (Meyer, 1993). And as the US population is projected to become markedly more diverse in the coming years, the different end of life requirements of intersecting religious and cultural affiliations may fundamentally transform standard markers of death and burial. Where they have room to expand, large cemeteries in urban areas are responding to this pluralism by dedicating separate spaces to particular ethnic or social groups. In smaller places, or where existing cemetery expansion is limited, social groups are developing their own burial spaces. Such fragmentation in death might more closely reflect the social, economic, and ethnic diversity of the living US population (Nurse, 2001).

Green burial

A second major social change affecting burial is the growing awareness of the environmental

consequences of modern life (Harris, 2007). Working toward community sustainability is also beginning to include after death practices that reflect a more thoughtful and careful understanding of the relationship of humans to the earth (Mooallem, 2009; Rugg, 2000).

Although many people choose cremation to save money, it may be noteworthy to planners that 13% of persons state “saving land” as the reason they would choose cremation (Cremation Association of North America, 2005). One emerging trend revisits an imagined version of the past, when burial consisted of a 24-hour wake, a simple wooden box, and a hand-dug hole in unmarked ground (Friend, 2005; Harris, 2007; Paumgarten, 2005). Returning to the old pine box eschews the use of toxic flesh preservatives, ornate caskets, and concrete vaults. Advocating this approach, the Green Burial Council suggests using “the burial process as a means of facilitating the acquisition, restoration and stewardship of natural areas” (Green Burial Council, 2009). The rationale is that unembalmed burials require a significant reduction in overall grave density.

While this does not solve the issue of conserving space through densification, it can be part of a community strategy to “use revenues from green burials” on a small part of a parcel to permanently preserve larger swaths of valuable natural areas (Friend, 2005, p. 50; Harris, 2007, ch. 9). With far fewer graves per unit of land, green burial grounds remain comparatively undisturbed, yet not without controversy (Kim, Hall, Hart, & Pollard, 2008). A recent attempt to rezone a vacant land parcel to build a natural burial cemetery in Macon, GA, ended in defeat after wide-spread community protest (Shiskin, 2009). Natural disposal—providing a service to the deceased and also benefits for the living—has also been applied to cremation. In Texas, for example, the Parks and Wildlife Department created a partnership with the Green Burial Council to allow cremated remains to be scattered in state parks for a fee. The proceeds from these burials will be used to acquire land for state park expansions (Streit, 2009).

Mausolea/Columbaria

In places where space for cemetery expansion or new cemetery construction is limited, community, or garden, mausolea have begun to emerge as alternatives or additions to existing cemeteries (Mangaliman, 1997). Ranging from family size monuments to 30,000 crypt complexes, community mausolea are often cheaper and far less space intensive than standard cemetery plots. They provide a similar kind of burial experience, at least in terms of the treatment of the body, and a visible community memorial, but in a dramatically reduced footprint. High-density structures to hold human remains can significantly expand the capacity of an existing cemetery that might otherwise face build out (Davies, 1996).

Occupying an even smaller footprint than mausolea, columbaria have similarly appeared in cemeteries around the country, particularly in the Western US and in large urban areas. Serving as both a repository for cremated remains as well as simple memorials, columbaria can provide space literally for thousands of individuals. In places like Hong Kong, where land is extremely limited and cremation rates are very high, dense columbaria are the norm rather than the exception (Teather, 1998, 1999). Moreover, cemeteries are also beginning to include natural landscapes that can be used for scattering ashes (scattering gardens), forests for injecting remains into tree root systems, or even artificial underwater reef structures into which ashes can be implanted (Marr, 2007; Streit, 2009).

Grave sharing

While mausolea and columbaria address space limitations by going up, burial provides the opportunity to densify by going down. Building on an old European practice of renting burial space, Australian cemeteries have begun to establish 50-year license agreements after which human remains can be moved in a “lift and deepen” procedure where the space close to the

surface is reused (Sterba, 2006). This involves burying persons on top of one another with a few feet of earth between after significant decomposition has taken place.

In the urban centers of continental Europe, where interring large numbers of dead in a small area has been a problem for a thousand years, grave sharing has become a necessity but not one devoid of emotion (Walter, 2005, p. 176). The City of London, UK, now faced with the reality of exhausted burial space, has encountered resistance to the idea of mom or pop spending their eternal rest under or on top of someone else (Lawless, 2009). Similar to the UK, the US mentality of the grave as eternal and private would likely need to soften before this procedure is considered a politically viable option for densification of the deceased.

Multi-use cemeteries

Even in places where the traditional cemetery reigns, burial grounds may still be incorporated into community life in creative ways. Returning to a view of graveyards as combined memorial and recreational space, like Mt. Auburn in the early 19th century, cemeteries of the future may be redesigned so that different uses overlap (Linden-Ward, 1989). In communities where recreational space is limited, cemeteries can serve as valuable proxies, providing space for low-impact activities like walking and running (Anderson & West, 2006). In most cemeteries, the infrastructure needed to support such activities is already in place. In a book by Peter Harnik to be published next spring, cemeteries are proposed as a solution to adding parkland to crowded cities (Eckdish-Knack, 2009).

Cemeteries might also serve as community gathering places. In Hollywood, CA, the nonprofit group Cinespia sponsors screenings of mostly mid-century American films amid the lush grounds of the Hollywood Forever Cemetery (Cathcart, 2008; Duertson, 2002). In some cemeteries, even high impact activities like bicycling could be accommodated, but such activities

likely will not easily fit into older cemeteries, particularly those that are relatively dense. Such is the case of Grand Rapids, MI, where the city's general ordinance prohibits bicycles but otherwise allows cemeteries to be used for low impact recreational activities (City of Grand Rapids, 2003).

Baltimore has taken a step toward turning codifying burial facilities as multi-use places. There, the city has maximized the utility of existing lawn cemeteries by allowing them to be rezoned as permanent open spaces, a floating district that includes a wide range of landscapes. Both public and private cemeteries of any design can be included as part of a special district intended to “permanently preserv[e] open space as an important public asset” (City of Baltimore, 2009, §3A-101). Given the difficulties of setting aside land for permanent preservation or parks, reimagining extant cemeteries as alternative open spaces offers an opportunity to expand natural infrastructure without acquisition. By not requiring special permits or extra steps beyond standard nonconforming use applications, Baltimore cemetery owners are encouraged to imagine their properties as part of the public sphere (ICCFA, 1998).

How Planners Can Intervene

Land use and zoning regulations give local governments considerable influence over where new cemeteries are built and how existing cemeteries expand, but the factors that influence cemetery management and planning are complex and cut across several substantive issues. As cultural landscapes, cemeteries touch deeply held beliefs and emotions (Llewellyn, 1998, p. 23). As real properties, the ownership and management of cemeteries in the US remain largely in the hands of private entities (Habenstein & Lamers, 1963; Sloane, 1991, p. 175). As institutions with a decidedly public function, cemeteries interact with a range of interest groups: Owners, managers, undertakers, religious congregations, planners, politicians, plot owners, and the

public. Each group shares concern about where new cemeteries will be located, how they will be designed, and how expansions will be handled. With so many interests clamoring for a seat at the table, planners dealing with burial issues face a challenging environment (Harrington & Krynski, 2002). Yet case studies that detail the process of planning, building, or expanding a cemetery are nonexistent. Without much guidance or even good information, planners faced with community burial issues have been left to pick their way through an ad hoc process.

There are however strategic points at which planners can effectively intervene. We will review five key levers that planners can operate at the local and regional level to address burial: Land use plans, zoning ordinances, public participation, intergovernmental coordination, and environmental regulations. Revisions to comprehensive land use plans and zoning ordinances can encourage communities to reduce overall consumption of land and improve the way community burial space is managed. Through strategic outreach and coordination across political boundaries, planners can help communities begin to discuss policies that encourage a more wide ranging perspective on how to efficiently manage existing cemetery space and decide cooperatively where future deaths will be accommodated.

Land use plans

Burial facilities occupy complicated ground in terms of community land use. While the majority of cemeteries are privately built, owned, and operated, they serve an essentially public function and therefore occupy important space in community geography (Pattison, 1955). The task of negotiating the planning of new cemeteries or expansions of existing cemeteries, whether private or public, in part falls to community planners and municipal administrators. Despite their ubiquity, cemeteries are rarely discussed as critical land uses, either in the context of local planning problems or in broader considerations of land use as a social, economic, or cultural

phenomenon (Harvey, 2006; Pattison, 1955).

Though cataloging the location of cemeteries has been made easier with Geographic Information Systems (GIS) and the widespread availability of digital geospatial data, the fragmented patterns of ownership and variable conditions of cemeteries makes cataloging details about their relationship to municipal land use extremely challenging (Zelinsky, 1994). At present, planners are almost entirely dependent on irregular and proprietary data published by cemetery owners and cemetery industry associations (Llewellyn, 1998). Few communities include cemeteries or burial facilities as part of their comprehensive plans. Only one of the places we examined, Waverly, IA, even mentioned the fact that the town has a cemetery, and then just in one sentence noting that of the cemetery's 40 acres seven remain undeveloped (City of Waverly, 2005, p. 24). The more common technique to evaluate cemetery expansion issues seems to be stand-alone capacity studies (City of Santa Monica, 2009; Local Agency Formation Commission of Napa County, 2008), though such studies are infrequent and do not address the relationship between burial and local land use.

While plans cannot solve missing data problems, including cemeteries as part of larger discussions of community land use offers an excellent starting point for planners to introduce the issue of planning for the dead. Through land use plans, planners can develop future scenarios that include burial needs. In addition to information about the age structure of the community, plans can project the number of deaths, catalog existing burial space, outline state regulations governing burial facilities, and propose locations for future burial facilities.

Zoning

As the one document through which local governments most often regulate the location of burial facilities, zoning ordinances are particularly important to cemetery planning. Without

challenging the fundamental structure of a city code, planners can advocate for changes in zoning ordinances that make new cemeteries or cemetery expansions more palatable. Reducing minimum lot sizes, changing buffer requirements, or expanding the number of districts where burial facilities can be located could significantly alter how burial landscapes are incorporated into the community. Thoughtfully designed, small community burial grounds could provide valuable greenspaces. Even simple changes like expanding the hours of operation or requiring gates to be open could encourage greater public use of existing cemeteries. In places with high rates of cremation, planners can adjust zoning ordinances to help communities incorporate scattering gardens into existing public lands.

Public participation

The public tends to perceive cemeteries as both benefit and curse. While established cemeteries often blend seamlessly into the residential landscape, in many cases becoming amenities to a neighborhood, proposals to build new cemeteries or expand existing ones frequently are met with public outcry (Llewellyn, 1998, p. 64). Because cemeteries are typically large land uses, they can meet the same kind of NIMBY resistance as commercial or residential subdivisions or certain non-family households (Feagans, 2004; Lake, 1993; Lewis, 2001; Ritzdorf, 1985). Yet existing cemeteries, provided nothing about them is changed, can also be seen as community resources that deserve protection.

Conflict over burial grounds can stem from several sources: The visible reminders of mortality that active cemeteries present, the idea that burial grounds depress property values, the value that neighbors place on unchanging viewsheds, and the nuisance of increased traffic and noise (Capels & Senville, 2006; Sloane, 1991, p. 243). Examples abound. In Culver City, CA, the owners of Hillside Memorial Park proposed adding a large mausoleum in a section of the

cemetery where soil and topography was incompatible with burial, but “the neighbors were concerned that the new building would block their beautiful view of Hillside's park-like setting” (Loving, 2004, p. 7). Alterations to this viewshed were considered by nearby residents a taking of the aesthetic environment to which they had grown accustomed (and perhaps had paid for). In Fayette County, GA, a plan to build a new private cemetery to meet the county’s growing demand for burial space was met with resistance from the public. An elderly neighbor of the proposed cemetery complained in a letter to the county commission, “chances are I won't live too many more years, but I'd like to live it without looking at a cemetery” (Lewis, 2001, p. 1J). Ultimately, the commission sided with the public and denied the developer’s request to rezone the parcel to permit the cemetery (“Cemetery Proposal Rejected,” 2001, p. 2H).

In most instances, planners should approach controversy over cemeteries as public relations problems. Orchestrating public outreach when an expansion or new burial ground is proposed could help palliate conflict after it has erupted. Introducing the issue of burial early in the community planning process, and allowing community members a voice in deciding where future interments should be located, could build long term community support and head off conflict before it starts.

Intergovernmental coordination

The regional land market influences the location of cemeteries. In theory, ground dedicated to memorializing the dead should be spatially proximate to the population it serves. But open land close to population centers that could be devoted to burial can often fetch a much higher price from residential or commercial developers (Harrington & Krynski, 2002; Teather, 1998; Zelinsky, 1994). Because most existing cemeteries, once located on the urban outskirts, have since been hemmed in by development, opportunities for adjacent expansions are often limited

(Capels & Senville, 1994). State regulations governing grave density, along with local zoning requirements for buffers and minimum lot sizes, can significantly increase the amount of land needed to build a new cemetery of even modest capacity (Llewellyn, 1998). Together, the regional land market and local regulations can make new cemeteries in developed places expensive propositions long before any dirt is turned.

The challenge of adapting existing intergovernmental relationships to the anticipated demand for new burial space may be tempered by reframing death spaces as being a service to the living. Like other planning problems with spillover effects or significant costs, planners can work to encourage regional cooperation around burial. As in metropolitan Atlanta, burial can be part of a regional plan for elderly friendly communities. As the demand for space expands, planners can experiment with techniques to encourage local governments to work together to create regional burial plans that distribute costs and benefits fairly.

Environmental regulations

Traditional cemeteries and alternative burial grounds have potential to improve a community's natural environment. At present, many municipalities consider cemeteries part of their green infrastructure, and in some places residents still use cemeteries for recreation purposes (City of Baltimore, 2007, §3A-106; Harvey, 2006). Established cemeteries can also support significant biotic diversity (Barrett & Barrett, 2001). But like golf courses, a cemetery cannot be considered a component of green infrastructure simply because it looks green (Wheeler & Nauright, 2006). The use of large quantities of chemicals and petroleum to maintain the bucolic appearance of a typical lawn-park cemetery detracts from its ecological and social benefit. To be part of municipal green infrastructure, planners must work to preserve cemeteries as well as mitigate the environmental impacts of upkeep.

Strategies for managing the environmental footprint of burial facilities can use the same policies that regulate tree removal, grading, and protect sensitive landscapes. Like other properties, cemeteries are subject to landscape ordinances, as well as stream and wetland buffers. Using such ordinances as leverage, planners can push cemetery operators to employ more environmentally sensitive landscape management techniques, influence how cemeteries are expanded, and ensure that new burial facilities are developed in an environmentally friendly manner. Burial facilities could even be included in regional greenspace or land conservation programs, which often employ heightened standards to protect fragile natural resources.

Conclusion

There is nothing more certain than death (maybe taxes), but certainty does not equate to clarity in how planners should address the coming surge in mortality and the subsequent process of disposing of the dead. Cemeteries are rarely part of comprehensive plans, revitalization plans, or community conversations. At the same time, human mortality is a necessary and inescapable public function and has been for a very long time (Mumford, 1961).

As the US population grows significantly grayer, interring the dead will almost certainly become a more pressing public issue in communities of all sizes. In 2010, the oldest members of the vast Baby Boomer generation, some 76 million strong, will begin to cross the retirement threshold and enter the years of highest mortality. Because of their number, whatever disposal methods the Boomers choose will reshape the landscape of burial in the US and will almost certainly compound a number of issues related to the permanence of zoning for cemeteries, the perception of cemeteries as a nuisance, and the effect of our disposal methods on environmental quality. As this population ages, demand for permanent space that sensitively balances socio-cultural expectations against environmental and economic conditions will make local planning

an important part of the death care industry.

Determining how land for interring the coming wave of deaths should be allocated will require significant public negotiation. Whether modifying existing cemeteries to accommodate a mixture of uses, adopting alternatives to burial, or something else, when planners task themselves with helping communities manage the externalities of death, they confront a deeply rooted cultural practice. Post-death rituals are tightly bound by an array of religious, or agnostic yet still sacrosanct, beliefs. Local governments are likely at first to be reluctant to challenge, or even discuss, such long-standing and emotionally charged behaviors.

Yet planners must at some point begin to bring burial into planning practice. Perhaps the biggest single problem is that information about human burial is rarely mentioned in the planning literature, which makes the process of planning for the disposal of human remains challenging. As we have noted, there are several ways that planners can make burial facilities more socially acceptable as well as more ecologically sensitive. But ultimately research and practice needs to explore techniques for including burial as part of the ongoing struggle to provide public space, environmental preservation, and economic development. We conclude with three suggested areas for future research.

First, detailed case studies are needed that explore how the design of burial grounds can be transformed to better integrate the landscapes of death and burial into existing communities. Designs that accommodate multiple uses and conservation space can bring burial facilities back into community life and simultaneously contribute to a community's green infrastructure. Land use plans can help direct future cemeteries away from the community fringe and encourage the incorporation of burial facilities as part of redevelopment or infill projects.

Second, planners would benefit from research that explores how ordinances can be rewritten

to permit the introduction of alternative methods of disposal that spare the earth the copious amounts of toxic chemicals, concrete, and wood used to preserve and entomb a corpse. Such policies might begin by allowing the mixing of natural or cremated burials in the same space as embalmed burials. Later, as alternative practices become more accepted, policies can be modified to restrict the amount of land available for embalmed burials while simultaneously expanding space for natural burials.

Third, while burial is a contentious issue, the problem appears to be one of perception. How can public outreach strategies emphasize conversation and deliberation around the subject of burial in order to reach agreement? Do good examples already exist, perhaps outside the US? An open public planning process can help mitigate the NIMBY and LULU problems that emerge when cemeteries are expanded or constructed anew. Research that examines on a global scale how planners have worked to integrate pluralistic practices of burial into existing burial spaces and introduce new burial grounds into fabric of existing communities is needed.

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Table 1. Cremations as percent of deaths in US by region, 2005

Region	Cremations	Deaths	%
Midwest	150,161	600,172	25.02
Northeast	126,166	475,322	26.54
South	222,636	891,229	24.98
West	255,127	466,845	54.65

Table 2. Cremations as percent of deaths in US by state, 2005

State/District	Cremations	Deaths	%	Region
Mississippi	2,806	29,257	9.59	South
Alabama	4,679	48,106	9.73	South
North Dakota	632	6,143	10.29	Midwest
Tennessee	5,998	57,129	10.50	South
Kentucky	4,880	40,386	12.08	South
Louisiana	6,346	42,012	15.10	South
South Carolina	6,386	37,167	17.18	South
New Jersey	12,868	71,955	17.88	Northeast
Arkansas	5,457	27,654	19.73	Midwest
Oklahoma	7,257	36,278	20.00	South
West Virginia	4,318	20,649	20.91	South
Georgia	13,794	65,683	21.00	South
Iowa	5,908	27,875	21.19	Midwest
Indiana	11,925	54,874	21.73	Midwest
Utah	2,946	13,356	22.06	West
South Dakota	1,555	7,042	22.08	Midwest
North Carolina	16,715	74,693	22.38	South
Texas	35,001	154,994	22.58	South
Missouri	12,746	54,692	23.30	Midwest
New York	36,841	154,147	23.90	Northeast
Kansas	6,280	24,774	25.35	Midwest
Ohio	27,414	108,088	25.36	Midwest
Illinois	26,162	102,922	25.42	Midwest
Virginia	15,057	57,715	26.09	South
Nebraska	3,980	14,882	26.74	Midwest
Massachusetts	14,448	53,447	27.03	Northeast
Pennsylvania	34,830	128,401	27.13	Northeast
Maryland	12,662	44,044	28.75	South
Delaware	2,279	7,675	29.69	South
Rhode Island	3,022	10,177	29.69	Northeast
Wisconsin	15,944	46,699	34.14	Midwest
Connecticut	10,240	29,515	34.69	Northeast
Michigan	32,158	86,933	36.99	Midwest
Minnesota	14,38	37,594	38.25	Midwest
Vermont	1,886	4,889	38.58	Northeast
District of Columbia	2,454	5,391	45.53	South

Table 2. Cremations as percent of deaths in US by state, 2005 (continued)

Wyoming	1,863	4,062	45.86	West
New Mexico	6,767	14,722	45.97	West
Idaho	4,910	10,665	46.04	West
Florida	82,004	170,050	48.22	South
New Hampshire	5,187	9,985	51.95	Northeast
California	120,883	232,211	52.06	West
Maine	6,844	12,806	53.44	Northeast
Colorado	16,486	29,563	55.77	West
Alaska	1,764	3,058	57.68	West
Montana	5,050	8,554	59.04	West
Arizona	26,603	44,562	59.70	West
Oregon	19,667	31,120	63.20	West
Hawaii	5,961	9,329	63.90	West
Washington	29,412	45,951	64.01	West
Nevada	12,815	19,692	65+	West

Note:

- a. Refer to the original National Funeral Directors Association data (<http://www.nfda.org/index.php/consumer-resources-cremation/78-us-cremation-statistics>) for cremation accounting methods
- b. Regions follow US Census delineation