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Making Historic Preservation Sustainable

Erica Avrami

Problem, research strategy, and findings: Historic preservation has the potential to serve as a constructive agent of change within the built environment and to contribute to goals of environmental, economic, and social sustainability. However, tensions between sustainability goals and preservation policy and practice are impeding opportunities to forge common ground and a shared agenda. I review the existing literature related to the preservation–sustainability nexus and critically analyze how preservation policies and practices conflict with or support key sustainability goals of energy consumption reduction, alternative energy production, urban densification, economic development, inclusion, diversity and participation, and intergenerational equity. Key findings of this research include the need to resolve tensions between sustainability and historic preservation practice through research and data, evolving preservation policies, and aligning historic preservation with the goals of environmental, economic, and social sustainability.

Takeaway for practice: The future of the preservation field and its engagement with sustainability goals hinge on the ability to contribute to environmental, economic, and social aims, but to also demonstrate why social concerns may sometimes trump economic and environmental ones given the fundamentally social aims of historic preservation. Understanding where tensions lie and why conflicts arise is an important step toward enhancing research about preservation outcomes and their contributions to sustainability and evolving preservation policy to better respond to changing environmental, economic, and societal conditions.

Keywords: historic preservation, sustainability

Planners recognize sustainability as a critical goal in developing the built environment (Birch & Silver, 2009; Daniels, 2008). Preservationists likewise acknowledge the sustainability imperative, but the field is grappling with how preservation policy and practice may need to evolve to effectively contribute to environmental, economic, and social sustainability. The world in which historic preservation functions has changed dramatically since the mid-1960s, when preservation was codified as a robust policy tool for land use planning and management at the federal level through the 1966 National Historic Preservation Act (NHPA) and at the municipal level through New York City's 1965 paragon Landmarks Law. Population growth, migration, and urbanization have dramatically altered built environments and community conditions in the past half-century. Society now confronts significant challenges in light of growing socioeconomic inequalities and the overconsumption of land and resources.

Preservationists have responded with an emergent discourse that explores how historic preservation activities contribute to sustainability goals (Auclair & Fairclough, 2015; Avrami, 2009, 2011; Barthel-Bouchier, 2012; Boccardi, 2015; Boyer, 2003; Frey, 2007, 2008; Holland, 2012; Keene, 2003; Listokin, 1997; Longstreth, 2011; Wagner, 2011; etc.). It is nonetheless unclear whether preservation's sustainability rhetoric is a) readily achieved through preservation policy and practice, b) effectively supported by research data and methods, and c) credibly aligned with environmental, economic, and social goals of sustainability. Despite shared aims of responsibly managing the built environment, significant tensions are evident between preservation and sustainability principles and the way in which they manifest in decision making about what to preserve and how.

A variety of regulatory planning tools serve preservation aims, including special use districts, conservation overlay districts, and contextual zoning, as well as a range of incentives and property rights mechanisms. However, the most ubiquitous preservation tool to date is listing, designating, or landmarking buildings, sites, and districts. While the regulatory land use function of

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designation is primarily addressed at the municipal level, for example, through design review, even federal listing on the National Register incurs regulatory oversight through Section 106 of the NHPA, the National Environmental Protection Act (NEPA), and Section 4(f) of the Transportation Act, not to mention state-level legislation that mirrors these federal laws. Many incentives or assistance programs, such as the 20% Federal Historic Tax Credit, can only be accessed if a property is deemed eligible for listing in the National Register. So while the preservation toolbox is expanding, listing persists as the mainstay of preservation policy. It serves as a gatekeeper for other tools and as preservation's primary interface with other planning practices.

With this in mind, I examine the tensions between preservation policy and key sustainability goals, focusing on listing or designation as the fundamental preservation policy tool. I review the existing literature on the sustainability–preservation nexus and develop a structured way to critically analyze how preservation policies and practices conflict with or support sustainability goals in relation to the environment, the economy, and society. With regard to environmental sustainability, I explore goals related to reducing energy consumption, producing alternative energy, and densifying urban cores, and I examine if and how preservation effectively supports those goals through research and practice. I question the relationship of preservation to economic sustainability and explore if and how preservation research and practice align with economic development concerns and provide an effective understanding of preservation's economic outcomes. Finally, I examine the intersection of social goals related to sustainability and preservation—specifically inclusion, diversity and participation, and intergenerational equity—to determine if and how preservation policy is supporting such aims.

I find that there are significant tensions between historic preservation policies and sustainability goals. Despite a growing rhetoric and body of literature about preservation's contributions to sustainability, there are significant shortcomings in data, research methods, and policy tools that hinder the capacity to align goals and pursue shared agendas. New and ongoing research is making important strides and forging some common ground, especially in the environmental and economic spheres of preservation and sustainability, but these in isolation are not sufficient to bridge the preservation–sustainability gap. Society does not preserve a place simply because it makes money or saves energy. The future of the preservation field and its engagement with sustainability goals hinges on the ability to contribute to all three areas of the sustainability tripartite, but also to demonstrate why social concerns may sometimes trump economic and environmental ones given the fundamentally social aims of historic preservation. Understanding where tensions lie and why conflicts arise is an important step toward enhancing research about preservation outcomes and their contributions to sustainability and evolving preservation policy to better respond to changing environmental, economic, and societal conditions.

Energy Consumption

The first area in which historic preservation goals can conflict with or support environmental sustainability goals is the energy arena. Buildings account for up to 40% of worldwide energy consumption and are a major generator of greenhouse gases (United Nations Environment Programme, Division of Technology, Industry and Economics, 2003). Based on current trends, consumption and emissions have the potential to nearly quadruple in the period from 1971 to 2030 (Levine et al., 2007). Preservationists advocate that older buildings are inherently green and promote their preservation on the basis of energy conservation, among other rationales. The NHPA (1966) specifically justifies federal legislation on the grounds that "the preservation of this irreplaceable heritage is in the public interest so that its vital legacy of cultural, educational, aesthetic, inspirational, economic, and *energy* [emphasis added] benefits will be maintained and enriched for future generations of Americans" (p. 1, §1). However, these energy benefits are not robustly substantiated because data and assessment methods are lacking, operational and embodied energy are valued differently, and designated historic buildings are often exempted from complying with energy codes.

Preservation advocates called attention to historic preservation's environmental benefits during the 1970s oil crisis, when the profound role of buildings in energy consumption was beginning to come to light (Advisory Council on Historic Preservation [ACHP], 1979a, 1979b). This claim was largely based on the perceived value of *embodied energy*, or the sum total of energy consumed to extract and prepare materials for and construct a building, in relation to *operational energy*, or the energy consumed through heating, lighting, and similar functions throughout the life cycle of a building. In the decades since, the concept of embodied energy has matured to include "the processes of building material production, on-site delivery, construction, maintenance, renovation and final demolition" (Dixit, Fernández-Solís, Lavy, & Culp, 2012, p. 3730), which more inclusively represents the gamut of nonoperational energy.

The energy-related value of historic buildings remains a matter of question because more recent research also suggests that the operational energy consumption of buildings far exceeds that of embodied energy, with operational accounting for up to 80% of all energy consumption across the life span of a structure (United Nations Environment Programme, 2007). Such findings devalue the significance of embodied energy, notwithstanding its more inclusive definition. In turn, much of the research and development within the construction industry focuses on new designs and components that reduce operational energy use through improved windows and insulation; high-efficiency heating, cooling, ventilation, and lighting systems; alternative energy sources (like solar panels and photovoltaics); and so on. In response to these trends, preservation organizations have undertaken or commissioned life cycle assessment (LCA) studies demonstrating the energy savings and reduced carbon impact of rehabilitating an existing building (Agbonkhese, Hughes, Tucker, & Yu, 2010; Athena Institute, 2009). The National Trust for Historic Preservation Green Lab (2011) produced one of the most promising studies to date; it contextualizes embodied energy in an avoided impact approach, demonstrating the positive environmental impacts of rehabilitating an existing building instead of constructing anew. The avoided impacts are quantified in terms of the number of years it would take for a new (replacement), energy-efficient building to recover all of the carbon expended during the initial construction process.

Despite the potential of an avoided impact approach, embodied energy remains a problematic concept because of the variability and inaccuracy of embodied energy data and methodologies, as well as unresolved inconsistencies in LCA approaches (Dixit et al., 2012). Skepticism is compounded by the fact that many view embodied energy as a "sunk cost." In business accounting, it cannot be recuperated and is therefore not included in decision making about future expenses (Young, 2012). Real estate developers, property owners, and other private interests do not have a financial motivation to preserve existing buildings on the environmental grounds of avoided impacts because, economically speaking, the loss of embodied energy is a social cost that remains largely external to the market.

Operational energy, on the other hand, is a recurring expense that is easily quantified; there is a clear monetary incentive to reduce those costs on the part of consumers. Government policy has also advanced more rapidly to address operational energy reduction through energy performance codes. For such codes to effectively reduce energy consumption and carbon emissions within the built environment, they must apply to existing structures because new construction and major renovations only account for 1% to 3% of the total building stock in a given year (Denniston, Dunn, Antonoff, & DiNola, 2010). In many places, however, designated historic buildings are exempt from energy code compliance or are left to the discretion of local landmark boards (Cochrane & Dunn, 2010) because retrofitting might alter historic fabric. In New York, for example, sites listed on the State and National Registers of Historic Places are exempt from complying with the Energy Conservation Construction Code (New York State Division of Code Enforcement and Administration, 2010). Historic buildings constitute only a fraction of existing buildings, and it might be argued that their role in the overall energy consumption of the built environment is negligible. As noted previously, the policy rationale of the NHPA includes energy benefits, but energy consumption is not a criterion for listing in the National Register of Historic Places or for any known municipal designation. This disconnect between rhetoric and practice suggests that the energy consumption benefits of historic buildings is used to rationalize the cause of historic preservation, but has yet to substantively realign preservation's goals toward a more sustainable built environment.

Alternative Energy

A second area where tensions exist between historic preservation and environmental sustainability goals is alternative energy production, especially wind and solar farms. The preservation field recognizes the need to move away from fossil fuels, but also seeks to protect historic sites and cultural landscapes from the negative impacts of alternative energy development. Solar and wind energy developments require vast stretches of open space, which can run through highly significant or fragile areas; such projects are fraught with NIMBYism. As a result, preservationists are increasingly pitted against energy reformers in their efforts to prevent renewable energy development through such federal review processes as Section 106 of the NHPA and NEPA. These regulatory tools provide important checks and balances for ensuring the protection of historic resources in federal undertakings, but the growing investment in alternative energy to reduce fossil fuel dependency will only increase such conflicts.

For example, when several wind and solar farms were proposed in California's Mojave Desert along historic Route 66, raising concerns about the impact on viewsheds and the cultural landscape, Senator Diane Feinstein introduced legislation in 2009 to designate the area a national

monument, thereby scuttling more than a dozen projects that would have created clean energy and jobs (Woody, 2009). When Cape Wind was proposed off Cape Cod and Martha's Vineyard (MA), historic preservation groups opposed the wind farm and joined forces with tribal communities who had a historic attachment to the land in an effort to thwart development. The stretch of water was deemed a cultural landscape eligible for listing in the National Register, thereby incurring Section 106 review under NHPA (ACHP, 2010; Nordhaus & Shellenberger, 2007; Seelye, 2010). This dynamic is not exclusive to the United States. In the 36th session of the United Nations Educational, Scientific and Cultural Organization (UNESCO; 2012) World Heritage Committee in 2012, prompted in part by controversial wind turbines proposed near Mont Saint-Michel in northern France, wind farms were identified as a recurrent preservation threat: "There is an urgent need to understand when and where turbines can be erected in relation to World Heritage properties in order that turbines that generate green energy are not seen to be always in conflict with heritage assets" (p. 6).

Lewis (2015) provides a comprehensive analysis of some of the seemingly common aims of historic preservation and renewable energy transmission in the United States, as well as the many barriers created by historic preservation in the transmission development process. In reviewing federal legislation and past conflicts, he concludes that policy reform is needed to clarify the relative public benefit of each and prevent ongoing conflict between the two interests. Renewable energy development is on the rise and is vital to national security as well as environmental sustainability. Preservation certainly has a role to play in mitigating the adverse effects of such development on the nation's historic resources, but recent conflicts underscore the tensions between existing preservation practice and renewable energy planning and land use.

Density

The third environmental area where historic preservation may conflict with the sustainability paradigm is densifying metropolitan areas in ways that prevent sprawl and the consumption of greenfields. How preservation situates itself within this dialogue is still unfolding. Beaumont (1996), Listokin (1997), Reichl (1997), and others assert that preservation plays an integral role in growth management, but the preservation field has not robustly embraced that charge. Those involved in historic preservation must address the issue of density and sprawl and understand how preserving historic structures may lead to lower density in urban areas.

Preserving older buildings and districts tends to protect low-scale structures and streetscapes. Preservationists also seek to ensure compatibility of nearby construction, which would likely trend toward lower scales for appropriateness. There is little quantitative research demonstrating that low-scale buildings in urban historic districts equate to low population density, or conversely that new, tall buildings always create high population density. A study of Seattle (WA), San Francisco (CA), and the District of Columbia by the National Trust for Historic Preservation Green Lab (2014) finds that areas with a mix of new and old buildings had higher population densities than did those with new buildings. Nonetheless, some scholars still argue for the introduction of new and taller buildings to achieve density goals: "Smarter preservationism would push new buildings to be taller, not shorter. Building taller, newer structures would reduce the pressure to tear down other, older monuments" (Glaeser, 2011, p. 263).

Conflicting assertions underscore the need for better data about urban historic districts and their densities. However, preservation advocacy groups and municipal agencies have traditionally invested more resources in identifying historic buildings and districts and in reviewing potential interventions on or impacts to those designated. Few resources are devoted to evaluating the long-term outcomes of designation on urban form and social conditions.

The tension between preservation and the goal of increasing density is compounded beyond urban cores by the efforts of preservation advocates to preserve historic suburbs despite their unsustainable land use and exclusionary history (Longstreth, 2011). While sustainability advocates and planners grapple with ways to densify suburbs and reduce sprawl, post–World War II suburbs are now a growing typology on the National Register as preservationists increasingly recognize and protect these developments as historic resources. Tensions are further exacerbated when the protection of low-density historic centers and areas plays a role in pushing development into open spaces beyond urban cores, or when the transfer of development rights results in high-rises looming over historic structures (Talen, 2012). To engage more effectively in sustainable land use planning, preservationists need to better understand the extent to which preserving older buildings at low density in the urban core or in historic suburbs may contribute to overall lower density development and sprawl.

Economic Sustainability

How historic preservation intersects with the economic sustainability goals of growth and vitality is yet another area of tension, in part because the economic value of

historic buildings and sites is an unresolved question within the preservation field itself. The sustainability paradigm is often in conflict with the capitalist nature of urban development. Sustainability advocates argue that other public goals are more important than developer profit, and that development decisions should be based first and foremost on environmental, then social, goals. However, *Agenda 21 on Sustainable Construction* (International Council for Research and Innovation in Building and Construction [CIB], 1999) hones in on the importance of social and economic considerations, and on the cultural issues related to historic preservation:

> A decade ago, the emphasis was placed on the more technical issues in construction…and on energy related design concepts. Today, an appreciation of the non-technical issues is growing and these so-called "soft" issues are at least as crucial for a sustainable development in construction. Economic and social sustainability must be accorded explicit treatment in any definition. More recently also the cultural issues and the cultural heritage implications of the built environment have come to be regarded as pre-eminent aspects in sustainable construction. (CIB, 1999, p. 18)

Since before the enactment of the NHPA in 1966, quoted previously, economic benefits have been part and parcel of the public policy rationale of historic preservation. The New York City Landmarks Law, passed in 1965, includes among its policy aims to "stabilize and improve property values in [historic] districts…protect and enhance the City's attractions to tourists and visitors and the support and stimulus to business and industry thereby provided… [and] strengthen the economy of the City" (Section 25-301). Thus, designation protects historic buildings and districts from market pressures, preventing demolition and inappropriate alterations; at the same time, preserving those buildings and districts is meant to serve as an integral factor in the economic base of the community.

But while the policy rationale for preservation clearly embraces its potential to contribute to economic vitality, preservation's economic toolbox is underdeveloped. There is likewise palpable debate within the field about justifying the protection of historic resources on economic grounds, as many contend that market forces should not influence the assessment of architectural or cultural significance. Just as the criteria for designating buildings and districts do not include energy consumption considerations, economic factors are largely absent as well. Again, because investment is often concentrated at preservation's front end of designating properties, rather than at the back end of evaluating designation impacts on places and people, the fractured dynamic between policy intent and outcomes limits the preservation field's capacity both to adapt and to engage effectively in the economic sustainability discourse.

In the face of declining public funds, a shrinking supply of buildable urban land, and competitive real estate dynamics, historic preservation advocates, particularly in the United States, are increasingly using private market arguments to rationalize designation and other preservation activities. But they are stymied in this goal by the lack of good data, and particularly data showing the full range of preservation's economic and social benefits (Ryberg-Webster & Kinahan, 2014; Rypkema, Cheong, & Mason, 2011).

For example, a growing body of literature describes the positive economic impacts that historic district designations have in urban areas. Most studies find that designation has a neutral to positive effect on residential property values; most indicate an enhanced price premium (Coulson & Lahr, 2005; Leichenko, Coulson, & Listokin, 2001; New York City Independent Budget Office, 2003; etc.). The impact of designation on commercial properties has been little studied, with Asabere and Huffman (1991) finding insignificant price premiums associated with non-residential properties within historic districts.

Some research suggests that preservation does create broad positive economic impacts through the total additional value created by preservation investment or historic assets. These studies estimate the impacts generated primarily through tourism, taxes, jobs, and construction, using input–output modeling (for a comprehensive bibliography, see Mason, 2005). In the United States, a number of statewide studies (for a comprehensive list of statewide studies by the ACHP, see http://www.achp.gov/economic-statewide.html), analysis of the Federal Historic Tax Credit Program (Rutgers University & National Park Service, 2013), and similar research find that preservation has a net positive effect on local or regional economies, thereby building a strong rationale for public and private support. However, most of these studies are advocacy driven, commissioned and undertaken with the intent to prove that current practices of historic preservation are economically viable, rather than structured to understand how the preservation field can better align its goals with a sustainable economic development agenda.

Social Sustainability

Social sustainability is a highly debated idea, and its goals within the sustainability paradigm cover a wide spectrum. In a review of the literature, Vallance, Perkins, and

Dixon (2011) conclude that social sustainability is "a concept in chaos" (p. 342). In their own interpretive scheme of the concept, they include "preservation—or what can be sustained—of sociocultural characteristics in the face of change, and the ways in which people actively embrace or resist those changes" (Vallance et al., 2011, p. 342) as one of the essential functions of social sustainability.

The discourse regarding preservation's contributions to social sustainability is nascent and equally undefined. But if one accepts that historic buildings and districts are fundamentally a sociocultural characteristic, in that society ascribes collective meaning and significance to them through designation, the literature supports some connections.

In her seminal 1981 law text, Rose notes that a community-building argument for preservation is threaded throughout the legal discourse since the 1896 decision of *United States v. Gettysburg Electric Railway Co.* She contends, "A major public purpose underlying modern preservation law is the fostering of community cohesion, and ultimately, the encouragement of pluralism" (Rose, 1981, p. 533). In the past three decades, these concepts of community cohesion and pluralism have evolved and generally emerge as part of the preservation- and sustainability-related discourses regarding inclusion, diversity and participation, and intergenerational equity. However, despite the fact that preservation is fundamentally a socially driven process that differentiates buildings and districts because of the values and meanings society ascribes to them, there is shockingly little research about the social goals and intended outcomes of historic preservation, let alone about their connection to sustainability.

Inclusion

In urban contexts, preservation's relationship to inclusion has largely centered on historic preservation's role in affordable housing access and gentrification. In recent years, researchers have asserted that preservation can have localized exclusionary effects. Harvard economist Edward Glaeser (2010), in a study of Manhattan south of 96th Street, estimates that the average price of a midsize condo in a historic district rose by $6,000 per year more than those outside a historic district from 1980 to 2002. Glaeser attributes this, in part, to the regulation of new construction in historic districts. Because historic districts have an aesthetic draw for potential residents, there is high demand but low supply due to the restrictions on larger or higher-density infill building. This likewise contributes to a growing income disparity between those who live in historic districts and those who do not, as well as to the availability of affordable housing.

Related to this criticism, particularly in urban contexts, is preservation's perceived association with gentrification. While a fair amount of research has been done on gentrification in general, few studies specifically examine preservation's direct implications. Allison's (2005) analysis of historic districts in New York City produces inconclusive findings as to whether historic preservation causes or is an effect of gentrification, with much depending on when designation takes place. While Glaeser's (2010) previously noted research proffers that housing prices and resident incomes increased in Manhattan historic districts, it is not clear whether neighborhood revitalization prompts gentrification and historic districting, or if historic districting drives the process. Chusid (2006) effectively counters similar claims that designation causes gentrification in the case of Austin (TX), but a recent study of the APA's Great Neighborhoods, the majority of which are officially designated historic districts, finds correlations between income inequality and (preserved) urban form (Talen, Menozzi, & Schaefer, 2015).

The research that explores this preservation-centered inclusion inquiry is limited, and the conflicting and inconclusive analyses underscore the need for closer examination of the effects of designation on communities to more fully understand preservation's role in social sustainability.

Diversity and Participation

Issues of diversity and participation create new challenges in light of sustainability concerns, which are as much about the sustainability of preservation policy itself as they are about preservation's contributions to social sustainability goals. Much as the concept of biodiversity and the protection of endangered species aim to promote ecological variation and environmental protection, historic preservation is viewed as a means of maintaining diversity within and stewardship of the built environment. As more time passes, there is more history, and there are more stories to tell through historic buildings and districts. This is in part why preservation policies of listing do not seek to cap the number of designated properties. The U.S. National Register of Historic Places lists more than 90,000 properties and districts, including more than 1.4 million individual resources. There are 30,000 New York City landmarks and historic districts, with 25% of properties in Manhattan subject to some form of preservation regulation as of 2013, though less than 4% citywide (Dietrich, 2014).

However, quantity alone does not guarantee diversity or the preservation of difference as represented by historic resources. Of the more than 2,400 National Historic

Landmarks in the United States, 25% are concentrated in three states: New York, Massachusetts, and Pennsylvania. Nearly 50% of all UNESCO World Heritage sites are located in Europe; despite policy efforts in the past 15 years to diversify representation of non-European countries on the World Heritage List, the number keeps increasing. The fundamental policy of listing creates a dialectic tension between the untidy differences of pluralist society and the shared platform of a collective narrative, sometimes making access to preservation institutions and processes difficult for individuals and communities who are unfamiliar with or marginalized from the workings of the field. Thus, preservationists are also struggling to engage historically underrepresented stakeholders through more participatory decision-making processes (Dubrow, 2003; Kaufman, 2009; Lee, 2003). Communicative and advocacy planning theories have informed and spurred the application of more bottom-up and deliberative processes through which stakeholders can participate in decisions about what to designate and how to preserve (Lee, 2004). Values-based preservation methodologies also seek to advance diversity and participation (Avrami, Mason, & de la Torre, 2000). While such approaches have been examined at the project level (de la Torre, 2005), little research has sought to examine this dynamic at the policy level (i.e., how preservation can effectively provide a public platform or conduit for diversity and participation).

Intergenerational Equity

Preservation's contributions to social sustainability have also been rationalized on the basis of intergenerational equity. The intergenerational equity argument is underpinned by the notion that historic sites are a nonrenewable resource (Throsby, 2001). Borrowing from the natural resources realm, *nonrenewable* means that the resource cannot be recovered or replenished at a rate that exceeds consumption. However, historic or architectural significance is a social construction that plays out on old buildings and neighborhoods. New meanings are invented every day; cultural attachments to historic places and the social values ascribed to them are always in flux. The extraordinary growth of listed or designated places—from New York City Landmarks to World Heritage Sites—underscores the fact that there are always more historic resources to be "made." The nonrenewable argument is based largely on a flawed concept of preservation as significant things that we discover and steward for the benefit of future generations; more recent scholarship has demonstrated the social processes through which heritage value is created and recreated (Hobsbawm & Ranger, 1983). It is precisely the renewability of this process—the capacity to always ascribe new values and craft new stories within the built environment—that makes preservation resilient and socially sustainable.

That said, individual sites and landscapes, because of the materials, forms, and techniques used in their original construction or the conditions under which they were created, may be irreplaceable. Machu Picchu and the Taj Mahal would be difficult to replicate; today's Penn Station, tucked in the bowels of Madison Square Garden, is certainly not the same experience as the McKim, Meade, and White Penn Station of the past. But that speaks to notions of substitutability rather than renewability. The way in which particular stories are spatialized in particular places may be inimitable, but this has more to do with the quality of preservation than the quantity of historic sites.

Through this cumulative, ongoing designation of heritage, places are protected as bequests for the benefit of future generations. However, it likewise creates maintenance burdens and limits options for future land use and construction. This is where the sustainability of preservation itself bumps up against the aforementioned idea of "what can be sustained of sociocultural characteristics in the face of change" (Vallance, et al., 2011, p. 342). That is not to say that the process of listing buildings and districts is inherently flawed or bad for social sustainability. Instead, the preservation field is challenged to reconsider longstanding policies and practices in light of social, economic, and environmental sustainability concerns.

Conclusions

There is a profound and passionate assumption that preservation is good for society and for the planet. While this may indeed be the case, the data and research needed to demonstrate preservation's contributions to environmental, economic, and social sustainability is lacking, thereby contributing to tensions between sustainability goals and preservation practice. These conflicts are compounded by adherence to preservation policy tools that do not prioritize robust understanding of preservation outcomes and impacts on communities, which could serve as a vital means of evolving and informing decision making. Better data collection and measurement would enhance understanding and alignment of preservation's role in sustainability and at the same time build a stronger base of knowledge about preservation's benefits to society. As Rypkema, Cheong, and Mason (2011) note:

> Many in preservation want data "to make the case" (i.e., advocate what they would have advocated

anyway) without really opening up to understanding how…research could shape, change, and improve the field's understanding of how historic preservation should work as well as preservation's potential and actual benefits. As a field, preservation needs to recognize the inevitability of change and determine the best strategies to respond, not just fear change and the associated risks. (p. 45)

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