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INTANGIBLE CULTURAL HERITAGE AS A CATALYST FOR SUSTAINABLE HISTORIC PRESERVATION AND URBAN REGENERATION

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This study examines how intangible cultural heritage can strengthen sustainability outcomes in historic preservation and urban regeneration by supporting the territorial capital of places. While preservation and sustainability share common goals—such as conserving resources through adaptive reuse and learning from long-tested building practices—heritage-based approaches are often viewed as peripheral to sustainability agendas focused narrowly on energy and carbon metrics. Drawing on the concept of intangible cultural heritage as living knowledge, skills, and social practices, the paper argues that cultural frameworks can inform environmentally responsible design while maintaining identity and continuity in historic environments. Two case studies illustrate this argument. The first analyzes a collaborative design/build studio at Fort Pulaski National Monument (Georgia, USA), where preservation and architecture students worked with traditional trades to develop volunteer accommodation proposals grounded in vernacular environmental responses and craft techniques. The second examines the regeneration of Birmingham's Jewellery Quarter (England, UK), where intangible industrial heritage and local industrial linkage have enabled the return of maker-based enterprises within a walkable historic urban fabric. Together, the cases demonstrate that integrating intangible cultural heritage into design education and regeneration planning can preserve the relationship between society and environment, enhance territorial capital, and support resilient development in historic districts. The findings suggest that sustainable practice in historic contexts should adopt combined cultural and environmental analyses that treat heritage as an active resource for future-oriented change.

INTRODUCTION

Can historic preservation be sustainable? Clearly, yes. Reusing heritage buildings for contemporary functions, retaining existing materials and architectural features, and studying—then recording—vernacular and traditional construction methods are core activities of preservation, and they closely align with the central goals of sustainability. Yet, even after more than three decades of environmental initiatives within architecture, planning, and the building industries, a persistent belief remains that historic preservation is either unsustainable or only loosely connected to sustainability in architecture and urban design. This misunderstanding likely stems from common but inaccurate assumptions about what preservation and sustainability actually involve. As Michael Tomlan (2015:358) observes, a long-standing notion portrays preservation as an "artifact-centered" mission mainly devoted to preventing change, a view that some preservationists and design professionals also accept (ibid.). At the same time, since the early 2000s, many sustainability discussions have focused heavily on renewable energy and efficiency, reinforcing the idea that carbon footprint alone is the key measure of sustainability (Chusid and Stock, 2020). In reality, both fields are more complex than these simplified narratives suggest. Preservation is not a refusal of change; rather, it is a discipline concerned with carefully guiding and managing change in the built environment. Stipe (Stipe 2008) captures this well: "There must be an acceptance of change, for without change there is no such thing as tradition to preserve." Preservation also extends beyond protecting objects as static relics. Its broader aim is to keep heritage meaningful and useful within contemporary society, consistent with the principle that conservation of monuments should be supported by "making use of them for some socially useful purpose" (ICOMOS, 1964: Article 5). In doing so, preservationists safeguard not only physical fabric but also, in certain cases, the intangible cultural heritage connected to these places.

Can urban regeneration be sustainable? Again, yes—but it tends to succeed most effectively when it respects and incorporates the heritage of the area being renewed. Across North America and Europe, many new projects in former industrial districts achieve strong environmental performance through reduced energy and water use and healthier indoor conditions. Even so, a crucial question remains: do such developments genuinely relate to the wider urban context? Perhaps. More importantly, when regeneration strategies revolve almost entirely around energy metrics, do they also sustain the cultural character of historic postindustrial cities—places whose industrial legacy once shaped their economic and social identity? Often, the answer is no.

BACKGROUND AND LITERATURE REVIEW

UNESCO (2003) describes "intangible cultural heritage" as the practices, representations, expressions, knowledge, and skills—together with the associated instruments, objects, artefacts, cultural spaces, and traditions—that communities and groups recognize as part of their heritage. Passed down across generations, it is continuously recreated in response to changing environments and histories, and it provides identity and continuity while encouraging respect for cultural diversity and creativity. Some may treat intangible heritage mainly as an interpretive framework for educating the public about past social life—through stories, rituals, festivals, and performances. While such cultural expressions matter greatly for supporting the protection of tangible historic resources, intangible cultural heritage is also crucial in another sense: it includes the knowledge systems through which communities understand nature and the world, frequently expressed through traditional craft and making. If preservation and regeneration are to become more sustainable, these dimensions—how cultures relate to natural systems and how craft knowledge is transmitted—can offer practical paths for integrating environmental responsibility into the care and evolution of built heritage.

Intangible cultural heritage has been central to the formation of many traditional urban and rural landscapes.

Of course, not every building practice or manufacturing tradition has benefited the environment; many industrial-era processes were damaging, especially during the Industrial Revolution. Still, forms of intangible heritage that build cultural identity and strengthen urban connections while living in balance with surrounding ecosystems have continued to support viable and resilient environments in postindustrial cities and rural regions across North America and Europe. Without understanding how such heritage contributes to livable landscapes, designers risk producing interventions that are environmentally efficient yet culturally disruptive. Learning from intangible cultural heritage can help practitioners develop approaches that allow historic places—shaped by long-term interactions between people and nature—to continue adapting over time rather than being swept away and replaced, a process that can permanently weaken cultural identity and potentially harm a community's well-being.

In summary, both historic preservation and urban regeneration can be sustainable, but only when pursued in the comprehensive, integrated way advocated by the Brundtland Commission (Brundtland, 2002: Kapp 2018). This paper outlines how these fields can respond to sustainability challenges at both small and large scales by drawing on a place's most active and evolving resource: its intangible cultural heritage. Two case studies are presented. The first examines a design/build initiative at Fort Pulaski National Monument in Georgia, where preservation-trades students, graduate architecture students, and the United States National Park Service (NPS) collaborated to create an accommodation complex that reinterpreted intangible building knowledge in innovative ways. The second explores the revitalization of Birmingham's Jewellery Quarter in England, where new artisan enterprises are operating within a historic industrial district to help shape a renewed, innovation-driven economy. Together, these examples show how intangible cultural heritage can support comprehensive sustainable development in historic districts and regions while strengthening sustainability outcomes in both preservation and urban-regeneration practice.

TWO CASE STUDIES OF SUSTAINABLE HISTORIC PRESERVATION

Fort Pulaski National Monument Design/Build Project

Located at the eastern end of Cockspur Island, Georgia, Fort Pulaski has long been vulnerable to tidal forces and hurricanes. Finished in 1847 as part of the Third System of U.S. coastal defenses, it was intended to safeguard access to the port of Savannah (NPS, 2015). During the American Civil War, rifled artillery proved decisive: in 1862, bombardment during the Battle of Fort Pulaski breached sections of the fort's eastern wall, compelling Confederate forces to surrender. That same technological shift effectively made masonry coastal forts like Pulaski outdated. The site later gained protected status when President Calvin Coolidge declared it a national monument in 1924, and in 1933 it was transferred from the War Department to the National Park Service (NPS), which continues to manage it (ibid.).

Across the nineteenth and twentieth centuries, various cottages, cabins, and service structures were constructed near the fort. Because building below sea level in a hurricane-prone zone is inherently risky, these structures were erected with the expectation that they might not endure indefinitely—yet they were still built with care and competence. Today, only a small portion of those earlier buildings survives. The broader Cockspur Island complex now consists mainly of service facilities, a U.S. Coast Guard station, artillery batteries, a lighthouse, and the fort itself.

Education and volunteer engagement are central to NPS programming at Fort Pulaski. Beginning in 2005, many volunteers—often retirees—were housed in recreational vehicles within an NPS-designated parking area west of the fort. Over time, staff recognized clear limitations: not all volunteers could supply RV accommodation, and educational groups were even less able to do so. At the same time, nearby lodging options in Savannah and on Tybee Island became increasingly expensive or unavailable during peak tourism

seasons. These pressures led NPS personnel to explore on-site housing alternatives for volunteers and visiting educational groups.

In the fall of 2015, the NPS launched a collaborative design/build studio joining the University of Illinois School of Architecture's Historic Preservation Program with the Historic Preservation Trades Program at Savannah Technical College (STC). The task was to design and build a small volunteer accommodations compound consisting of an education/conference building and three lodging cabins: one intended for single-family use and two hostel-style cabins designed to house eight occupants each. Fort Pulaski staff required that the project incorporate environmentally responsible design strategies, minimize site disturbance, ensure full accessibility, and rely on traditional construction methods.

The studio was structured to promote sustained conversation between designers and craftspeople, grounded in traditional building knowledge—especially timber framing, ironwork, and masonry. Graduate students from Illinois traveled to Savannah to complete an environmental assessment of the site, study regional vernacular traditions in southeastern Georgia, and participate in a three-day hands-on workshop led by STC preservation-trades students focused on historic building skills.

Both the environmental analysis and the vernacular study were approached through a sustainability lens, but also—crucially—through preservation priorities. In preservation education, examining environmental conditions and their effects on historic fabric has been standard practice for decades. Programs have also emphasized that the cultural knowledge shaping a monument must be understood to conserve it effectively. Tomlan (2015:216) describes this approach by emphasizing that documenting vernacular places requires learning local interpretations of building traditions and paying attention to seasonal change, since it can reveal when features were introduced or removed.

Following this method, the Illinois students documented nearby historic precedents in Savannah and on Tybee Island through measured drawings and sketches. They also reviewed scholarly literature to understand why southeastern Georgia's vernacular house forms evolved as they did. Key elements were studied in detail—roof pitch and overhang depth, foundation strategies, porches and stoops, layout patterns, ceiling heights, and window/door placement. As their analysis developed, students recognized that these features were not merely stylistic expressions of intangible cultural heritage; they were also practical adaptations to local climate and landscape conditions. In other words, the region's inherited building knowledge offered direct guidance for sustainability goals. Strategies related to water reduction and efficient landscaping (LEED1 water efficiency prerequisite 1 and credit 1), along with improved ventilation, thermal comfort, daylight access, and views (LEED indoor environmental quality credits 2, 7.1, and 8.1), were already embedded in many of the vernacular solutions refined over generations (USGBC, 2009).

The students then turned to local materials and construction systems. Coastal Georgia vernacular building commonly uses timber framing, supplemented in limited ways by iron and masonry. This naturally raised deeper questions about process and purpose: how were these buildings assembled, and why did builders choose specific techniques? Through the STC workshops, Illinois students were introduced to modular traditions such as the timber-framed "pen," and they learned about constraints and performance characteristics of historic masonry materials, including slake-formed lime mortar produced from oyster shells sourced from the Savannah River.

Ongoing discussions—conducted remotely via Skype—extended this learning exchange. Students and instructors from STC explained how traditional Georgian construction could be both durable and resource-efficient. Over time, both groups converged on a set of practical methods for the cabins: mortise-and-tenon joints, timber bracing, and brick-pier foundations were identified as especially appropriate for the project's demands.

To test these ideas, STC students produced full-scale and partial mock-ups of key components, including foundation options, roof and ridge configurations, queen-post trusses, porches, and balcony assemblies. Illinois students evaluated these prototypes and integrated the lessons into their designs. Ultimately, three detailed proposals were prepared for NPS review, each including a master plan and cabin drawings. All schemes aimed to embody sustainability principles through the region's intangible cultural heritage and craft practices. Some proposals closely echoed the area's historic architectural character, while others adopted contemporary forms built using traditional methods. The original intent was to construct the selected student design; however, after Hurricane Irma caused significant damage at Fort Pulaski in 2017, the work was paused and was expected to restart in 2021.

What students gained from Cockspur Island may not be "new" to specialists. For decades, preservationists and many sustainability advocates have recognized that existing buildings contain substantial environmental value, and preservation education has long treated climate responsiveness in historic architecture as essential knowledge. The larger issue lies in persistent professional assumptions: many in the building industries still treat preservation as separate from sustainable design, and they often assume that traditional practices—intangible cultural heritage—are only relevant when analyzing old vernacular structures rather than when shaping new interventions. Yet preservationists have argued the opposite for over thirty years. Park (1998:13), for example, emphasizes that vernacular buildings frequently embody principles now associated with "green" design: local materials, careful siting for sun and prevailing winds, passive heating/cooling, and durable construction, along with features such as porches, awnings, large openings, roof ventilators, deep overhangs, and deciduous shade trees that deserve renewed attention. What is equally important—though often under-acknowledged—is that the cultural knowledge behind those features is itself a sustainability asset. Even if some critics label such an approach nostalgic or anti-technology, the argument here is not to reject innovation, but to integrate craft knowledge, landscape logic, and structural wisdom into both new construction and rehabilitation within historic contexts. When intangible cultural heritage is considered at the district or city scale—especially in postindustrial settings—it can strengthen broader sustainability agendas.

Regeneration of the Jewellery Quarter, Birmingham, England

As Jackson (n.d.) argues in discussing urban form, a truly sustainable planning model can be found in many cities built before the dominance of automobiles: their density, land-use patterns, and neighborhood functioning often support cultural, social, and economic vitality in ways that modern sustainability frameworks still strive to achieve—and ecological value can be added to that discussion with relative ease. This observation is especially relevant to postindustrial cities, which commonly face shrinking tax bases and the decline or abandonment of former industrial cores and central business districts. While globalization has contributed to this urban downturn, changes in industrial organization have also been decisive. What is often described as "postindustrialism" can be interpreted more precisely as post-Fordism, in which mass production shifts elsewhere or is restructured through automation. Interestingly, today's "innovation economy" shares features with nineteenth-century artisan production, particularly in the emphasis on flexible, small-scale making.

Despite common assumptions, industrial manufacturing has not vanished from North America and Europe. Instead, digital tools—computer-aided production, 3D printing, software-based fabrication, and small-batch operations—are reshaping how industry functions and how people interact in cities. These newer firms tend to be smaller, often seek adaptable interior spaces, and prefer districts whose street networks and block patterns support pedestrian movement and casual interaction. Importantly, many of these urban districts already exist because they were established before Fordist development patterns reshaped cities such as Pittsburgh and Detroit, which are now targets of regeneration. To reinvest in these places responsibly, it is critical to understand how they were originally formed through intangible industrial heritage—defined as the traditional craft knowledge, skills, practices, and know-how that explain industrial processes and the material

remains they produced (Robinson, 2014). A clear illustration of this relationship can be seen in Birmingham's Jewellery Quarter.

The Jewellery Quarter—also called Hockley—began in the early eighteenth century as a residential suburb characterized by semi-detached villas for upper-middle-class households. Over time it became an early example of functional adaptation, as houses were repeatedly repurposed rather than demolished. With Birmingham's industrial expansion in the eighteenth and nineteenth centuries—shaped in part by figures such as James Watt and Matthew Boulton—Hockley changed as more residences were acquired by industrialists. Rather than replacing villas and terraces with large factories, many buildings were converted into small-scale production spaces. This pattern contributed to Birmingham's reputation as the "City of a Thousand Trades," with the district producing items such as buttons, springs, firearms, metal components, and jewelry over a span of more than two centuries. A major turning point occurred in 1773 when Boulton persuaded the British government to locate the Birmingham assay office in the area (Cattell, et al., 2002).

Placing the regional hallmarking institution on Newhall Street at the edge of the Quarter helped generate a distinctive intangible industrial heritage that remains legible today. Jewelry workshops—often employing fewer than 15 workers and occupying no more than 5,000 ft.^{2} (465 m^2)—multiplied rapidly. These firms were mainly wholesale producers rather than retail sellers: they bought precious metals, fabricated goods, had them assayed, and shipped finished products to retailers across the British Empire. Over time, this production-and-distribution routine became a defining practice of the district. The assay office also served as a social hinge: competing businesses commonly met there, then continued conversations at the post office and local pubs. Some firms grew and built purpose-designed facilities, but many owners stayed in converted houses and terraces for economic reasons. When large orders exceeded a single workshop's capacity, firms often subcontracted work to nearby competitors.

Through the nineteenth century, the inherited craft knowledge and the associated social practices of jewelry production reinforced a dense clustering of small businesses within a tightly connected urban fabric of narrow streets and intimate public spaces. This industrial concentration supported broader regional conurbation in the West Midlands and helped sustain the Quarter's prosperity. However, during the 1970s and 1980s the district declined, pressured by globalization and by limited capital renewal in Birmingham's jewelry sector—both in skilled labor and in machinery.

Around 2010, signs of renewed industrial activity began to attract attention. Many British millennials, dissatisfied with weak employment prospects even after earning degrees, turned toward entrepreneurship, using emerging technologies to create new products and services. Some launched jewelry businesses; others developed small fabrication operations producing specialized automotive components, food products, software, or cultural goods such as music. Low rents were part of the attraction, but so was the Quarter's longstanding culture of artisanship and its local industrial linkage—an aspect of intangible cultural heritage. Tolley (1972:351) describes local industrial linkage as the support networks that enable idea exchange, subcontracting, and specialized processing in districts where many small or medium firms operate in proximity.

By 2014, jewelry-making coexisted in the Quarter with other kinds of making, including brewing and skateboard production. These new makers valued the district's intangible qualities: institutions such as the assay office, everyday meeting points like the post office and pubs, and the walkable street structure and small plazas that encourage interaction. Unlike earlier generations who may have worked there out of necessity, many of these newer artisans and entrepreneurs deliberately chose the area because its spatial form supports collaboration and social life. In newly planned developments, sustainability policies often target active living and reduced car dependence within inclusive, socially healthy environments; in many historic districts, those conditions are already present. For postindustrial regeneration to be genuinely sustainable, the first step is to understand how intangible cultural heritage produced the tangible city. Intangible practices can move with

the people who perform them, or they can disappear over time, but they leave physical traces in the built environment. Recognizing that relationship is essential for regenerating and maintaining historic districts in a sustainable way (Schragger, 2009:485).

RESULTS AND DISCUSSION

Intangible cultural heritage, expressed through buildings and urban form, represents how a civilization actively shapes and negotiates its environment. When this intervention is carried out with longevity, human use, and ecological conditions in mind, it generates *territorial capital*—the combined set of place-based economic, cultural, social, and environmental assets that supports long-term development (McHarg, 1969; Perucca, 2014:537). By contrast, many current construction approaches depend almost entirely on rapid, machinery-driven assembly of prefabricated components, while contemporary urban building types often eliminate traditional live/work patterns. These tendencies typically fail to build territorial capital and frequently erode it, reducing the sustainability of both individual buildings and entire districts.

The idea of intangible cultural heritage gained momentum in the 1970s, alongside the growing acceptance of sustainability. The expression itself was introduced in 1982 at UNESCO's World Conference on Cultural Policies in Mexico, followed by a series of international frameworks that progressively clarified its meaning, culminating in the 2003 UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage (Leimgruber, 1965). Even though sustainability principles and the concept of intangible cultural heritage developed in parallel, intangible cultural heritage was rarely treated as part of sustainable building and design thinking. One reason may be that it was strongly associated with anthropology and folklore, placing it outside the emerging mainstream of sustainability-oriented design. This separation has contributed to lost opportunities for producing more sustainable urban environments (Embaby, 2014:344).

Incorporating intangible cultural heritage into design can begin within academic studios, as illustrated by the Fort Pulaski design/build initiative. Mohga E. Embaby (2014:340–344) argues that students must first grasp local community values through a place's "physical, social and economic characterization." She maintains that designers should balance these local value systems against modern, science-based performance measures, so that shared ground between heritage and performance can be identified—but only after a careful, parallel analysis of cultural and environmental dimensions. As Gil-Martín, et al. (2012:270) emphasize, such an approach helps achieve environmental sustainability, protects the relationship between society and its environment, and supports the continuation and growth of territorial capital. They further argue that when designers apply a combined cultural-and-environmental method, enduring construction types, architectural detail, and human-scaled form—features that have sometimes persisted for centuries or millennia—can remain present within historic settings. This integrated methodology is therefore essential for linking sustainability and preservation practice in historic places globally.

Beyond simply maintaining physical artifacts as reminders of earlier generations, safeguarding intangible cultural heritage in preservation can act as a driver for learning purposeful responses from the built heritage—responses shaped by local climate, materials, and long-tested building knowledge—and then applying them creatively in both rehabilitation and new construction. Earlier builders worked through practical challenges such as passive heating and cooling, daylighting, and strategies for wind and rain. It is reasonable, then, to study historic buildings and construction practices and carry forward the most valuable lessons into new projects, ideally adding to the future heritage of a place. In historic contexts, this learning process can strengthen the human–environment relationship without weakening territorial capital.

Historically, urban form has mirrored patterns of daily life and work. Yet designers in recent decades have often set aside the intangible cultural heritage embedded in live/work practices. In the United States,

postindustrial decline reflected, in part, the domestic weakening of Fordist mass production, driven largely by automation and the relocation of manufacturing to countries with lower labor costs. In places where Fordism did not fundamentally reshape the landscape, intangible industrial practices produced urban structures that encouraged what Tolley (1972:351) called "local industrial linkage," enabling efficient industrial clustering and conurbation. The Birmingham Jewellery Quarter—and the wider West Midlands—demonstrates this clearly. Although jewelry-making employment has dropped sharply since the 1960s, the district's urban fabric—and with it, the everyday culture of making—continues. As older economic systems faded and new ones emerged, Birmingham has seen fresh production methods draw on this urban intangible cultural heritage to renew the district while retaining its historic character. The central point is that intangible cultural heritage is closely tied to postindustrial regeneration. The UK, for example, remains the world's sixth most productive nation, but it achieves this through different production models and delivery systems than in earlier eras (Taylor, et al., 2017).

In the UK, large industrial plants are increasingly being replaced by smaller enterprises. Since 2009, 15% of industrial growth has been attributed to new small firms. By 2015, the UK had around five million micro businesses (one to nine employees), representing 33% of private-sector employment—up from 3.5 million in 2000 (Royal Society for the Encouragement of Arts, Manufactures and Commerce, 2017). Alongside this shift is the rise of the "gig economy," where work is structured around short-term contracts and freelance arrangements rather than permanent jobs. This model has been expanding within industrial districts across the UK, including places like the Jewellery Quarter (Taylor, et al., 2017). While some economists argue that existing infrastructure may not support these changes, evidence suggests the opposite may be the case. The expanding micro/innovation economy often emphasizes product quality over sheer quantity, and digital tools have renewed interest in one-off and specialized manufacturing. In contemporary Britain, for instance, Sheffield produces specialized cutlery, and Birmingham fabricates specialized automotive components.

Because English industrial conurbation developed prior to Fordism, regenerating postindustrial quarters through intangible cultural heritage is often more straightforward than attempting to revive Fordist landscapes in the United States, where the postindustrial terrain is deeply connected to obsolete mass-production systems. In settings built around the scale and logic of machinery-driven production that no longer fits current economic realities, leveraging intangible cultural heritage may be difficult or impractical. Therefore, regeneration strategies that depend on intangible cultural heritage must be aligned with today's emerging economy—one increasingly shaped by micro businesses, innovation, short-term contracting, and customized production. Supporting this dynamic economic direction requires environments where intangible industrial heritage genuinely enables it.

Once celebrated as the "City of a Thousand Trades," Birmingham's postindustrial districts offer particularly favorable conditions for such development. Other UK cities—including Glasgow, Stoke-on-Trent, and Sheffield—also hold strong potential for similar regeneration. However, effective planning depends on clearly understanding the specific qualities and capacities these places embody before designing renewal programs around them.

CONCLUSION

Historic preservation and urban regeneration can be fully compatible with sustainability when they are guided not only by technical performance goals but also by the cultural knowledge embedded in places. This study has shown that intangible cultural heritage—expressed through traditional building practices, live/work patterns, and long-established social networks—helps generate and sustain territorial capital by strengthening the environmental, social, cultural, and economic assets of historic districts. The Fort Pulaski design/build case demonstrates how combining environmental analysis with vernacular study and craft-based

construction knowledge can produce design solutions that meet contemporary sustainability expectations while remaining rooted in local traditions. Likewise, the regeneration of Birmingham's Jewellery Quarter illustrates how intangible industrial heritage, including artisanal practices and local industrial linkage, can support postindustrial renewal by aligning historic urban form with today's innovation and micro-business economies. Overall, the findings suggest that sustainability agendas should move beyond narrow metrics such as energy and carbon alone and adopt integrated methods that recognize heritage as an active resource. When intangible cultural heritage is treated as a dynamic tool rather than a nostalgic reference, historic places can continue to evolve, retain identity, and contribute to resilient, culturally meaningful, and environmentally responsible development.

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