Conserving the Future: The Need for Sustainability in City Planning and Preservation

MARK HOLLAND

This article, based on the keynote lecture given at APT's 2011 annual conference in Victoria, British Columbia, looks at the many intersections between sustainability and the philosophies and knowledge associated with heritage and preservation.

Fig. 1. Dockside, Victoria, British Columbia. A sustainable community built on an old industrial brownfield. Photographs by the author.

In the late twentieth century the United Nations and many people around the globe were beginning to feel a significant level of concern about what the future held in light of emerging problems associated with global economic activity and patterns of development. The Brundtland Commission, convened by the United Nations in the mid-1980s to address these concerns, published its report in 1987 as "Our Common Future," a document that was to change the world by introducing the concept of sustainable development (www .un-documents.net/wced-ocf.htm).

As the economists and government leaders on the commission spent time working closely with scientists to better understand the projected long-term impacts of current economic activity, some startling conclusions emerged. The economists declared that the business-as-usual patterns of the twentieth century would cause so much negative environmental impact that development could backfire in the twenty-first century because rampant environmental degradation would ultimately undermine economic success. Therefore, twentieth-century economic practices had to be seen as ultimately unsustainable, and we needed to find new ones. Thus the concept of "sustainable development" was born.

In retrospect, it is interesting to note that it was economists who invented the concept of sustainability. However, because it was environmental impacts that were the deepest concerns, very quickly the environmental movement became the highest-profile champion for sustainability, and the two perspectives have since largely become synonymous in popular culture.

The profound downside to this rebranding of sustainable development from an economic concept to one of environmental advocacy was that it subsequently suffered from the same politicization and marginalization as the environmental movement. It became known as the perspective of special-interest groups, rather than the sober perspectives of world leaders and economists.

Today, as we all travel relentlessly forward into the twenty-first century, we see the issues raised by the Brundtland Commission increasingly less as the perspectives of a narrow interest group and more as the "new normal" for all policy and economic decisions. A generation of university graduates educated on these matters, an increasing popularization of science in the media, and a new cultural interest in sustainability have raised sustainability's profile, and the imperative to change the direction of development is now widely recognized.

The concept of sustainability is most easily understood at the global scale. However, as humans are increasingly an urban species, cities have become the front line of achieving sustainability and the consequential "localization" of the global sustainability discussion — and it is here that sustainability crosses paths with heritage and preservation technology.

As buildings and cities are created, we are forever inventing a new world out of the past. We build on previously developed sites, reconstruct roads, replace and extend infrastructure, and renovate existing buildings in an endless process of construction, aging, and renewal. Into this churn comes the rich and deep perspective of heritage preservation, asking us to understand where today fits in the tapestry of yesterday and encouraging us to feel respect for what has been created at different times, first by not physically destroying everything from the past as we create something new and second by appreciating

Fig. 2. Heritage warehouse converted into environmentally friendly housing, Southeast False Creek, Vancouver, British Columbia.

the perspectives, values, and lifestyles of our past as a context and influence on our present.

When we combine the maturity of respect for the past that comes with heritage preservation and the imperative to be cautious and pay attention to keeping the good things we have now for the future as advocated by sustainability views, we find an interesting parallel — an ethic of conservation, both for the past and the future.

At its root, becoming sustainable simply means addressing the areas where we are currently not sustainable and doing things differently going forward. The core issues that challenge our ability to survive for another few hundred years in a global society and economy that is similar to the one we currently have involves addressing a number of fundamental, game-changing challenges, including

Climate change. Emissions from economic activity are polluting the atmosphere, harming our health, and potentially seriously changing the chemistry of the atmosphere. Scientists are widely advocating emissions reduction to avoid significant environmental, social, and economic problems that could result from pollution and global warming.

Fossil-fuel dependency. The global economy is completely dependent on inexpensive conventional oil sources, and the petroleum industry now recognizes that a massive increase in future demand will result in discrepancies between supply and demand, driving prices higher and forcing shifts to other sources of energy.

Waste and pollution. The accumulation of enormous amounts of waste from economic activity and consumption cannot be sustained indefinitely. All sectors of the economy are now reorienting toward reducing waste and pollution.

Water supply. Demand for water continues to rise around the world in most every region due to growing populations, growing demand for food, and increases in industrial activity. However, the core supplies of water that local watersheds can provide remains the same. This direction asks for significant increases in water efficiency and reuse of treated wastewater in our cities (Fig. 1).

Habitat and ecosystem degradation. Human activity and economic growth have caused significant impact on all terrestrial and marine environments, threatening the health or existence of many species. This impact cannot continue indefinitely, and efforts to both protect and enhance habitat are needed.

Food security. The world's food supply is now a global system predicated on significant inputs of fossil-fuel energy, fertilizers, and pesticides. These practices have damaged soil quality and are threatening arable land around the world — a direction that cannot be maintained indefinitely. Responding to this challenge requires more benign agricultural practices and an increase in the scale and capacity of the local-food system in any community.

When we move beyond responding to the above threats to simply ensure that our species and cities will survive into the future, we need to focus on increasing the health of our communities. That imperative raises three additional areas of attention:

Individual and community health. A wide range of issues need to be considered to conserve or enhance community health. These are unique to each community and its specific challenges and opportunities. Some of the core issues include safety, education, and health care.

Economic prosperity and stability. When the combination of all the above challenges converge on a community, its economic prosperity can become destabilized. Strategies to ensure stable local economies are important to complement a global economy and to ensure the well-being of our communities.

Governance and management. We live in a world entirely structured by organizations — public, private, and nonprofit. Ensuring the above issues are appropriately addressed requires that organizations are appropriately directed, managed, and resourced to ensure society becomes sustainable.

The application of sustainability goals today is increasingly left to green rating systems, such as the U.S. Green Building Council's LEED rating program for buildings and neighborhoods. However, the roots of sustainability far outreach any rating system. More importantly, the complexity of heritage preservation requires a greater degree of creativity than any generic rating system can address effectively every time. As such, it is important that those people and organizations promoting both heritage and sustainability start from first principles and custom build a sustainability strategy for their project.

In order to understand the strategic implications of responding to these challenges in any project and to move beyond motherhood statements to real action, these points should be treated as topics of consideration and positive goals developed for each. That list of goals can then be applied to whatever we are working on. The resulting analysis and ideas can be seen as a "custom sustainability strategy" for a project, with each strategy being completely distinctive but applicable in order to make the project substantively more sustainable.

The following discussion explores a number of issues that are central to the planning, building, and functioning of cities and communities. Of particular interest to the preservation sector is the fact that the solutions to many of the challenges lie in learning from the past and integrating knowledge and technology from previous eras into the current era. In this way, we can reposition perspectives on heritage and preservation far beyond a cultural value to a powerful guide in creating a future sustainable society.

When we combine the perspectives and goals of heritage preservation and sustainability to a city, we can identify eight areas of action.

Complete community structure. The first area of action in creating a sustain-

able community is to ensure that it has a high level of local completeness in its land use, thereby offering a diversity of housing, jobs, business opportunities, educational opportunities, amenities, and services to those who live and work in the community. This completeness applies both at a local neighborhood level and a regional scale. This principle calls for a network of neighborhoods, towns, and cities interconnected in a region through sustainable transportation systems integrated around topography, farmland, recreational lands, and sensitive environments.

Interestingly, all our communities were built according to these principles when we relied on horses, railway, and streetcars for our primary transportation. It was not until the mid-twentieth century, with the rapid spread of national highways and automobile ownership, that the main transportation systems on which we all rely became unsustainable. As such, communities from the pre-modern era can offer some of the best advice on how to structure our future communities. In this manner, expertise in historical patterns of development can be a powerful contribution to contemporary sustainable city planning.

Low-impact transportation systems. The second area of attention is the development of a low-impact system for transportation of people and goods. This system includes issues such as road design, vehicle technology, pedestrian experience, emergency-vehicle requirements, and many others. The goal of the rethinking of these systems is to provide for effective mobility and access without a heavy reliance on the personal automobile. As such, more sustainable transportation systems favor the pedestrian, cyclist, and public transit over personal automobiles and work to minimize negative environmental impacts from the transportation infrastructure.

As noted above, much can be learned from historic cities in the development of new transportation systems, including their design for pedestrians and micromobility modes. Future transportation systems should be a hybrid of the human-scale development patterns of the past combined with leading low- or zero-emission technology of the future.

Green buildings. The third area of work relates to addressing the buildings themselves. In light of the challenges of becoming a sustainable society, how buildings are designed and operate has a significant impact on environmental, social, and economic health. Twenty-first-century buildings will be high-performance buildings that include high levels of energy and water efficiency and indoor air quality. They will be durable, flexible in terms of use, and easily repairable and will support lifestyles that likewise are healthful and have low environmental impact. They will be interconnected with innovative infrastructure systems and contribute to the provision of renewable energy, cleaned wastewater, and urban habitat.

However, just because these buildings are high performance does not mean they are spaceships. Interestingly, some of the highest performing buildings built today actually use ancient techniques of responding to local microclimates and employing local, low-embodied natural materials. More importantly, in urban settings, the retention and renovation of existing buildings is the starting place for any green building (Fig. 2). Not all of the currently prominent green-building rating systems (LEED, Built Green, Green Globes, and others) respond appropriately to this need. However, most offer some recognition for reuse and retention of existing building structures and materials.

Some studies have shown that the embodied energy of a building associated with its construction and materials can be up to approximately 15 percent of the total operating energy a conventional building will use over its life. As such, in some situations, there is a strong case for deconstructing or moving an older building, depending on the new uses and needs a project is responding to. However, in many cases, the starting point needs to be the preservation and adaptation of an existing building. In this regard, the preservation-technology sector can play a central role in both conserving the past and the future.

Innovative infrastructure. The fourth area focuses on the systems that supply us with both energy and water and then deal with waste. U.S. President Ronald Reagan is credited with a comment in the early days of the oil embargo when he noted that "conservation is easy – it's just freezing in the dark." His comment is telling in that it raises the issue that simply reducing consumption is not sufficient. Instead, we need to restructure our supply systems for heat, power, and water so that we can use all we need with little or no impact on the planet.

Achieving these goals involves developing renewable energy-supply systems for heating and cooling systems and electric power, both at local levels and at national-grid scales. It also involves installing high-efficiency water systems and appliances and designing landscapes and business operations so they use as little potable virgin water as possible. Further, it calls on us to clean and recycle wastewater wherever possible for non-potable uses. We also need to ensure that all runoff and wastewater are appropriately treated to remove harmful toxins before returning it to streams, rivers, lakes, and aquifers to maintain the necessary water supply for our local ecosystems. Finally, we need to compost organic wastes and reuse or recycle as much of our solid waste as possible — a practice that has been the basis of our past and will again be in our future.

Many of the techniques being used in these innovative infrastructure systems are new and technologically advanced; however, many are also quite ancient. Most low-tech cultures and early pioneer cultures had advanced systems for harnessing wind, water, and other renewable sources, and many of these are being rediscovered and adapted to today's urban environments.

Multitasked urban landscapes. The next area of attention in a sustainable community is addressing the many uses and requirements of the urban landscape, particularly around four dimensions of programming. The first is a combination of preservation and enhancement of key local ecosystem areas to ensure that the sensitive areas are protected and that disturbed areas have re-engineered ecosystems through landscape design that reintroduces appropriate habitat and stormwater-management systems. The second consideration is in establishing areas for urban food production, most often achieved through provision of community gardens. The third dimension involves providing a rich array of recreation

opportunities for all ages to support a healthy lifestyle. The final dimension involves the celebration of arts, culture, and heritage visibly in the landscape, as it is the palette of a community in which we tell and convey the richness of our society's diversity.

Before the era of the automobile, the landscapes in our towns and cities had to accommodate these uses automatically, because it was not feasible to travel long distances to access other landscapes. Thus, there is much we can learn from pre-automobile towns and cities in how every square foot of their landscape was well used, formally or informally, as the place of life for all.

Sustainable local-food systems. The sixth area of consideration in a sustainable community is its food system. Historically, we produced most of what we ate very close to where we lived. With the proliferation of fast land and ocean transportation, economies of scale and comparative advantage have restructured the global food system to a point where a significant amount of the food in an industrialized country comes from another continent. The structure that underpins this global food system comes from inexpensive fossil fuels driving equipment and transportation. With the future rise in fossil-fuel prices, the price of food will likewise rise; when factors of climate change are further considered, a significant shift back to regionally self-reliant food systems is imminent.

We will always benefit from global trade in food stuffs, but we now have the opportunity to better develop our local food economies and the skills, jobs, and cultural energy that comes with them. This local-food movement is reviving many skills and technologies from the past and returning artisans of local food to their rightful place of respect in the eyes of their community. In this area, again, knowledge and skills from the past are central to sustainability and future prosperity.

Individual and community health. The seventh dimension is community health — of both individuals and the community overall. This dimension focuses primarily on facilities, programs, and the development of "social capital" (relationships and organizations) that enable a community to meet its needs for shelter, food, health care, education, arts, and culture. Each community is different in its needs and assets, and, as such, there are no set standards for what is required in this regard. In many ways, this area of consideration calls us to reach beyond sustainability, beyond ensuring our communities will "survive," to reaching to where they "thrive."

Interestingly, in the premodern era and before the advent of television, the social bonds that connected communities and the associated support that individuals and groups gave each other was strong. The advent of a more atomized culture of individual entertainment has changed the time we spend with each other and therefore the bonds that we have. The root concept behind "community" is one of "common ground," and there is much we can learn for our future from the past when we shared more in common and felt a higher level of responsibility for the well-being of each other and our neighborhoods.

Robust local economies. The final aspect of a sustainable community is one that crosses over with all of the others noted above — that of a vibrant local economy. A strong local economy will never replace the significant global linkages we currently have and likely always will; however, a strong local economy ensures a diversity of employment and career opportunities, the success of local eccentric businesses that are the basis for much local culture and color, and a certain measure of resilience in the face of fluctuating global economic trends and catastrophes.

We will not be able to replicate our premodern "heritage" economies in our communities, as they were based on completely different economic fundamentals. However, the communities that have a significant presence of merchants with longstanding relationships with customers and a neighborly shopping experience are often considered the most desirable to live in. As such, we can learn much from our past for our future in this area, as well.

Conclusions

The discussion above has explored the global issues that we need to address in order to ensure we survive far into the future. It has also gone beyond that to touch on what we need to "thrive." One of the most important implicit principles in this exploration has been that of building a much stronger connection between ourselves and the places in which we live. In the past, that connection was inescapable due to contemporary technology and culture. Today, in a world that offers many opportunities to be physically, socially, and emotionally distracted and disconnected from where we live, it takes a more conscious effort to connect. As such, while many of the directions needed to achieve our goals of surviving and thriving may seem like they should occur naturally, given how we used to live and build, today we must make an effort.

In many areas where we see progress on sustainability, we also see a greater connection to "meaning" in all aspects of personal and community life. One of the most important aspects of "meaning" is how it connects us to the fabric of time and place and where we fit in that fabric. Creating a new world conceptually without links to the past may operate successfully, but it risks being thin and devoid of meaning. In this context, beyond the technical lessons we can learn from our cities and buildings from the past, our efforts to understand, remember, and preserve the past form a powerful cornerstone for all we do in the future as we create a more refined model of our society and economy that will ensure we all both survive and thrive through the twenty-first century.

MARK HOLLAND, BLA, MSc, MCIP, LEED AP, is a planner who holds professional degrees both in landscape architecture and in community and regional planning. He has served as a city planner and the sustainability manager for the City of Vancouver. He is currently vice president of development for New Monaco Enterprise Corporation, a company developing a highly innovative master-planned community in the Okanagan, British Columbia. He can be reached at mark.holland@newmonaco.ca.

The *APT Bulletin* is published by the Association of Preservation Technology International, an interdisciplinary organization dedicated to the practical application of the principles and techniques necessary for the care and wise use of the built environment. A subscription to the *Bulletin* and free online access to past articles are member benefits. For more information, visit www.apti.org.