

Restoration of a Traditional City

Boston in the 21st Century

by Henry P. MacLean

Historical Perspectives on Boston:

Traditionally, growth comes at a time when we have pushed to the limits and there is nowhere else to go. Boston is a place where limits have traditionally been broken. In December of 1773, the Sons of Liberty – members from the Saint Andrew’s Masonic Lodge including Paul Revere, Samuel Adams, and others – initiated the “Boston Tea Party”, a critical step in crystallizing the movement of the colonies for freedom from England.

Thirty years later another form of limitation to growth was met by cutting down the drumlins and hills of the town and filling the harbor to create new land. In the next 190 years the city would fill more harbor, marsh, and river to grow four times over, from 783 acres to its present size of over 3000 acres, growing from a town of 16,000 to a metropolitan area of two and a half million people, a 156 fold increase.

¹ “At the end of the American Revolution, Boston still resembled a small English seaport of narrow streets ... that suggest a continuity of the medieval tradition.” Between 1788 and 1818, ² “Urban elegance in the terms of London, Bath, or Edinburgh came to Boston through the work of Charles Bulfinch (1763 to 1844), who literally changed the face of the town”; designing the State House, Courthouse, Faneuil Hall, four



23.1 Then and Now

The infilling of the original Bays around Boston proper.

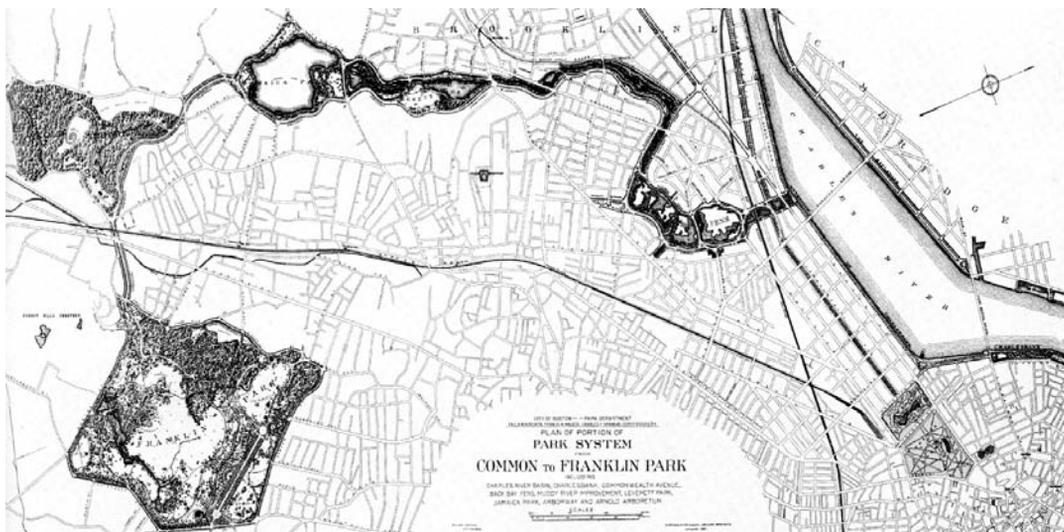
1. Boston Society of Architects, Architecture in Boston, 1976, p.3

2. Boston Society of Architects, p.8

churches, three entire streets, schools, and scores of houses. In the mid 1800's the city experienced a growth of cultural institutions and annexed a number of neighboring towns where large sections of the population began moving out from the original city on new tram and electric car lines, and small towns were merged into the city in the first phases of major expansion.

Two truly inspired “Designers of American History” who left their mark on the landscape of Boston in the late 1800's were Henry Hobson Richardson and Frederick Law Olmsted. Roughly one hundred years ago H. H. Richardson brought in a new beginning in architectural development as he established his office in Brookline MA after being awarded the design of Trinity Church in Copley Square at the age of 32. Richardson fused his natural affinity for blending his buildings into the landscape with his magical use of geometry and symbolism and choice of natural rich color and material. His effect is clear today after having his Trinity Church selected as the most outstanding masterpiece by one hundred American architects, one hundred years after its construction. What people were looking for in Architecture in 1870 is what we are looking for today – “something aesthetically sound and yet distinguished by its own life and power of development.”

These same geometries have reappeared in numerous culturally and geographically distant and isolated locations throughout the history of temple building on the planet. The study of platonic solids and the nesting of the five platonic polyhedra which give rise to these geometries, outlined by Plato in his Timaeus, were used as principal design parameters in Richardson's buildings, in plan section and elevation.



23. 2 Emerald Necklace

Darkened area shows the Boston Greenway Park system, designed by Fredrick Olmstead

Convinced to move to Boston by his good friend Henry Hobson Richardson, Olmsted's great work as Commissioner of Parks in the city was a 4000 acre park known as the Emerald Necklace.

³A man's eyes cannot be as much occupied as they are in large cities by artificial things, or by natural things seen under obviously artificial conditions, without a harmful effect, first on his mental and nervous system and ultimately on his entire constitutional organization.

These words echo his great understanding, compassion, and designs which thankfully found their place in a score of large American cities. While most of this Boston park system was developed, urban renewal and highway programs of the 20th century have destroyed much of the cohesiveness of this necklace, cutting off for instance a wonderful series of parks along the Charles from the larger open spaces of the system. Slowly, sections of these missing links are being brought back.

The first half of this century saw a continuing growth of the industrial and commercial success of Boston. But the greatest changes to this and other American cities came with the end of the war. According to America's foremost historian Vincent Scully Jr. , ⁴ "After World War Two, the automobile came into its own, most of all in the United States, where the auto industry managed to get our trolley lines torn up and where we embarked on a joy ride that left our cities in ruins... We designed everything for it, 'to keep it happy', in the words of Duany." (planner/architect Andres Duany)

Today, this unlimited trend of cars and highways may be turning the corner. A new central artery project now proceeding in Boston (a ten billion dollar project considered to be the single largest public works project in the history of the world) will in fact include the dismantling and rerouting underground, the elevated highway that cuts the heart of downtown off from the harbor. This will open up a potential new green belt-avenue that will have a marked positive impact on the city. This is but one of many steps that gives us hope for a reformation in progress here in the "Hub".

The patterns and principles underlying the establishment and growth of this traditional New England seaport town were primarily motivated by trade, commerce, and the accrual of monetary wealth. When it became an end and not a means for the majority of our society, the real economics of nature was discarded and abused.

3. *Civilizing American Culture, A Selection of Frederick Law Olmsted's Writings on City Landscapes*, MIT Press, Cambridge, MA. 1971, p.243

4. Vincent Scully Jr. *Seaside and New Heaven. Towns and Town Making Principles*, Duany and Plater-Zyberk, Rizzoli, New York, 1992

Looking Back and Moving Forward

⁵ At my feet lay a great city. Every quarter contained large open squares filled with trees, among which statues glistened and fountains flashed in the late afternoon sun. Public buildings of a colossal size and an architectural grandeur unparalleled in my day... Surely I had never seen this city nor any one comparable to it before. Raising my eyes at last to the horizon, I looked westward. That blue ribbon winding away to the sunset, was it not the sinuous Charles? I looked east; Boston Harbor stretched before me within its headlands...

These are the thoughts of Julian West, the protagonist of socialist and utopian novelist Edward Bellamy's *Looking Backward*, as he wakes from a deep hypnotic sleep of one hundred and thirteen years, three months, and eleven days. Surviving an unusual set of circumstances that embalmed his body in a subterranean chamber and set his systems into a state of suspended animation beginning in May 1887, Bellamy has the thirty year old West discovered by an excavation crew and nursed back to consciousness by a retired Dr. Leete in the year 2000 AD. After his gaze from the good Doctor's rooftop where he is convinced of his unbelievable situation, he responds, ⁶ "Only a century has passed... But many a millennium in the world's history had seen changes less extraordinary."

Bellamy embraced the vision of Whitman, Emerson, and other transcendental writers and philosophers who were all drawn to provide a space for the individual amid the rush of industrialization, immigration, and the onslaught of urbanism in the 1880s. As Dr. Leete points out to Julian, ⁷"No doubt, as you imply, the cities of that period (the 1880s) were rather shabby affairs. If you had the taste to make them splendid, which I would not be so rude as to question, the general poverty resulting from your extraordinary industrial system would not have given you the means."

He goes on to describe his Boston of 2000 as a place and time where on the contrary, ⁸"...there is no destination of the surplus wealth so popular as the adornment of the city which all enjoy in equal degree." Bellamy's vision of cooperation replacing competition and the idea of increasing wealth by increasing common versus individual stock inspired the likes of Ebenezer Howard and his well known Garden City proposals of the early

5. Edward Bellamy, *Looking Backward*, 2000-1887, Random House, NY, 1982, P.25

6. Bellamy, page 26

7. Bellamy, page 28

8. Bellamy, page 28

twentieth century which integrated open space with agriculture, and took a stand against those ills of pollution, transportation, and housing shortages.

In his myopic conclusion in his introduction to the 1982 printing of *Looking Backward*, Smith College professor R. Jackson Wilson summarizes;

⁹ As Dr. Leete described in his long abstract monologues, the new Boston was a modern city, characterized by planning, integration and efficiency. But beneath Dr. Leete's abstractions, the city that Bellamy actually described, and allowed Julian West to experience, smacked more of restoration than revolution. He was still 'looking backward'.

Eighteen years later this very concept of restoration is being embraced as the only way we in the non-fictional 1990s can hope to survive and thrive into the 21st century. In his best selling new book, *The Ecology of Commerce, A Declaration of Sustainability*, green business entrepreneur Paul Hawken describes how we are a society about to shed a skin and move into a new era.

¹⁰ Like a sunset effect, the glories of the industrial economy may mask the fact that it is poised at a declining horizon of options and possibilities. Just as internal contradictions brought down the Marxist and socialist economies, so do a different set of social and biological forces signal our own possible demise ...The *restorative* (my italics) economy ... respects this fact. It unites ecology and commerce into one sustainable act of production and distribution that mimics and enhances natural processes.

Despite the inevitable sadness and shock that comes from looking at our real time situation here in Boston, the New England region, and America of 1999, we are thankfully now witnessing a national movement that has come of age. Perhaps in the nick of time, this movement fully embraces the notion of a restoration of nature and the ..."City as a Paradise of Culture" in the words of Richard Register, just as we have come to cherish the Garden as "the paradise of Nature." The vision has once again emerged, but alas, not to be realized for the year 2000 in Boston as Mr. Bellamy had imagined.

Current Patterns:

According to Andy Euston, FAIA Senior planner with US Department of Housing and Urban Development in Washington, ¹¹ "Sustainability is the paradigm now and for the

9. Bellamy, page xxxiv

10. Paul Hawken, *The Ecology of Commerce*, Haper Collins, New York, 1993, p. 3

11. Walter, Arkin, Crenshaw, *Sustainable Cities*, Eco-Home Media, LA 1992, p. 73

next millennium... How to reconcile urban-rural patterns in the industrialized world today is the core challenge of all politics, all humanitarianism, all enterprise. “ While cities like Boston have always had the potential of being the paradise of culture, they can also be seen as the prime concentrated source of death for thousands of species worldwide and a scourge on resources from the rural lands that surround and support them.

¹²A hundred years ago, even fifty years ago, it did not seem urgent that we understand the relationship between business and a healthy environment, because natural resources seemed unlimited. But on the verge of a new millennium we know that we have decimated 97% of the ancient forests in North America; every day our farmers and ranchers draw out 20 billion more gallons of water from the ground than are replaced by rainfall; the Ogallala reservoir, an underground river beneath the great plains, larger than any body of fresh water on earth, will dry up within thirty to forty years at present rates of extraction; globally we lose 25 billion tons of fertile soil a year, the equivalent of all of the wheat fields of Australia.

Many atmospheric scientists believe that with the current level of ozone depletion, would be 15% depleted by 2005 or 2010, which could signal the systematic death of phytoplankton, the basis of the marine food chain and 30% of the oxygen producing biomass of the planet (from Adam Trombley, Project Earth, 1988). What we forget living here in Boston is that much of our lifestyle contributes to this process as we drive our cars, build with materials like wood that still comes from these older and distant forests, and as we import 85% of our food from out of state. The average calorie of food put on a typical Boston dinner table in 1994 was subsidized by 10 calories of energy spent to get it there. (from Wendall Berry, American writer and agriculturist)

As Sim Van der Ryn reminds us, ¹³“Vast cities are short term aberrations based on fossil fuels. We can make them more efficient, in terms of land and energy use, but in many ways this simply prolongs the destruction of global natural systems, that are enslaved to the service of urban consumers.” While a typical American consumes the equivalent of six gallons of oil a day, this energy of a million BTUs per capita per day could never be sustained by the planetary resources or sinks if adopted by the other 92% of the world’s 5.5 billion inhabitants. We each produce a half a ton of gases a week, which includes among other things the 800 hours per person average spent just sitting in traffic each year.

According to Al Gore, we have created sinks so big that on an average, Americans produce twice our individual weight every day in household, hazardous, and industrial

12.Hawken, p. 3

13.Walter, p.69

waste. Some 85% of the landfills for the Boston area operating in 1980 were closed in 1991. The cost of dumping a ton of trash has risen ten-fold in the Boston area in that period. Recycling can be seen as a primary element in this regeneration process. And yet we are just beginning.

While the most progressive cities in the Boston metro area like Newton are recycling up to 40% of their trash, we could be recycling over 80% of our waste. To further illustrate this point, every night while half of the world's population is going to bed hungry, the traditional industrialized cities of the US including Boston are throwing away over 375,000 tons of food. (from Westy Egmont, Executive Director of the Boston Food Bank).

We are also wasting nutrients in the form of our urine and excrement by mixing them with water into our sewer systems and septic systems, continually contributing to ground water and oceanic pollution. In our continued search for clean and plentiful water in Boston, we have created a string of polluted and abandoned reservoirs running out 150 miles to the west of the city.

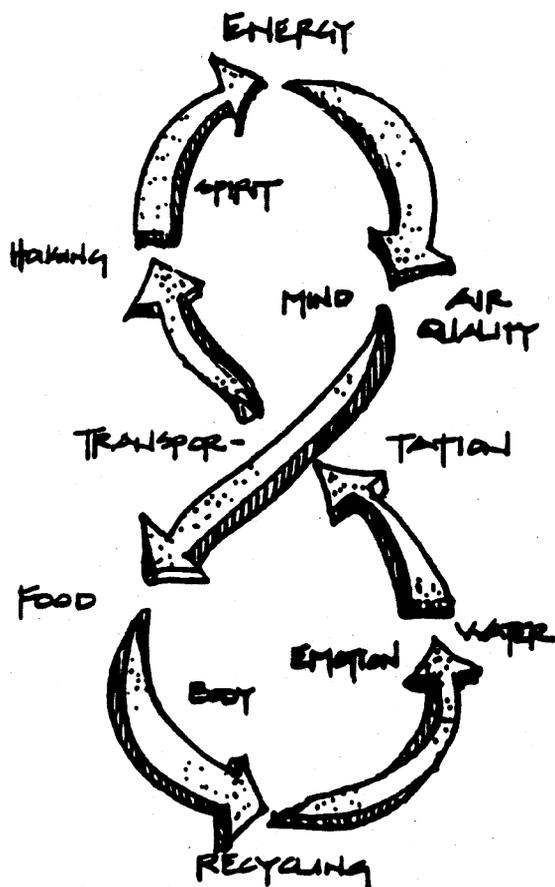
Although the demand for water is down to 285 million gallons per day as compared to 335 million in 1987 (due to conservation and leak repairs over the 6400 miles of pipes and tunnels feeding 2.5 million people in the metro area), the cost of this deferred maintenance program is reflected in the rise in water rates which have gone up 60% in Boston in the last 10 years. With a present average age of 80 years and life-span of 100, it is estimated that 3 to 4% of the 1.4 billion net worth of the infrastructure, or twice the normal 1-2% maintenance costs, will be passed on to the consumers over the next 20 years.

After running down our drains, daily this water is mixed with another 200 million gallons of gray water and run off from the Metropolitan Area watersheds, to be piped to a waste water treatment facility in Boston Harbor. Although the immediate ramifications will allow inner harbor regeneration, the new 9 mile out fall tunnel is raising a host of new regional concerns for the safety of Massachusetts Bay. Had the State not delayed so long and then been in such a hurry to respond to the Federal mandate (to clean up what had become one of the dirtiest harbors in the world), new developments in the organic rather than chemical treatment of sewerage could have been explored, such as the implementation of Solar Aquatic Waste Water Treatment systems developed by John Todd and his research group in Falmouth Massachusetts, Oceans Arks International.

These are the pressing problems that directly affect everyone in Boston today. Unless they are dealt with soon, the quality of life in the city will inevitably worsen. Part of the problem in dealing with it all is staying clear and out of shock or denial as we begin to

study the particulars of the biological, emotional, spiritual, and psychic mayhem we are dealing with, consciously or unconsciously, on a daily basis.

As we brace ourselves and move into the 21st century, these patterns nonetheless offer an opportunity to embrace our greatness. We are finally face to face with the principles our traditional growth is based on. It is not a pretty sight and we are not happy campers. We have no choice but to reconnect with nature and regenerate our relationship with this planet we have been graced to inhabit.



23.3 Figure Eight

The figure eight matrix that emerged covered energy, air quality, transportation/ communication, food production, water management, and housing / community issues.

Developed by Henry P. MacLean

Working up from the Roots

For the past seven years I have been associated with an intentional community located 120 miles west of Boston in Shutesbury, called Sirius Community. I researched Sirius as one of seven case studies for a project organized by the Consortium for Regional Sustainability through the Center for Environmental Management at Tufts University, in the metro area. Funded by the Environmental Protection Agency (EPA), the focus of the study was to find the essence of what constituted a sustainable community. The work entitled *Sustainable Strategies* was published in November of 1993 and edited by the Consortium's director Elizabeth Kline.

The four characteristics that emerged in the study were the need for a vision or plan of action, a process that integrated education and economics to put that vision into play, an ecological approach to the landscape in question, and a process of insuring a quality of life that completed a balanced community. These same four essential qualities appeared whether it was a group of farmers on Cape

Cod, a city of 70 thousand in Jamaica Plain, a community of 25 people living in central Massachusetts, or an individual house in suburban Boston.

In teaching my sustainability courses at the Boston Architectural Center of Wentworth Institute, I develop a matrix of indicators/issues that evolved from my research, to provide a form and help crystallize the inter-related and often overwhelming concerns of sustainability. The figure eight matrix covered energy, air quality, transportation / communication, food production, water management, and housing /community issues. To my surprise and delight this matrix also nested the concepts we discovered as a team at Tufts.

Another overlay of this system uses integrated needs of mind, body, emotion, and spirit. I have been rethinking the common expression left to us by our ancestors of the Bauhaus movement, “form follows function” from this new perspective. The extension then becomes form (body/earth) follows function (mind/air) which follows frequency (spirit/fire) which in its turn follows intent (heart/water). Restoring a concern for issues of the heart and spirit seem critical to our work at this time.

In the fall of 1992 Sarah and Richard Lincoln-Harrison, a couple from Marblehead (Boston north shore) organized a presentation entitled “Marblehead Beyond the Millennium”. To it they brought a number of experts to represent eight categories of sustainability. At the end of a meeting, they held a brainstorming session to ask what a new ecology center in Marblehead might include. As they describe in their recent article;

¹⁴ Over the past few months, the idea for a community organic farm has gathered momentum. We apparently have tapped a vein of concern among citizens who are apprehensive about the food they eat. It could also be that we have touched a longing to recover the nourishing experience of cultivating and caring for the earth.

The Marblehead Community Organic Farm Group is a diverse and talented multi-generational group of 195 households with over 600 people eating fresh organic and locally grown food over a 5 month period each year. From this group a larger organization called the Marblehead Environmental Coalition has emerged. This group links together the work of a broad range of committees engaged in a number of different projects ranging from cancer prevention to pesticide awareness. As a result the Town is now recognized as one of the Commonwealth’s most environmentally active. From this notion of a simple conference, the Harrisons have tapped into the root solution to the urban/ rural dilemma we are all facing. In the words of Sim Van der Ryn;

¹⁵“ The garden and traditional small scale agriculture represent a middle ground, a transformation of nature to human ends in a way that

14.Sarah Lincoln Harrison and Richard Harrison, *Vision Leads to Opportunity*, New England Environmental News, Winter 1994. p. 12

15.Walter, p. 69

both the people and nature are enhanced. In our search for solutions, we can not do better than that.”

While the projects in Marblehead and Shutesbury are not necessarily urban solutions, they do embody the essential ingredients operating in the center city, with perhaps a less complicated set of constraints. This allows them to set the stage and serve as models for the projects that must ultimately follow in the urban core.

One such project in the urban core gaining steady momentum is the work of Bill Taylor and his bicycle and tree planting enthusiasts known as Earthworks, located in Jamaica Plain (a south-central borough of Boston). This pro-active group is working to plant the beginnings of what they expect will eventually be orchards of fruit bearing trees all over the city. With the help of local youths, schools and community center organizations, this group is working with the hardest hit neighborhoods where gang leaders are asked to take responsibility for a young seedling in order to fully come to know what responsibility for home turf really means.

The bike routes and the edible landscapes that Earthworks is planting will ultimately become the new green-ways and corridors of the inner city. This is where intention is hardest to seed, and where our cities will be re-won. Another focus of Bill’s group is to support legislation to continue the construction of bike routes in the city . It has been reported that over 50% of city trips could be made with the use of a bike instead of a car, which as Ryan Snyder tells us ¹⁶ “is the most energy-efficient form of transportation known. For 350 calories (a bowl of cereal), we can travel ten miles. An average auto uses about 18,000 calories for the same trip.” Working with others, Earthworks played a strong role in recently pushing for a redraft of the current Transportation Plan for the Boston Region, pushing to make it more responsive to the progressive Federal ISTEA measures passed in 1991.

Earthworks has also worked with groups like Fair Foods, which distributes 5000-8000 pounds of food daily and 25,000 pounds of bread a week, all of it food that would otherwise be thrown away. They are building a distribution center for this work have been located in an abandoned building donated by the city.

16.Walter, p. 178

Seeding a Sustainable Future

Boston City Hall and Plaza, a Model for the 21st Century

Visualize a center where one might go with one's family to visit a museum of environmental awareness, dine at a five-star restaurant, or view an ecological display while taking in fresh air, the sights and sounds of waterfalls, and lush green gardens swirling through three nine-story open atria full of activities and light. Offices and storefronts, pedestrian corridors, balconies and other spaces are all tied together at a variety of levels, with ceremonial stairs leading up to an acre and a half of public space a hundred feet up in the air, smack in the middle of Downtown Boston.

Imagine as well a public/private collaborative paying for such a project in less than seven years, creating 100,000 square feet of new public and retail space generating hundreds of new jobs, while transforming one of the city's most well-known architectural landmarks into one of this country's most exciting architectural public spaces. Finally, picture this project as a new model for ecological architecture, as well as a center for teaching and leading the rest of the country in applying these standards in their own homes and communities into the new millennium.

Boston City Hall and its plaza were built into their current form in the early 1960's. Since that time there has been ongoing debate about the effectiveness of the original plan and in particular the barren and lifeless urban landscape presented by both the plaza and the well-known Kallmann McKinnell building. The submission of over 200 schemes in the Ideas Competition of 1994/1995 made clear that people of Boston want to see the plaza revitalized. In the words of Mayor Tom Menino this historical and geographical center of the city needs to be "preserved, ...improved, made more attractive, welcoming, accessible and usable."

This is an opportunity for the City of Boston to explore a vision for the first Green City Hall in America. With help from the Department of Property Management and Basic City Services, we have greatly accelerated our understanding of the role sustainable architecture and green building can play in City Hall and the plaza. We have found through these studies that we can pay for a sustainable building with the funds that would be otherwise spent on utilities alone. The million dollar savings per annum that we have identified would pay for a sustainable renovation in less than a generation.

We have identified specific economic, health, and ecological possibilities which could help initiate a drive to create this country's most outstanding model in cutting edge sustainable architecture and landscape architecture. This would include both the renovated City Hall and new construction proposed for the plaza.

As part of this plan, we have explored exciting architectural additions and alterations to City Hall which allow for significant pedestrian movement under, over, and through the structure. These additions and alterations to the existing building could result in reclaiming 100,000 square feet of existing and new floor area for office and commercial use. This would generate new jobs and a revenue stream from the integrated facilities. City Hall would also serve as a link between the marketplace/ waterfront and the revived plaza.

Singing to The New Center

Over the course of Colonization on the Massachusetts seaboard hundreds of towns were established. Why was it that the town of Boston should grow to become such a center? Clearly, the model of Arkhom is one way of rationalizing this fact. The growth of Boston over more than three hundred years is a story all in itself. A story to include the development of many environmental ills all too familiar in hundreds of similar cities all around this planet. Isn't it interesting that the body politic would chose to returned to the geographical center of its original Shaumut peninsula to build City Hall and plaza, this "Hub of the Universe", after all this time and movement! How much like a living organism this is, growing so big at such a sustained and phenomenal pace while managing to stay so conscious of its center.

However conscious or unconscious it was, this memory of the Center was accompanied by a massive influx of Federal money and a brutal act of Urban Renewal that eradicated the old Boston of Scollay Square and the West End, transforming it to the barren landscape of giant concrete and glass buildings that established Government Center from 1955 to 1965. This post war boom project began a transformation that has remained unfinished to this day. Ask anyone who works in Boston City Hall, drives or walks by on a daily basis, and you might hear a refrain of sorts, that the building elicits emotional or even psychological unrest, reactions of urban malaise no matter where you might find yourself spending time. Visitors from outside the region and country are routinely left wondering how poorly they are greeted by this plaza and building and how the great City of Boston ever allowed this "experimental" centerpiece to overshadow and confuse its center as well as it does. Even the Mayor wants an office that feels and works better for him and his staff.

In the February 1969 *Architectural Record* write up praising the building as an "architecture for the people", the author Mildred Schmertz describes this new brutalist movement of architecture characterized by City Hall as an extension of a philosophy where "small elegances and refinements have no place ... since such are believed to be inappropriate to the human condition and indeed beneath us, belonging to a world which more of us, and principally the young, are learning to reject." When City lawyers in the late

60's struck down any options for a cafe and restaurant in the central space of the building as originally proposed by the architects, the small elegances were forever rejected and the building was doomed. The existential barrenness and vastness of the plaza spread through and took over City Hall itself.

In a talk given in 1959 at the 46th Paris Prize dinner three years before he and his partners won the Boston City Hall Competition, Gerhard M. Kallmann outlined his philosophy for an “Experimental Architecture that is interested no longer in simple form against a void but in contrast patterns of interrelatedness.” Yet once the lawyers and bureaucrats insured that the single purpose of the building was city business, this powerful language of inter relatedness achieved by Kallmann and his partners went to work to reinforce the lack of programming and kafkaesque character of these utilitarian spaces. Without people coming to enjoy and be in awe of this architecture, the building was reduced to a maze of ideas, an idealized concept formed in countless yards of concrete and buried steel, with “City Business” as the single and only business of this new centerpiece of Boston.

In their desire for an architecture for the people, an experimental architecture, and an architecture dedicated to patterns of interrelatedness, the original architects and planners of the plaza were never given the full opportunity to see their experiment succeed. It is precisely these missed opportunities so clearly evident in the building today that form the basis for our collaborative effort to reenvision this frozen sculpture of the 60s.

Redeveloping the Open Core

The building has a hollow core of sufficient size to accommodate a regular place or center of human activity. The floor of this space, dubbed “the mound” by the original architects, is on the fourth floor level which when added up in full accounts for 40,000 s.f. of nearly vacant space sitting just one level up from the equally barren plaza below. This is



23.5 The Mound
Unused core of Boston City Hall is and opportunity waiting to happen.



23.6 Boston City Hall circa 1999.

a place trapped in time, a magnificent diamond in the rough, with veins of possibility and potential leaping out of every corner. Ceilings, columns, and concrete beams and girders wrap around a central patch of sky above, with receding office windows and balconies rarely visited. Two grand sets of stairs lead up to the space from the plaza and Congress Street, as well as the main ceremonial stair from inside the building itself. Access to all of them are permanently blocked to the public .

With two thousand full time residents of the building and tens of thousands of other Bostonians moving through the area on a daily basis, this place has the potential to sing with activity. It is roughly the size of Copley Plaza’s central atrium which also has three or so levels of office space looking down into it’s central core full of activity, with water features, plants and light flooding the space from a wonderful skylight above. Once the



23.7 Five Star Restaurant
A rendered view from the proposed restaurant atop Boston’s renewed City Hall.

Mound at City Hall is enclosed from above, a whole fleet of side wall glazing set back from the pillars of the building (so as not to visibly change the exterior design) can complete the enclosure of this priceless space. By removing the hazy skylights that sit in the center of the mound and introducing another internal set of escalators down one floor, this space can be instantly reconnected to the third and main entry of the building. The dark and isolated second level that hosts lines of discouraged traffic ticket payers below would now be flooded with natural daylight and exhilarating views looking up in some areas as much as eight stories.

Bridging to Quincy Market

City Hall sits at the cross point of many paths through Boston. The most prominent is clearly the walkway to the sea that places the building as an object (some would argue a blockage) between the highly successful indoor /outdoor spaces of Faneuil Hall and the transformation that awaits City Hall Plaza. So as the midpoint in this colossal trio of activity, the role of this building as a bridge seems to warrant a further look. In fact this notion of using the building as a bridge for large streams of pedestrians solves a few of the issues faced by the most recent proposal for the long debated bridge across Congress Street.

By relocating the handicap lift component of the pedestrian bridge to the southeast corner of the building, a new elevator and its expanded lobby could receive a ramp off the new bridge, inviting pedestrians from the Plaza and the tail end of Washington Street

directly into the building. The renovation would be completed inside by providing a full circle pathway around the ceremonial stair leading up to the mound. (This would connect this new lobby to the new escalators and the main entry lobby and elevators. It would ultimately reconnect Faneuil Hall to City Hall Plaza.) It would also be happening at the base of these enormous atria, whose shafts of light from above would enliven all of this new activity.

These dramatic atria, more refined and thinner than that of the central core of the building, recall the drama and awe-inspiring canyons of gothic cathedrals. If one could access these spaces via a simple spiral metal stair, perhaps integrated with some water feature, plants, and artwork, a vertical pathway to the roof garden could begin from this third level, a personal journey by foot reminiscent of such national treasures as the Washington Memorial.

A Roof Garden for the 21st Century

In addition to Mayor Menino's call for a rooftop restaurant, there have been several suggested uses for this potential one acre space. What could become the tenth floor of the building currently houses two rather large one and two story mechanical penthouses and ineffective roof windows, quite visible from the street and clearly unrelated to the design of the building below. LeCorbusier, one of the great modern architects who certainly inspired Kallmann and McKinnell, saw the roof garden as an instrumental component of this style of architecture he helped create. While the weather in Boston can't be compared to that of some of Corbu's sites in the south of France, strips of garden and potential swing spaces for greenhouses could be successfully located along the edge of this roof. A promenade for strolling and viewing the city might also be directly connected by elevator to the street and the newly restored public spaces below. Being the center point of the city and ten stories up, the views are sensational and surely due to improve when the expressway no longer cuts off the harbor from downtown.

Providing a crown to the center portion of the building would reclaim 30,000 s.f. of restaurant and conference space at this tenth floor level, with a loft space at the peak of this new structure. This plane could double as a structure to mount the latest in translucent solar electric skylights which turn sunshine directly into electricity while providing properly shaded natural light to the space below. Working with the "one million solar roofs" initiative now being sponsored by the Federal Government, these panels (that help power state of the art ecological buildings in Europe and Japan) could turn Boston City Hall into the largest demonstration project of photovoltaics in the Northeast. This project is in fact currently financeable.

New Shops and Arcade for Congress Street

The approach to City Hall from the east and Faneuil Hall holds what is perhaps the greatest opportunity in this renovation. In addition to the bridge at level three mentioned above, the building on the two lower levels would instantly attract shoppers from one of the nation's busiest shopping areas located just across the street. Behind the 300 foot long brick wall that runs along Congress Street and wraps the corner to the north entry of the building is 20,000 s.f. of parking for 24 City Councilmen as well as mechanical and dead storage, space that could all be efficiently relocated to more appropriate areas in the building. By punching some holes in this brick skin to create a covered arcade, this whole facade could come alive with shops and commercial activity that could open through to the lower atria of the first two public floors and the ticket areas mentioned above.



23.4 Boston

City Hall and City Hall Plaza is located in the open space in the middle of photograph.

By extending the existing north entry and making it visible from Congress Street and the plaza, the grand recess it now occupies could be filled with a lobby and more retail space. In this way even more area could be reclaimed on five levels without compromising the original look and feel of the building from the outside. Transforming these two faces of the building on the east and west would effect an enormous improvement on the historic architectural neighbors of City Hall, the Blackstone Block, and the Marketplace. Whatever development is decided on for this end of the Plaza and/or the Federal Building would also now be directly open to and engaged with the revived public entrance and activities of the mound and the grand atria above.

Security would have to be considered with the increased flow of people through the building. However steps could be taken to cordon off certain areas at night or after business hours for the City Offices without sacrificing any of the opportunities mentioned above. The building is currently open to the publics' free movement during regular working hours.

Economic and Energy Efficiency

At Wentworth Institute of Technology, we studied the building from an environmental perspective. The results were simple but profound. Imagine for a moment that the effi-

ciency of buildings can be measured like cars. Instead of miles per gallon we in the building industry call it BTUs (British Thermal Units) per square foot. Every human body is in fact a little heat machine that in a state of rest puts out about 450 BTUs per hour. The fuels that power a building like City Hall are ultimately similar to gasoline, as they burn oxygen and pour more unwanted carbon into the atmosphere. In fact, what is surprising to most people is that buildings produce close to 40% of the carbon being pumped into the atmosphere today, while trucks and autos produce closer to 33%.

Working with a national program called Vital Signs set up in 1995 to analyze a wide range of buildings across the country, we set out to determine how much energy City Hall used on an annual basis and how that compared to the national standard. Working with the Office of Property Management at City Hall who provided us with all of the energy invoices from 1995-1997 for the building, we determined that the energy utilization rate of City Hall was about 277,000 BTUs per square foot. Our building was using 2.5 times (277/110) more energy annually than a standard building built today, and 5 times more than a building built to current high efficiency standards. The combined costs of powering and fueling City Hall come to \$1.6 million per year, 2 and 1/2 times more costly to operate than a standard building built today.

Our next step was to develop a three part strategy on how to bring the energy use down and in the process save the city 1 million dollars a year. The simple three prong strategy was to (#1) Upgrade the existing 30 year old mechanical system, (#2) salvage and reactivate the existing computer control center, and (#3) renovate the interior court and provide a new insulated glass and panel skin to the exposed vertical faces of the structure and the roof openings.

In the process of review and analysis, my colleagues, students, and I realized that we could save this money and the associated pollution as well as retrieve close to 100,000 s.f. of new space in the building. In the process of retrofitting we could in fact address all of the opportunities outlined above regarding the open core and the roof garden from Congress Street and the North Entry. In April of 1997 we shared our enthusiastic results in a full presentation to Property Management and Commissioner Michael Galvin, members of the Trust for City Hall, and the Chief Architect for the City. Mr. Galvin, whose office had initially



23.8 Proposed Renewed City Hall,
Design my Wings Lane Collaborative

provided all of the raw data for our calculations was equally moved, and invited us to present to the Mayor and his cabinet on July 8, 1997. The presentation was well received and lasted twice the allotted time.

Center for Ecology and Sustainability

Demonstration / Research Center

To insure the successful implementation of such an ambitious project, we propose the development of an ecological center for New England that might be housed in several thousand square feet of the reclaimed space. Through a collaboration of universities, museums, corporate, private, and public sponsors, this Center could become a regional source of learning for sustainable practice and planning, with the green renovation of City Hall as its built-in demonstration and teaching model.

The purpose of the center would be threefold. The first would be to minimize the energy and material inflows and outflows for the renovated City Hall and new facilities currently being planned by the Trust. The plan would integrate issues of sustainable / renewable sources of energy, lighting, indoor air quality, transport and parking, food and nutrient cycling, waste and recycling, indoor and outdoor water use, building material selection, as well as ongoing maintenance of the buildings themselves.

Second, demonstrations of a variety of cutting edge technologies in each of these areas would be made accessible to the public for regular tours and presentations. The Center would actively serve to raise public awareness with events and educational programs related to the history and transformation of the city and its environment (urban, rural, natural, and cultural). By reaching out to educate the public as the Mayor's Environmental Committee and the Sustainable Boston coalition has done, City Hall Plaza would become an inspiration for healthy future development for Bostonians and all who come to visit this center.

The third focus of the center would be to serve as a nerve center for monitoring the state of the metro region and the larger New England ecosystems. Pertinent information related to a sustainable region would be the focus of computer and data services in the Center. This monitoring would include the long term life lines and infrastructure of the city. Partnerships would be forged with universities, museums, and other regional agencies to create the appropriate linkages of data so that the entire puzzle of a healthy region could be analyzed, synthesized, and envisioned for the general public and civic leaders charged with creating legislation that is informed and up to date. By renovating the plaza and City Hall in a sustainable / restorative fashion, Boston will be working from the ground up, truly recognizing itself as an active participant in the process.

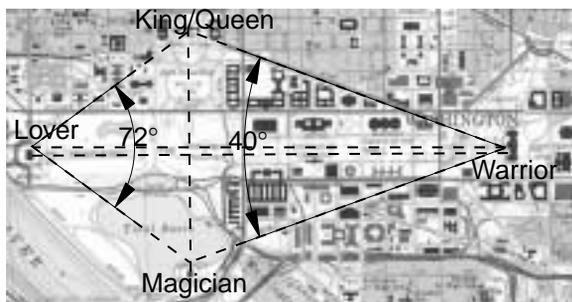
This Center would not only act as a living example of responsible development to the entire city, it could also thrive as an economic magnet for the rest of the plaza and the downtown district. It would go hand in hand with developing a renewed sense of place with this historic spot of the first taxi, the beginning of Paul Revere's ride, and the invention of the telephone. The Center would be a proactive and pragmatic agent of positive change from our current paradigm of waste and polluting to the vision of a sustainable future with environmental and economic security for the 21st century.

City Hall as a National Model

Sustainable development will become the dominant paradigm of new construction in the 21st century. The deterioration of the natural environment, the subsequent stresses on our built environment coupled with trends in population growth and increased consumption suggest that we adopt a proactive stance in developing sustainable projects and programs in ecological architecture to support the planet's health and the lives of the next generations.

Greenhouse gases such as carbon dioxide and carbon monoxide, forty percent of which are a result of the construction and operation of buildings, are now being linked by scientists around the world to global climate change. Eighty percent of greenhouse gases come from the developed world (the United States is a major contributor), which hosts only 30% of the world's population. The average American uses twice as much energy as the average European. Changes in temperature patterns are greater now than any seen in the geological record of the past 9000 years. Scientists agree that resultant rises in sea level pose a growing threat to coastal communities like Boston.

Most of the technology and design tools required to implement ecological design are currently available and are being implemented in civic, commercial, and residential projects throughout the world. Case studies from Glasgow, Scotland and Oslo, Norway featured in the 1996 International Council for Local Environmental Initiative (ICLEI) report show citywide programs realizing significant savings of natural resources and energy. These buildings are much less costly to operate, and they provide dividends that repay initial costs in a short time.



23.9 Warrior, Lover, King, Magician
Washington DC, criciform geometry and rhomboid inscribed by roadways and alignment of district center.

The ING Bank's 50,000 s.f. International Headquarters in Amsterdam is a good example. Built in 1986, it has a 50,000 BTU/

s.f. energy utilization strategy. As a result, the Bank recaptured its \$700,000 energy system investment in the first four months of operation. Avoided costs from utilization are joined by savings on health insurance costs as a result of improved employee health and significant cuts in employee absenteeism. The ING Bank reported in 1994 (*In Context*, No. 35) savings in excess of \$1.4 million due to reduced absenteeism alone.

Another project closer to home is the Greening of the White House, a comprehensive energy analysis program coordinated by the Rocky Mountain Institute in Snowmass CO. By adopting sustainable or energy efficient heating, cooling, lighting, and insulation strategies, the sustainable rehab of the White House is projected to save American taxpayers close to \$250,000 per year.

The 1996 ICLEI report states that because cities have power over land use, transportation, building construction, waste management, and energy supply, they will play a vital role in reducing energy use and greenhouse gases. The report also suggests that cities like Boston join the international organization Cities for Climate Protection which helps local governments address global warming through proper municipal energy policy.

Boston City Hall and Plaza are landmarks of modern architecture at a historic crossroad of revolution, innovation, and dynamic change. It is fitting that they carry the vision of sustainable culture into the 21st century. By using cutting edge sustainable technologies and design to cut waste, save money, create vital community space, and generate economic activity, we can make Boston City Hall and plaza into a demonstration model for the country and the world. The Center for Ecology and Sustainability placed at a key site in the Gaia Matrix of North America, would send the values of a renewed human relationship with the Earth across the continent. The seed energy of Boston would once again be used to promote the evolution of human consciousness.

Since our meeting with the Mayor's cabinet, this proposal has become a major focus of Wings Lane Collaborative, a group of architects, engineers, contractors, planners, and educators dedicated to building ecological as well as economic solutions that are both sensitive and sensible for the 21st century. Our collaborative has been invited to present this proposal at ten different national and international conferences, four of which have published the proposal in their proceedings, including the American Institute of Architects National 1998 conference on the internet. We have also developed an international group of advisors and endorsing agencies working on similar eco-center developments in other cities. Boston is a place where limits have traditionally been surpassed. In support of Mayor Menino's vision for the highest quality of life and the strongest economy of any major city in America, an ecological renovation to Boston City Hall and its plaza can set a new standard that the entire country will ultimately follow in preserving the Earth for our children well into the next millennium.

Reanimating the Landscape

The restoration of our ecology and reintegration of this “Paradise of Culture” with nature is also a restoration of our attitude towards the planet, towards each other, and towards ourselves. As part of this re-animation of the city, we must continue to honor the spirit of the place as well, to re-examine what it is beyond a career or a family that brought to each of us as individual souls to where we are on the planet. In seeking a deeper connection with Gaia we will find an even deeper understanding of our full divine/human nature.

As we pull our lives back into comprehensive working land use patterns that embrace traditional and restorative values, we will be able to start walking the more sensitive song-lines and ley lines that directly connect us with the grid patterns of Gaia herself. We will be able to reestablish the sacred ways of our ancestors and re-tune our rhythms to hers. The ties and connections we have to our European and Native American ancestors and their connections to each other is another part of the story that is now emerging.

Now it is time to develop relationship with the landscape to see where the sacred stones were placed, where the rituals were held, and praying villages were sited. We need to remember how to get still so as to dowse and feel the landscape with our students and children on a more regular basis. We might also study the geometry our Masonic forefathers understood as they established city plans like Washington DC in the form of a cathedral itself.

One interpretation of this plan came to me after I was told that every soul carries within himself or herself a king or queen, a warrior, a lover, and a magician. It seemed to me that the soul of Washington could be found at the cruciform on the Mall, created by the White House (the king/queen), Congress (the warrior), the Lincoln Memorial (the lover), and the Jefferson Memorial (the magician). The heart stone is just a few feet from the Washington Memorial, the tallest free-standing masonry structure in the world. In this model it is interesting to note that the Jefferson Memorial (the magician) has the White House (the king) within his sights and not the other way around. Just as Merlin knew what was best for Arthur, our forefathers might have inscribed this balance into the soul and form of our nation’s capital.

With the discoveries of Arkhom and the Gaia Matrix, the heart and essential geometry of Boston is established. A new geometry is brought to light from which a new process of restoration can begin. A sustainable city is wanting to be born to this new millennium, conscious of its impact on the health and mind of the Gaia Matrix. In this process, it is important to remember that...

¹⁷...a new image of the city which does justice to all of its dimensions can be no simple overnight job: for it must include the form-shaping contributions of nature, of river, bay, hill, forest, vegetation, climate, as well of those of human history and culture, with the complex interplay of groups, corporations, organizations, institutions, personalities. Let us not then unduly regret our slowness in arriving at an expressive and unified form of the modern city.

In the days ahead as we become more sensitive to these geo-metrys (measures of the earth), we can also work toward a better understanding of the study of geomancy and earth energies. The technology behind the planetary grid system studied and written on by Fuller, Critchlow, Becker, Hagens, Winter, Childress, Michell, Champoux, and other contemporary researchers, provides further leads on the theories of ancient temple builders, Plato, the Templars, and our Masonic forefathers.

Geomantic researcher and writer Steve Nelson notes in his work how the straight line that connects Mexico City (the root), Washington (the solar plexus), New York (the throat) , Boston (the third eye) and London (the crown) can be viewed as one entire chakra system. As one begins to layer the various insights and studies over one another, the patterns and principles that we have inherited, and those that can guide us into the 20th century, will begin to emerge and become more clear.

These straight tracks that circumnavigate the planet are part of these patterns and principles that have never left us. In fact they may have even played a major role in determining where and how we have settled these modern cities in such large numbers. These principles have been sleeping for some time now, and soon will awake to a new millennium, just as our friend Julian West did a century ago, to view his dream ... of this city ... by the bay.

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17.Lewis Mumford, *The Urban Prospect*, Harcourt, Brace, and World, Inc. NY, 1956, p. 164