

Interventions in Urban Infrastructure: Recovering Public Landscape in the City of Bath, Maine

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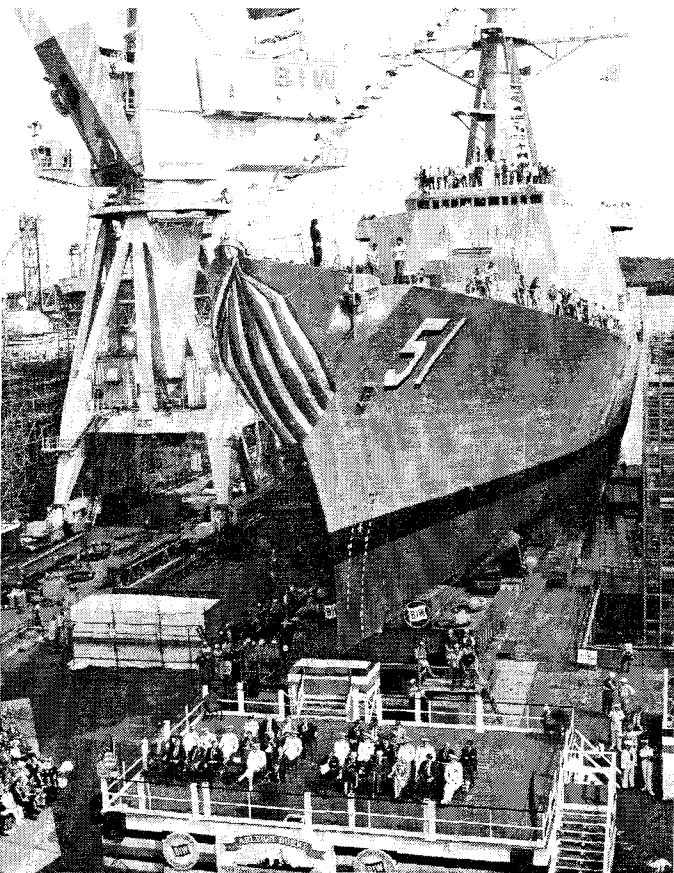


Fig. 1. Launching of the Arleigh Burke, B.I.W.

History makes maps and they in turn make history¹

This paper outlines an urban redevelopment project, done in consultation with the city of Bath, Maine, to regenerate its marginalized landscapes and provide meaningful public space in the city. The illustrated project establishes a strategy for the recovery of the city's urban identity in the wake of one hundred and fifty years of infrastructural transformation, urban renewal

and disinvestment. The urban redevelopment strategy was generated from research on the history and form of the City of Bath. The research involved accessing archival information from historic records, mapping data from G.I.S. databases, and community input gathered from a series of Town Hall meetings, as well as discussions with the city planner, city council and the Maine Department of Transportation.

The design process mapped the documented histories as vehicles for accessing the historical transformation of the city by recording topographic changes, shifts in land parcelization patterns, and changes in the physical fabric of the city over the course of 150 years. The use of computer mapping within the design process acted as a means for reading the urban structure and developing new spatial patterns for the redevelopment of the city. This approach empowered the design process with the ability to project an urban vision derived from within the city's own specific morphological history. Among the critical tactics employed in the design were a reconsidered notion of public space at the junction of urban infrastructure and the extension of existing spatial systems within the urban landscape to reestablish the historic connection between the city and the river. Mappings are used to develop and encode a form of structural DNA intended to mediate the diverse infrastructural and architectural scales within the city. The final proposal is represented through a series of 2 and 3-dimensional digital maps and renderings.

URBAN FORM AND URBAN CONTEXT

In order to establish a methodology for analysis, it is necessary to first outline a provisional definition of the city by positioning the form of the city within a critical framework. Following from Rossi's seminal work, urban form can be defined as the built production of a culture. This assertion, based on the city's physical presence as an "ultimately verifiable fact", preferences the legibility of the city in terms of its materialization as an

artifact.² Given the relationship between the material artifact and human labor posited by Locke, the city can also be understood as an immense repository of that labor.³ Further, in as much as urban form is the material product of a culture's labor, it is also a product of itself. Specifically, the historical deposit of the city is in part the result of historical processing which accumulates over time. The resulting palimpsest of urban form embodies the accumulation of the resilient and material basis of the city.⁴

The privileged position of built form (both present and absent) within this discussion of the city is not intended to eclipse the consideration of culture, economics or politics. Rather, it is to emphasize that a culture's ideas are embodied in the material artifact of the city itself. This notion of "ideas embodied" leads then to a description of the city's role as context.

Urban form and its function as context can be described in two parts. First, as mentioned above, the material reality of the city accumulates as a historical deposit. In this sense the urban context operates as a repository. A reading of the city as it exists, as well as how it has come to exist, establishes an understanding of a culture's physical identity. The ideas and institutional structure that constitute this identity are revealed through the archeological exposition of the city. Second, the existing reality of the city can be understood as a continuum. It is the physical framework for the ongoing life of a culture. Architecture does not have the power to single handedly reinvent a culture, nor, therefore, does it have license to remake the city (creative will is not equal to a *tabula rasa*). Instead, architecture has the obligation to act critically within a city, contributing to the perceptual construction of its structural base. Reading the artifactual repository is therefore a vital basis for the ongoing action of architecture in the city. Through an activated relationship between the measure of the map and the increment of building, the material potential of urban form is encoded within the projection of the map. The structural/constructional unit is an essential aspect of architectural form, and measure is fundamental in the production of this unit.⁵ In as much as measure and increment are fundamental to the making of things, so too are they inherent in the morphology of the city. Construction on the map is the material production of the city.

BATH, MAINE

The City of Bath, Maine (Pop. Approx. 10,000), has been dependent upon transportation for its economic livelihood for the last 150 years. Initially established as a shipbuilding port, the city's location along the Kennebec River, one of the major deep-water rivers in the state, facilitated the city's linkage to the Atlantic Ocean ten miles downstream. This location has been responsible for the historic relationship established between the town and the sea. During the mid-nineteenth century Bath was

the fifth largest seaport in the United States.⁶ Its rise to prominence was the result of the abundant resources used for the production of ships. Oaks and Black Pine trees covering the State of Maine during the last century were a prized commodity for the shipbuilders who occupied a vast stretch of the Kennebec shoreline. This fact, together with the ideal deep-water anchorage and protection from the sea, established the City of Bath as the first to be incorporated under the statutes of the Commonwealth of Massachusetts.⁷ During the mid-eighteen hundreds, Bath was the fifth largest port in the United States.

Today the city struggles to maintain its identity within the coastal structure of the state. The city is largely "blue collar" with an economy – not based on tourism, as are other towns along the Maine coast – but on shipbuilding and service industries. This economy has both prospered and suffered along with the changing fortunes of shipbuilding. As the technology has changed from the craft-based construction of the multi-masted schooners, to the technologically advanced Aegis Destroyer Class vessels, so too has the economic base of the city. Mediation of these effects has been attempted by the city, with the introduction of new transportation systems over the years. The rail system introduced in the 1890s and the bridging of the river in 1935 were both intended to facilitate linkages between the city and regional economies.

This process of instituting infrastructural solutions for the solidification of economic welfare continues to the present day. None have had the intended affect on the cities well being. This is largely due to the disassociation between the spatial structure of the city and the transportation mechanisms intended to support it. As an example of this situation, the existing highway viaduct is designed so that travelers coming up the Maine coast are forced bypass the city before they are aware of the fact that a viable urban center is present. This effectively removes the possibility of depending on a tourist-based economy. In addition, the dissolution of the waterfront as a viable urban place has severely affected Bath's ability to establish an identity for itself beyond the commercial production of ships. This situation was largely brought about thru the agency of urban renewal. Like many larger American cities, salvation was projected thru a process of erasure. In this case it was the waterfront that was erased, along with an extensive urban block structure supporting the core of the city. The recovery of the landscape as a spatially charged public terrain is paramount to the continued survival of the city.

Among the strategies employed in the regeneration effort are:

1. The extension of existing systems of public space intended to reestablish the historic connection between the city and the river.
2. Establishing new patterns of public space to define the fabric of districts, edges, and urban spaces.

3. The resolution of different scales of construction and land use to handle a mixture of programmatic intensities within the urban core.
4. The re-parcelization of waterfront land to establish the physical character and scale of the city in accordance with its own historic paradigms.
5. The linkage between highway, rail and water-based infrastructure systems, parking, and the proposed system of public spaces in the city core.

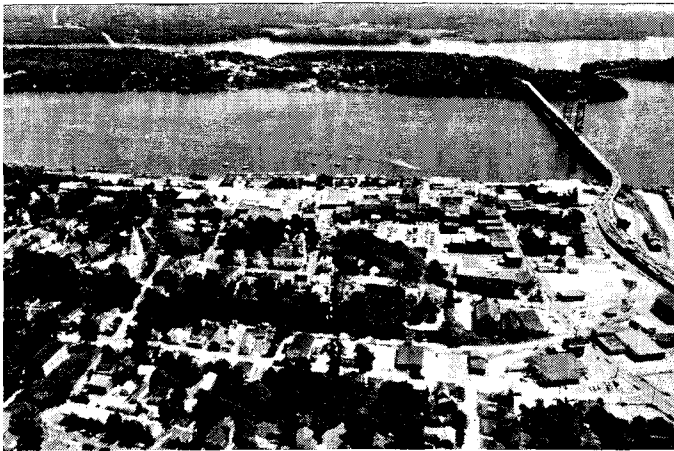


Fig. 2. Bath, Maine – Aerial from West.

THE PROPOSAL

The projected urban redevelopment is generated from research on the history and form of the city, an intimate knowledge of the workings of the city developed over a number of years, and an active political involvement. The resultant project establishes a plan for the recovery of the city's public landscape in the wake of urban renewal. The research involved accessing archival information from historic records, mapping data from GIS databases, and community input gathered from a series of Town Hall meetings, as well as discussions with the city planner, city council and the Maine Department of Transportation. The data was then mapped into the computer as layers that transparently record the structural transformation of the city. The design process used the mapped histories as vehicles for accessing the historical transformation of the city by recording topographic changes, shifts in land parcelization patterns, and the changes in physical fabric of the city over the course of 150 years.

The use of computer mapping within the design process acted as a means for reading the urban structure and developing new spatial patterns for the redevelopment of the city. Through an activated relationship between the measure of a map and the increment of building, the material potential of the urban form is encoded within the maps' projection.

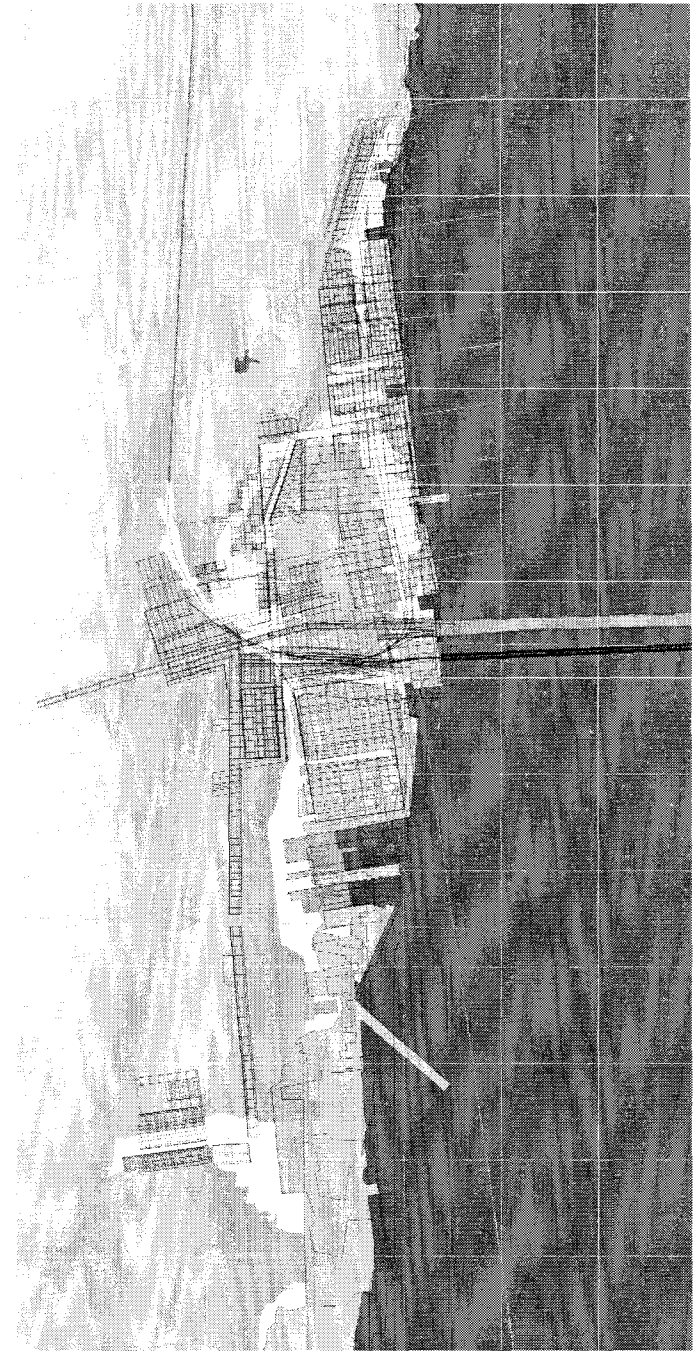


Fig. 3. Structural Transformation.

The structural/constructional unit is an essential aspect of architectural form, and measure is fundamental in the production of this unit. In as much as measure and increment are fundamental to the making of things, so too are they inherent in the morphology of the city. Construction on the map is the material production of the city.

The implementation of measure as a structuring agent is used to project potential diverse scales over the evacuated terrain of the city. A series of structural grids projected from the diverse fabrics of the city were extrapolated over the terrain from

fragments within the city in order to organize and scale the landscape. Scaling mechanisms were developed from the latent measures embedded in each of the significant urban fabrics left intact in the city. This device, when superimposed and reworked into a coherent structure, encoded the potential for divergent spatial and programmatic adjacencies.

Among the tactics employed within the scaling mechanisms used for this project was the re-parcelization of waterfront land historically reclaimed from the river. The current scale of land parcelization along the river was never subjected to the fine-grained landownership patterns of the historic core. The status of this reclaimed land, consolidated under urban renewal, currently prevents either the implementation of new programs or its ability to be spatially controlled. This is an economic factor that frustrates attempts to reconstruct the waterfront with either public or private investment. Funding from the Maine Department of Transportation is to be used to purchase these oversized tracts of land for re-parcelization according to the newly projected system. Parcels may then be resold or banked as new public space, according to the structure of the urban DNA. This process is intended to allow the city to recover its investment while placing the waterfront under local control.

In order to understand the morphological transformation of the city, five density mappings were undertaken documenting the changing physical structure of the city from 1822 thru 1993. These maps record the expansion and contraction of the fabric of the city over time and the effect of successive infrastructural impositions. Each map documents a significant transformation in the city as a result of a change in transportation mechanisms – from ship to ferry to train to highway. In addition, each map represents a significant shift in the culture of the city – the rebuilding of the city after the fire of 1894, the impact of the Second World War and the remnants of urban renewal. The historic spatial structure of the city is made present and imprinted in these maps.

The density of this structure, when transparently represented, projects possible futures onto the vacated landscape of the existing city. This virtual density, tempered against the structure of the DNA coding, is tested against possible programmatic inhabitation in order to develop a series of interconnected public landscapes.

The Bath reconstruction plan relies on autonomy between discrete buildings and projects. This degree of autonomy is economic and political as well as spatial. The infrastructure of the landscape organizes these disparate fragments into a series of mutually reinforcing set-pieces carefully positioned to construct meaningful public space in the city. The new terrains are located in and around the territory left vacated as a result of the succession of infrastructural impositions within the city, and the implementation of urban renewal tactics during the seventies. In addition, a large percentage of this land is located

under the 10-foot above sea level line on land that has historically been subjected to flooding. This situation led to construction of buildings within the contested terrain that were considered expendable.

The strategy of discrete architectural operations organized within a structural landscape framework, engages the political and economic processes of the city by allowing individual buildings to emerge over a period of time as circumstances allow. The key to this temporal process is the carefully remapped set of land parcelization patterns and scaling devices used to inform the city's projected spatial structure. To support this set of codes, the ground plane is re-constructed to provide spatial connectivity between the urban architectures.

THE CITY AS INFRASTRUCTURE

The economic fortunes of the city have been inextricably tied to infrastructure systems throughout the last 200 years. Originally, the Kennebec River, then the ferry system and the train, and now the highway system, all provided a series of vehicles for connecting the city to the larger regional and global marketplace. Each system has contributed to the gradual construction and erasure of the city. Historically these systems have operated independently as they have served in distinctly different programmatic capacities. A major focus of this project is the combinatory tactics of reconciling the diverse infrastructural systems with the spatial resolution of the city fabric.

In 1999, The Maine State Department of Transportation completed the construction of a new bridge across the Kennebec River to handle increasing traffic loads projected along coastal Route 1. As a condition of the federal government granting funding for the construction of the new highway bridge, MDOT has had to generate alternative mobility strategies for the coastal communities. This was planned in conjunction with the implementation of rail and ship transportation systems, in order to make the City of Bath a critical transportation node within the state. This new infrastructure impacts the city at a critical juncture between the Bath Iron Works Corporation and the core of the historic city. The project proposes the spatial resolution of this junction in the city to handle the intensified transportation and pedestrian systems that converge around this space and reconsiders the notion of public space at the junction of the new urban infrastructure.

MDOT has proposed to locate a new Intermodal Transportation Center along the Bath waterfront in order to take advantage of the city's unique connections to existing highway, rail and water infrastructures. The IT center links the regional rail system which connects to Boston and Portland with a series of high speed ferries serving the coastal communities up and down the coast of Maine. An additional component of this junction in the

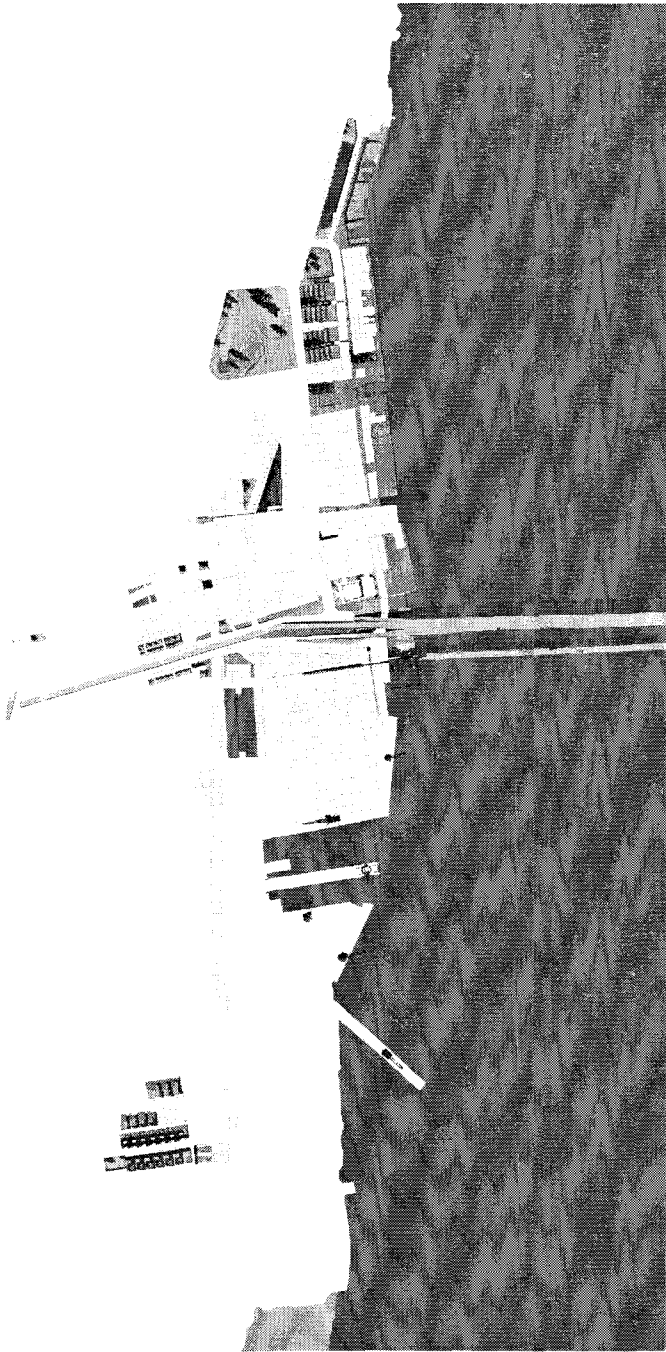


Fig. 4. Infrastructural Landscape.

city is the daily migration of workers to and from the shipyard. Historically this junction has been transformed from its role as the most significant public space in the city, surrounded by important civic institutions, to a vague terrain of abandoned infrastructural rights-of-way. Rather than succumb to further potential fragmentation that could be the result of the new highway construction, it is the intention of this project to turn the confluence of systems in this area into an advantage for the city.

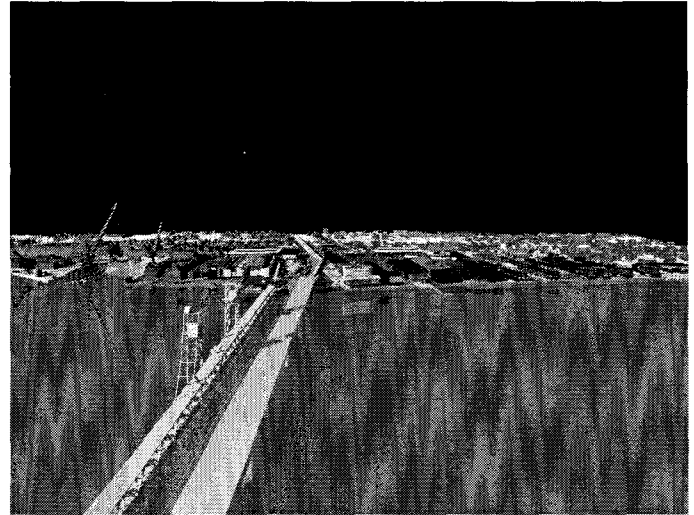


Fig. 5. Bath Transportation Infrastructure.

Bath is a city with a population of 10,000 inhabitants that swells each day by almost as many additional workers. Bath Iron Works, currently a major defense contractor for the U. S. Navy, is Maine's largest employer. Historically, the political and economic fortunes of the city and B.I.W. have been inseparable. The city could be characterized as a classic example of the "company town". The shipyard is located immediately south of the Route 1 highway bridge. B.I.W. is one of the two remaining defense department contractors to construct the Aegis Destroyer class ships for the United States Navy. It is the sole remaining shipbuilder left in the city after over a century of consolidation.

The impacted urban condition of the shipyard places the company at an economic disadvantage with other competing shipyards around the world, as the methodology of modular ship construction is restrained by the urban geography. This potentially destructive situation is mediated by the century of shipbuilding knowledge passed down from generations of shipbuilders within the region. Simply put, the local knowledge of the workers is far more beneficial to the vitality of the company than the adverse infrastructural condition it has inherited.

Each morning and afternoon workers swarm into and out of the city, taxing the transportation infrastructure. The Bath Iron Works is gradually implementing a system of public transportation routes, which will converge on the gates of the Company discharging hundreds of workers at a time. Part of the project's resolution strategy is to provide a public space scaled to this migrant population while they wait for the company gates to open in the morning and for public transit to take them out of the city in the afternoon. This space is additionally linked to the rail and water transportation systems planned as part of the intermodal transit development.

With the downsizing of the military industrial complex that has largely sustained the economy of the city, Bath Iron Works – a local company with global knowledge – is looking for partners to share in the technological expertise it has developed thru its contracts with the United States military. They have programmed the development of a new high technology building to be used as an incubator for new technological research. The fact of this building and its associated programs causes the reorganizing of the shipyard into both militarily sensitive and publicly accessible areas. This shipyard is to be restructured so that the entry is from the new northern gates; this area acts as a filter between the public nature of the new technology building area, and the militarily sensitive area of the lower portion of the yard.

The second component of this newly reconfigured landscape is the construction of a new public space intended for the ritual of the launching of ships. This is a ritual that has been part of the history and tradition of the city for over one hundred years. The decommissioning of the historic bridge over the river effectively removed the possibility of public participation from this significant event in the culture of the city. The launching platform is to be built by Bath Iron Works using shipbuilding technology as an acknowledgment of the importance of this ritual to the psyche of the city and the prolonging of its relationship with the company. The platform is accessible from the public landscape of the waterfront and is to be raised up to the level of the old bridge structure in order to accommodate crowds along its length.

THE BATH WATERFRONT

The waterfront properties located north of the Route 1 highway bridges are historically among the most significant to the city. These properties have undergone significant changes, from working waterfront to vacated and de-programmed land. The design of the new MDOT highway bridge has now permanently severed any possible relationship between the historic windjammers that cruise the Maine coast. New programs need to be located within this zone that will be sustainable throughout the year and not rely exclusively on seasonal trade.

One of the largest areas of erasure during the urban renewal process occurred in the areas of the flood plain located below 10 feet above sea level. These areas are subjected to the regulating structure of FEMA. The FEMA regulations limit the kinds of program that can be located within this zone. A key component of the waterfront development is the construction of the floodwall that acts as a public connector along the waterfront while offering a protective enclosure for the potential development of the underutilized land. The marshland located immediately to the north and south along the rivers edge mediates the hard edge of the FEMA wall by providing for the ecological cleansing of the river and an ability to absorb

floodwaters during peak seasons. Anchorages are provided along the wall in order to distribute the density of boats up and down the waterfront.

Among the primary spaces that organize the stretch of land along the new public waterfront is the landscape occupying the terrain of the historic Texas Shipyards. Once occupying the western edge of the Kennebec River and spread out for over two miles along the shore, a series of shipbuilding yards were constructed on new land built into the river. This was a result of the demand generated by the British and American merchant fleet's need for ships. One of the most important of these yards – the Texas Shipyard – occupied the site where the city connected to the river along Front Street. This area is strategically positioned at the base of the granite hill where the historic core opens up to the space of the waterfront. A large public space positioned to take advantage of existing easements and surface parking, and left over from the urban renewal efforts, acts as the programmatic and spatial connector between the housing district to the north and the commercial core of the city. This is to be the primary civic space of the city, and the linkage between the tourist driven economy of the historic core and the permanent citizens of the town. This site is to be marked by a series of masts located within the Town Square. These masts reconstruct the visual density that the waterfront once had and additionally acts as a sign for vehicular traffic coming over the bridge that a new revitalized town has emerged.

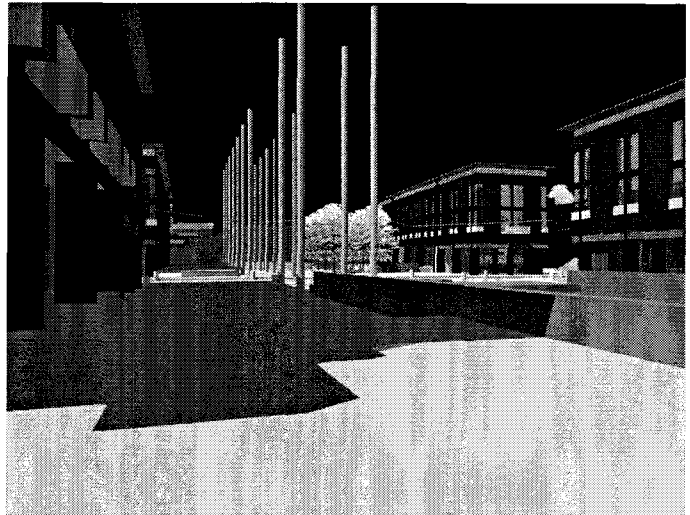


Fig. 7. Bath Town Square.

A new mixed-use housing district occupies the land to the north of the town square. This is urban housing of the type not currently available along the Maine Coast. Current housing stock is comprised of excessively large individual houses that require extensive maintenance. This is a serious problem for the state's increasingly aging population who cannot sustain the lifestyle necessary for a viable existence.

Occupying a 2-acre parcel of the northern most land on the Bath waterfront, the Coal Pocket has historically served as a repository for heating coal offloaded from ships. It is a contaminated parcel built-out over riprap and is unstable as buildable land. Its projected redevelopment includes the construction of a marsh park that will serve as a reclamation vehicle for sustaining the ecosystem of the Kennebec River. The evolving ecology will perform the function of cleansing the river while providing a habitat for saltwater wildlife. Along the edge of the bluff, overlooking the park and down the river, is the site for the proposed hotel. Which anchors the northern end of the public waterfront.

Once part of the marsh separating the granite hill of the historic core from the housing neighborhoods spread out along the ridge, Water Street – so named because it was originally part of an inlet off the Kennebec River – has, through a process of urban renewal, degenerated into surface parking for the downtown. This area was one of the two principal districts cleared during the early seventies in order to address the problem of parking. This was foreseen as an antidote to the economic evacuation of the urban core. It was here that a large percentage of the nineteenth century fabric was pulled down. It has remained underdeveloped since, largely due to the topographic complexity of the area. The area is both the front and back door to the city center. It has been utilized for surface parking and servicing the backs of the Front Street blocks. The town police station currently occupies the center of the site. The town parking-garage is scheduled to be located on one of these lots, through which a connective sequence is organized to connect the cultural arts center located in the Chocolate Church, to the downtown and waterfront. New loft housing completes the back of the Front Street block and faces a new public space in which the existing police station establishes its' civic presence. This proposal inverts the established role of the area and turns it into the primary connective space between automobile and pedestrian transportation mechanisms.

CONCLUSION

Taken together, the previously outlined position regarding urban form/urban context, and the induction/projection of mapping as an applied form of research, establish a potent basis for an architecture of urbanism. This working method reaffirms the observation that what is understood about a subject is largely dependent on how one comes to know it. In the case of Bath, Maine, the attitude towards the city, and the means used to interpret the city, are not simply starting points. They did not precede design, but were consciously engaged as acts of design in themselves. As the outcome of this urban design process/attitude, the intention of the work depicted in the accompanying illustrations is to participate in the existing reality of the City of Bath. Directed towards this end, the

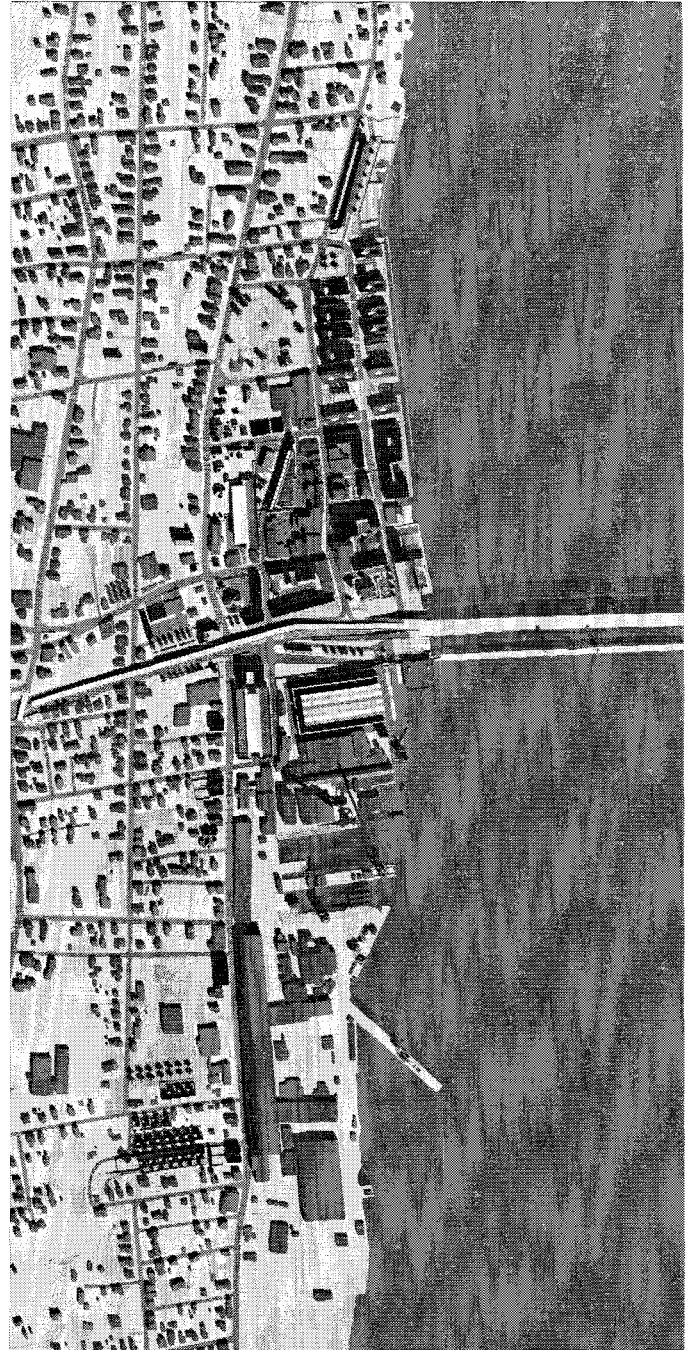


Fig. 3. Bath Reconstruction Plan.

activity of mapping creates an intimacy with this reality, a means of divining its underlying structure, as well as distilling its visible character. At the same time the abstract nature of this operation provided a distance from the complex immediacy of the existing situation, an intentional gap for contemplation and invention. Ultimately this urban design activity strives for a critical balance with the existing city, wherein the boundaries between received and proposed are deliberately blurred.³

CREDITS

This project was funded by grants from The University of Michigan's Taubman College of Architecture and Planning, and The University of Tennessee, College of Architecture and Design. All Computer generated images and mappings are by the author using G.I.S., AutoCAD and Form*Z programs. Historical images have been provided courtesy of the Bath Historical Society, and the Bath Public Library. Special thanks go to Shailesh Jain for his invaluable assistance in the technical realization of this project, to members of the Bath City Council and to Matthew Eddy, former City Planner, for their insights and faith in a sustainable future for the City of Bath.

NOTES

- ¹Greenhood, David, *Mapping*, University of Chicago Press, 1944, pg. xi
- ²Aldo Rossi, *The Architecture of the City*, (Cambridge University Press, Cambridge, 1982), Chapter 1, "The Structure of Urban Artifacts".
- ³John Locke, *The Second Treatise of Government*, (Hackett, Indianapolis, 1980).
- ⁴Rossi, *ibid.* An argument since taken up in a variety of other sources, e.g. Han Meijer, Arnold Reijndorp, "Urban Design and Collective Memory" in, *The Railway Tunnel Site, Nine Concepts*, (Uitgeverij 010, Rotterdam, 1988).
- ⁵Kenneth Frampton, "Rappel a L'Ordre: The Case for the Tectonic," *Architectural Design*, (v.60 #3/4, 1990)
- ⁶Owen, Henry W., *History of Bath*, The Times Company, 1936
- ⁷Owen, *ibid.*
- ⁸Carol J. Burns, "On Site: Architectural Preoccupations," *Drawing Building Text*, ed. Andrea Kahn (Princeton Architectural Press, New York, 1991)