# Conceptual Urbanism

## Towards a Method of Urban Form and Urban Design

by

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Bachelor of Architecture
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Submitted to the Department of Architecture in partial fulfillment
of the requirements for the degree of

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## Abstract

"Conceptual urbanism" describes the interpretive nature of a particular structure of the city perceived through the morphological examinations of urban artifacts; emphasizes the perpetually changing "realness" in the concept and the vigorous search for its verification and falsification in the urban artifacts of the city.

How does a specific knowledge of the city influence the perception of urban artifacts within the city? And how does an urban artifact or a group of artifacts brings about a particular order of the city? These are complex questions that concern the nature of the artifact, the mental frame of the observer and the transaction of the two in the mind. The thesis investigates how the knowledge of the morphology of the city conditions a specific perception of urban artifacts' formal qualities; and vice versa, how an urban artifact, by virtue of its tectonic makings, makes possible a particular mental structure of the city. Boston is used as case study to show how the conceptual structure of the city can be obtained by examinations of morphological developments of Back Bay, Government Center area; and the conceptual structures thus derived can be applied to evaluate the tectonic qualities of Marketplace Center at Quincy Market, City Hall at Government Center, and Hancock Tower at Copley Square.

The thesis continues to propose that the conceptual structure abstracted from the morphological stages of the city can serve as a middle ground for the synthesis of two schools of city form studies--one by Conzen in urban geography, the other as represented by Rowe, Eisenman and Hancock in urban design--for a method that starts either from empirical scrutinies of individual artifacts without losing the larger structure of the city or from a generalization of a city's structure with substantial details that tie the structure to actual history of the city.

Through the process of formulating conceptual structures by examining urban artifacts in relation to stages of morphology of the city, a tension is created between the designer's conception and his/her perception of urban artifacts. The final part of the thesis considers this tension as a new impulse for urban design process; and urban design as a vehicle for the tectonic studies of urban artifacts and city form.

Thesis Supervisor: William L. Porter
Title: Professor of Architecture, Urbanism and City Planning

**To My Parents**

# Acknowledgments

I would like to thank my advisor, William Porter, for his insightful comments and suggestions, without which the thesis would have been impossible; my readers Michael Dennis and Julian Beinart for their support and advice; my colleague Panayiota Pyla, for her enthusiasm and help. Special thanks to Stanford Anderson, Francesco Passantti, Sibel Bozdogan, and Nasser Rabbat, whose thoughts and ideas were invaluable to the formation of the thesis.

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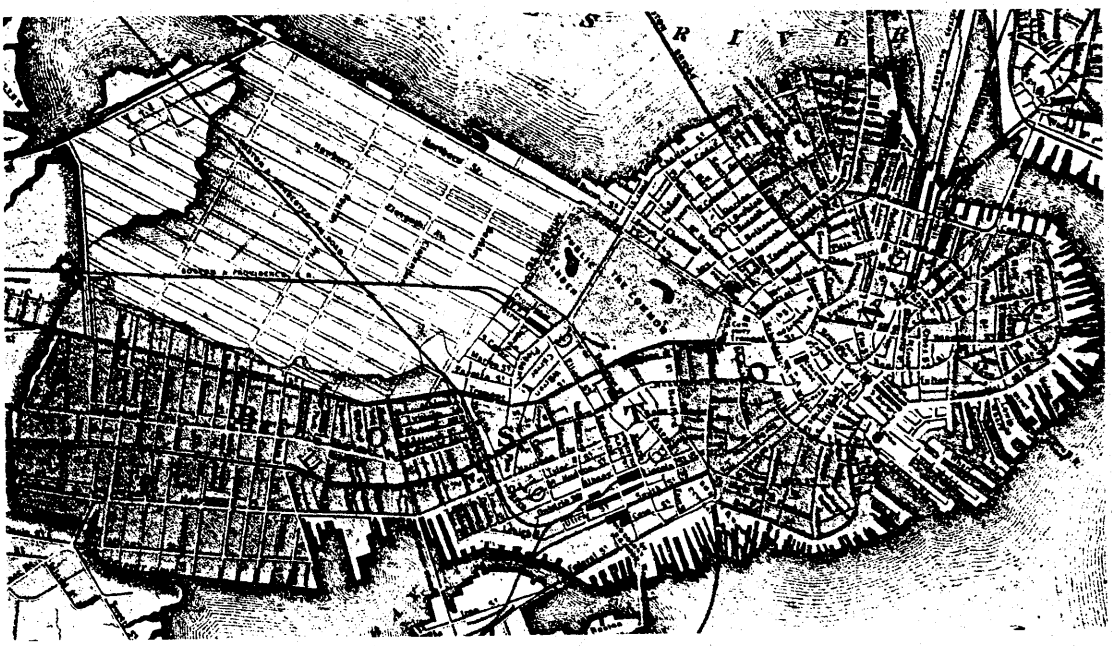
CHAPTER 1

# Introduction

**Architect as Scientist**

For the architect, the problem of precedence or model, of the particular situation in which he works, of working in an existing city with all sorts of problems, of constructing a practice on an already problematic theoretical foundation, places him/her in a position similar to a scientist, for both the architect and the scientist have to propose hypothesis or conjectures based on empirical observations and act according to the hypothesis thus formulated. Interpretation is inherent and often insoluble in the conceptualization process.

The dependence of urban artifact on an ideology or a set of political ideals comes from the fact that all artifacts owe their existence to unavoidable historical--social, economic, or cultural--pressures. However a city and its artifacts can no more be understood by means of standards borrowed from sociology and political science alone. Nor can they be understood from their origins or their final states. The city is in perpetual change; its artifacts are modified, demolished, extended, altered, renamed. In this process, the whole and the parts mutually reinterpret themselves.



*Morphological stages of Boston*

The totality of the city--its artifacts, its structure, its geography, its problems, dreams, victories, failures--is handed down to us. But the city is never a pre-given fact. Each generation reinterprets the urban forms of the previous generations. And each individual act of building illuminates one particularity of the city. No matter how long ago an urban artifact was built, it is presented to us simultaneously with other artifacts. We read these diverse artifacts according to our own aspirations and desires, making connections between formerly unrelated objects, creating new meanings out of the existing patterns. The precedence or "authoritative case" is not a pre-given of the case, but something that we make, and thereby make our case. And the nature of the artifactual evidence is such that there is always more of it, subject only to the limits of our physical stamina and mental framework. The order or the structure of a city is always a particular order or a particular structure of the city as a result of a particular mode of seeing. I would like to quote William Porter as he pointed out the role of urban artifact in shaping the perception of city form that "it is only through the potential created by the potential artifact (for the designer) or the real artifact (for the perceiver) that the particular orders of the city become accessible."

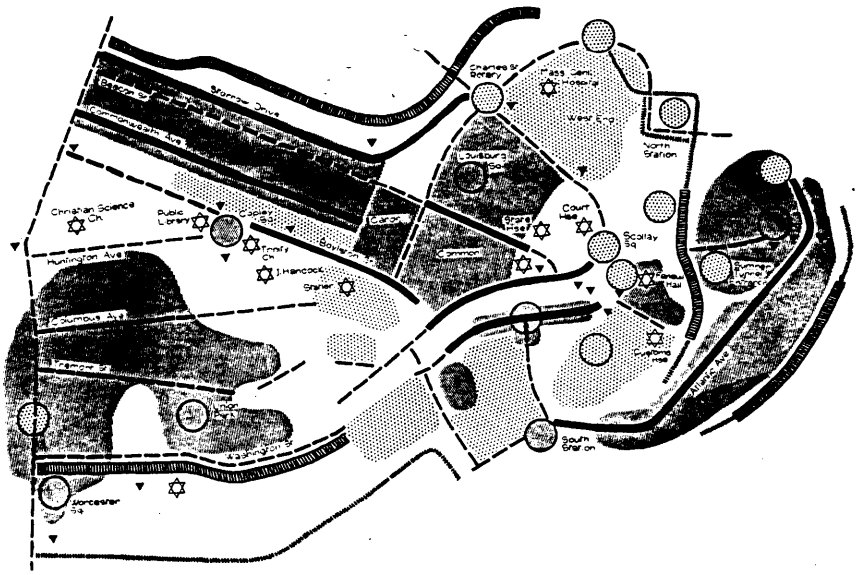
**Morphology as a Theme**

How does a specific knowledge of the city influence the perception of the urban artifacts within the city? And how does an urban artifact or a group of

artifacts bring about a particular order of the city? These are complex questions that concern the nature of the artifact, the mental frame of the observer and the transaction of the two in the mind. I will use the morphology of the city as one theme to investigate, and hopefully clarify one aspect of this complex question: how the knowledge of the morphology of the city influence the perception of a specific formal quality of an urban artifact and vice versa, how an urban object, by virtue of its tectonic makings, brings about a hidden aspect of morphological structure of the city.

**Mental Structures**

Morphological studies of city form give great priority to the empirical observation and description of urban artifacts. A morphologist is one who after careful observation in the field, describes the variability of the earth's surface with the aid of maps and diagrams and with the ultimate aim of comprehensive division of the townscape into a set of "regions" or "districts" with unique characteristics. However I found it more convincing and maybe more fruitful to emphasize the mental, or conceptual realness of the structure of the city: a particular structure of the city exists as much in the mind as it does in the reality. The early European colonizers described oriental cities in dismay or in euphoria. We are not interested in how much truth their descriptions contained, but rather in the way how an observer, based on his/her particular knowledge of one city, judged the quality of another.



*Cognitive map of Boston, from Kevin Lynch* The Image of the City, *p19. The city lives as much in the mind of its residents as it exists on the ground.*

Italo Calvino describes eloquently the city as different mental conditions. In *Invisible Cities*, fifty-six cities are classified into some eleven categories such as "cities and dream", "cities and desire", "cities and sign", etc.

"Cities, like dreams, are made of desires and fears, even if the thread of their discourse is secret, their rules are absurd, their perspectives deceitful, and everything conceals something else." (p44)

"From there, after six days and seven nights, you arrive at Zobeide, the white city, well exposed to the moon, with streets wound about themselves as in a skein. They tell this tale of its foundation: men of various nations had an identical dream. They saw a woman running at night through an unknown city; she was seen from behind, with long hair, and she was naked. They dreamed of pursuing her.As they twisted and turned, each of them lost her. After the dream they set out in search of that city; they never found it, but they found one another; they decided to build a city like the one in the dream. In laying out the streets, each followed the course of his pursuit; at the spot where they had lost the fugitive's trail, they arranged spaces and walls differently from the dream, so she would be unable to escape again.

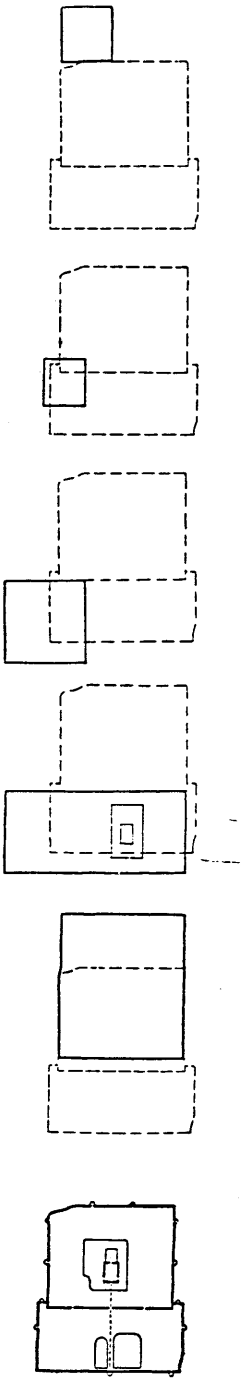
"This was the city of Zobeide, where they settled, waiting for that scene to be repeated one night. None of them, asleep or awake, ever saw the woman again. The city's streets were streets where they went to work every day, with no link any more to the dreamed chase. Which, for that matter, had long been forgotten.

"New men arrived from other lands, having had a dream like theirs, and in the city of Zobeide, they recognized something of the streets of the dream, and they changed the positions of arcades and stairways to resemble more closely the path of the pursued woman and so, at the spot where she had vanished, there would remain no avenue of escape.

"The first to arrive could not understand what drew these people to Zobeide, this ugly city, this trap." (pp45-46)

Piranesi's vision of Rome, from Peter Murray, Piranesi and the Grandeur of Ancient Rome, p62

## Form Interaction



Abstraction of morphological stages of Peking, from S. E. Rasmussen *Towns and Buildings in Drawings and Words*

The notion of "form interaction" comes from urban geography. It concerns with how the specific aspects of artifacts are/were related to the city; and how the growth of this specific aspects influence(d) the morphology and structure of the city.

"Our concern will be with the physical form and structure of the city, its morphology. We shall extend *morphology* to include not only form and structure but also the actual physical expression of that form, and the manner, by chance or by consistent practice, in which various physical components are related to each other in a system of *form interaction*. As an example, we may note the frequent approximation of the church and the market square within medieval cities. This relationship points to a formal interaction between the church and the square, as well as a functional tie between the two--the role of the medieval church in maintaining the 'just price' of goods sold in the market stalls. Today we still find new churches fronting on the square built according to this traditional urban morphology long after the administration of a just price has passed from the church to the state, and in many cases long after the market stalls on the square have had much retail significance. Thus formal interactions may be quite distinct from functional ones." (James Vance, *This Scene of Man*, p2)

The system of form interaction concerns with principled abstraction rather than particularized realism; with process more than product, with hidden laws more than manifest appearances, with relations more than entities. It is most useful in our study of urban artifacts, for it enables us to discover many hidden worlds from the one perceivable world; to relate apparently unconnected phenomena into systems. The system of form interaction is obtained through the careful examination of the morphological stages of the city and the role each individual artifact played in the development of the city. Then this system of form interaction can be represented by a geometric armature, which is not an abstraction of the street patterns, building blocks, etc., but a mental structure that is abstracted beyond any literal connections with the physical artifacts, and yet can be verified by them.

*Plan of Boston, from Michael Dennis MIT Urban Design Studio Spring'93* Resource Book

I will use Boston as a case to demonstrate how a geometric armature, the conceptual structure of the city, can be obtained by examination of the morphological stages of the city; and how this conceptual structure can be used as a measure to judge the tectonic quality of the urban artifact. Having defined urban composition in morphology of the city, I will put this method in comparison with morphological studies in urban geography and urban design to see how the particular structure of the city achieved by this form interaction method can be enriched by the morphological and ideological analysis of form in urban geography and urban design. And finally I will propose that the morphological approach to urban definition can be a rational bases for an urban design process.

CHAPTER 2

# Boston: A Conceptual Structure

**Urban Structures of Boston**

What kind of conceptual tool we can use to explain the elaborate and durable urban structures of Boston, a city that almost captures all urban history of America? The Colonial Boston in its medieval irregularity, the Bulfinch's Boston of baroque planning, the Olmsted's Boston of emerald necklace, the great urban reform movement in early 19th century, the industrial expansion of Back Bay under a French planning ideology, the alternating periods of Classic and Renaissance revivalism, urban decay, urban renewal, the era of highway engineering and suburban sprawl, urban blight, preservation, the CBD redevelopment zoning: Some of these have registered and still exist in Boston's urban plan, while others were never realized but are living vividly in the mind of the society. Were we to look at urban processes as changing of elements, rather than of rules which correlate those elements, we would see a movie rather than reality; were we to look at typology as thematic variations of shape rather than the same mental attitude at work, we would be exhausted by thousands of thematic

facts; were we to watch buildings being constructed, we would be observing different technologies; were we to query users, we would be told about function or use; were we to consult the designers, we would know various and even opposing intentions.

**Deep Structures**

How do we explain these diversified developments of different and even opposing ideological intentions in terms of "form interaction"? Could we assume a deep structure cutting across diverse logics in the formation of the city, unpredictably connecting various discrete elements into a general system that compliments different logics of formal compositions--deep structures that are essential to the formation of urban artifacts and yet are not deterministic of their actual physical shapes or materiality? Or could we assume that the morphology of the city has a meaning of its own; that in the course of development, a clearly articulated relationship was established between the forms of artifacts throughout history, and that it is possible to verify those formal constant against a background of the differences between historical periods?

## Methodology

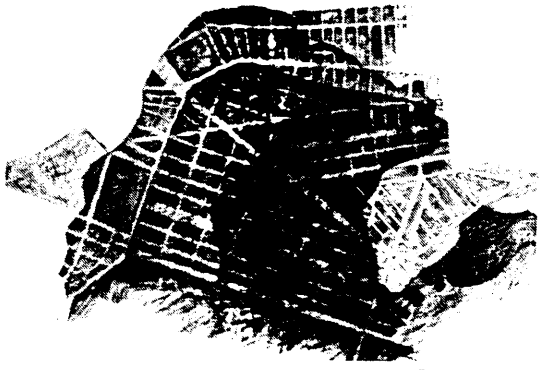
**Positivist Skepticism**

I suggest that in dealing with the complex questions concerning the formation of a city, we could adopt an attitude of a contemporary scientist, or of what I call "positivist skepticism": "positivist" in the sense that we believe in a fundamental law that governs the development of cities and by consistent and vigorous inquiries we can approach that law; "skepticism" in the sense that we do not hold on to that law tenaciously and not allow ourselves to be mislead or blinded by that law. It is out of doubt rather than confidence that we hold onto that law and our efforts aim more at its falsification than verification. Based on this attitude, I summarize as follows a method for observation, conceptualization and representation of the process of urban artifact:

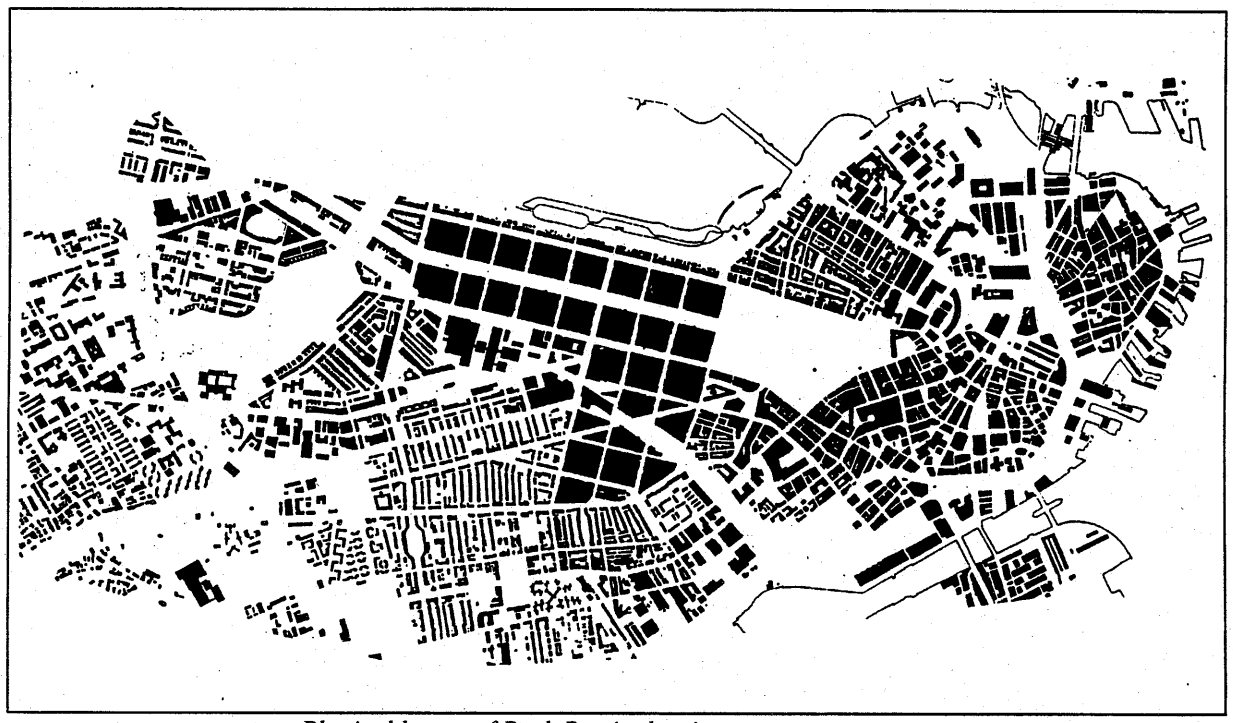
- Formulation of morphological stages of the city in relation to its history and empirical examination of the urban artifacts in the morphological stages of the city thus formulated;
- Conceptualization of a geometric armature in direct relation to the history and current functional structure of the city and reinterpretation of the urban artifacts according to the conceptualized structure;

To hold that morphological change is continuous is a truism. Nevertheless it presents a methodological problem, because our records are discontinuous. And even if we could follow the development of cities continuously over a three-thousand-year period, the effort would overtax our abilities. We need an economy of effort and of attention, as well as a system that allows us to cantilever across gorges of unrecorded evidence. Stages of morphogenesis-- the historical results of our limited records--is such a tool, with which we can infer what had happened from the physical evidence we have. In this way "we as much invent as discover the laws we set forth, as much design as discern the patterns we delineate." (Nelson Goodman, *Ways of Worldmaking*)

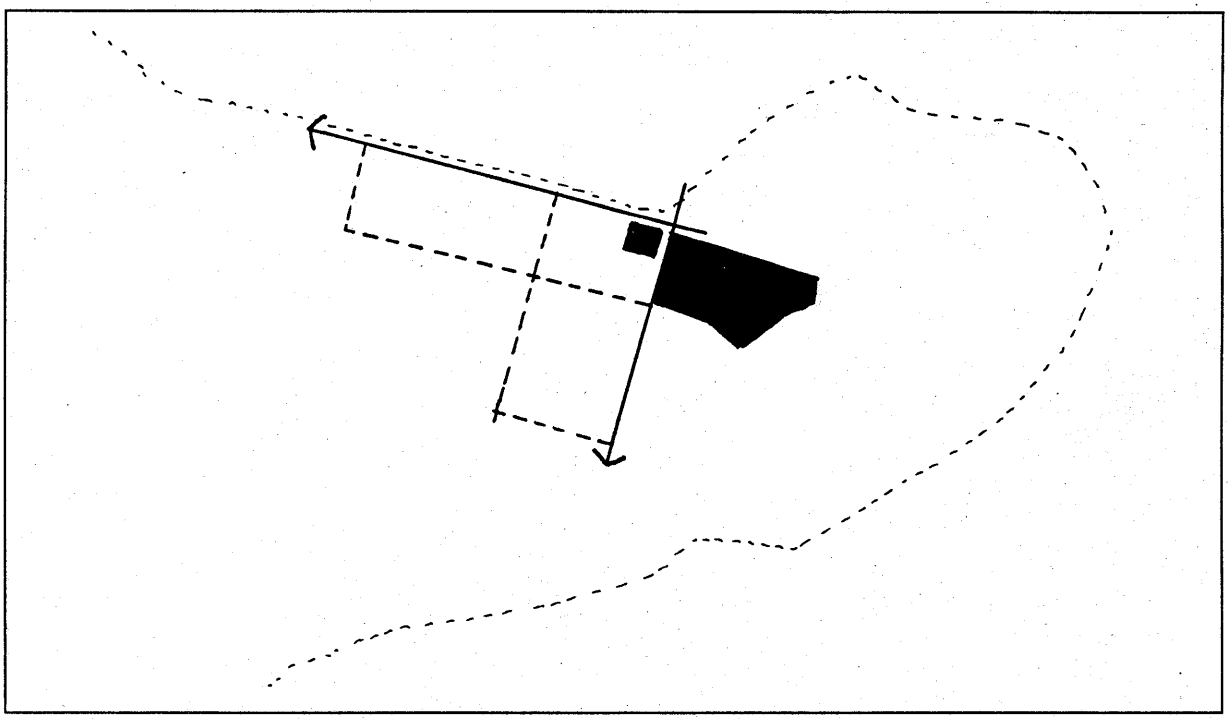
Stage is not chronological time; it is morphological time, representing one stage of a series of transformation in which the social, political and economic forces clearly manifest themselves in tangible forms. A plan of a city in this sense is a measure of different morphological times of the city. Seen in morphological stages, an urban field in a city is not simply out there in its static finality: certain elements such as a street, an urban block, are more potent than other elements of a field in the sense that they have the power to outlive the life cycle of the plan unit to influence the structure of the city and subsequently they become the conditioning parts for the later developments of the plan unit and the city.



Morphological stages of Back Bay, Boston



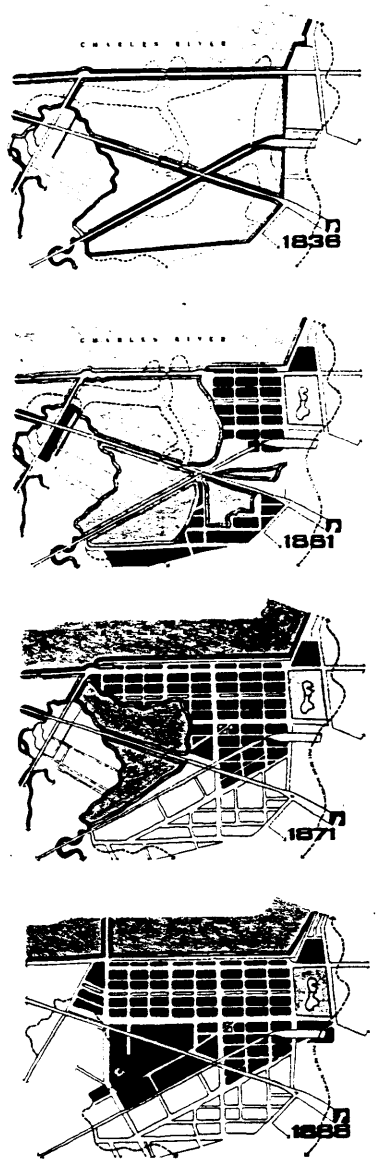
*Physical layout of Back Bay in the city*



*Two edges of Boston Common--Arlington Street and Beacon Street--as conditioning elements in the formation of Back Bay.*

## Case 1: Beacon Street

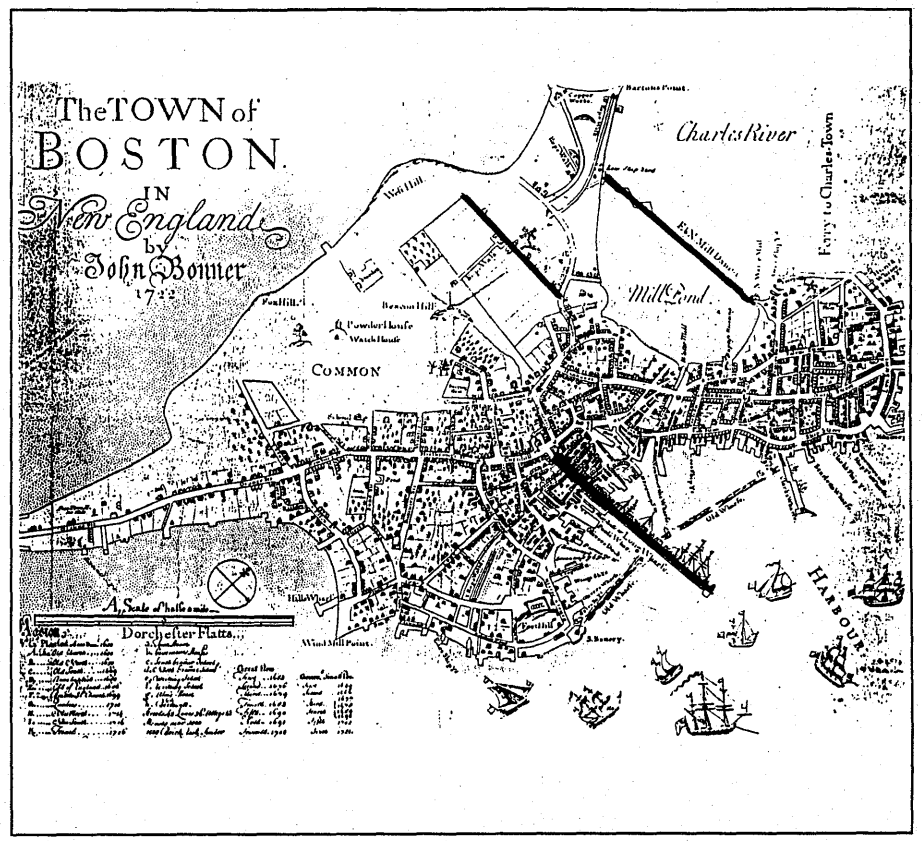
**Observation 1**
**Back Bay**




**Morphological stages of Back Bay**
**From *Back Bay Boston*, p37**

A distinctive plan unit in the city, Back Bay can be explained in typo-generic terms such as grid pattern, dimension of urban block and its subdivision, axiality, orientation, transformations of blocks, etc. A continuous urban field, Back Bay can be brought down to its generic component: type. Typology aims at a precise understanding between individual house form and the residential morphology. Simultaneously represented as non-hierarchical pregiven facts, spatial hierarchy, street pattern, house layout can be read as variations of a typological theme. For example, the plan is decomposed into several layers such as courtyard configuration, column and party wall distribution, entrance locations and street pattern. Each layer is explained in relation to other layers so that a precise and comprehensive relationship between various elements can be established.

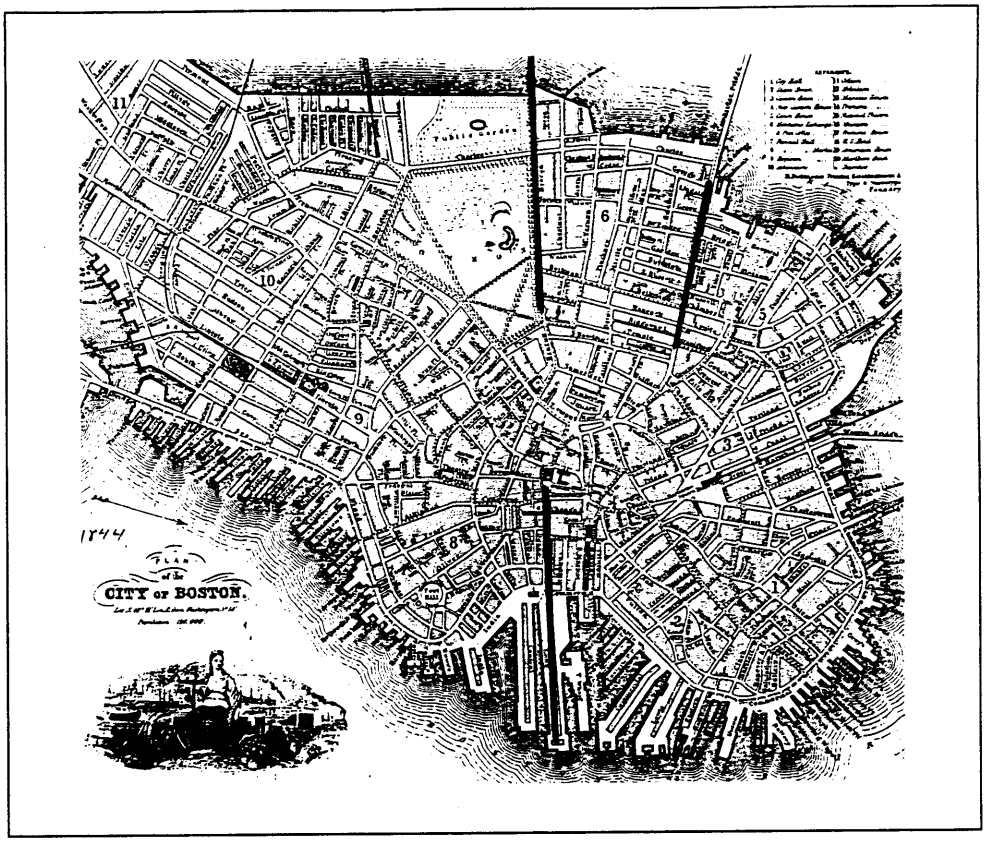
However if we examine the morphological stages of Back Bay, we will discover that more basic and fundamental than house typology or French planning ideology, Boston Common played an essential role in the formation of the area: we realize that the pregiven urban block of Back Bay counts little for the formation of the plan; and that the physical condition of the Common prescribes the operation mode for the urban block. The morphological stages of Back Bay can be summarized as a pregiven urban block replicated along two transverse axes defined by the two edges of the Common: Arlington and Beacon. These two streets stand out in the seemingly homogeneous grid of Back Bay as the generic elements or the two regulating lines for the development of Back Bay plan.




*Gazing at the 1722 plan of Boston we observe the powerful linearity of Long Wharf. As our eyes cross the territory of the plan, we also ascertain that the dam of Mill Pond and Cambridge Street follow the same direction of Long Wharf. On the plan the three lines almost parallel each other.*

**Observation 2**
**Long Wharf**

Wolfhang Braunfels commented that a structural feature of the port city as a type was that people reached the city center first from the sea and then from the city center diverged to other inland areas. This hypothesis can be testified in the formation of downtown Boston. In the earlier plans of Boston, we read that Long Wharf reached straight to the present day Downtown Crossing, which was connected at the time to the inland traffic spine, Washington Street.

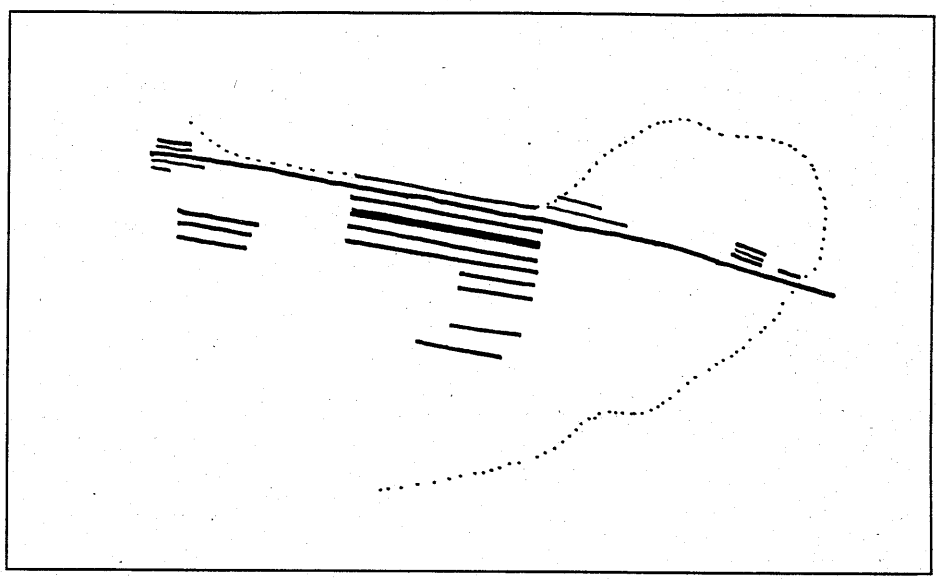



*On the 1844 plan, the Long Wharf articulated itself further in the form of what is now Quincy Market, while the Mill Pond and the dam disappeared in the fabric of Bulfinch Triangle; Cambridge Street remained the same; and one edge of the Common was extended to become the Beacon Street in Back Bay.*

## Regulating Line

**Form Interactions: Long Wharf-- Quincy Market--Common--Back Bay**

What is the system of form interaction between Long Wharf, Quincy Market, the Common, and Back Bay? Was the orientation of the Back Bay grid fundamentally influenced by that of the Long Wharf? Historical accounts do not tell us about the actual relationship between Long Wharf and Back Bay, and most likely at the time when locomotives were used to fill up the bay, Long Wharf and the maritime activity associated with it had already gone into oblivion. However based on the graphical analysis of the two maps, we could hypothesize that the orientations of Long Wharf, Cambridge Street and Common offer us formal clues to the understanding of axis shift from Washington Street to Beacon Street in the later development of Boston. Just as a minute realistic detail in a cubist painting discloses the connection between the painting and the real world, and

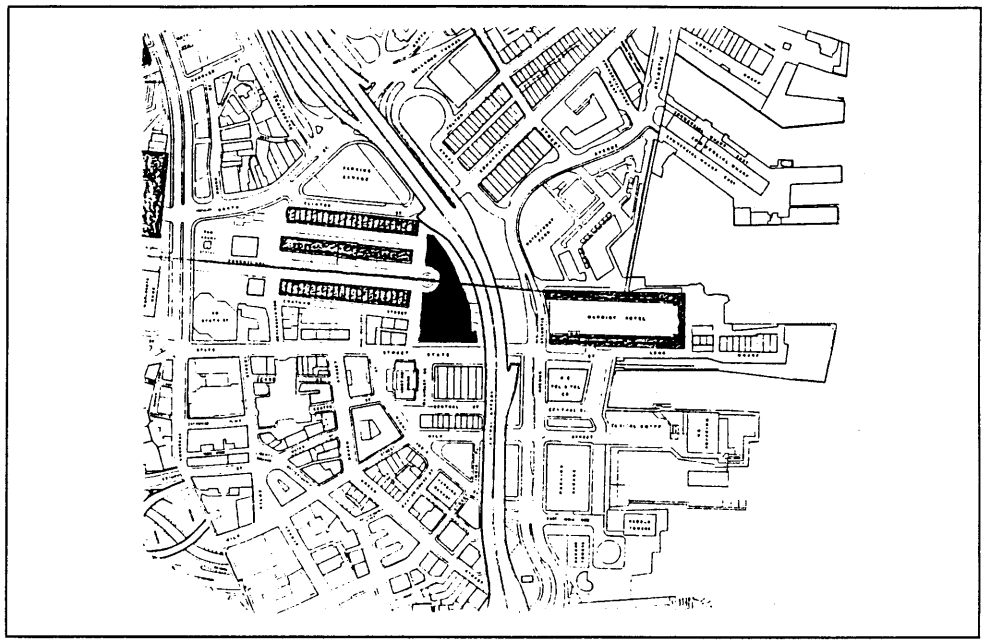


*Beacon Street as a "regulating line" linking Long Wharf, Quincy Market, Common, Back Bay and North Fenway together.*

subsequently the connection will enable us to recognize instantaneously bottles and tables from the intertwined lines and planes, so too the recognition of the formal feature of Long Wharf, Cambridge and Beacon streets enable us to reconsider the formal reality of the city at the time of Back Bay expansion.

**Beacon Street as a Conceptual Structure**

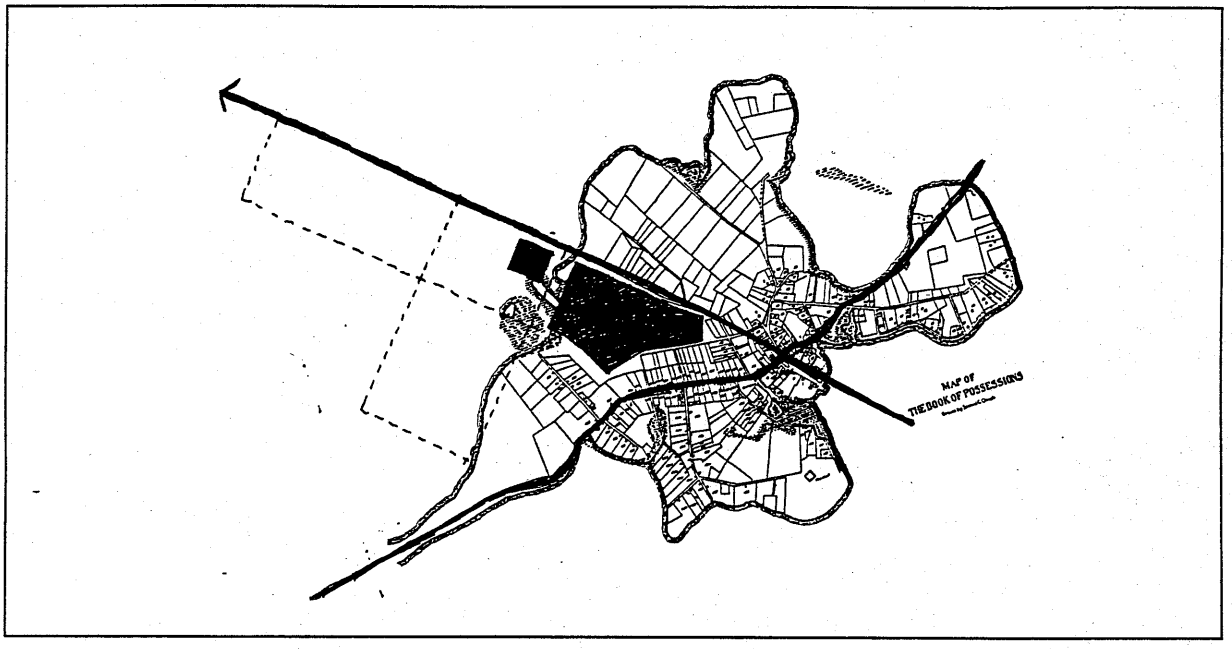
From these artifactual observations we can abstract a geometric armature to represent the particular formal order of the city evoked by the form interactions between Long Wharf, Quincy Market, the Common and Back Bay. It is out of tremendous doubt rather than confidence that we draw the lines of this formal structure. We are aware of the interpretive nature of our mental construction of the line of Beacon Street as generic to the development from Long Wharf to North Fenway: interpretive because (1) it does not intend to offer an authentic definitive explanation for the formation of these areas; but only provides a conceptual device to bridge temporarily gorges of unrecorded history between the formation of these areas; and (2) that, though pure formal construct in the mind, some features of it embody sufficient evidence to relate the mental construct back to particular moments of morphological history of the city, that is, the conceptual line running from Long Wharf to Back Bay is verifiable by historical facts yet not identical to those facts, which leaves us with more opportunities of reinterpretation.



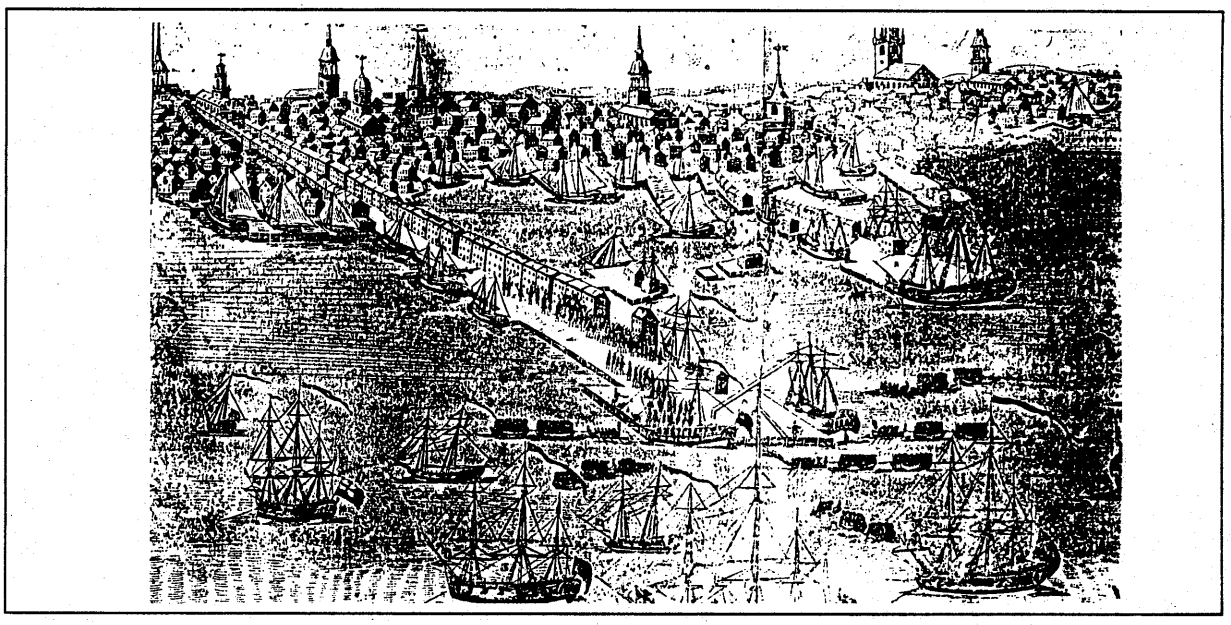
*The Marketplace Center terminates the linear axis of Quincy Market, which formerly connects the market to Long Wharf.*

**New Perceptions of Urban Artifacts through Conceptual Structure**

This means that more than how much the line of Beacon Street can be verified in the history, we are interested in how Beacon Street makes accessible to us a particular structural order of the city by its connection to a group of artifacts with similar formal features and how this particular structure helps us to reexamine the existing urban artifacts with a new understanding. For example, the Marketplace Center at Quincy Market terminated the South Market Street with a receptive conclave space. It can be legitimized as (1) a place-making strategy to define the longitudinal space of Quincy Market; and (2) a mask to ward off the intrusive elevated central artery. However given the context of our previous understanding of the form interactions between Long Wharf, Quincy Market, and the Common, we would say that the design of the Marketplace Center hardly understood the role Long Wharf had played in the morphological development of the city. Judged with the current commercial network of the city, the location and physical layout of Quincy Market appears totally arbitrary to us; but judged in connection with Long Wharf at the heyday of maritime activities, the location and physical layout is highly rational and precise. The significance of Long Wharf in the morphological development of the city is totally ignored, and the existence of Long Wharf is totally annihilated and the meaning of Quincy Market is completely changed by terminating Quincy Market with the transverse block.




*Form interaction between the new urban structure represented by Beacon Street and the old urban structure represented by Washington Street.*



*The powerful linearity of Long Wharf in early 19th century, from Walter Whitehill,* Boston: A Topographical History. *The physical layout of Quincy Market was part of this structure.*

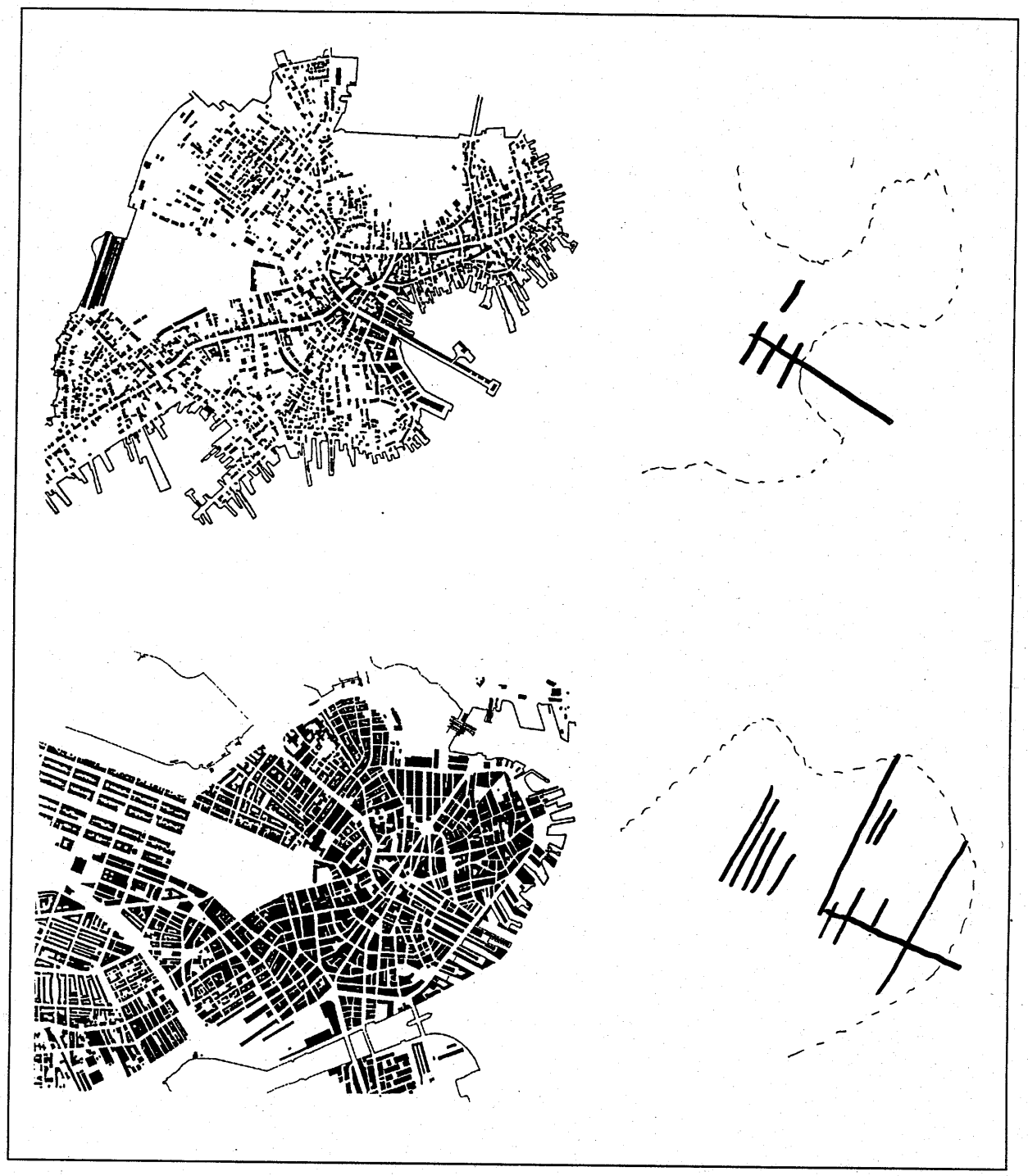
Urban Artifact
↓
Morphology
↓
Conceptual Structure

In the above case study, I have shown how a particular structure of the city was achieved by (1) studying Back Bay in its morphogenic sequence and identifying Beacon Street as a "regulating line" that conditioned the composition of the plan; and (2) associating Beacon Street with a larger morphological framework of the city: Long Wharf and Cambridge Street. From these two observations I hypothesized that the orientation of Long Wharf might have greatly influenced the axis shift from Washington Street to Beacon Street in its initial expansion and that these streets could be abstracted into a geometric armature to represent the particular formal structure of the city. For without this armature, it would be extremely hard for us to understand the physical formation of this area of the city. This structure of the city exists in the physical reality as well as in our minds as a concept, and this conceptual structure in our minds enables us to connect diverse urban objects in a system of form interaction and consequently this system of form interaction can serve as a background for evaluating the tectonic aspects of urban artifacts of the area.

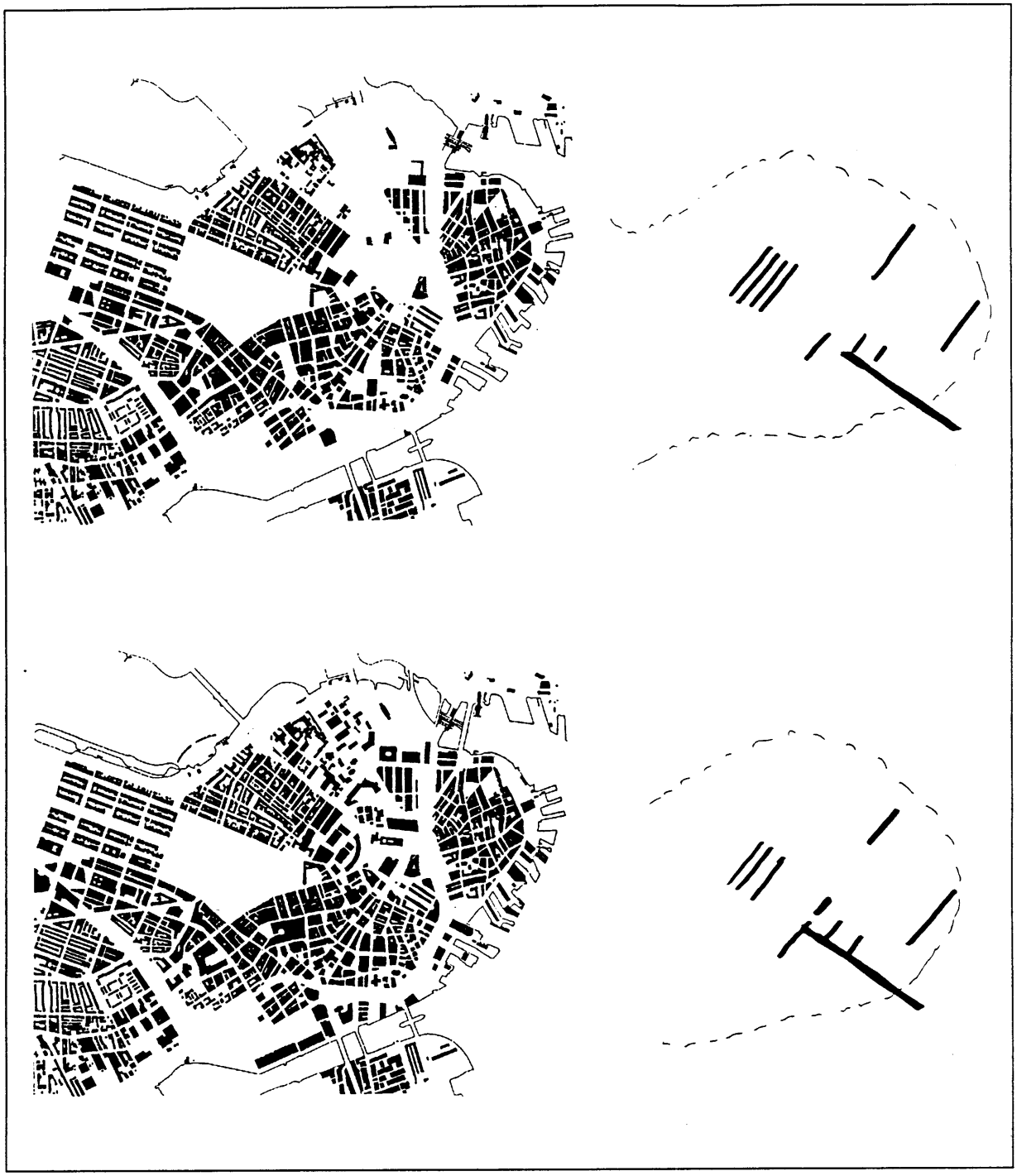
## Case 2: North Washington Street

Observation 3
Bulfinch Triangle

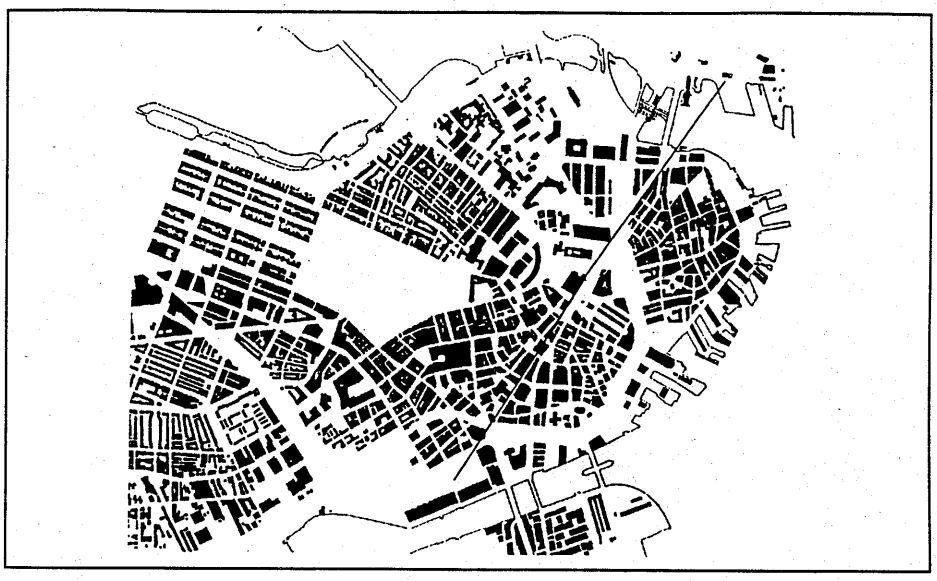
The morphogenic origin of North Washington Street can be traced back to the 1815 plan, in which it was a fragment of the street connecting Hanover and Long Wharf that is now State Street. In the 1930 plan, the line of North Washington Street became one arm of Bulfinch Triangle and continued down to Devonshire Street. The orientation of North Washington Street was repeated in Joy, Bowdoin, Hancock and Somerset streets in Beacon hill area and in Endicott, North Margin, Lynn streets and a fragment of Atlantic Avenue in North End. The urban explosion in 1960s erased almost all the physical traces of this pattern in downtown area, leaving only some of its fragments in the surrounding areas.



*Morphological stages of downtown Boston from infancy in 1815 to repletion in 1930s. A geometric armature of North Washington Street can be identified in each stage.*



*Morphological stages of downtown Boston showing the obliteration and reemergence of North Washington Street.*



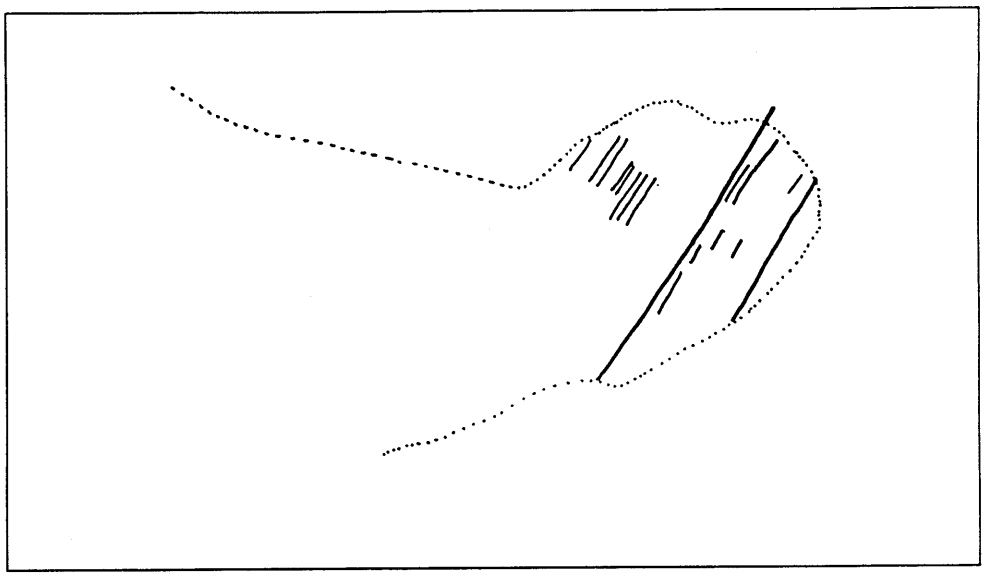
*City Hall takes up the line of North Washington Street out of many other alternatives in the surrounding area.*

**Observation 4**
**City Hall**

The eastern edge of City Hall at Government Center took up the line of North Washington Street out of the urban vacuum created by the urban blight. This makes it possible for us to speak of the "autonomy" of North Washington Street in the sense that it precedes the existence of, and was recalled by, the City Hall.

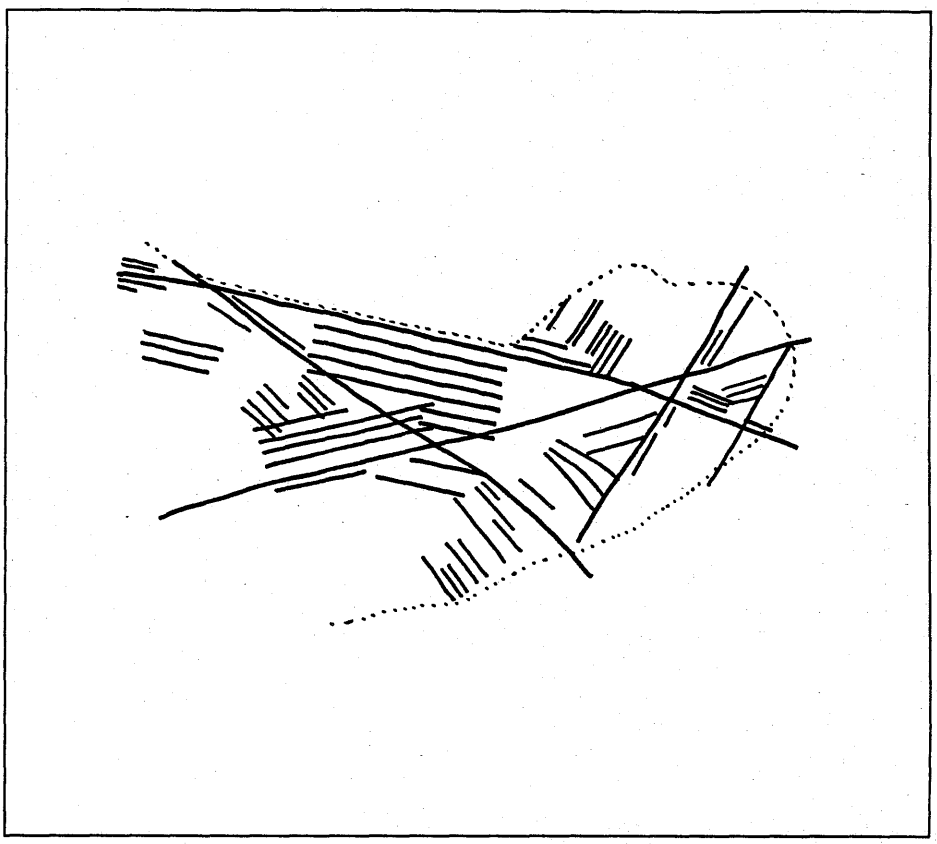
**Persistence**

It is important to note the conceptual nature of the term "persistent element". North Washington Street is persistent not because it appears in various morphological stages, either as a whole or as fragments, but because it was evoked by the building of City Hall. Given the power and arrogance of an era that could raze the whole urban fabric to the ground, the City Hall building did not necessarily have to engage itself to North Washington. However, by the conscious act of selecting North Washington as the primary line of the planning out of many other alternatives in the surrounding area, North Washington Street was elevated to the status of "persistence". Had there not been the City Hall building, or had it been oriented to Hanover Street which was another important street on the site, we would have never been able to tell whether North Washington was persistent or not.



*A geometric armature can be reconstructed based on the "persistence" of North Washington Street: the pattern represents the origin, repletion, obliteration and re-emergence of North Washington Street and the associated patterns in the surrounding area.*

When we say that North Washington is persistent, or when we say that it is "autonomous" because it precedes the existence of the City Hall and was evoked by it, we do not mean that North Washington really determined the formation of the area or the site planning of City Hall; on the contrary we mean that it is the formation of the area and the conscious planning of the city hall that had made North Washington persist. We emphasize the active, conscious choice of design rather than the passive fact of a pre-existing street. To assert the "autonomy" or "persistence" of certain urban elements, be they thoroughfares or monuments, would suffice "to make a cat laugh." Here I would point out that it was a mistake of Rossi when he classified "persistent" urban artifacts into "pathological" and "propelling" as if the physical artifacts themselves--the palace of Alhambra or the cathedral-market at Padua--were in/capable of generating the activities in and around them.

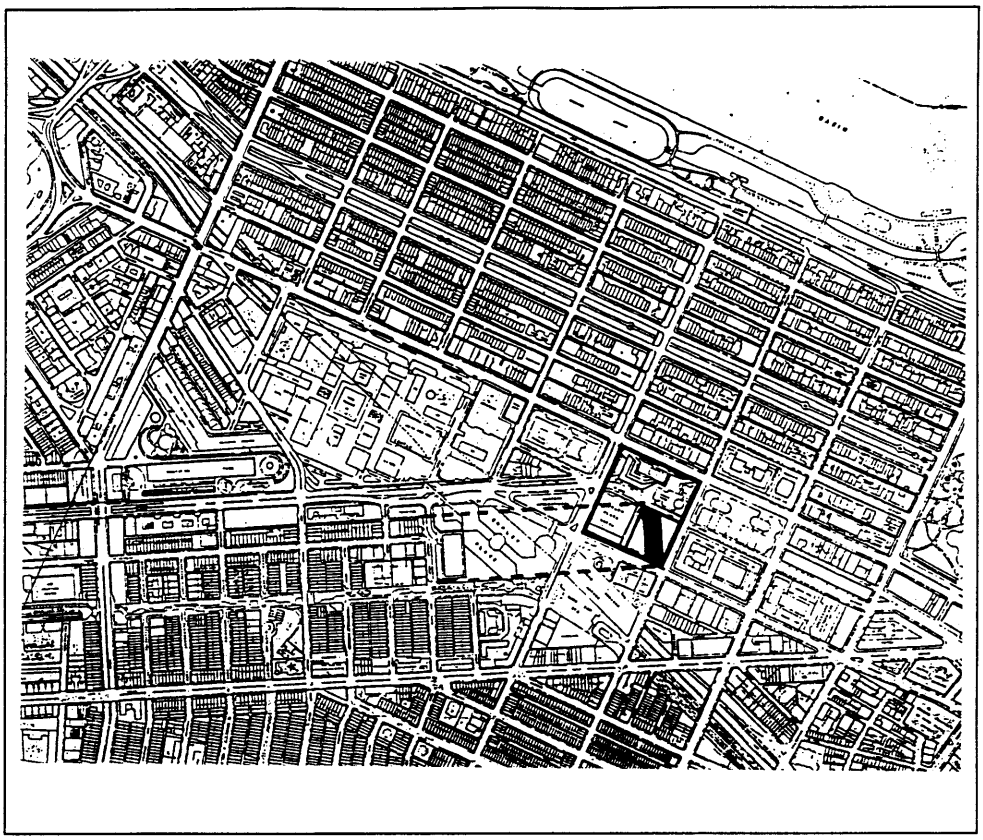


*A geometric armature for Boston based on morphological stages of the city, which is a conceptual structural for the city. It exists as much in the mind as it does in the physical reality of the city. It is not an abstraction of street lines or building orientations. It is a mental structure of the mind that is abstracted beyond association with any existing urban artifacts in a literal sense. It is the mental order through which a particular structure of the city is perceived.*

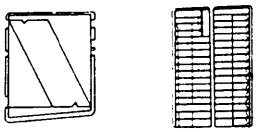
## Conceptual Structure of the City

**Mental Order**

From this perspective when we say that morphological stages of the city can be summarized in several sets of "regulating lines", we do not mean literally that these lines actually "controlled" the physical layouts of the city, but rather that these lines create a conceptual structure through which we can elevate urban artifacts into our mental territory to map out a particular order of the city. The "regulating lines" exist as much in our minds as in the real city. In fact it would be more appropriate to say that these lines exist in our mind that constantly seeks their verification and falsification in the real physical city.



*Hancock Tower between Back Bay and South End*



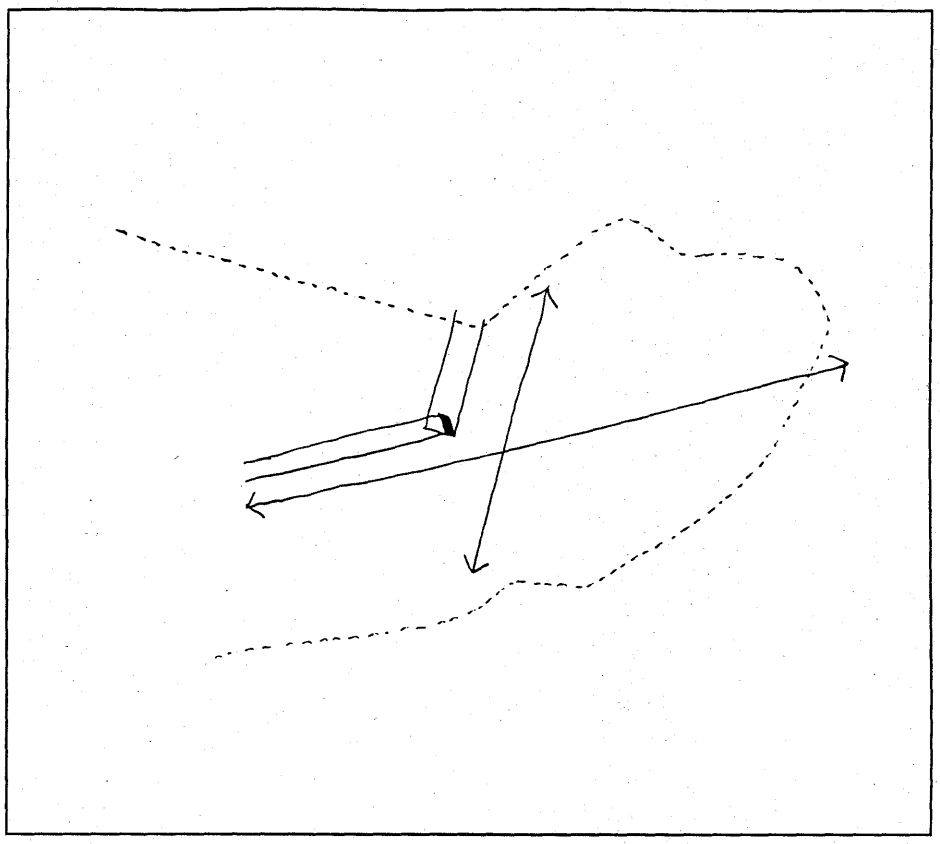
**Comparison of the Physical Dimensions between John Hancock Tower and Urban Block of South End**

## Case 3: Hancock Tower

**Morphological Mirror**

The Hancock Tower is a mirror. Through its glass curtain walls we can see the surrounding environment. But more importantly it is a morphological mirror through which we glimpse the architectonic making of the city. It reflects a tectonic and morphological fact of the city through its "composition".

The site occupies a quarter of an urban block which is part of the urban field defined by Back Bay grid. The tower takes a diagonal cut through the site. This diagonal can be read as an extension of the grid pattern of South End.



*Hancock Tower seen through the conceptual structure of the city obtained from morphological stages of Boston.*

**Particular Structure of the City Made Possible by the Tectonic Quality of an Urban Artifact**

The collage of the building and the site thus acquires a double meaning: the whole composition can be read in both ways being both Back Bay and South End at once. Yet it is none of them in terms of "fabric" or visual experience. It is integrated into the "architecture" of the city, not the "fabric" of the city. Situated at the junction point between the two pieces of fabric, the Hancock Tower is more than a glass mirror. In its composition we read two morphological conditions of the city. It is a form that is inserted into the city so that the city can see the tectonic formation of itself through that form.

Such reading is achieved not by reading the building and its context in literal terms, but by elevating them--Hancock Tower, Back Bay and South End--into a conceptual structure obtained through the abstraction of morphological formations of the city. The building does not engage its immediate context in

terms of sensory perception: it could be anywhere. But it engages the structure of the city at a deeper level: it emphasizes a syntactic relationship between Back Bay and South End, in this sense, it is uniquely tied to the structure of the city and can only happen at Copley Square, the juncture of the Back Bay and South End.

It is worthwhile to mention again the conceptual nature of our reading of Hancock Tower: when we say that the tower addresses the structure of the city, it does not mean that structure is the real structure of the city, waiting to be copied into the making of the building; rather it means that the formal feature of the building enables us to read the structure of the city in that particular way. Or, it is more appropriate to say that the Hancock Tower verifies and strengthens the structure of the city that exists more in our mind than in the material artifacts.

## Summary of Case Studies

In the above case studies, I have demonstrated:

- how a particular structure of the city can be obtained by examinations of specific formal aspects of urban artifacts and how the growth of these specific aspects in the morphological stages of the city, for example, how the specific physical orientation and linearity of Long Wharf and Cambridge Street had influenced the later development of the Common and Back Bay;
- how a specific tectonic feature of an artifact makes possible the reading of a specific physical structure of the city, for example, how the Hancock Tower makes visible, and hence strengthens the Back Bay and South End structures in the formation of the city.

To achieve this, I have tried to articulate two analytical processes based on the morphological stages of the city:

- Abstraction of a geometric armature by careful examination of the morphological stages of the city: a geometric armature of Boston was constructed through the examinations of the origins and evolutions of Beacon and North Washington streets in the morphology of the city;

- Tectonic study of individual urban artifacts in relation to the armature thus formulated: the formal features of Hancock Tower were related to the armature defined by the two significant morphological stages of the city, Back Bay and South End.

I have emphasized the conceptual/interpretive nature of such structures of the city as obtained from morphological analysis of the city form, although the structures can be verified in the physical features of the city. The purpose of morphological study is to understand the morphogenic origin of urban artifacts and their genetic and functional explanation in terms of the aims and actions of man in the course of history and in the context of nature. Morphology, function and evolution are the three key concepts. Form and function were precisely linked to each other at a given moment of history, yet the process of time brought in the functional changes of form. The dialectic relationship between form and function was established through the process of evolution. Evolution enabled the form to be closely related to each of its function and meaning yet fundamentally devoid of any inherent meaning or function during its course of development. This, plus the discontinuous morphological records, already renders all studies of the physical forms of the city interpretive and conceptual. The characteristic of the particular structure of the city developed by using morphology of the city as a theme can be summarized as (1) it is achieved by form interaction: a form is explained through other forms through a geometric deductive reasoning rather than through functional descriptions; (2) that the formal deductive reasoning for the form interaction process is verifiable in the morphological history of the city; and (3) that the formal structure of the city is conceptual or interpretive in nature. In the next chapter I would compare this method to the "authentic" morphological studies of urban geographers and the ideological and graphical studies of urban designers for a more convincing method for the analysis of urban artifacts.

CHAPTER 3

# Composition: A Morphological Definition

Morphological studies of city form by urban geographers and architects are two distinctive bodies of knowledge. Aiming at different purposes and separated by language barriers, the two schools of researchers barely knew each other's existence before World War II.

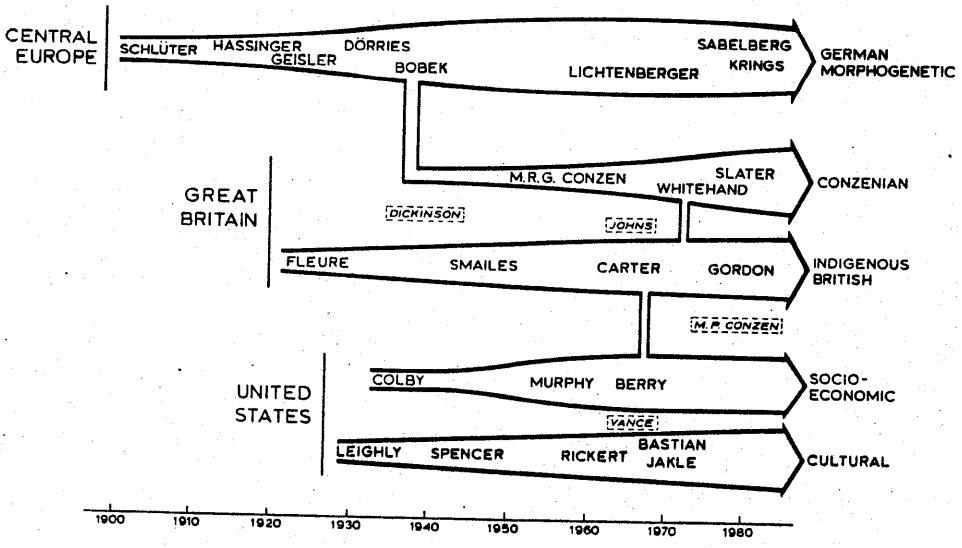
## Morphological Study by Urban Geographers

Originated in the late 19th century Germany, urban geography underwent a major shift from "descriptive" to "explanatory" mode of inquiry. In the "descriptive" mode, the dominant ethos was empirical; the major purpose was a detailed description of the visible and tangible man-made forms on the ground. After careful observation in the field, urban geographers described the variability of the earth's surface with the aid of maps and diagrams and with the ultimate aim of comprehensive division of the townscape into a set of "regions" or "districts" with

unique characteristics. The earlier geographers allowed themselves to be pushed by the enormous scope of their projects into essentially morphogenic classification relying on the depiction of settlement plans on topographical maps without uncovering the origin and development of the plans in use. As a result profuse nomenclature was produced without being adequately grounded in the historical process of the settlements. One reason for this was that urban geographers had not developed a sufficiently coherent body of knowledge about the social and economic organizations of towns to make possible a more penetrating urban morphology.

**Explanatory Geography**

The recognition of the illogicality of concentrating all attention on forms at the expense of the underlying forces resulted in the functional theory of urban morphological study: the "explanatory" mode of urban geography emphasizing the discovery of formative laws underlying the urban artifacts. In 1933 Christaller's work dramatically overshadowed all the earlier works with a sharp focus on a most potent functional research model. The incorporation of large quantity of non-morphological issues for the narration of forms resulted in the blurring distinction between urban history and urban geography. Urban history, urban economics, urban sociology, etc., all entered urban morphological studies, closing the classical era of urban morphology.




*Genealogy of urban geography, from J. W. R. Whitehand,* Urban morphology, *in Michael Pacione, ed.,* Historical Geography, *p252.*

## Historical Process of Urban Form

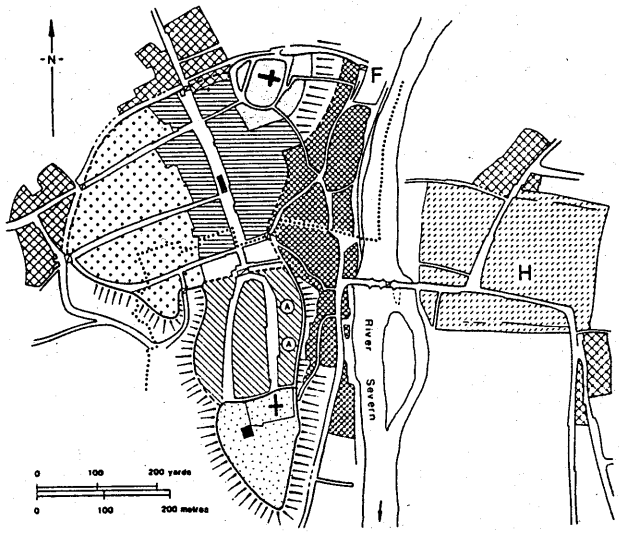
**Conzenian School**

One off-shoot in the shift from the "descriptive" to "explanatory" urban geography in Germany was Conzen's study on the morphology of medieval towns in the English context. Conzen almost elevated the urban analysis of a town plan to a scientific level. By "scientific", I mean the systematic framework of inquiry that comprises clearly stated concepts and the vigorous application of those concepts in various situations to arrive not only a general but a precise understanding of urban artifacts in historical process of the city.

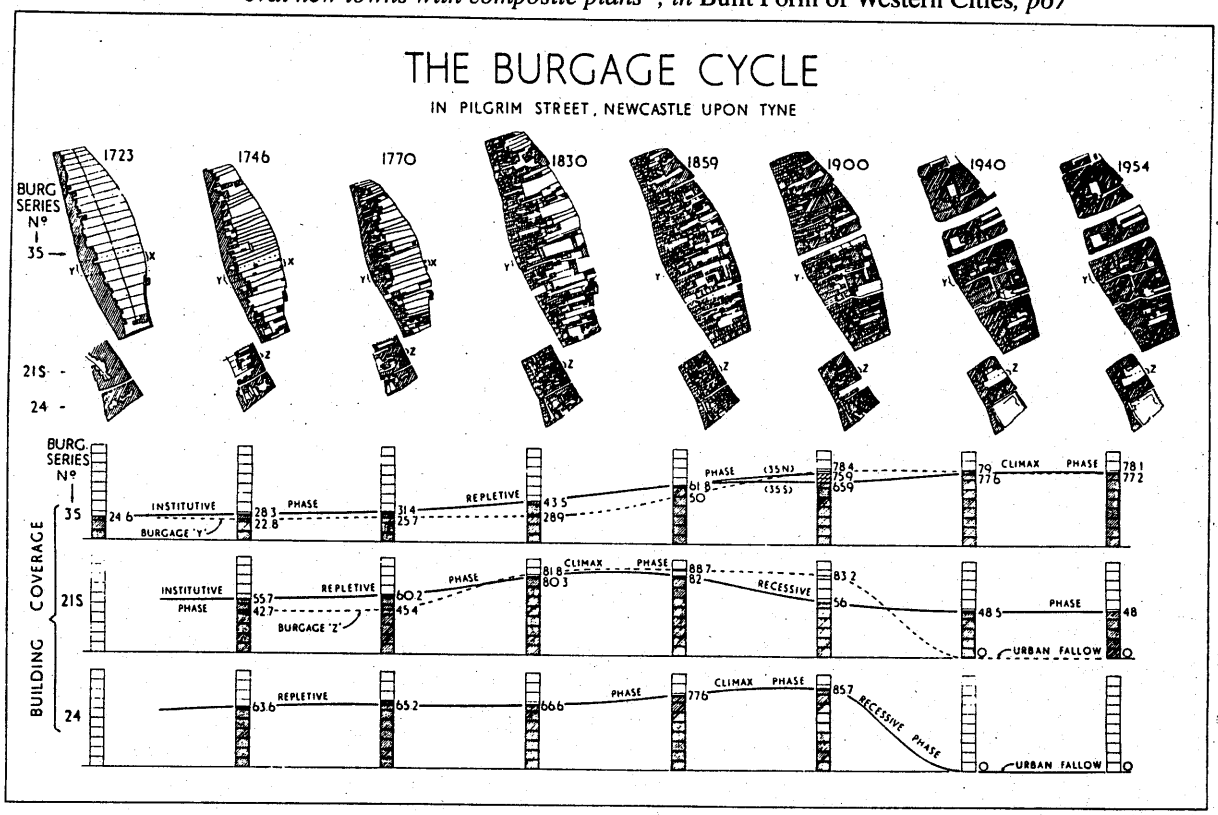
Conzen used the term "plan unit" to define the physical homogeneity of urban forms within a city plan. A group of buildings, by virtue of similarity of size, shape, building plan, can be defined as one plan unit. Different plan units represent different morphological and functional changes of the city.

**Division of a Plan: Plan Unit**

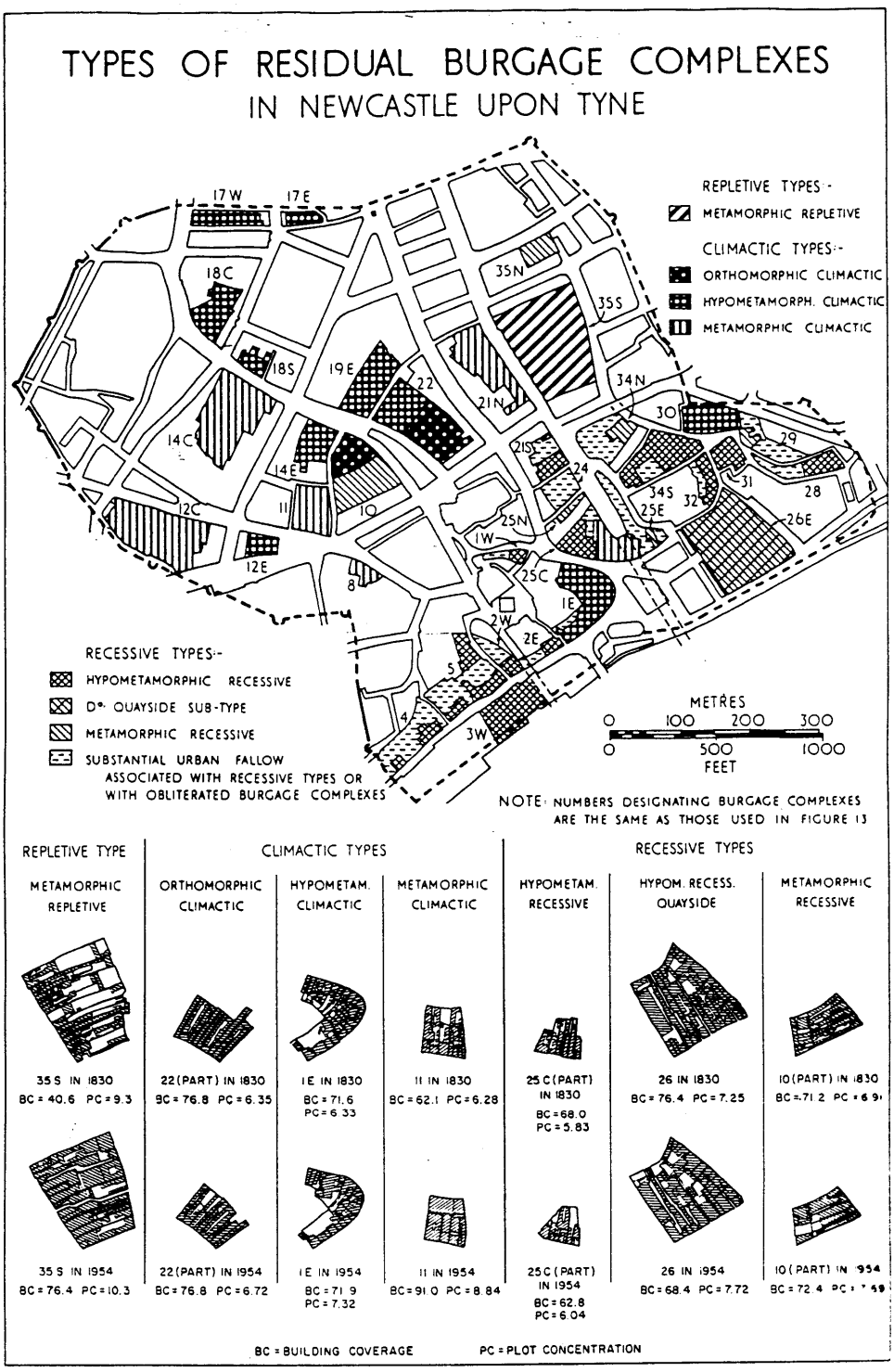
> "The contrast between uni-nuclear and multi-nuclear origins of towns introduces the subject of the compositeness of medieval town plans and the modes of their growth. Here the recognition of distinct plan units is of great importance and can often illuminate the growth stages of a medieval town, especially earlier ones, when available written records fail to give any information. Such recognition depends on the careful scrutiny of plan detail such as the behaviour of street spaces and their bounding street lines and the shape, size, orientation, and grouping of plots, all such evidence leading to the identification of the 'seams' along which the genetically significant plan units are knit together." (M. R. G. Conzen, "The use of town plans in the study of urban history", in T. R. Slater, ed., *The Built Form of Western Cities*, p120)




*Division of a town plan into distinctive plan units. From T. R. Slater, "English medieval new towns with composite plans", in* Built Form of Western Cities, *p67*




*Conzen's study of Newcastle at Tyne, from J. W. R. Whitehand, ed.,* The Urban Landscape, *p45. Detailed study of transformation cycles of two plan units were carried out without reference to other physical changes in their immediate context.*




*Physical changes of plan units were explained by external industrialization and commercialization processes without referring to interrelationships between those changes. Physical changes were explained not by "form interactions" but by functional descriptions of form. Because of this, Plan units scattered across the plan without a general structure. from J. W. R. Whitehand, ed.,* The Urban Landscape, *p47.*

Conzen's method involved five key steps:

- intensive and accurate observation of geographical phenomena both in the field and on maps;
- search for the processes producing such phenomena and the underlying forces involved;
- unambiguous conceptualization of observed phenomena on the basis of these processes and forces and in readiness for testing and improvement by comparative study;
- devising of an appropriate cartographic expression for concepts formed;
- maintenance of an interdisciplinary perspective on any geographical problem.

Having closely observed the physical transformations of the city of Newcastle over a span of 230 years based on eight large scale Ordinance Survey maps, Conzen identified two major formal features in the transformation of burgages: repletion and plot metomorphosis.

**Repletion and Metamorphosis**

Repletion represented the cyclic and incremental process of an urban block in succession of institutive, repletive, climax, and recessive phases. Plot metamorphosis represented the dramatic changes of the texture and pattern of an existing burgage block. According to the intensity of the replacement--scale of the new building in relation to that of existing ones, or whether the new building adopted the existing land division, etc.--plot metamorphosis could be divided into categories such as "orthomorphic", which meant that the replacement happened within the existing lot division, "hypometamorphic" and "metamorphic", which obliterated the initial plot patterns.

**Historical Process**

The formal categories thus produced on the empirical observation were then related to the commercialization and industrialization processes of the city to understand the formation process beneath physical forms. Physical forms were not seen as shapes on the plan but as indicative of an economic process at work. For example, instead of being described in pure formal terms, a left

over space in an urban block--defined as "urban farrow" by Conzen--was explained both as an ending of the incremental burgage cycle and the result of burgage obliteration under a stronger economic impulse, thus a symptom of the beginning of a new morphological stage.

## Studies of City Form by Architects

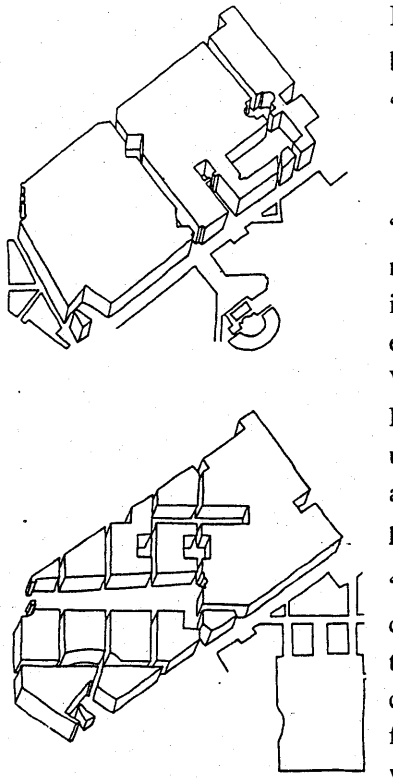
**Ideological Concerns**

Ideology has been the overarching concern in the formal study of urban design. According to different ideologies, We can classify urbanism into the rational urbanism of Gropius and Corbusier that emphasized urban form as the result of mechanical rationality; the aesthetic urbanism of Sitte and Cullen that associated urban form with certain aesthetic experience; the political urbanism of Mayer and Lissitzky that considered physical objects as the vehicle for world revolution; and the current critical urbanism that attempted to undo the built-in assumptions of urban practice and sought for new ways of urban intervention.

The origin for the study of city form in urban design could probably be traced to the 15th century when Pope Sixtus V proposed to cut through the chaotic Roman residential fabrics with avenues to connect major monuments with grand vistas and direct access provided by these avenues. A strong tradition of urbanism was established ever since and applied to the planning of Washington, Turin, New Delhi etc. One theme of this classical urbanism--the emphasis on public realm and the humanist warmth of pedestrian experience--was taken up by architects in mid-1970s in reaction to the total mechanization of cities of *avant-garde* modernism. The renewed interest in the morphology of the existing city--contextualism or rationalism as it was called--was established the publications of Rowe's *Collage City,* Krier's *The Reconstruction of European Cities*, *AD Roma Interotta,* and Rodrigo Perez D'Arce's *Urban Transformations.*

## Graphic Process of Urban Form

**Division of a Plan: Urban Field**



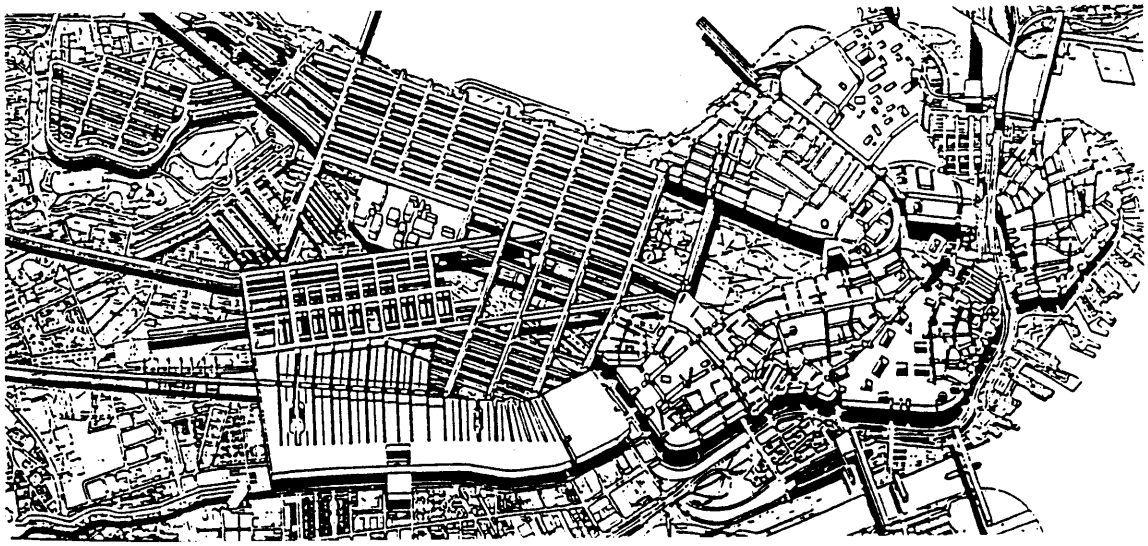
Like in Conzen's morphogenic study, an architect encounters the same question of how to divide the city plan into manageable parts. In urban design, a city plan can be divided into several urban fields based on notions of "texture /grain", "geometry /pattern", "density", "orientation".

"Delineation of the elements deriving from space begins with the most characteristic aspect of the city, which is not the isolated space itself nor the block as object, but the combined fabric of both, extended over an entire area in an associated larger group form. When this area is recognizable and coherent it is defined as a 'field'. Its subsidiary elements are texture, street, square, block, and block unit. Each of these elements, including the field, can be designed and manipulated in a corresponding relationship between plan and perceptual experience.

"The field is an area of the city which has distinct defining characteristics achieved through clear edge, clear center, or distinct texture. It is mosaic in form, non-linear, non-axial, repetitive, continuous and possibly disordered. It has the design qualities of fabric or surface; its edges can be shaped; its inner area inscribed with pattern; it can be joined with other fields, overlapped and interwoven. As an aggregated formal entity it sometimes corresponds to districts or neighborhoods." (Steven Peterson, "Urban Design Tactics", *AD Roma Interotta*)

Having been defined as such, an urban field would then be studied with concepts such as axial connection, spatial hierarchy, imageability, accessibility, and building typology.

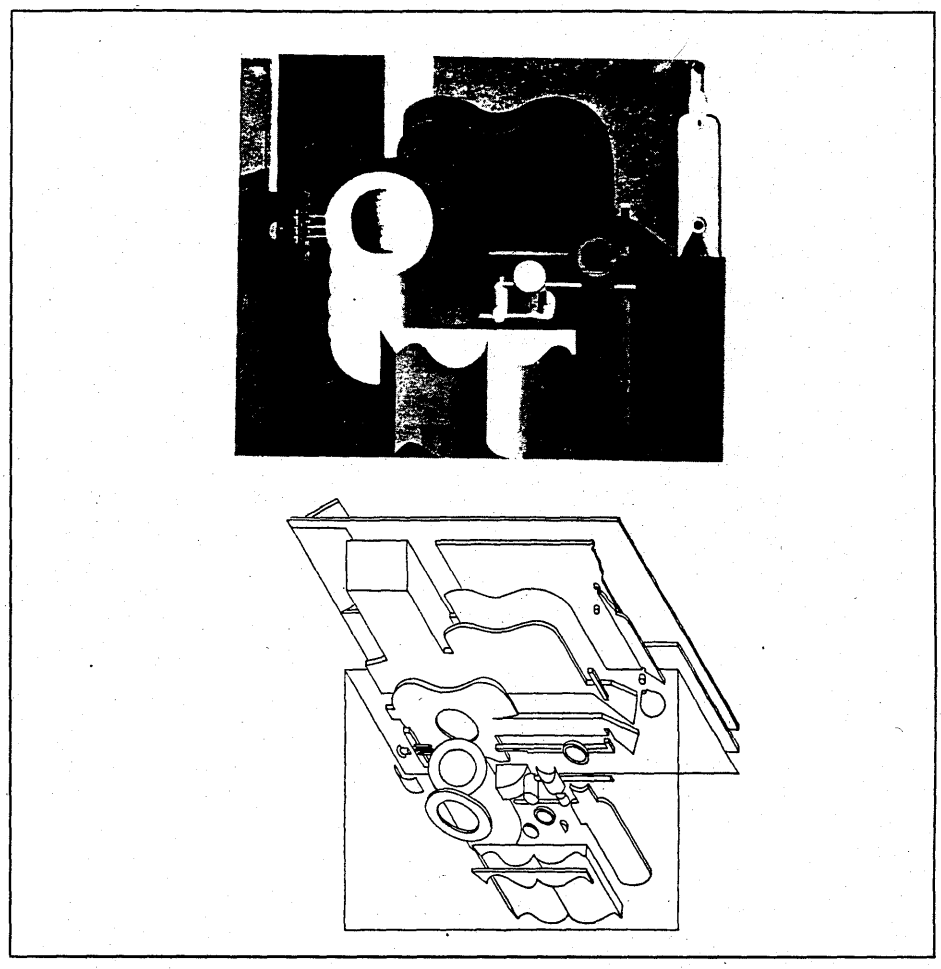
**Graphic representation of an "urban field", from Steven Peterson, "Urban Design Tactics", *AD Roma Interotta.***



*Division of Boston into distinctive "urban fields" by Mario Gandelsonnas, from William Porter MIT Urban Design Studio Spring 1992,* Boston Resource Book.

**Graphic Process**

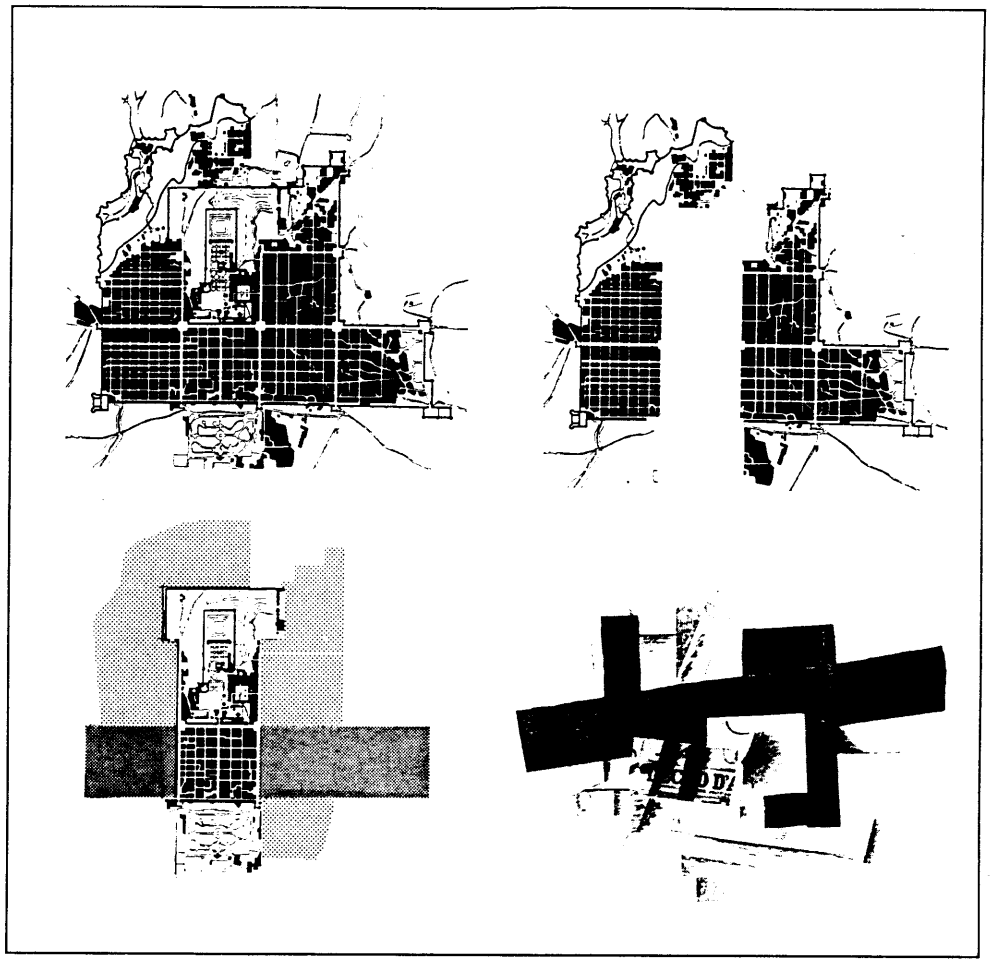
If morphological study in urban geography is characterized as mapping the transformation of urban artifacts based on close empirical observations in the city, then the study of city form in urban design almost reverses the process. Geometric principles established in Renaissance and Beaux-Art schools set up the great tradition of graphical analysis of formal character of a city. Instead of starting from historical developments of the city, an architect starts from a formal concept in the analysis of city form. A classical reading of urban form is to detect an ideal geometry hidden in the imperfect context. Urban forms are represented not according to the way they were actually transformed but according to a graphic process or an ideological intent. The analysis is more a graphic process or a political statement than the real transformation in the history of the city.



**"Transparency"**

*Analysis of Le Corbusier's painting, from Rowe & Slutzky,* Transparenz, *p48. The whole painting was detached into several layers. Every object can be read in one single layer or in combination of several layers.*

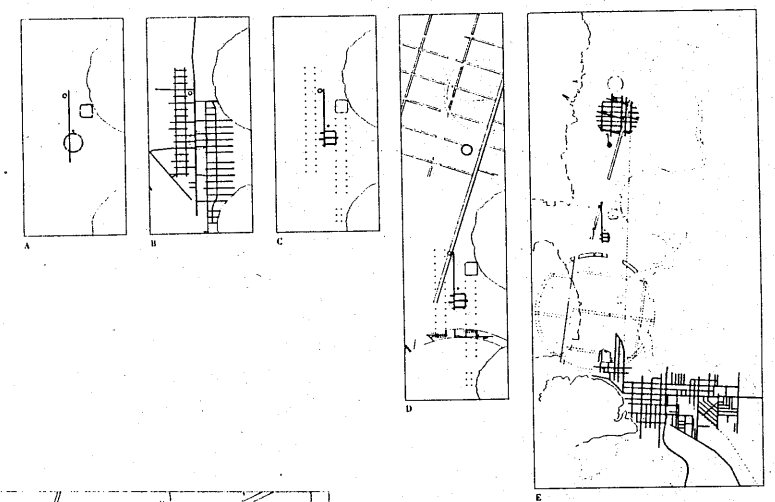
According to Rowe, "transparency" requires a simultaneous reading of both foreground and background, which makes the distinction between figure and ground obsolete. An object is seen as constituted by fluctuating contexts. Central to "transparency" is to discover the "unnoticed structural qualities in the object." (Rowe and Slutzky, in Coline Rowe, *The Mathematics of the Ideal Villa*) Perception is practiced as detections of series of superimposed layers. To read the form is to look through "a first plane of significance to



*Graphic transformation of Jaipur, India in juxtaposition with Braque's painting. From Rowe & Slutzky,* Transparenz, *p52*

#### Eisenman's Harvard Studio

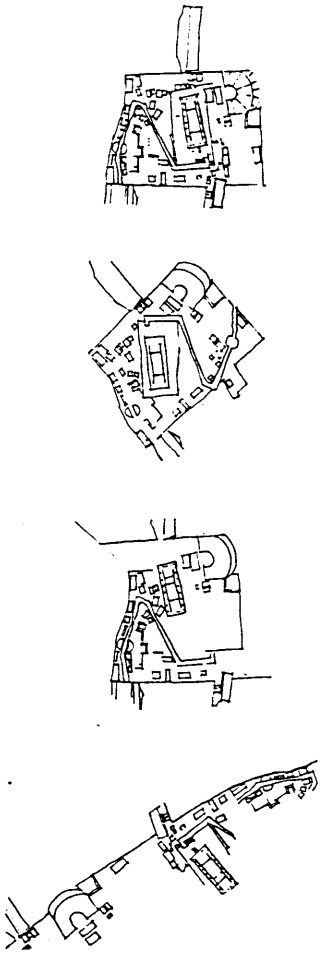
Such "painterly" reading of city plan was taken up in Eisenman GSD studio under the rubric of deconstructivism. Certain formal features of the city--the Indian burial mound, the Camp Sherman grid, the town plan of Chillicothe, and the city plan of Columbus, Ohio, as in Rusli's project--were selected and put into a compositional process of scaling, collage, resolution, etc.



*Agus Rusli*
*A. Ancient Indian burial mounds. B. Resurrected layout of Camp Sherman as it was built over the Indian Mounds. C. Discourse selects the traces of the Camp Sherman Grid as they intersect with Indian Mounds. D. First scaling of the previous drawing, using the mound that was never destroyed as a point of registration. E. Second scaling now introduces the town of Chillicothe using the library of Camp Sherman (the only currently standing structure from the Camp) as a point of registration. F. Third scaling introduces the City of Columbus, the current capital of Ohio, using the town of Chillicothe (the former state capital) as a point of registration. G. Model of the Third Scaling.*

*Agus Rusli's urban design project in Eisenman's studio, from Jonathan J. Marvel, ed.,* Eisenman Studios at the GSD: 1983-85, *pp50-51.*

**Hancock's studio**



Graphic transformation of a town from John Hancock, "Precedence and Invention", Harvard Architectural Review 5

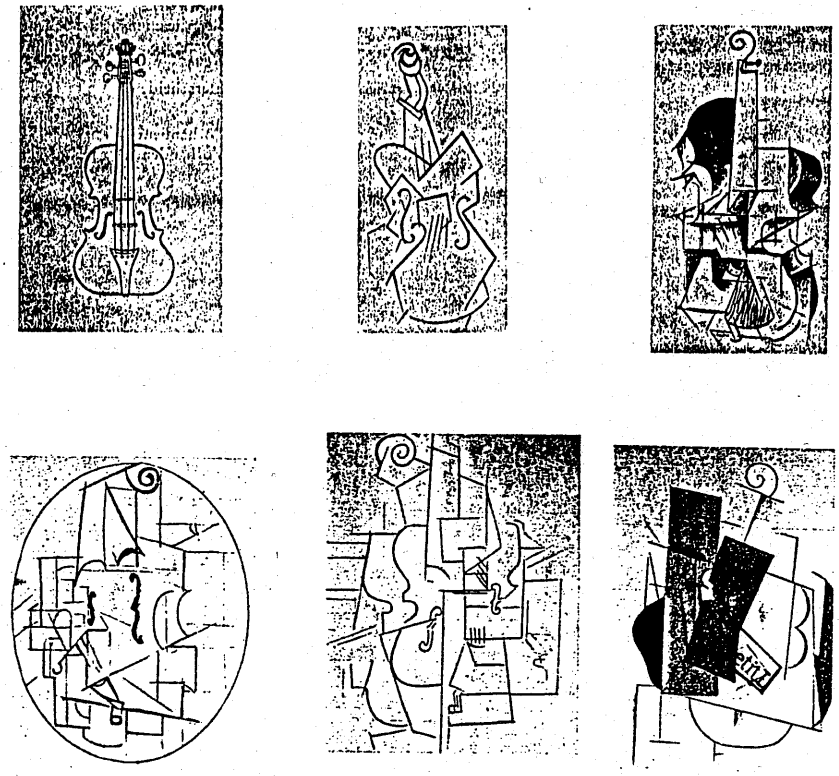
The method of graphic analysis of urban form was best summarized by John Hancock in terms of invention and precedence.

"The designer begins with a facsimile of some kind, like a plan, and passes it through his own reading and misunderstanding, using a series of operations suggested by terms such as slippage, reversal, scattering, extension, replication, interlock, density, double-scaling and intertextuality. This produces a series of drawings or other texts, which become a search for all the formal, thematic and critical possibilities of the plan's material. The value of such work is mainly in engendering a spirit of constructive play in the designer and the process, to enable the new work to finally escape the usually impressive weight of the precedent's direct organizational coherence and experiential force. It suggests of ways of extending new work beyond precedents, though in ways that may still reestablish a resonance with it of a perhaps unexpected kind. A frequent side-effect, ironically is to produce strikingly new insights which do reconnect and have plausible readings even back in context and in relation to origins and intentions" (John Hancock, "Precedence and Invention" in *Harvard Architectural Review 5*)

## Synthesis

**Historical Process and Graphical Process**

I have shown two schools of morphological studies in terms of historical/morphological process and graphical/ideological process. morphological research: the historical analysis of urban form represented by urban geographer/morphologist Conzen; and the graphic analysis of urban form represented by architects Rowe, Eisenman and Hancock. Instead of writing a review of the critiques on the assumptions and developments of these two schools of city form studies, I organized my examination of these two approaches around two questions: firstly, how the city plan was divided into manageable parts; and secondly how different parts of the city was explained. The purpose is to search for a method that combines the advantages of both for a more convincing analysis of urban artifacts.



*Transformation of violin, from Kasmir Malevich,* The Non-Objective World.

**Graphic Analysis**

In the case of graphic/ideological analysis, studies of urban form are guided by conceptual structures and transformational rules under strong ideological concerns that denied the efficacy of any existing urban artifacts. However those conceptual structures are highly subjective/ideological and the transformational rules purely graphical/utopian that have little, if any, connections to real processes of the city. The question is how to impress the controlled graphic process--the action of a cutting, a fragmentation, a dissociation, an explosion or a regrouping of the exploded parts--with the concreteness of historical details in direct relation to the historical provenance of the city and its present functional structure.

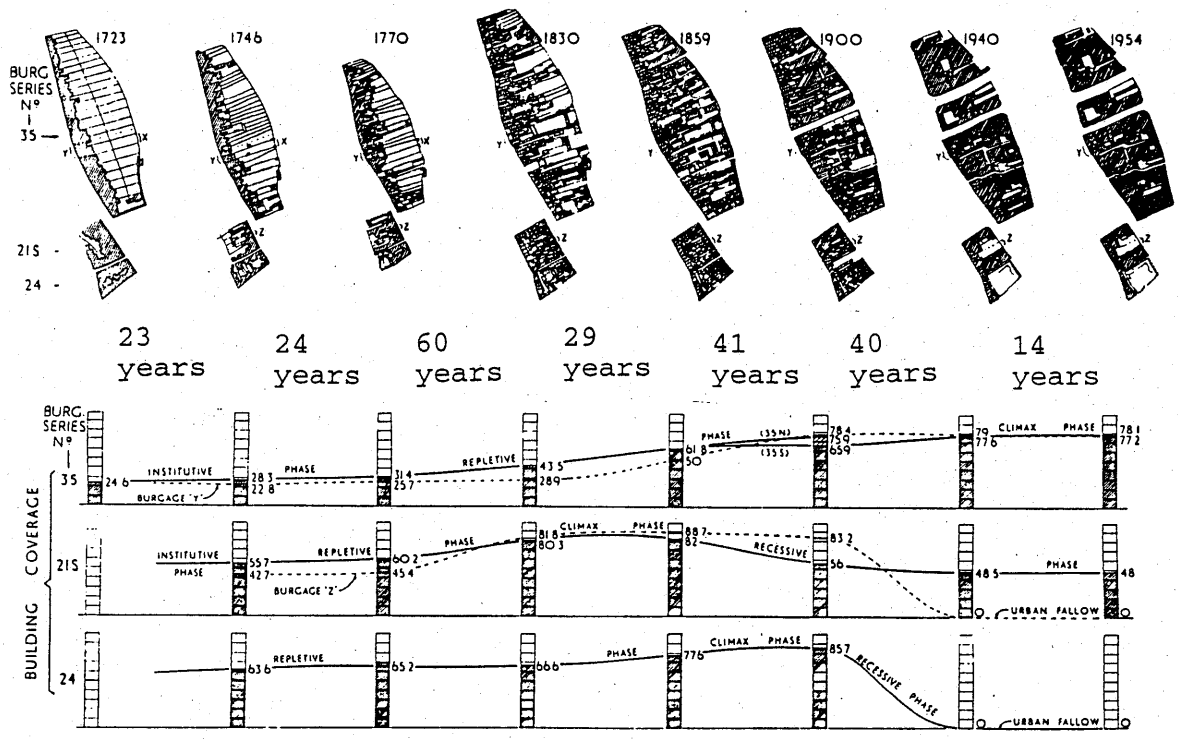
**Historical Analysis**

In Conzen's study of medieval English towns, precise and convincing understanding of urban artifacts was achieved by relating transformations of individual artifact to actual commercialization and industrialization processes of the city. But the problem with Conzen's method is that distinctive plan units, however precise in their moment of formation, were scattered across the plan of the city without a comprehensive structure as we have seen in his morphogenic study of Newcastle.This was because: (1) each plan unit was explained only by external forces such as industrialization and commercialization, for the external forces were functional descriptions, which, though provided reasons for physical change, may not necessarily explain the exact nature of formal changes of the plan units; and (2) typological studies of urban plan originated in Italy were unknown to Conzen, who had a German intellectual origin and conducted his researches in England. To understand the physical changes of these plan units, we need also to understand their interrelationship through form interaction. The question to the historical process of urban form is how various Conzenian plan units can be related to each other in a system of form interaction.

**Interpretive Nature of Conzen's Work**

My second critique of Conzen's morphological studies concerns the "objectivity" of his results. The material bases of Conzen's study were the ordinance plans and official survey plans. These plans were the engineering productions based on scientific measuring and drawing principles for which accuracy was the ultimate goal and standard. However, plans are like texts: they do not neccesarily represent the reality of what (had) exist(ed) on the ground, but rather follow their own discourse. And given the complex political intentions and social circumstances at the time of their productions, we should have all the reason to believe that a plan of a city reflects more the mentality of its maker than the reality of the city.

Thus it is more appropriate to consider Conzen's effort as to reconstruct the medieval plan from the modern city and to relate the reconstructed plan to the artifactual reality of the current city by an interpretive framework, in other words, he tried to explain how medieval plan had evolved under industrialization, emigration or commercialization process to its contemporary conditions.




*To represent a 230-year development of the town of Newcastle, Conzen used eight large scale plans produced in the years 1723, 1746, 1770, 1830, 1859, 1900, 1940, and 1954. But this chronological scale is not even. The time difference between the two adjacent time points are 23, 24, 60, 29, 41, 40, and 14 years. However the densities of these physical developments through this uneven time sequence was represented in vertical graph-bars that were distributed evenly, creating the illusion of smooth curves with gentle undulations across the time span of 230 years.*

**Morphological Stage as a Middle Ground for Synthesis**

How do we synthesize these two kinds of studies--the historical/ morphological studies by Conzen and the graphical/ideological analysis by Rowe, Eisenman and Hancock--for a method that is able to substantiate the well-structured graphical process of the later with the historical concreteness of the later? How do we start from empirical scrutinies of individual artifacts without losing the larger structure of the city or from a generalization of a city's structure with substantial details that tie the structure to actual history of the city? To answer these questions means to liberate the morphology of the city from the heaviness of its historic authenticity by emphasizing the conceptual realness of the physical structure; and to invest in the graphic analysis with sufficient veritable facts of the city.

But how is this possible?

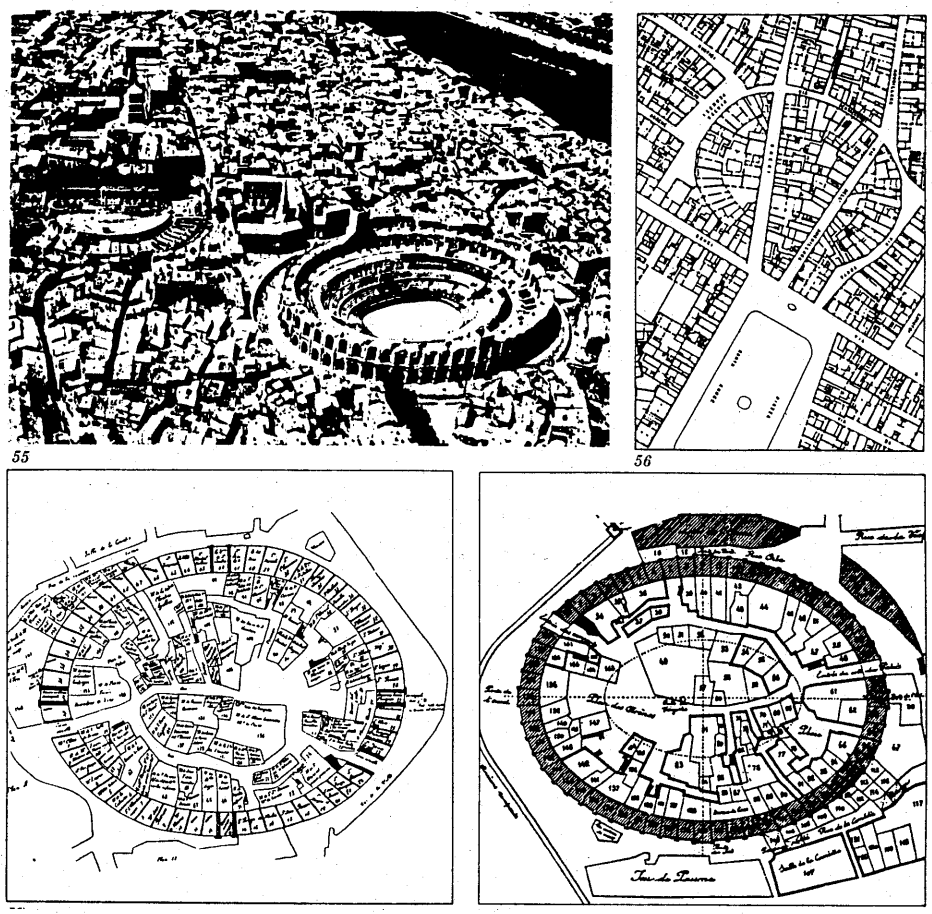
Based on the method for observation and conceptualization of urban artifact I have tested in the case studies of Boston, I would propose that the method of form interaction through morphological stages of the city can serve as a middle ground for the synthesis of these two almost diametrically opposed methods for a more convincing analysis of the structure of the city.

## Conceptualized Morphology of the City as Structure of Urban Artifacts

**Precise Definition of Urban Composition**

Studies of urban form and the structure of a city primarily deal with the compositions of urban artifacts. Modern paintings provide outstanding composition strategies, which could be applied to the graphic understanding of the composition of urban artifacts. But to adopt an attitude of urban composition is to think about urban artifacts in their morphological transformations in the history of the city. The example Rossi used in *The Architecture of the City* illustrates what I mean by a morphological definition of composition. Pointing out the obvious and frequently forgotten fact that material formations of the urban artifacts persist beyond the time scale of any single regime of human interest to such an extent that even if the material of buildings is demolished, certain features of its geometry are pathologically preserved in any new construction on the site of the old, Rossi cited the Roman amphitheater at Arles which had been absorbed into the housing fabric of the medieval city, to challenge the naive functional and social determinism of compositions of urban artifacts.

However, Rossi's effort was misunderstood as one that attempts to disengage architecture from the complex of the city for the sake of its own "autonomy". At both theoretical and practical levels, this original intention to register in form the totality of the city--that is, all its history, its social conditions etc.-- was forgotten as it was gradually reduced from a critical theory to an "instrumentality of use" for designers' individual creativity. Rossi did not wish to break the link between material form and cultural meaning. He meant exactly the contrary when he proposed the idea of history as the structure of urban artifacts.



*Transformation of Roman amphitheaters, from Aldo Rossi,* The Architecture of the City, *p89*

The way I read Rossi is that he aimed at a precise definition of the composition of urban form in relation to the actual process of the city. His question was how to integrate an individual building, in his case, the house, into the urban structure of the city.

> "It seems to me that to formulate a building in the most concrete way possible, especially at the design stage, is to give a new impulse to architecture itself, to reconstitute that total vision of analysis and design on which we have so urgently insisted... The constitution of new urban artifacts--in other words, the growth of the city--has always occurred through such a precise definition of elements." (Rossi, *The Architecture of the City*, p118)

For Rossi, the "precise definition of elements" is typology, which means the "structuring principle of architecture":

> "...that the architectural artifact is conceived as a structure and that this structure is revealed and can be recognized in the artifact itself. As a constant, this principle, which we can call the typical element, or simply the type, is to be found in all architectural artifacts..."
>
> "ultimately, we can say that type is the very idea of architecture, that which is closest to essence. In spite of changes, it has always imposed itself on the 'feeling and reason' as the principle of architecture and of the city" (ibid, pp40-41).

Architecture and the city are disciplined by the same principle of typology. But how? We are never told.

> "I have tried to differentiate between an urban artifact and architecture in itself, but with respect to urban architecture, the most important and concretely verifiable facts occur through the coincidence of these two aspects, and through the influence of one exerts over the other. Although this book is about the architecture of the city, and considers the problem of architecture in itself and those of urban architecture taken as a whole to be intimately connected, there are certain problems of architecture which cannot be taken up here; I refer specifically to compositional problems. These decidedly have their own autonomy. They concern architecture as a composition, and this means that they also concern style."(ibid, p116)
>
> "Architecture, along with composition, is both contingent upon and determinative of the constitution of urban artifacts, especially at those times when it is capable of synthesizing the whole civil and political scope of an epoch, when it is highly rational, comprehensive, and transmissible--in other words, when it can be seen as a style." (ibid, p116)
>
> "However, the architectural artifact not only embodies the structure of this individuality, but it is precisely this structure that affirms the autonomous logic of the compositional process and its importance. In architecture lies one of the fundamental principles of the city." (ibid,p127)

This "typological" aspect of form, which Rossi termed as "composition" or "physiognomy", runs throughout his book, yet is never really elaborated. I would

explore one aspect of Rossi's "history as the structure of urban form" by understanding urban composition from morphological stages of the city.

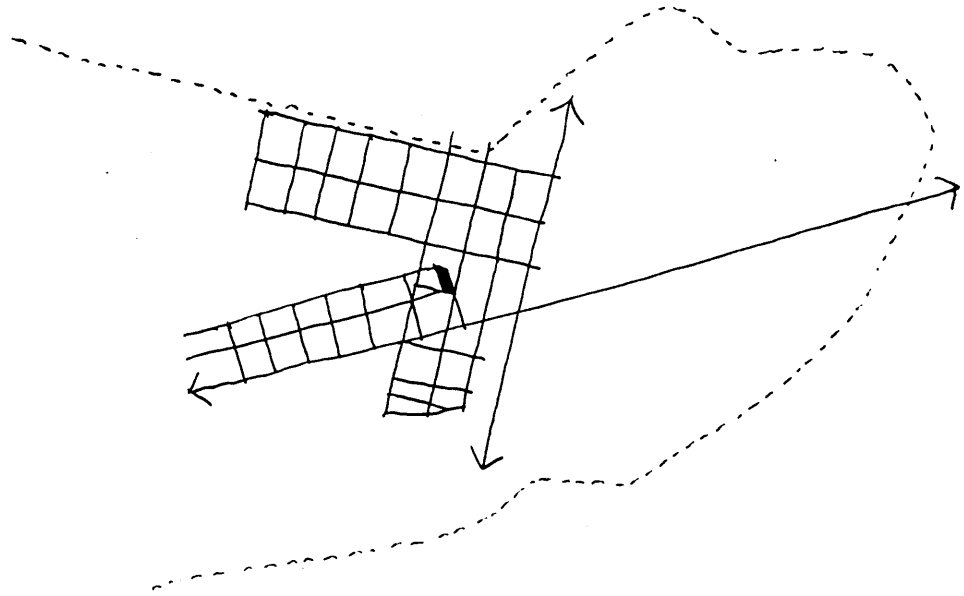
**Compositional Elements of the City**

It is common sense that a building either passively adopts, or defiantly and deliberately denies the shape of its site. However concerning the morphological history of the city and the relationship between the building and the city, the building could be conceived as a fragment in a system of form interaction in successive morphological stages of the city. Let us suppose the building in the site echoes not only the shape of the site, which may be a random/marginal result of the city's development, but also represents one significant morphological stage of the city by its deployment of axes, walls and columns. Then we could say that the building establishes a formal link with the city. This formal link is not achieved by a classical axiality nor by a thematic continuity. A particular tectonic feature of the city is built into the building and is presented to us through the formal clues of the building. Then we could say that the building evokes a particular structure of the city, maybe long forgotten. Those elements of the building and the urban elements they recall establish a composition, through which a particular structure of the city discloses itself to us. Those elements in the building and the city that constitute the composition can be termed as "compositional elements". Through the compositional elements, a particular tectonic structure of the city is made accessible to us. Standing in Copley Square, when we start explaining the form of Hancock Tower, we are already contemplating the morphological formation of Back Bay and South End. It is the morphology of the city made visible. Being neither the building nor the city, compositional form operates at both scales of the building and the city. The compositional elements, the strategic deployment of ordinary elements such as axis, wall, column, etc., holds the building and the city morphologically together by their specific relationship. This "compositional form" is equivalent to the "geometric armature" I have so earnestly demonstrated in Chapter 2.

**The Conscious Choice of Compositional Elements for a Particular Structure of the City**

The particular formal order or structure of the city may be obtained by decomposing the building and the city and rearranging them in morphological time: certain attributes of the building, such as directionality of walls, orientation of grids, axis shifts, etc., are associated with the morphological

stages of the city. Seen from the morphological perspective, the compositional elements in a building are not only perceived as objects performing specific functions, but also as signs of a larger morphological framework of the city. A colonnade, a differentiation of a grid pattern, the carving of a courtyard out of solid, etc., transcend their immediate locality and integrate themselves into morphological stages of the city. Thus the description of these elements may not only be obtained in terms of their functions, but also be deducted with precision by their very formal properties and their relationship with those compositional elements in the city.



*In the case of Hancock Tower the compositional elements are: 1, the diagonal of the Tower; 2, the orthogonal site; 3, the Back Bay grid; and 4, the South End grid. This formal link is not achieved by a classical axiality nor by a thematic continuity. It is this tectonic quality of Hancock Tower that holds two pieces of urban fields together.*

To enrich and to test the validity of the conceptual structure of the city thus obtained, we need to put it to the test of morphological histories of the city using Conzen's method and to the ideologies of the city using the method of Rowe, Eisenman and Hancock. For example, the conceptual structure for the Hancock Tower and the particular structure it evokes of the city can be tested against the historical background of urban renewal and the specific ideological concerns about future of Boston.

## Tectonic Definition of Urban Artifacts

**Summary of Chapter 3**

In this chapter I have put the method developed in Chapter 2 in comparison with two schools of morphological study of city form, one by Conzen in urban geography, the other as represented by Rowe, Eisenman and Hancock in urban design. I have argued for the *form interaction method based on morphological stages of the city* to be a middle ground for the synthesis for the two methods, and therefore be enriched by them. The middle ground method suggests that we start from an empirical analysis of urban form in close relation to the historical development of the city, and a conceptualization process aiming at discovering a geometric armature "persistent" throughout various morphological stages of the city. I emphasized the interpretive nature of the geometric armature to stress that it exists as much in our minds as in the real city. This conceptualized geometric structure represents a specific formal order of the city, as I have demonstrated in the case studies of Boston in the previous chapter. Being a conceptual tool, the "structure of the city" is not an end in itself, but rather is a theme to enable the architect to engage in social, political or cultural discourse of urban form of the city. This method is similar to what Karl Poper, Thomas Kuhn, and James Holton had suggested for scientific inquiry: the concept or model comes from within as a structuring principle; and the outside empirical world functions only as verification or falsification data.

**A Particular Order**
**||**
**Urban Artifact**
**+**
**Conceptual Structure**

Morphological studies of city form ultimately deal with the physical compositions of urban artifacts and the styles "by chance or by consistent practice, in which various physical components are related to each other in a system of form interaction". Referring to Aldo Rossi's thesis of "history as the structure of urban artifacts", I suggested one possible line for elaboration of this thesis is to understand the tectonic making of the urban artifacts in relation to morphological stages of the city. The assumption is that there are formal continuities in the deepest layers of urban structure that are common to the entire urban history of the city. Of course, we need not fall in the trap of "environmental determinism" or "autonomy of architecture" in the quest for a structure of the city. Within various urban fields, the urban artifacts exist as they are, in a crude or unintended way. The true purpose of urban composition

aims at systematic process of choice and decision-making guided by a consistent intent that will guarantee the final result to reach into the realm of principled understanding of a particular structure of the city.

Active urban composition is the result of conscious planning. The building, as in the case of Hancock Tower, deliberately associate itself with certain morphological facts of the city, and in so doing, evokes a particular formal structure of the city. From this perspective, the tectonic definition of urban artifacts acquires conceptual input into the physical reality of form. The tectonics of an urban artifact is not the appearance of the form, but what that appearance evokes in the perceiver's mind. The architectonics of Hancock Tower is not the glass box diagonally imposed on a square site, but the particular conceptual structure of the city evoked by the physical composition of the building and its site

CHAPTER 4

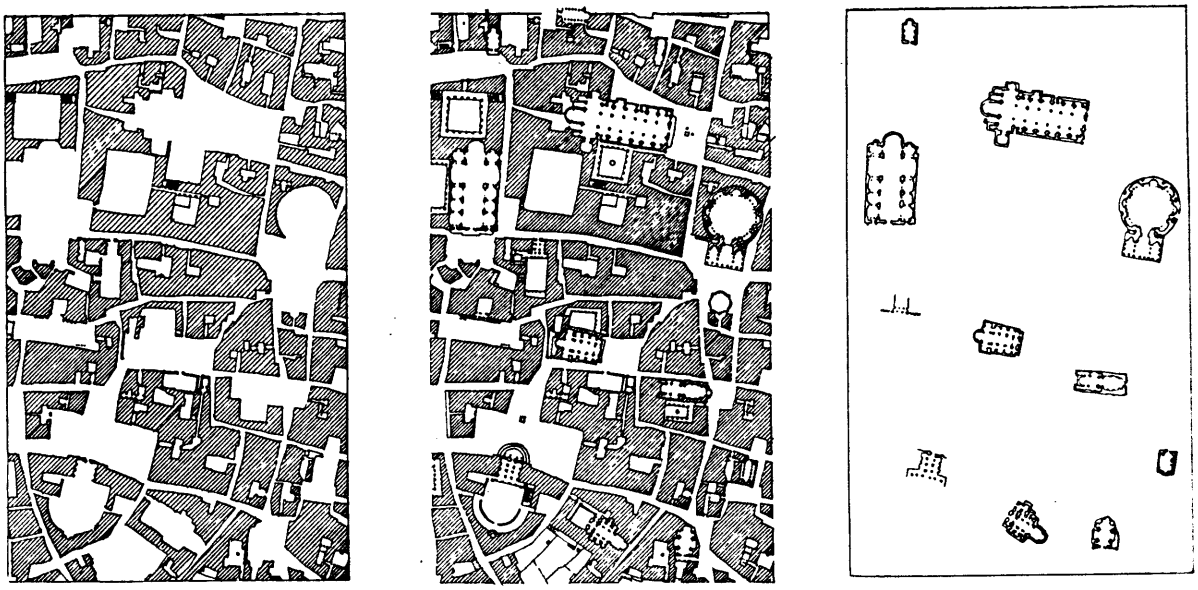
# Conclusion: Conceptual Urbanism

**Summary of the Method for Conceptual Structures of the City through Morphological Stages**

The imaging or mapping of the orders or structures of the city can be investigated in many different themes. The thesis uses morphology of the city as a theme to explore how a specific reading of the morphological history of the city influences the perception of the urban artifacts and how the tectonic feature of an urban artifact makes accessible a particular structure of the city. The method is to examine the role urban artifacts play(ed) in a "system of form interaction" in the morphological stages of the city. It requires the formulation of morphological developments of the city in relation to its history and abstraction of a geometric armature from the morphological stages of the city; and conceptualization of a form interaction process by reconstructing several layers of geometric armature into a new entity in relation to the current functions of the city. Past histories and current functions of the city establish the dialectics for reinterpretations of morphological developments of the city. To reconstruct past histories by the current functions

of the city runs the risk of "misreading" or "misrepresenting" the history of the city. But it can be justified by the fact that history itself is a reconstruction of things of a particular order. The study of morphological stages of the city elevated the study of city form from focusing on the major monuments of the city to the study of the most ordinary urban elements of the city, and from there summarizes a structure of the city, other than the monumental network of the city. In Chapter 2, having analyzed three case studies in Boston with this method, I summarized the features of a conceptual structure of the city as form-interactional, verifiable and interpretive. In Chapter 3, I put this method in the context of morphological studies in urban geography and urban design. Identifying the problems in both studies, I suggested that the "form interaction" method could serve as a middle ground for a synthesis of the morphological/empirical analysis and the graphical/ ideological analysis of urban artifacts and the structure of the city. Quoting Rossi's example of the Roman amphitheater at Arles, I argued that it was possible to develope a precise understanding of urban composition by applying this method. Now I will examine one process of urban design and suggest how it is possible for this method to be a rational process of the design.

**Study of Most Ordinary Urban Artifacts**



*Morphological study of Rome, 1748, from* Rational Architecture *p183. The method proposed in this thesis will elevate the study of city form from focusing on the major monuments of the city to the study of the most ordinary urban elements of the city, and from there summarizes a structure of the city, other than the monumental network of the city.*

**Contextualism: the Context is not Pre-given**

Contextualism was developed with the intention to justify a design through the analysis of its context. When a particular work of design is placed "in context", it is usually the case that a collection of pre-existing conditions are assembled and juxtaposed with the designed artifact in the hope that the contextual material will reveal the determinants that makes the design what it is. The context--the complex social, historical or cultural conditions of the site--is reduced to simple categories in order to justify or rationalize the design; rather than being illuminated by the design. We have seen so many cases--as would any urban design studio testify--in which the notion of the context frequently simplifies rather than enrich, confuses rather than elucidates the design discussion, for the tension between the design and its context seems to presume that the context is pre-given and hence has the potency to determine the meaning of the design.

But in reality the context is not given but produced; whose meaning needs as much explanation as the design does. We can not assume that the urban forms that constitute the context are simpler or cruder than the design. The urban context is not simply to be discovered and emulated, but to be created. And urban design is not a passive acceptance of the context. The relationship between the context and the design is very much akin to what happens in the legal dispute. The precedence or "authoritative case" is not a pre-given of the case, but something that lawyers make, and thereby make their case. And the nature of the evidence is such that there is always more of it, subject only to the external limits of the lawyer's stamina, the court's patience and the client's means.

**Rationalism**

In reaction against the practice of total reconstruction of cities of avant-garde modernism, architects came to the realization that the morphology of the city could be a new typology for urban design. Whereas the nature and the machine had provided legitimizing models for architecture and urban design in the past, argued Vidler, so now the city was the "third typology" to offer such a source.

> "The city is considered as a whole, its past and present revealed in its physical structure. It is in itself and of itself a new typology. This typology is not built up out of separate elements, nor assembled out of objects classified according to use, social ideology, or technical characteristics: it stands complete and ready to be decomposed into fragments. These fragments do not reinvent institutional type-forms nor repeat past typological forms: they are selected and reassembled according to criteria derived from three levels of meaning--the first, inherited from the ascribed means of the past existence of the forms; the second, derived from the specific fragment and its boundaries, and often crossing between previous types; the third, proposed by a recomposition of these fragments in a new context." (Anthony Vidler, "The Third Typology", in *Rational Architecture*, p31.)

Being the outcome of history, the typology of the city sanctions certain design solutions and denies others according to whether they correspond to and reinforce its characteristic typological conditions. Then here comes the question of choice: which city and which history should one use to evaluate the urban design? The Neo-rationalists apparently opted for the 18th century European city. But the selection of the city and its history as the legitimizing source of urban design remains an open question.

**The Problem of Choice**

## Urban Design Process

One method in urban design is that the architect would start from a plan, like an abstract painter, working within a deductive, systematic formal logic from general patterns of a city plan down to a particular architectonic armature free of any functionalist or socio-economic causation. In this process, the architect must create a dialogue between him/herself and the graphic transformations of shapes, between the ideal type and the imperfect context that is far beyond his/her ability to control.

On the surface the question is how to begin with an analytical search through the surrounding city area for formal clues to achieve an urban geometry with layers of complexity available to generate successive levels of design. But to initiate a formal search as such, we need a mental construct or a theme to determine which part of the urban fabric is worthy of being selected as the starting point of the graphic process. This is one question. The other question is, once such process is

achieved and completed, how can one associate it with the social, economic or cultural realities of the city? how can one impress the formal analysis with concreteness of historical, social or political details?

It is apparent that an analysis of the forces which control the form of cities--whether these are economic, social, or political forces--is necessary to arrive at some general definitions of those forms. But how useful are these general definitions of form in design, which ultimately deal with the composition of form?

Howard Clark described a situation of an urban geographer preparing to map a medieval town plan.

**To Draw with Certitude & Precision**

> "Changes in the physical fabric beyond recognition, destruction and loss of document, poor architectural survival rate above ground, lack of concerted archeological excavation, all contributed to the difficulties that face anyone seeking to map the medieval town. The historical cartographer has to face all of the difficulties of the historian, yet his product, by its very nature requires a degree of certitude and precision that is hardly justified by most medieval sources." (*The Comparative History of Urban Origins in Non-Roman Europe*, p629)

An architect, like the medieval map-maker, must delineate a form on the plan with "a degree of certitude and precision" that can be hardly justified by the various concerns of ideology, politics, client, budget, function, etc.

Where does s/he start?

I mentioned at the opening of the Introduction that the conditions of an architect is much similar to that of a scientist. Interpretation is inherent in the thinking process. As architects, we are often left to wonder why in earlier days a small number of ordinary designers plus a few simple laws would suffice to achieve an orderly, pleasant environment, whereas nowadays the most talented architects and urbanists with the aid of most advanced technology plus a rigorous and comprehensive research can not even maintain that order. We must realize that our cities perform no longer a mono-function for a single class but multiple functions for diverse social groups; that our

society is a dynamic field of interrelated forces, a set of mutually independent variables in a rapidly expanding infinite series. Our society is characterized by coexistence and conflict of amazingly heterogeneous institutions and individuals, and that it is most unlikely for these diverse social groups to have common perspectives and common way of life. This fact makes it impossible for us to visualize urban form under one overarching ideology as did the Roman colonizers or Renaissance architects; nor is it possible for us to perceive a hierarchical order as the CIAMers once enjoyed. This leads us to the realization that architects are not translators of the clients' intentions or societies' ideologies, but interpreters of the city form. If it is unlikely for different social groups in the city to share the same views about the city, if it is our purpose to design cities for the enjoyment of vast numbers of people of widely diverse background and origins, we may consider to focus on the physical clarity of our city and to allow different attitudes to develop without predefined guidelines, then our primary interest would be in technology and a formal order of the city in so far as these may be divorced from the political, economic or cultural forces.

Then the question is to start from a definition of a form without functional and ideological causalities. I suggest that morphological stages of the city can serve as such a beginning for the subsequent registration of different aspects of urban analysis (social, historical, cultural, political aspects, etc.) and urban design (form, function, client, budget, etc.). The central question is the precise definition of urban composition through the morphological stages of the city. I have demonstrated how a logical-formal operation based on the morphology of the city could be translated into a hypothesis for a structure of the city, and then into a design method, with which pre-established and formally defined urban elements of the city could play an active role in urban composition.

**Formal Operation**
↓
**Hypothesis of City Form**
↓
**Design Method**

The idea of developing a system of form interaction and of using it to inform urban design is based on the recognition of the continuities that exist in the deepest layers of the urban structure, where certain fundamental characteristics that are common to the entire urban dynamic can be revealed. A conceptual structure of the city can be obtained by abstracting geometric models from morphological stages of the city. This skeleton, this armature can then be imposed back to the city to enable apparently unrelated urban artifacts interact with each

other in unexpected ways. The conceptual structure/armature is not to be confused with abstract street lines or building blocks. It represents syntactic relationships among the urban artifacts in the city without any association with the artifacts themselves. This quality makes it possible for the conceptual structure to operate at both scales of the city and the building, thus integrating the building and the city tectonically together into a coherent, perceivable structure.

**Urban Artifacts and Particularity of the City**

Based on the evidence of the case studies of Boston, my hypothesis is that even though urban artifacts can go beyond their specific functions and ideologies, they can never go beyond the particularity of the city in which they exist: the structure of the city and the form of the artifact itself is the final explanation for the existence of an urban artifact. Hancock Tower can be explained in terms of the politics and ideologies of the 1960 American urbanism and city planning, skyscraper building technology, the designers intent, or in terms of the current debate on the nature of public spaces, etc. However, the physical longevity of the building can undo all these external arguments. Over the years of evolution, it will have acquired new meanings and functions that will make its original ones obsolete. But beyond and above these changing scenes, the form of Hancock Tower summarizes the particularity of the city of Boston. It is firmly grounded in the juncture of Back Bay and South End. I would say, this is the moment when the city explains itself through its urban artifact and the urban artifact reveals the structure of the city. When we explain the form of Hancock Tower, we are already contemplating the morphological formation of Back Bay and South End. The building is a structure of the city made visible.

> "No longer is urban design a realm that has to be related to a hypothesized society in order to be understood; no longer does architecture write history in the sense of particularizing a specific social conditions in specific time or place. The need to speak of nature of function, of social mores --of anything, that is, beyond the nature of architectural form itself-- is removed." (Anthony Vidler, The third typology, in *Rational Architecture*, p31)

Had there been a direct translation between architecture and social or political interests, design would have been much easier. Deprived of such easy cross-

walk, architects and designers are perennially in search of new explanations and new practices of urbanism. "Conceptual" urbanism--the term I use to describe the interpretive nature of a particular structure of the city perceived through the morphological examinations of urban artifacts--emphasizes that perpetually changing "realness" in the concept and the vigorous search for its verification and falsification in the urban artifacts of the city.

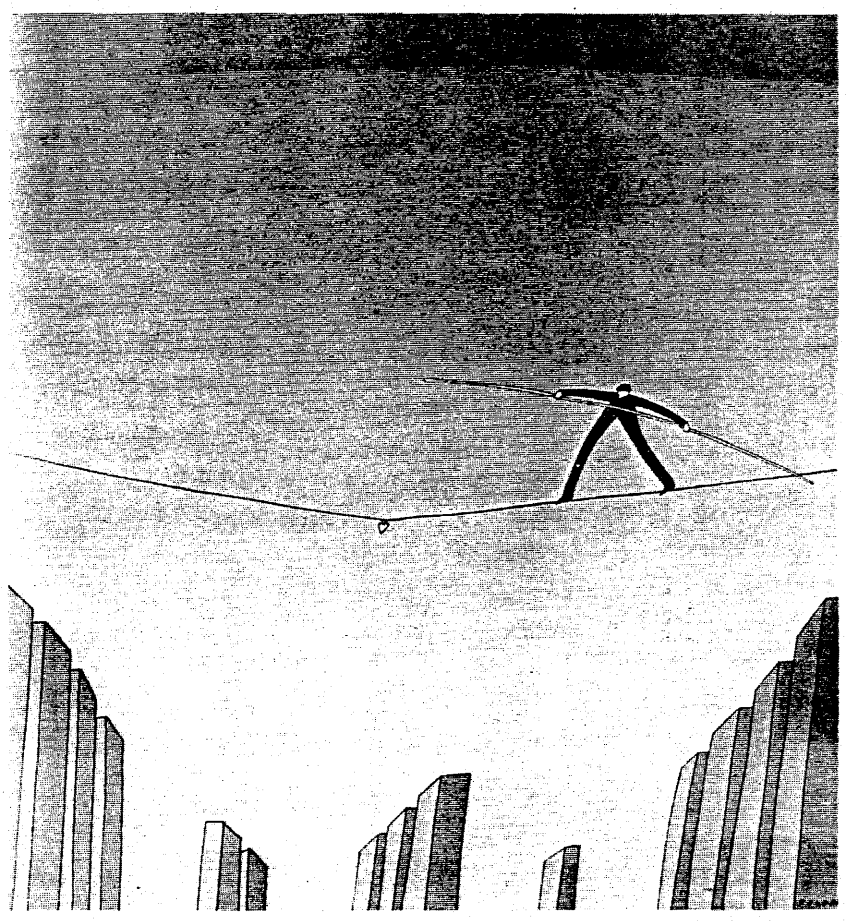
**Geometric Models without Functional or Ideological Causalities**

As veritable facts in the city, morphological stages can be abstracted into geometric models that enable us to construct formal ideas that are inherently "useless' and "meaningless", but of enormous potential owing to their structural simplicity and neutrality. Such geometric models are not composed of abstract building blocks and street patterns, but a set of compositional lines abstracted beyond any connection with actual buildings and streets. They may be elegant summaries of a line, an angle, or a curve that express critical moments in the formation of a city. Such conceptual structure obtained from abstraction of morphological stages controls only relations. It does not deal at all with elements being related. The elements and plan units are the products of their own systems of relations. The basic structure, for instance, sets up the relation between a building and a street, but it does not dictate what type of building or street. The building may be a shed or a skyscraper, the street may be a lane or a thoroughfare. Essential in the formation yet non-determinant of the physical artifacts, conceptual structures of the city can serve as a starting point for urban design process and for the architect to expand his/her horizon to incorporate discoveries in other disciplines in a well-structured conceptual framework.

## Urban Design as Scientific Tectonic Research

Having gone through the process of "urban artifacts--morphological stages--conceptual structures" of the city, I would propose urban design as a vehicle for scientific tectonic research of urban artifacts. Scientific means systematic arguments with well defined concepts and the consistent and recursive application of those concepts. Tectonic means the physical appearance of urban artifacts together with their mental structures. Morphological history of the city can be a theme for the scientific investigation of the tectonics of urban composition. The mental or conceptual structures of the artifacts are obtained from the interaction

between the individual artifacts and the stages of morphological developments of the city; and are then imposed back on the artifacts. The crude, unintended physical appearance of urban artifacts and the mental structure of a consistent intent thus create a tension between them. And urban design can be the vehicle to explore the potential created by this tension.



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