

*Thesis*

Personal Project

April 14, 1981

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## Contents

### Project Statement

Introduction	1
Program Background	4
Methodology	7

### The Term Eight Project

Urban Morphology	9
Morphology of the Waterfront	14
Design- General	17
Design- Specific	20
Conclusion	24

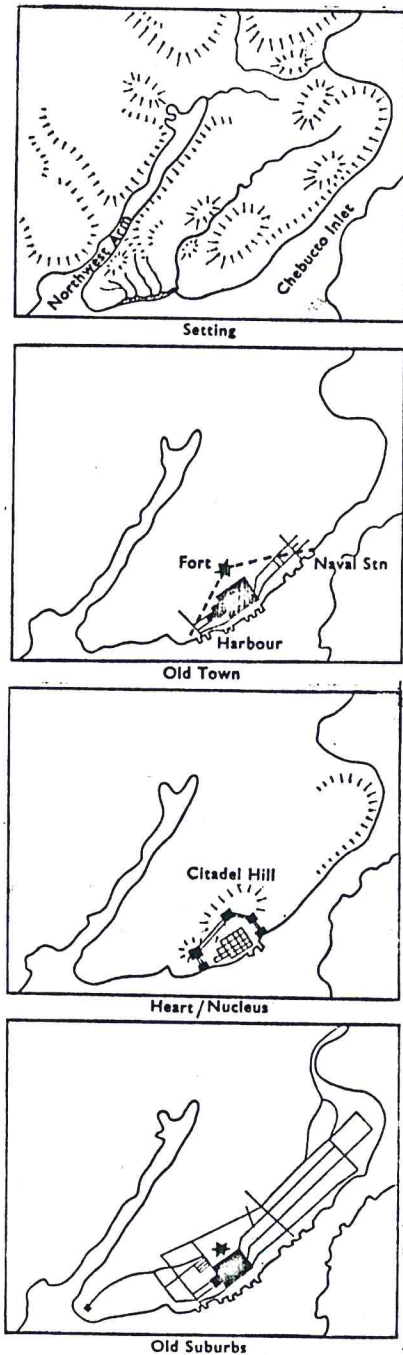


Fig. 1 Urban growth patterns in Halifax, from W. Watson

The work of this final term can be approached from two points of view; as a problem solving design solution and as a personal exploration into areas that have for some time interested me. It is the latter that is the subject of this essay. The nature of contextualism and the generative basis of architectural form are principal interests that have developed in earlier terms and this project has been viewed as an opportunity to explore these interests.

In a not widely known article published in 1953 Prof. Wreford Watson described the persistence of historical fact in shaping the physical environment of cities.<sup>1</sup> This work originally came to the author's attention to provide historical research as it used the city of Halifax as an example for his particular kind of urban analysis. However its' philosophical underpinnings and explanation of the influence of historical process in the creation of the uniqueness of individual urban environments has since that time had considerable influence. Relict geography as Watson terms his method traces the influence of formal elements long after the original has disappeared. For example, in Halifax the original town wall has long been a determinant of the urban form, enclosing a central area that grew according to its' own rules. Although the wall disappeared some centuries ago the formal distinctiveness of the area remains, but is in danger of itself disappearing as building projects

become increasingly larger and unaware of their disruptive power.

Watson's theory is in many ways close to that of Christian Norberg Schulz, who in his article *Genius Loci*<sup>2</sup> traces the development of the uniqueness of areas, that is the sense of identity and place to similar process, and argues for the maintenance of local urban structures as fundamental to maintaining human identity. Although he does not deal with the historical issue Kevin Lynch follows a similar theoretical line with regard to the importance of urban structures.<sup>3</sup>

In recent years certain theories have been advanced in opposition to the theories of the modern movement with regard to the generative basis of form in architecture and have posited that it is this basic principal that has lead to the collection of anonymous, object oriented buildings that now form the urban fabric( the anonymity referring more to their universality than passivity).

These theories attack the modern movement as being chiefly concerned with form as generated by the concerns of the building itself and functional expression at the expense of the urban environment and in particular that the International Style's fundamental tenet of universality stands in conflict with any hope of uniqueness and identity. They propose instead the derivation of form from the urban context and the break-up of the form-function link.

Perhaps most representative of these theories is the Third Typology theory of Vidler who claims that the city exists as a repository of forms independent



of functional basis, and therefore able to be adapted to new use in a continuous process of urban form generating new form<sup>4</sup>.

An examination of the alternative projectes, especially those of Krier etc., leaves one with the feeling that while it might be true that the Modern Movement's concern with internal generation has resulted in objects set in a continuum of inarticulate residual space, the reverse is true with many of these alternativ designs. Their concentration on space as design object results in buildings as anonymous poche. The conflict centers around the issue of internal versus external as the generator of form in architecture and seems to entail an implicit acceptance of the mutual exclusivity of the two.

The thesis presented in this essay is that neither position is a complete theory of architecture and the design project has undertaken an exploration of a formal structure for a specific area that might reconcile both positions. Venturi presented one possible means of this resolution with his assertion that 'architecture occurs at the meeting of the interior and exterior forces',<sup>5</sup> his thesis being that the exterior wall acts as a kind of mediator between interior and exterior but forever separating them. The result is internal generation of interior form and external generation for exterior forms.

### PROGRAM BACKGROUND

The waterfront area of Halifax has recently become available for development through public land acquisition and building clearance and although its' location immediately adjacent the urban center might, in terms of functional zoning make it a logical area for CBD usage the special characteristics of the waterfront throughout the city's history should cause us to carefully consider the nature of the area as it has existed and as it could exist.

The design project is based on an actual proposal call for the area, a theatre and art gallery complex, which as presently formulated would cut the area into development size blocks and call proposals for individual buildings. The current proposals seem mainly generated by this parcelling of land, resulting in the buildings as isolated objects, formally more consistent with an urban block pattern than any pattern suggesting the waterfront location and a complete break with historical process.

The Halifax waterfront is no longer viable as a working waterfront and has suffered general disintegration except for a small area to the north of the project area which has seen considerable historical reconstruction and re-use as a shopping area. While in that area the retention of traditional buildings and a fairly good fit of new function to old form might justify the somewhat literal historical approach the projected uses for the project area seem

incompatible with the traditional waterfront building model.

The design project utilizes a program of spaces prepared by the theatre and gallery consultants for the present development project. A class A art gallery and theatre complex consisting of proscenium theatre and concert hall form the main functional program. Objectives of the project include a consideration of the entire waterfront area and the determination of a formal design strategy for the area, selection of a specific site for the theatre/gallery complex and development of a design for that complex.

In view of the above mentioned proposals and other recently completed buildings in the waterfront area which make token contextual attempts through the use of materials this project explores a form generating methodology derived from contextualist sources that does not compromise functional concerns, and might in fact be used in response to function based decisions. The methodology is largely derived from current published material but attempts to clarify certain areas that have received criticism especially the issue of typology and the misuse of elements; the two seem to be related matters.

Many current approaches to the contextual problem are dependent on a notion of building typology. However the question of typology is somewhat problematic as Moneo has pointed out <sup>6</sup>; there seems little agreement as to what actually constitutes a type(formal, functional or structural criteria) and their nature



as complex entities which, while making them particularly difficult to employ in a cross functional situation, is also a factor underlying the problem of the misuse of elements. Many current theories propose the dissection of types and a recombination of elements to create new types<sup>7</sup>. While in talented hands such an approach might indeed be successful, the notion that the reuse of elements in new formal structures might lead to contextually responsive forms seems insubstantial as a general theory. The approach taken in this project is essentially morphological analysis and the establishment of a form generating grammar, that is a set of shape rules which define the parameters of shape generation from function based criteria.

Architectural theory today recognizes that only with regard to highly critical areas does the physical control dominate to the extent of functional form determination<sup>8</sup>. In most cases functions are sufficiently diffuse that numerous form choices are available. The program for the theatre/gallery complex contains both types. A number of functionally critical spaces were considered sufficiently specific to derive their forms entirely from internal forces; others with a low degree of criticality are generated by the contextual methodology.

## METHODOLOGY

The contextualist methodologies undertake an analysis of urban form based on the interaction of solid and void as represented by a figure/ground study and proceed from overall or generalized level of the city to the smaller constituent levels. The process is diagrammed in Fig.2 and a brief review of the methodology derived from Stephen Peterson's article Urban Design Tactics is offered here.<sup>9</sup>

The primary morphological level is the identification of the field, '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; as an aggregate formal entity it sometimes corresponds to districts or neighbourhoods. '

The fabric of the field is formed from the combined interaction of the second level elements of solids (blocks) and voids (streets and squares). The street is 'linear, axial, open and continuous; the square has the opposite characteristics; it is closed, centralized and discontinuous. The block is not necessarily a constant repetitive,

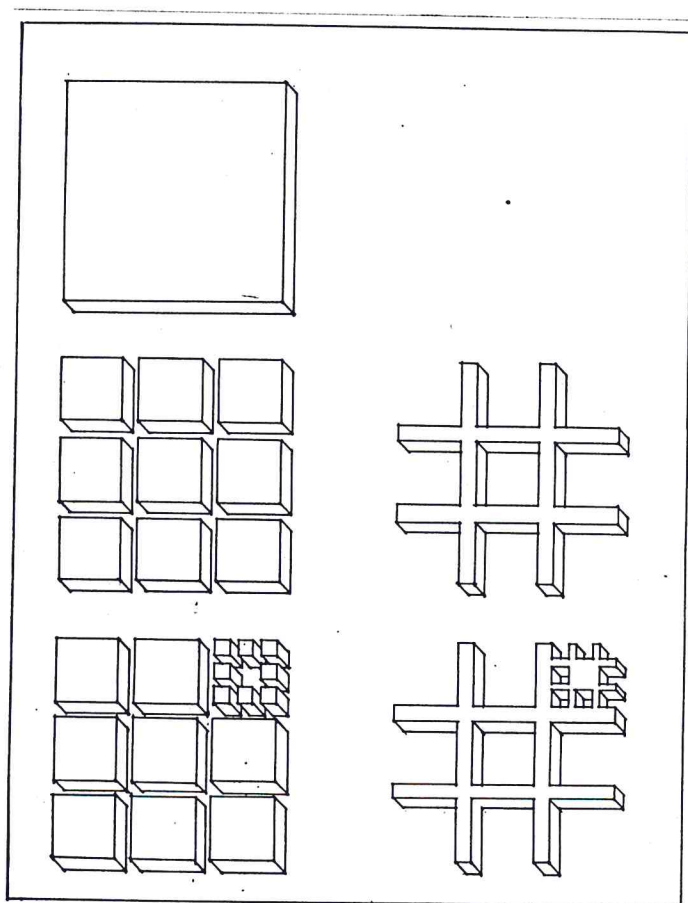


Fig. 2 Methodology





Fig. 3 Study area Figure/ground

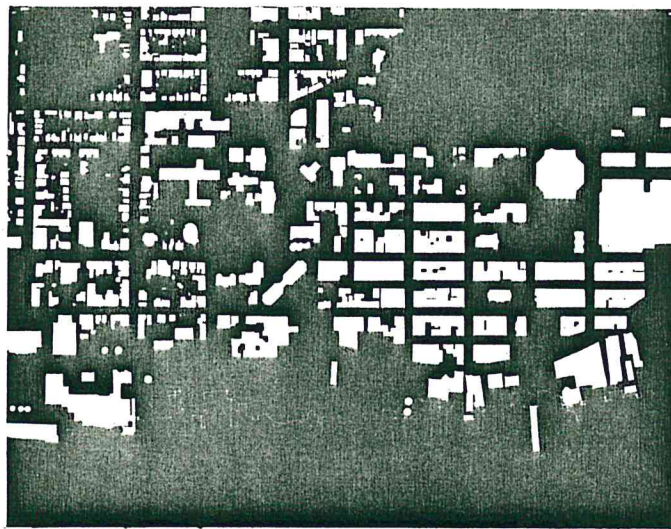
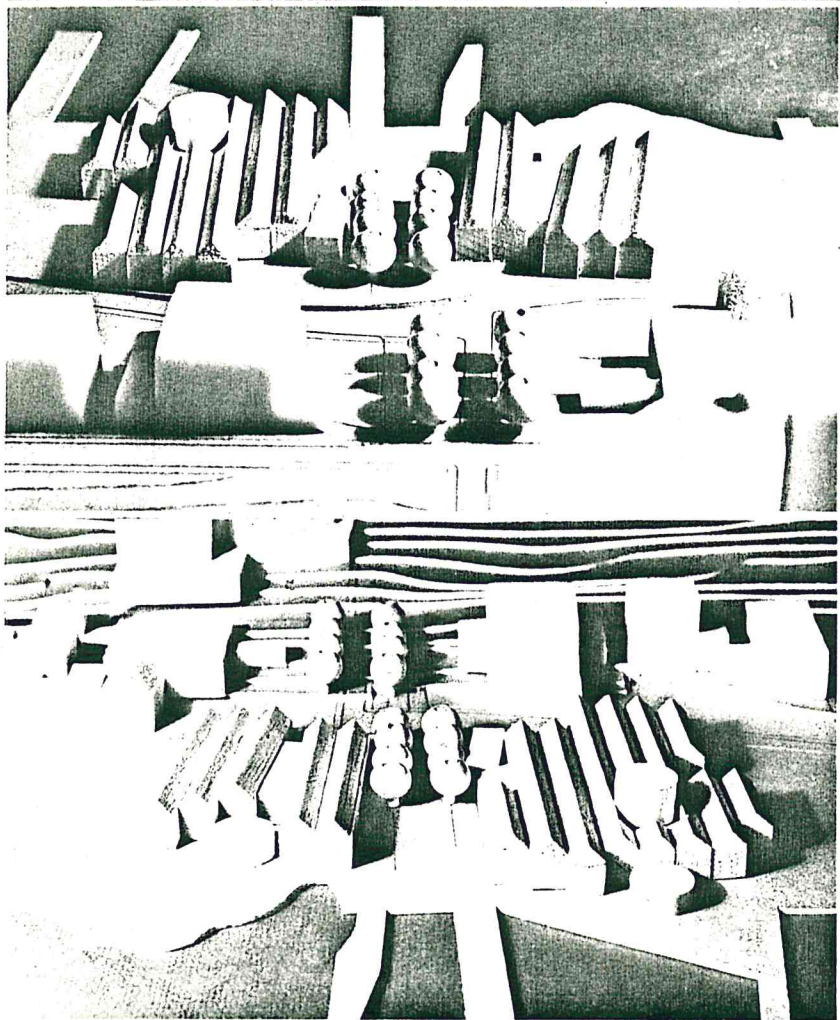
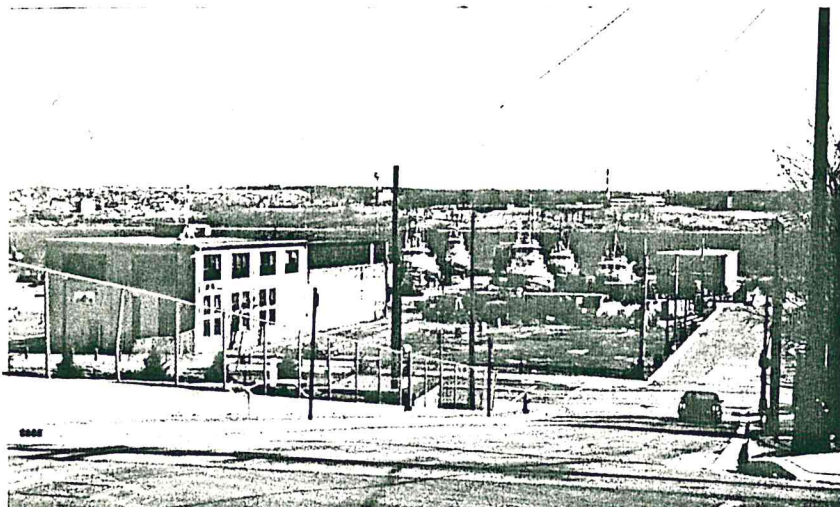


Fig. 4 Reversal diagram

modular element, but is itself a variable requiring flexibility in size, proportion, and perimeter.'

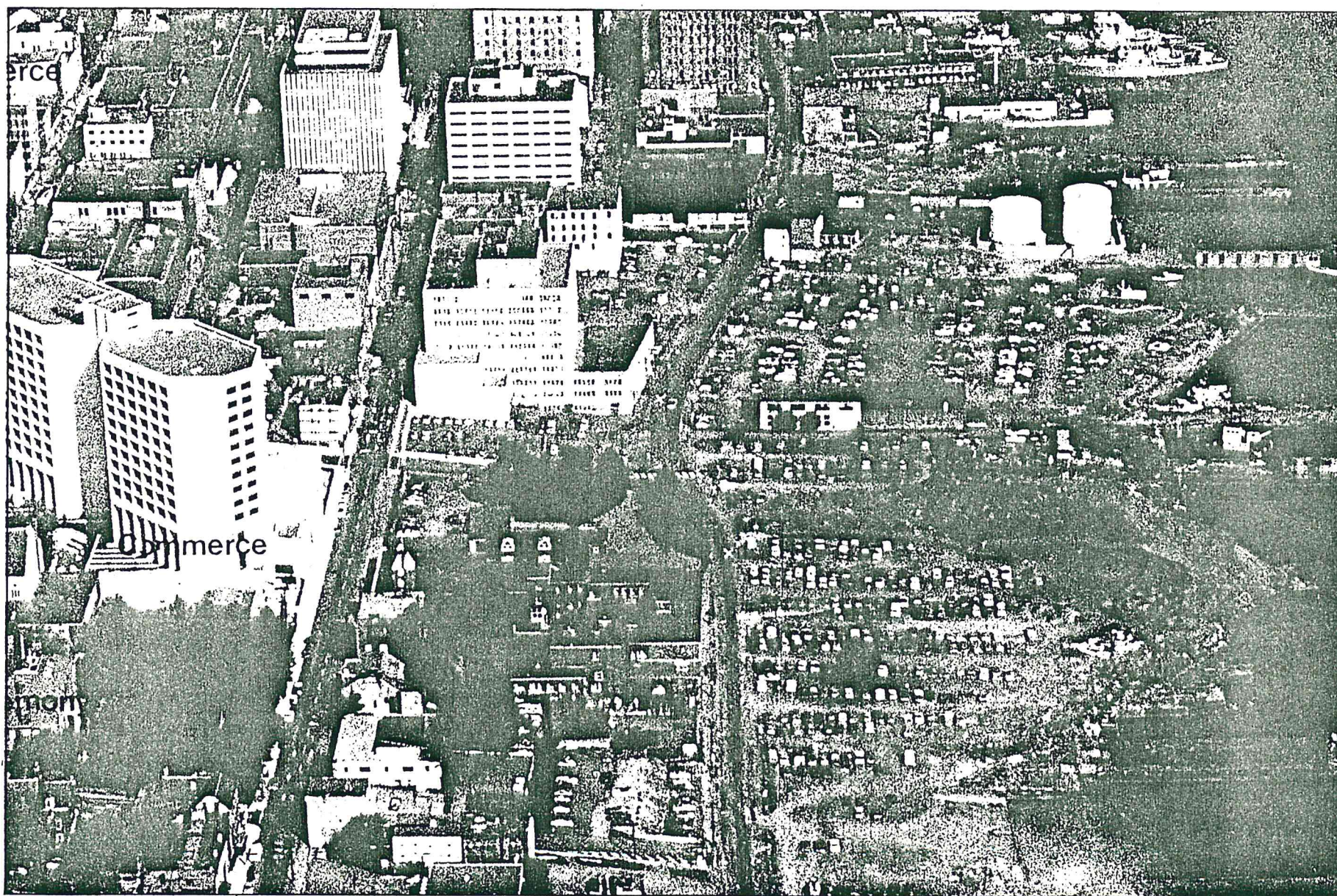
The constituent block units of solid (building) and void (inner block spaces) form the third morphological level.

At this level most theorists abandon the morphological approach and rely instead on some other method (innovation, typology etc.) to generate actual building forms to the shapes and textures determined at this level. Such a practice seems to severely limit the potential of the morphological method, if equal importance is to be given to both solid and void which is the important figural quality of the Gestalt figure/ ground double image. The approach taken here is to continue further along the lines of the general method to elicit further levels of ordering principals and establish a generative system for building form.



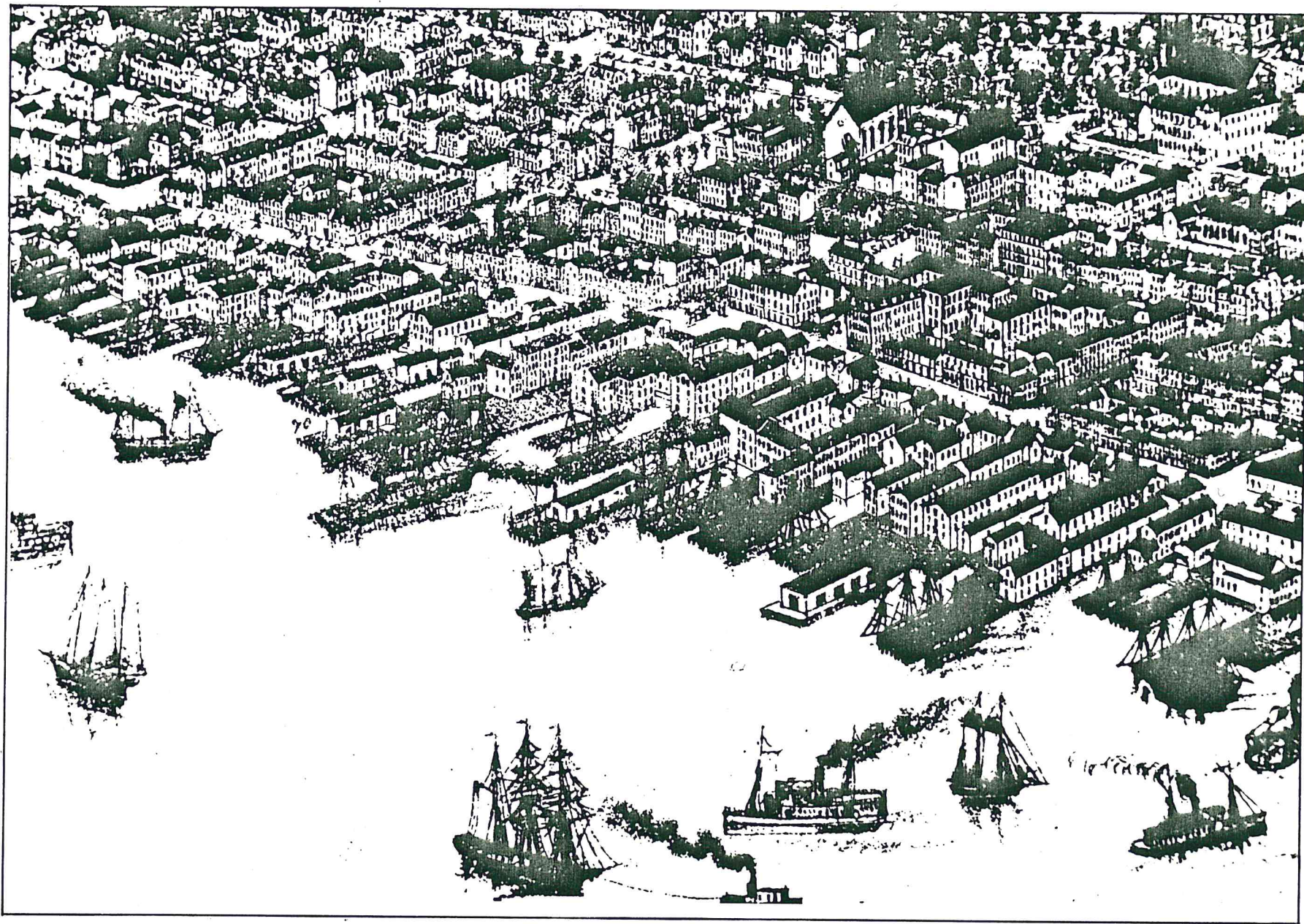
THE TERM EIGHT PROJECT





The waterfront area





The waterfront area 1895



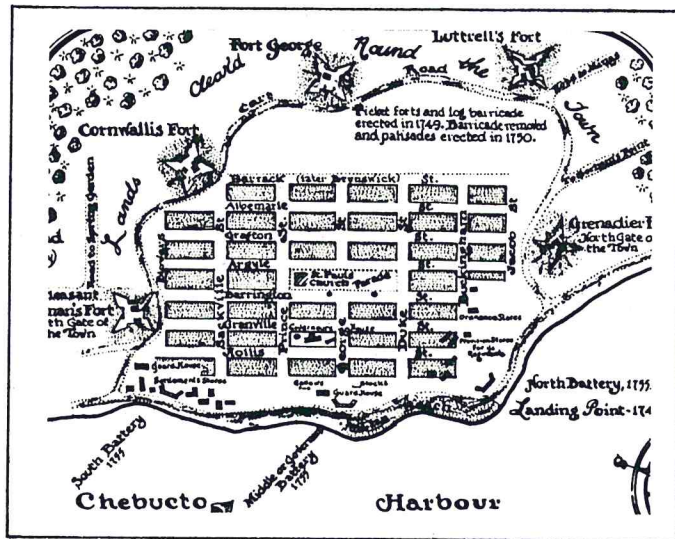


Fig. 5 Replica map of early Halifax

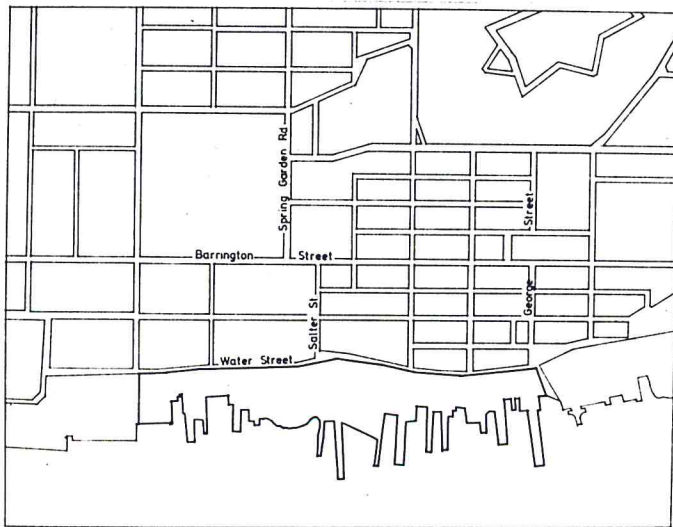


Fig. 6 Street pattern of study area

It is apparent from the figure/ground study of the existing pattern that little remains of the waterfront area. However, two major fields can be identified and although these are in general congruent with functional zoning categories their origins lie more in historical process and urban geography.

The major fields are that of the historic center and the area lying to the south, basically dividing along the present Spring Garden Road. An analysis of historical process reveals this division to have been of considerable importance.

Halifax to some degree exhibits the pattern of European towns; historic centre, perimeter and suburbs and as Watson has pointed out this is due to similar process<sup>10</sup>. The area of the historic center still retains the influences of its' origins as a barrack's grid with central parade square as focus and contained within a city wall, in this case the palisades whose original path still defines the limits of the historic center field.

The second level morphological structure of this field is analysed in Fig. 7 and the military engineer's grid is quite apparent although it will be noticed that disintegration of this grid has started to occur in the upper right hand



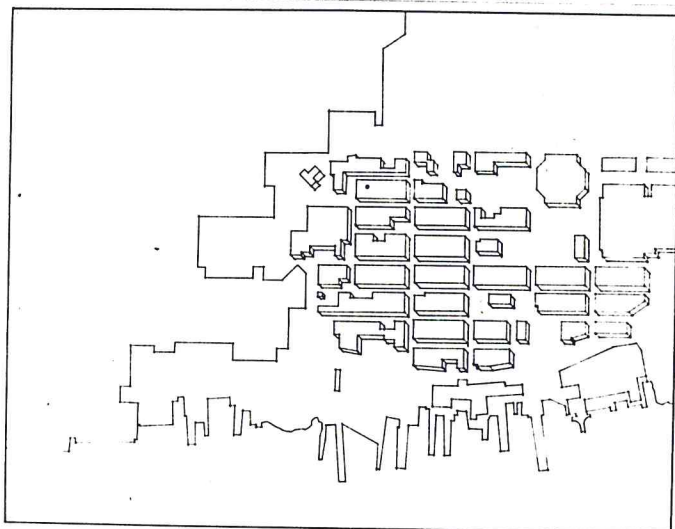


Fig. 7 Block study of historic centre area

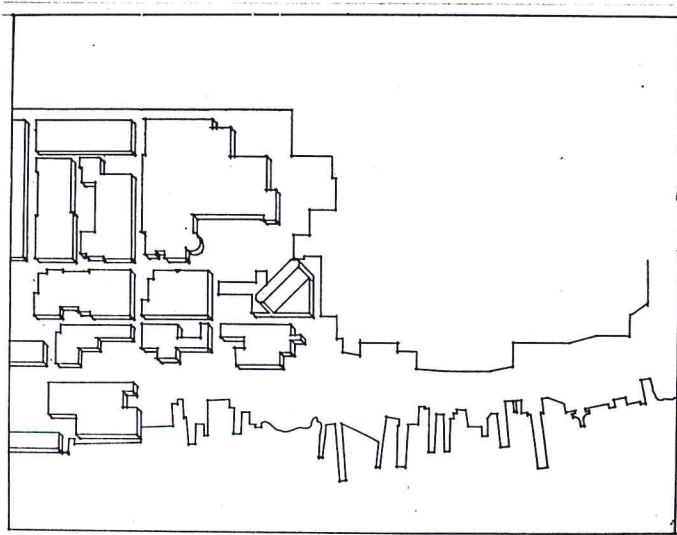


Fig. 8 Block study old south suburb area

corner where block amalgamation has taken place in recent years to accomodate large scale projects. It is this break with historic pattern that this essay questions.

The field to the south of Spring Garden Road has had a somewhat different origin, lying as it did outside the city walls and undeveloped untill sometime after their removal. The larger grid forming the texture of this area grew up out of estate division of land and the present block structure illustrates the difference from that of the historic center. It will be noticed that only principal streets, Barrington and Water were projected through to this area and it is likely that these existed as country roads outside the palisades before any major division took place. Only a small part of this field is shown and analysis is not carried any further as the important point of a major field division has been established.

At this point in the design project a number of possible schemes were projected utilizing the structures of the surrounding fields. However a further exploration of historical process threw into question the suitability of any such



Fig. 9 Figure/ground study of 1890 waterfront

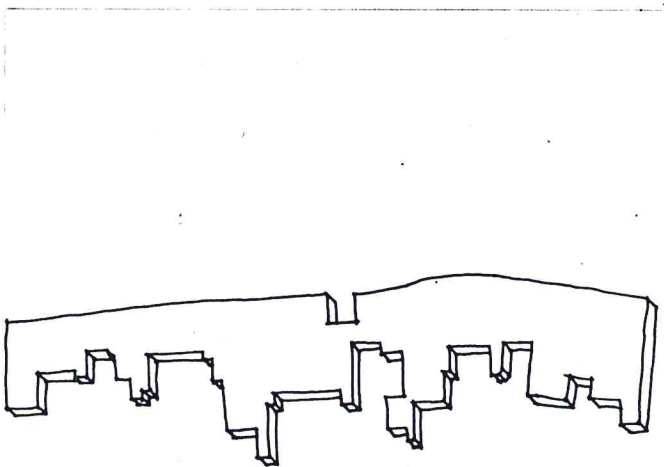


Fig. 10 Waterfront field

approach. In view of the objective of determining formal uniqueness of locality it became apparent that the waterfront itself was a unique area and that any design projecting the adjacent urban structures into this area, while often a suitable strategy for urban infill, would result in the disappearance of a traditionally unique area.

A comparison of the present pattern with an 1890 figure ground study reveals a number of important points. The traditional waterfront was a fairly uniform field with little expression of the urban block structure. Fig. 10 illustrates the primary morphological level of this field. Its boundaries have definite characteristics; the water edge exhibiting a ragged profile while the Water Street boundary reflects a dense street oriented character. Its lack of a clear second level structure (streets and blocks) clearly differentiates this area from the surrounding fields.

In a sense the idea of a clear center is somewhat lacking in the traditional waterfront due to its uniform texture and elongated shape, but an examination of its edge condition reveals that the bump and spatial enlargement at the foot of



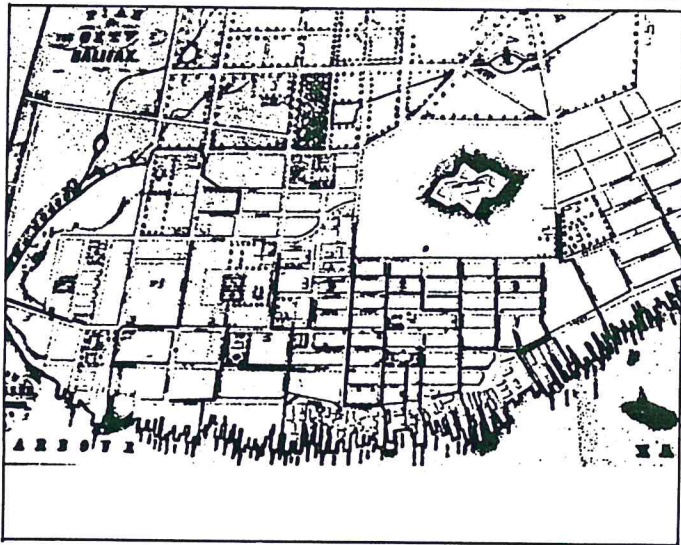


Fig. 11 Map of area circa 1800

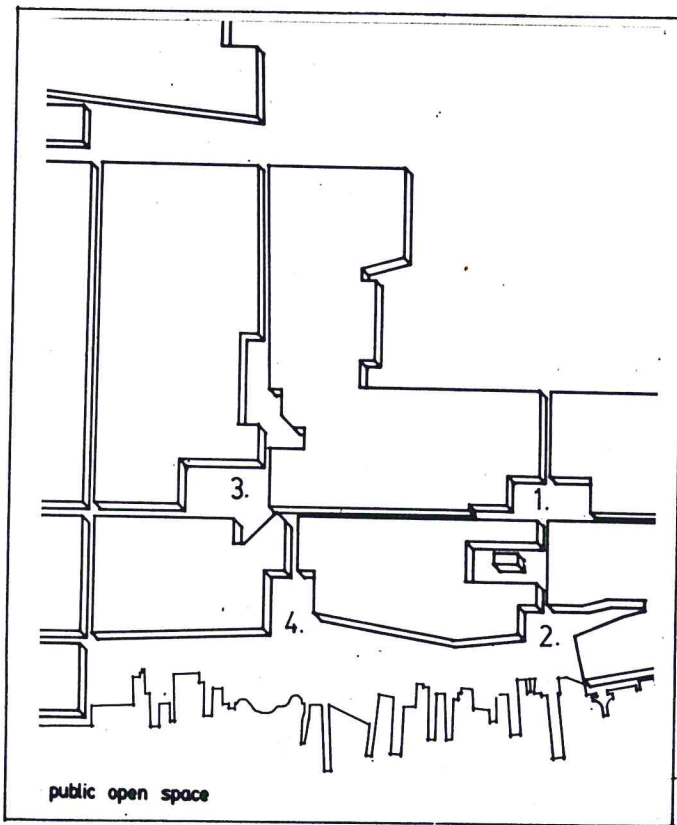


Fig. 12 Public space system

Salter St. has had a considerable history as a circa 1800 map, Fig.11 shows it to have existed even then and appears to be the result of a street realignment ( the shoreline has been much altered over time). Its' form can be detected in the 1895 view and it seems certain that its' location as the junction of three major fields and historically the termination of the city enclosure has made this an area of considerable importance and suggests its' suitability as the site for the cultural complex.

Fig.12 shows the system of major public spaces in the area and their linkages developed from the figure/ground study. There is a system of four major open spaces structuring this part of the city, 1) the Grand Parade, focal point of the historic center grid and a component of the historic formal axis of the city that unites the town clock with the ferry landing, 2) Chebucto Landing, a presently being constructed public space at the ferry site, 3) the open space and historic cemetery at the present termination of Spring Garden Road and a potential location consisting of existing open but undefined space at the foot of Salter St.. This is seen as further support for this location.

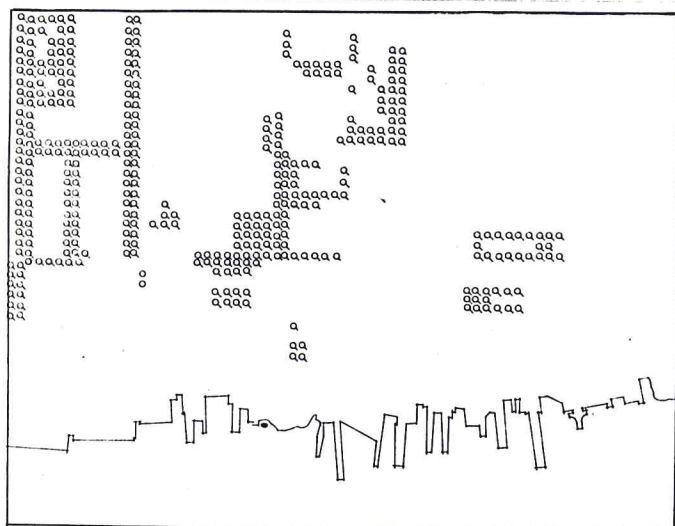


Fig. 13 Vegetation pattern

Vegetation patterns reveal structures in much the same way as built form and the pattern of this section of Halifax is shown in Fig.13 . The pattern is in general consistent with the structure of the public space system, by marking the route along Spring Garden Road and two of the major public spaces although it will be noted that within the area of the historic centre route marking is not a characteristic.

The above analysis indicates the desirability of this location from an urban structures viewpoint. The conclusion is further supported by the presence at this location of the last working wharf which is used for tugboat docking, an activity requiring little or no land facilities but of considerable visual interest. In view of these points this area at the foot of Salter St. has been selected as the site for the cultural complex and the design seeks to tie it into Spring Garden Rd., a major pedestrian route and restate the boundary originally defined by the city walls and complete the linkages with major public spaces.



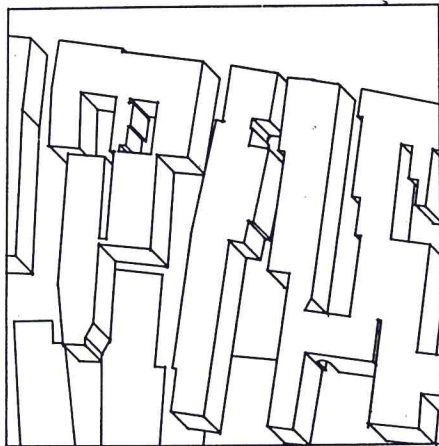


Fig. 14 Waterfront study

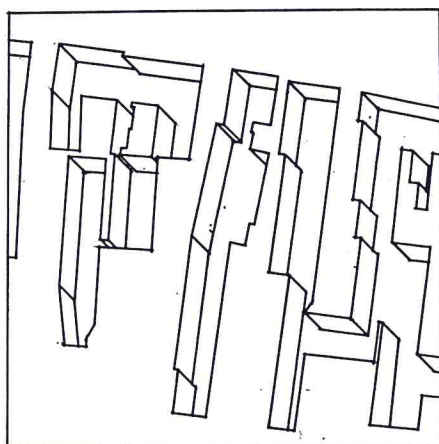


Fig. 15 Reversal diagram of above

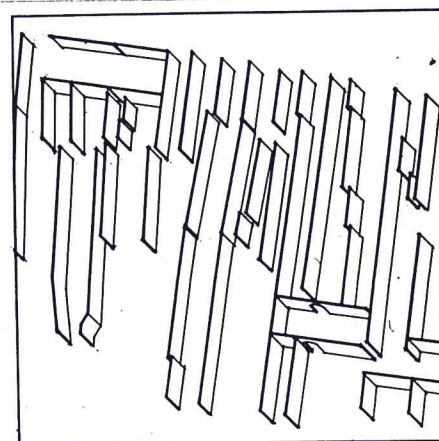


Fig. 16 Waterfront form ordering system

### MORPHOLOGY OF THE WATERFRONT

The morphological pattern that emerges over time in the waterfront area reflects the two valuable assets of street and water frontages as necessary to commercial usage. Land subdivision results in narrow linear lots and further growth is a process of infill and amalgamation of buildings into complexes. The resulting geometry is characteristic of the area and stands in contrast to that of surrounding areas.

As was noted earlier the traditional waterfront lacks the second level morphology (streets and blocks). A representative area of the waterfront from a location near the proposed site has been analysed using the contextualist methodologies. Fig. 14 shows the third level structure as derived from the 1890 figure/ground study and is contrasted with a reversal diagram showing the spaces as solids, Fig. 15. What is most apparent is the equivalence of forms and spaces in shape and ordering; the spaces shown as solids of Fig. 15 might well pass as buildings in this area. A similar study of a typical grid block would show a completely different form and texture with large centralized inner block volume



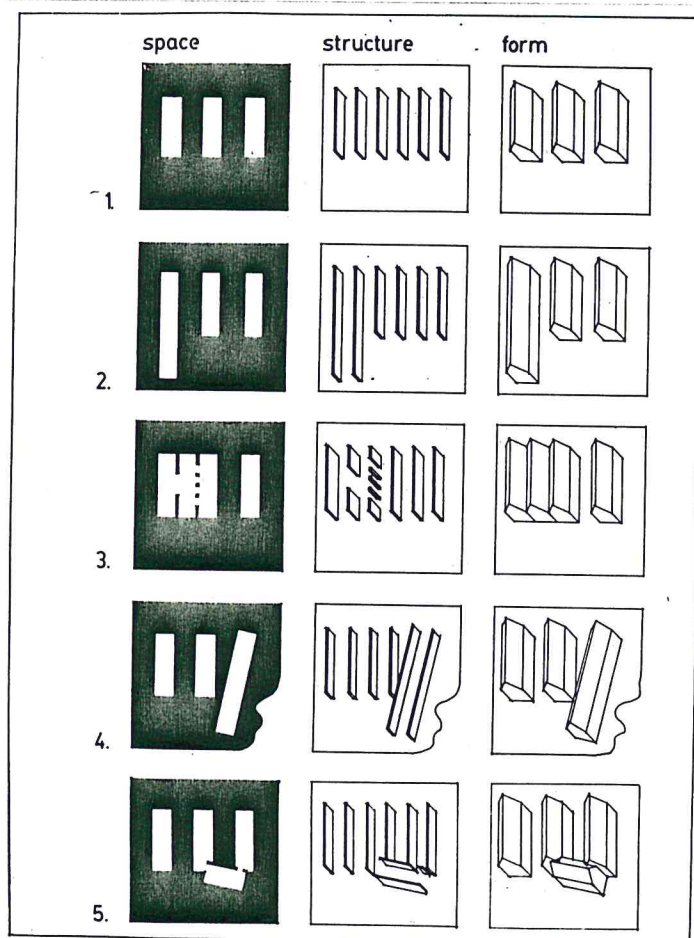


Fig. 17 Morphological principals of the waterfront area

and perimeter oriented solids. Even functionally there is an equivalence of solid and void in the traditional waterfront with through circulation not being the primary function but rather activity related to the working of the area. In many cases a cross circulation system developed through buildings. The texture of the area is apparent in the figure/ground study, linearity deviating here and there in response to specific constraints.

The basic principles of the formal structure are tabulated in Fig. 17. Historically the first order is of fairly uniform structures responding to street and water as

- 1) land division creates a simple system and uniformity,
- 2) growth takes place by simple extrusion often in several stages and reaching extreme lengths of several hundred feet,
- 3) a more complex system then develops with accretion through infill and amalgamation of existing structures into complexes often involving the complete removal of walls and creating a complex space system. Walls become reduced to punctured planes yet still form the underlying structure,
- 4) skewed alignments reflect specific site constraints such as other

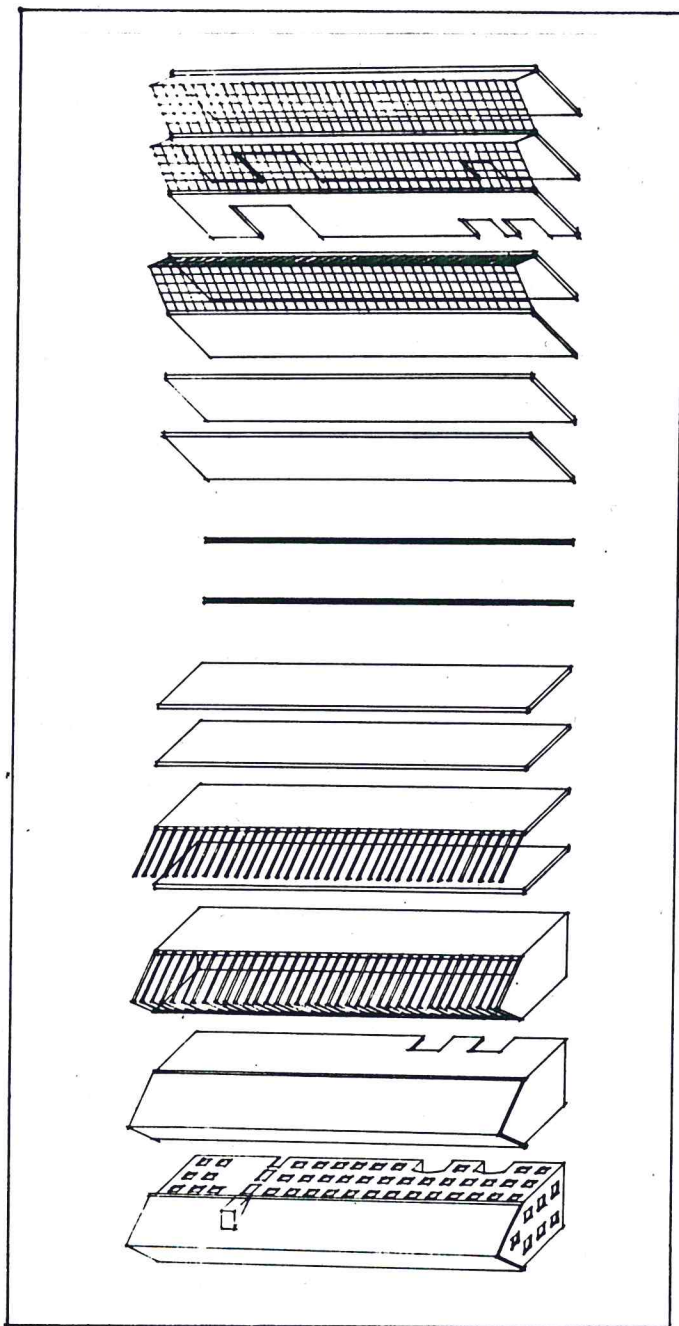


Fig. 18 Transformation of ordering system

buildings as impediments to growth and the bridging of structures in the most direct manner, 5) the accomodation of non-congruent structures, the exceptions to the rule that grow up independantly of the general ordering system.

Fig. 16 shows the ordering system of the study area in terms of the above formal grammar.

The design project utilizes these principles in a process analgous to the accomodation of the traditional waterfront rather than type reproduction. Fig. 18 illustrates the transformation of the traditional waterfront building by reduction to its simplest ordering elements, two parrallel walls, to general ordering element.

### DESIGN-GENERAL

The basic statement is of a contextually derived continuous field for the entire waterfront area which is subjected to deformation in the process of design response to specific functional and intentional demands using the form generating grammar. Fig.19 shows diagrammatically the general organization of the area and its' fit in the urban structure. A double bay parking structure adjacent and parralleling Water St. is included with vehicle entrance to the extreme south of the site in preference to isolated individual garages and with a view to the possible future abandonment of major vehicle movement on this narrow street which as envisaged would become a major pedestrian area. The high water table (tidal) permits only a single storey structure and at that it must in places extend a few feet above road level.

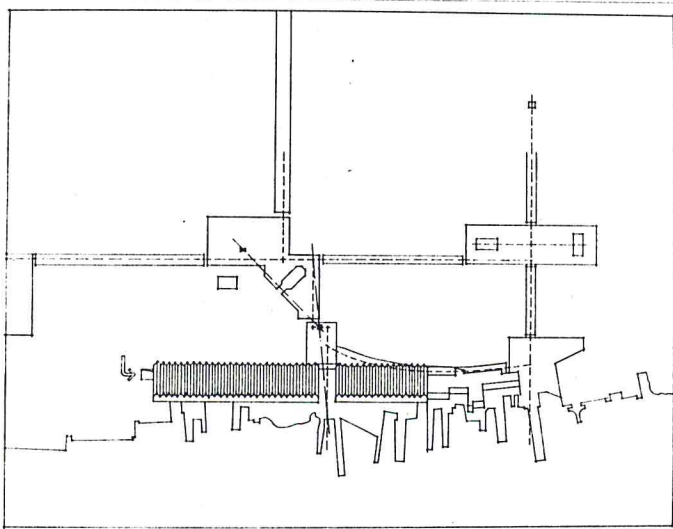


Fig. 19 General design diagram

Further development of the area is shown in the plan of Salter St., Fig.20 ,which is designed as an urban boulevard extending the Spring Garden Road pedestrian route, a street already having much of the Grand Avenue manner, well treed, boulevarded in places, a system of public sculpture and now connecting the Public Gardens with the waterfront.



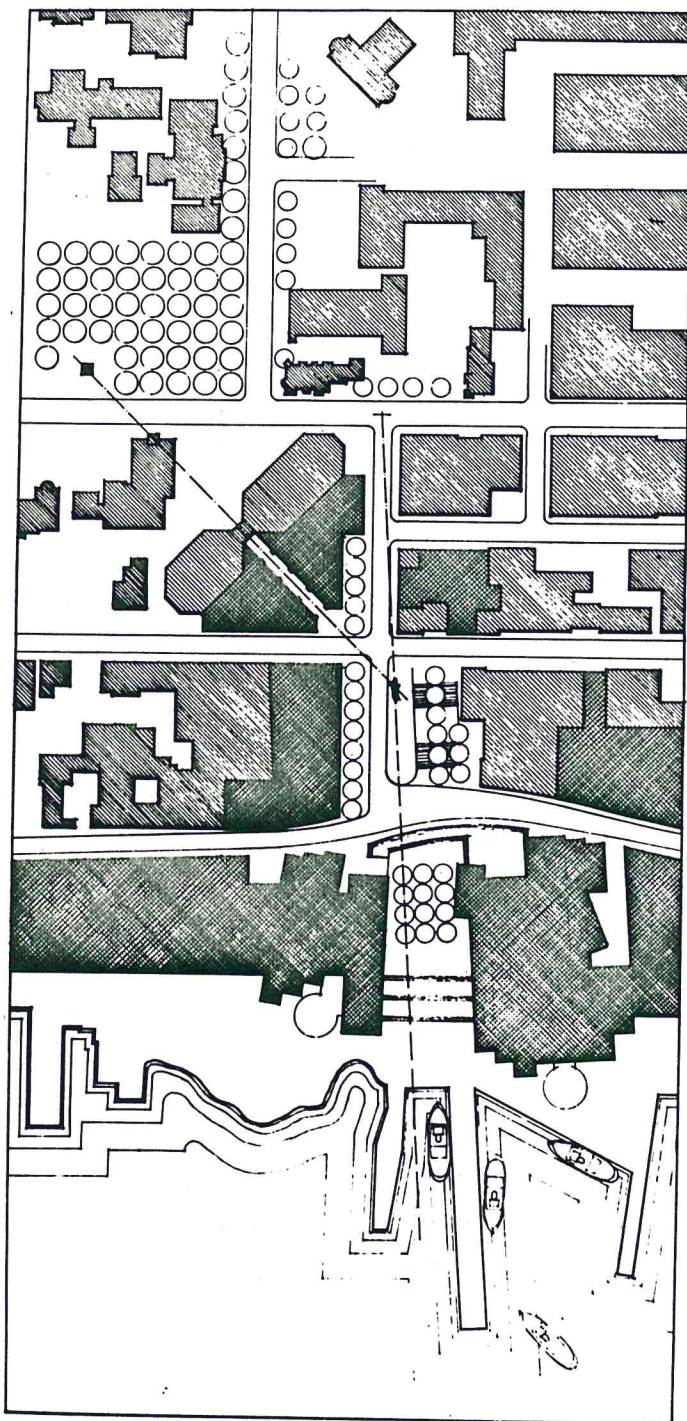


Fig. 20 Site plan

A recently erected highrise office tower at the foot of Spring Garden Road which fails to respond to the urban geometry in any way and similarly fails as a termination of that street must nevertheless be recognized and its' non-congruent alignment has been utilized to help ease the turn and make the Salter St. connection.

To emphasize the Spring Garden connection and direct the views to the tugboat wharfs, Salter St. has been designed with a slight skew axis overlaying a series of stepped junctions beginning at Spring Garden and utilizing existing open space (a present government parking area would become public steps to emphasize the pedestrian role but might also provide a pleasant sitting area and encourage impromptu performance.

The site plan shows infilling of some surrounding lots that would be required to regain the structure of the area and includes a major shopping/commercial area at the base of the office tower oriented around an axis projected from its' non-congruent geometry and penetrating the Salter St. boulevard. The disparate axes are resolved in a civic monument or sculpture whose primary alignment reinforces the Salter

St. axis. This would form an enclosed pedestrian linkage, tying into the existing Barrington St. oriented shopping mall in the lower floors of the office tower.

The new boulevard terminates in a forecourt at Water St., passes through a restriction created by the one existing building that would remain as a restaurant and opens again to the water at the tugboat wharfs whose alignment the buildings and street axis reflect. This is intended to reduce the thrust of the street into the water, as was historically the case, and provide spaces suited to specific locations, i.e. urban side, water side.

The steps at the entrance are seen as continuing those down the hill while accomodating the parking level and service tunnel and creating an emphatic break in the now tightly built Water St. as emphasise of the civic importance of the complex., at the one location along the street that can stand such intervention.



### DESIGN-SPECIFIC

The buildings have been organized around the major waterside public space with the theatre/concert hall complex to the north and the art gallery to the south. Principal entrances are located here with other entrances to the theatres opening off Water Street. Both structures operate within the constraints of the contextually derived enclosure and the morphological principles uncovered in the analysis of the area. A series of parallel planar elements has been set up then deformed in design refinement and punctured as the functional patterns require creating a free flowing yet structurally ordered space. The design development and use of the form generating grammar is illustrated in Fig.21 .

The actual theatre enclosures, including the performing gallery, are treated as non-congruent forms within the overall field due to their highly constrained technical requirements and have a primarily functional basis as the form generator. These are expressed as isolated modules circumstantially located within the main field, although the linear geometry does penetrate these enclosures in response to certain intentional demands.

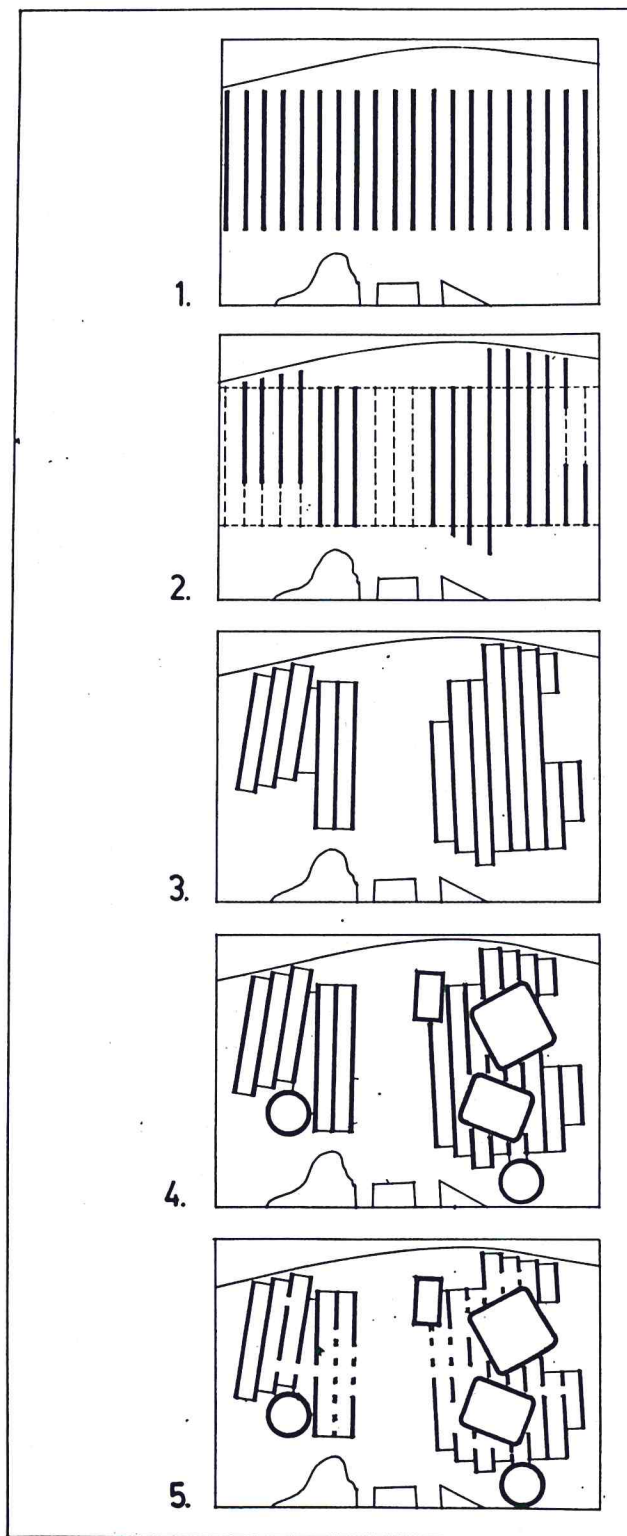


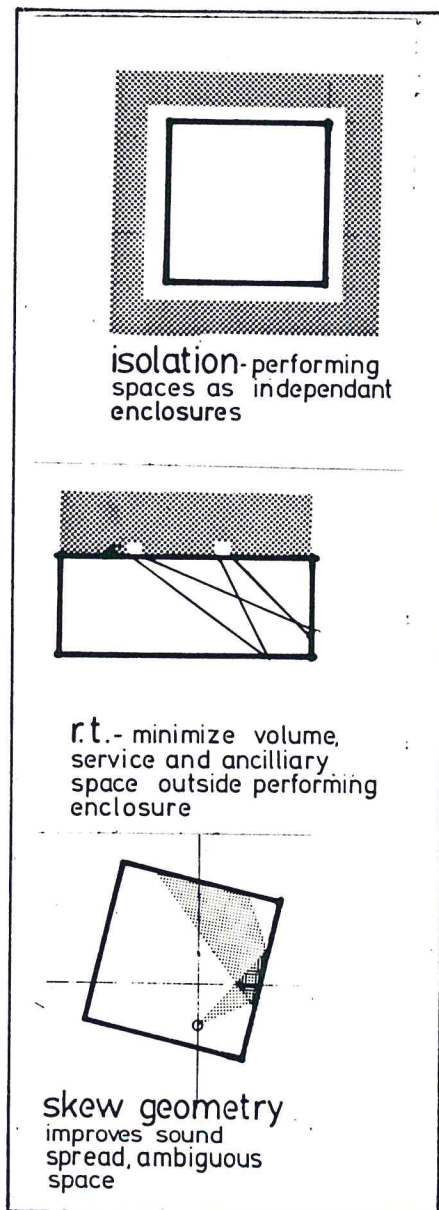
Fig. 21 Design development

While the main theatre forms have been suppressed externally for contextual reasons, the fly tower and experimental theatre have been allowed full external expression of their internally generated forms toward the water because of the marine-like shape and scale (and perhaps a memory of the recently removed oil tanks). Their forms are explained in detail later.

The remainder of the theatre building spaces, essentially public lobby and acting support functions, is designed as a series of interconnected spaces ordered by the linear plan and becoming a large single field surrounding the theatres on two levels.

The art gallery consists of two main blocks of two and three levels. The first contains all administrative and public service space; the second has the galleries and support functions such as workshop and storage. These blocks are separated by a skewed ramp space designed to emphasize transition and a sense of arrival within the circulation system, while taking advantage of the harbour view and sculptural court located over the performing gallery which is essentially a duplicate of the experimental theatre. Gallery arrangement permits either continuous sequential circulation or independent access.

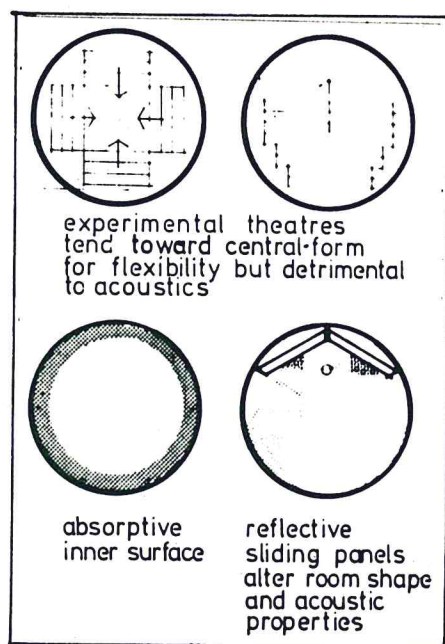




Construction of all buildings would be reinforced concrete planar elements and intermediate floors with light steel frame roof system having either metal facings or glazing as appropriate to the functional spaces below. Two storey spaces have been included in both buildings to permit light penetration to the lowest level. The depth of the roof space over the theatres permits the necessary long spans while providing service space interstitially.

The theatre expression as isolated elements, while intensifying the idea of their separate formal origin, also finds a source in their functional basis. Complete structural separation has been given these spaces and the theatres are entirely independent shells isolated from the main enclosure to reduce sound transmission. Treating these as separate shells also permits a minimizing of internal volume to shorten reverberation time, particularly critical to the proscenium theatre. All service spaces are outside the shells to further reduce room volume and the backstage area is fully separated.

The skew geometry resulting from the juxtaposition of enclosure alignment and main ordering system, on which



geometry the seating and structure are designed is used to create an ambiguous space to heighten the proscenium illusion which becomes in effect a frame independent of its surrounding walls. The modern movement sought similar effects with free form geometries. The resultant skew geometry is further utilized to improve sound spread in the space.

The experimental theatre and performing gallery, while appearing to have made the classic blunder of acoustically focused space, have actually sought to turn that form to advantage. The provision of a suitable form for such use is a particularly difficult matter; any elongation produces a visual stress along that axis, limiting flexibility, while centralized forms though suffering acoustic disadvantages can, due to their lack of directional emphasis, be successfully utilized as a visually neutral space with focal point at any location.

The design proposes a circular form containing three concrete reflective panels sliding on a track located just inside the enclosure walls. The circular walls are treated as highly absorptive surfaces creating a dead space which can be reshaped easily for acoustic or visual purposes by a simple relocation of the panels and seating.



## CONCLUSION

The design is seen as a dialogue of specific use functional space having a high degree of criticality and residual non-specific space. The overall enclosure is urban and contextual in formal reference and in function (semi-public space). The ordering system, although derived from contextual sources is not intended as reproduction or non-functional projection of surroundings but as a means of establishing principles of ordering space in a culturally responsive way. The solution finds certain syntactical precedents in the work of the Dutch school, particularly that of Aldo Van Eyck whose sculpture pavilion and Protestant church incorporate similar formal themes.

The intention has been to explore the interaction of two ideas of the generative basis of form with a view to the possible resolution or reconciliation of the opposed theories. The project has regarded the urban structure as fundamental to the idea of identity and sense of place and holds that the building form itself is an extension of that structure.

The form generating grammar that has resulted points to a possible means of achieving the integration of the supposedly diverse and mutually exclusive bases. Form in any meaningful sense must include the organisation of the parts of the work and consequently contextual

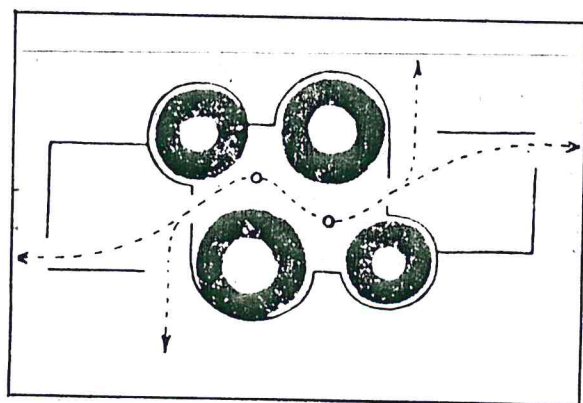
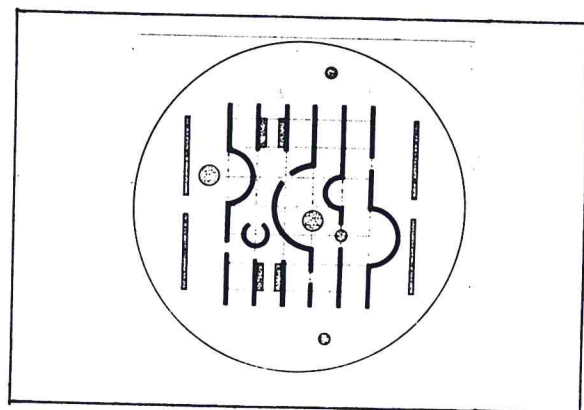


Fig. 22 Van Eyck's Sculpture Pavillion and Protestant Church

factors in form genesis must influence the physical organization of the work, all other 'contextual response' seems superficial, including Venturi's accommodating exterior wall; formal identity operates at a much deeper level.



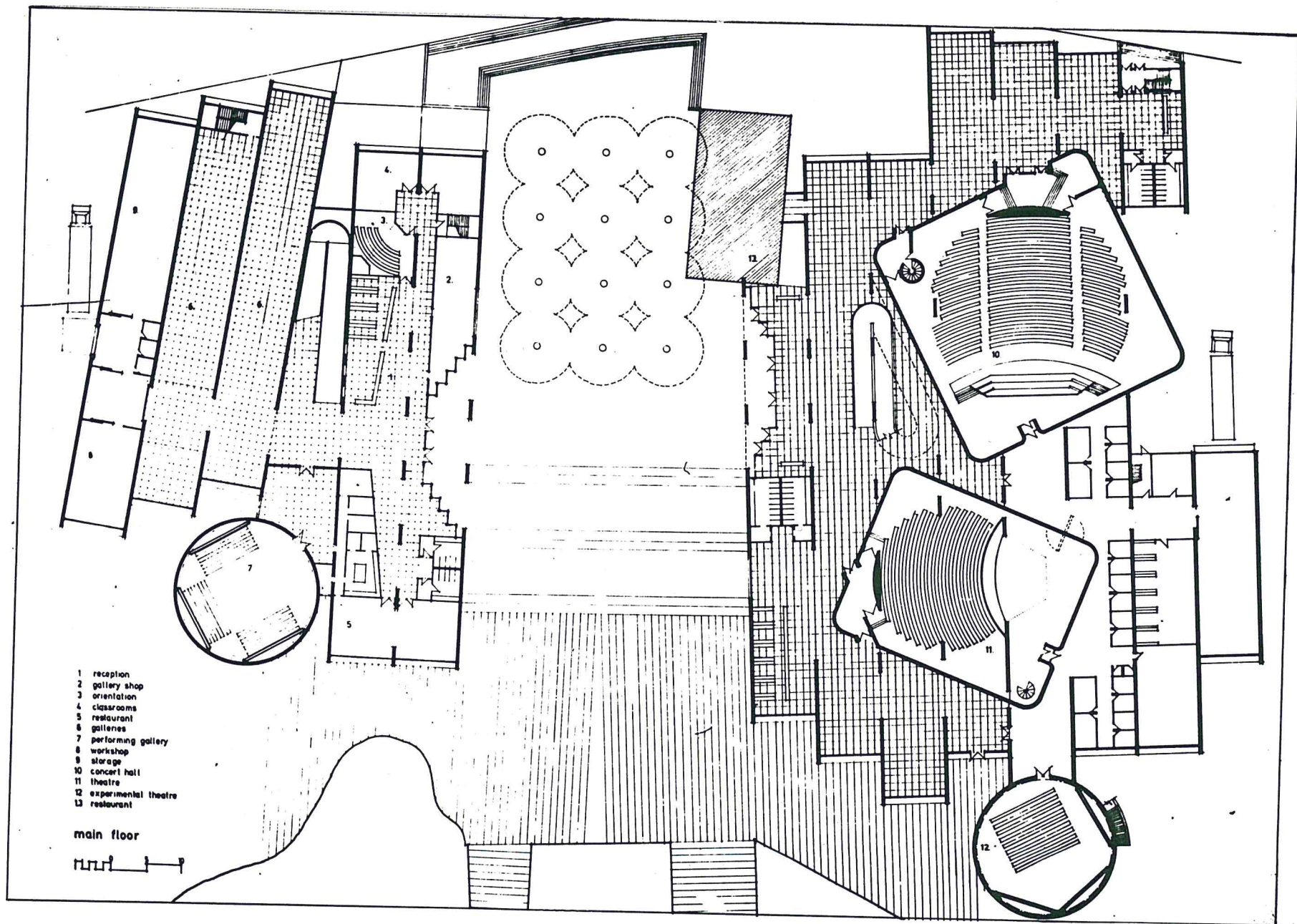
# NOTES

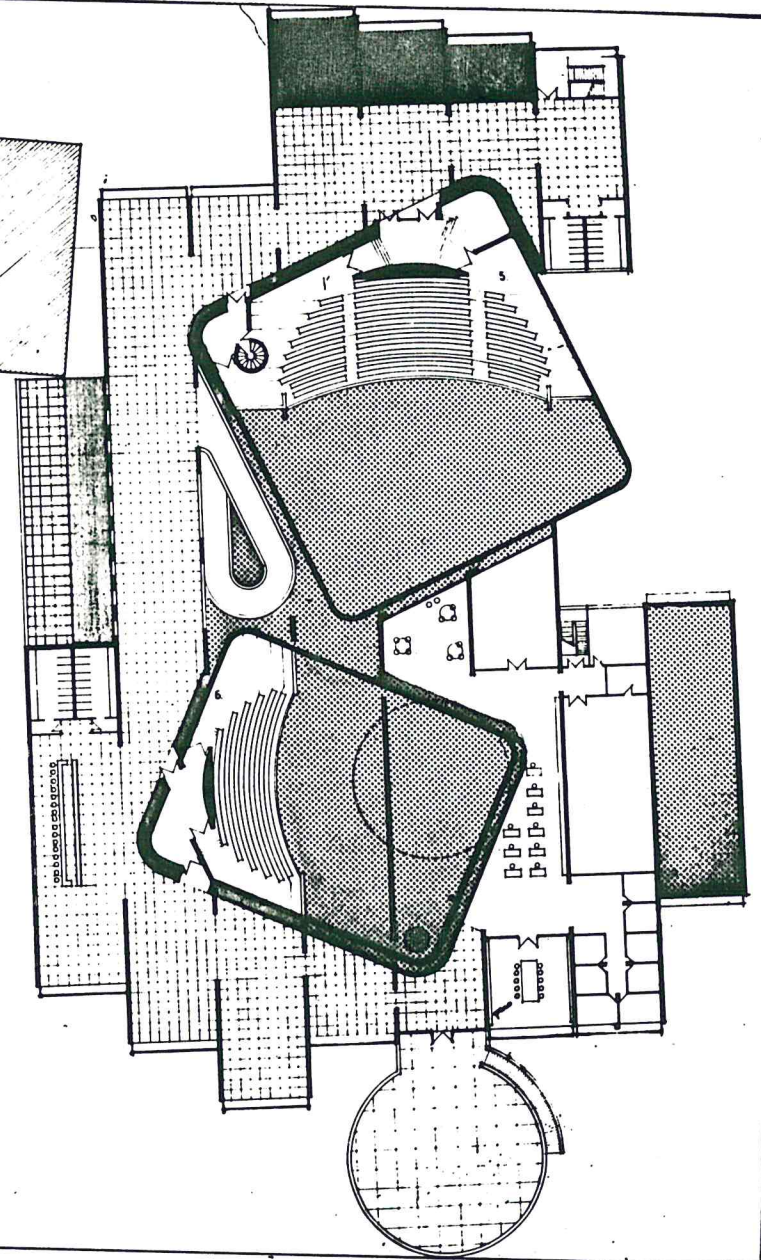
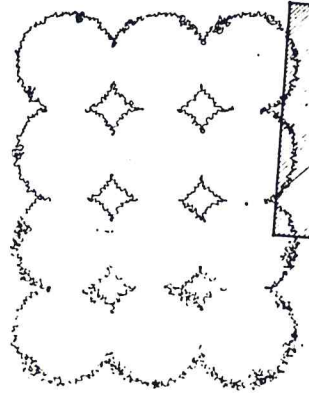
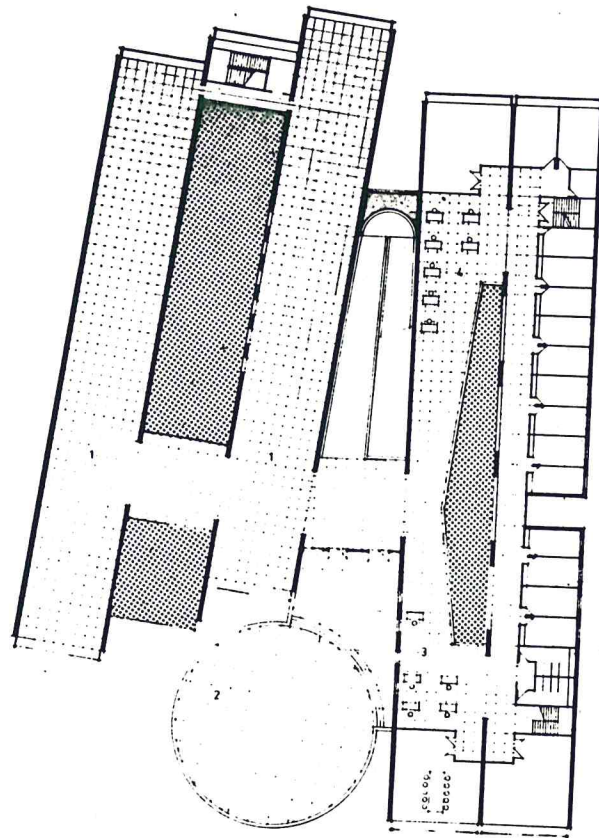
- 1 J. Wreford Watson: Relict Geography in an Urban Community in Geographical Essays in Memory of Alan G. Oglivie, Thomas Nelson and Sons Ltd., 1959
- 2 Christian Norberg Schultz: Genius Loci, in Lotus 13, Dec., 1976
- 3 Kevin Lynch: The Image of the City, The M.I. T. Press, 1977
- 4 Anthony Vidler: Rational Architecture, 1977
- 5 Robert Venturi: Complexity and Contradiction in Architecture, The Museum of Modern Art, 1977
- 6 Raphael Moneo: On Typology in Oppositions, Summer 1978
- 7 Vidler, op cit.
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- 9 Stephen Peterson: Urban Design Tactics. in Architectural Design, Vol, 49, No 3-4, 1979
- 10 Watson: op cit.

APPENDIX

D E S I G N   P R O J E C T   D R A W I N G S







- 1 galleries
- 2 sculpture court
- 3 administrative
- 4 curatorial
- 5 concert hall balcony
- 6 theatre balcony

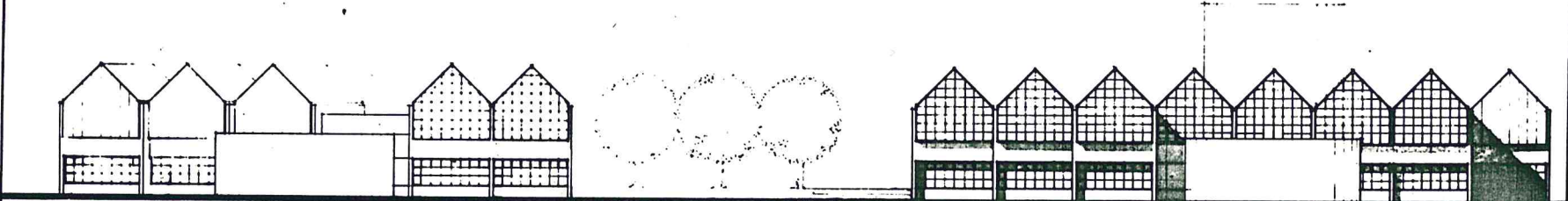
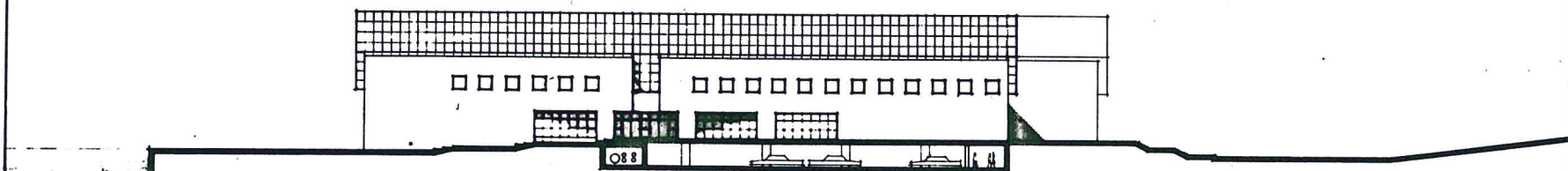
second floor







street elevation



waterside elevation

