CONJUNCTIVE HOUSING

Housing in Mixed-use Complexes

by

Augustine Fung

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Master's Thesis

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Augustine Fung

McGill University
Montreal, Quebec, Canada

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ABSTRACT

This thesis examines the idea of conjunctive housing as a viable alternative for habitation within the urban context. It traces the historical origins of housing in conjunctive use with other functions. Various examples of this type of housing are cited extending from its beginnings during the classical era right up to the twentieth century.

The study of the mixed land use concept in urban areas calls for a more comprehensive analysis of the validity of conjunctive housing as an alternative to the ever increasing suburbanization. This idea transcends the notion of landuse efficiency, and underscores the importance of promoting inner-city living.

Conjunctive housing represents a time-tested approach which deviates from various other conventional housing patterns. An exhibit of several types of mixed-use establishments is provided, together with a probe into its generic forms which demonstrate the numerous planning options. This thesis is an attempt to reiterate the concept of conjunctive housing, especially in response to the contemporary trend of urban living, as a viable solution for housing urbanites, a concept which may even prove to promote a socially superior mode of urban lifestyle.

RÉSUMÉ

La présente thèse traite de l'habitation dans les immeubles multi-fonctionnels comme d'une option convenant particulièrement au milieu urbain. Nous dressons l'historique de ce type d'habitation et l'illustrons de nombreux exemples, depuis l'époque classique jusqu'à nos jours.

L'étude du concept d'utilisation combinée du sol dans les secteurs urbains exige une analyse exhaustive de l'opportunité de résoudre le problème de la suburbanisation par les immeubles d'habitation multi-fonctionnels. Ce concept surpasse l'idée d'utilisation efficace du sol et met en évidence l'importance de promouvoir la qualité de vie dans le centre des zones urbaines.

Bien qu'il s'écarte des modèles conventionnels d'habitation, le concept d'immeuble d'habitation multi-fonctionnel a fait ses preuves. Nous présentons plusieurs types d'établissements polyvalents et l'examen de leurs formes générales laisse entrevoir d'innombrables possibilités d'aménagement. Nous tentons de remettre à l'ordre du jour le concept d'immeuble d'habitation multi-fonctionnel pour apporter une solution viable à la tendance actuelle et nous croyons que cette solution permet aux citadins d'enrichir leur vie sociale.

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I wish to express my gratitude to those who have in any way assisted me in the preparation of this thesis.

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Finally, my deepest appreciation and thanks go to my wife, Annie, for her love and understanding, encouragement and essential moral support during the preparation of this study.

INTRODUCTION

Architecture is the science and art of designing and constructing buildings. The creative tendency embodies the desire and need of people in an experience to recreate a given environment. Such recreation is often a composition of imagery, spatial experience in the past and a genuine urge to formulate a meaningful habitation pattern.

Our city today becomes a container of numerous ideas, innovations and definitions of what a city should mean to us. Though the ever-changing man-made factors can never be exhaustive, the formulation and structure for human living and existence is always tangible.

"Cities should be viewed as organic structures of a living organism. A city consists primarily of people and exists for people." Environmental architect Victor Gruen strives hard to achieve his goal to shape and reshape the urban environment. I cannot more wholeheartedly subscribe to his approach that all other elements in a city such as its structures, its communication systems, its utility lines are means only to serve the needs and aspirations of people.

> "The urban environment for which we must strive then becomes simply one in which are achieved optimal environmental conditions for the urbanite --- for his physical and psychological health and safety --- through a framework and

> structuring which is able to create and safeguard those qualities which we summarize under the term 'urbanity'." (1)
>
> Victor Gruen, Centers for the Urban Environment - Survival of the cities

Cities can accordingly be viewed as defined, compact, organically structured organisms with strong interaction of all urban functions in a small-grained composition of sociological and functional diversity. Urban planners and architects need to work with the fullest use of their hearts, knowledge and skills to create a livable environment for urbanites. Gruen also thinks that "by interweaving all expressions of human life within the urban tissue, we can restore the lost sense of commitment and belonging; we can counteract the phenomena of disorientation, and participation." Truly, we are ready for some viable alternatives that will accentuate a sustainable and vibrant urban life.

Of course, some of the advocates of an urban pattern may view the "organic entity" as a conglomeration of some numerable yet identifiable components such as the people, the houses, the shops, the streets and the public places. Are they all equally indispensable elements of the fabric of a city ? According to Arthur B. Gallion and Simon Eisner, both contemporary planning professionals, "The city means

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(1) Victor Gruen, Centers for the Urban Environment, Survival of the Cities, 1973, Chapter 1, p.9.

the whole people who inhabit it, the entire collection of houses the people live in, the shops in which they work, the streets they traverse, and the places in which they trade." (2)

As we concern ourselves so much about our city, and the life within it, we should therefore pay close attention to the ever-changeable pace of the molecular interaction of the components within this organic structure. Numerous researches and intellectual probes have already been launched in the recent past to rediscover the tangible forces that shape our cities today, both internally and externally. It has to be a challenging task before us to incorporate the loose components into the urban fabric as a whole. Taking the appropiate approach, a city can work functionally to its betterment. How can we achieve urban renewal, viable planning control and development in a wholesome way? Urban planners, architects, engineers, sociologists, economic technocrats and even the governmental bureaucrats, as a family together should search for a workable solution to our urban problems in order to rear a thriving and exuberant urban future for the generations to come.

The task is not an easy one. The philosophy of landuse separation announces the merits of apparent financial and

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(2) Gallion - Eisner, The Urban Pattern (3rd ed.), 1975, Chapter 1, p.3.

social security. Land use controls did not lend much help to the call for establishment of large-scale arrangements and rearrangements of urban development founded on larger principles of public efficiency and amenity. (3)

This study does not repudiate all the benefits we have enjoyed thus far from separatory landuse. Nevertheless, there emerged, particularly in the 1960's, a new approach of mixed landuse environments integrating diverse components within our urban fabric. It proved itself to be a noteworthy landuse alternative. As Dimitri Procos would put it: "One of the most interesting and promising aspects of mixed landuse is its ability to create, on relatively small areas of land, environments that have many of the characteristics usually associated with urbanity: the proximity of activities, the increased educational and cultural opportunities, and the possibilities of choice in one's contacts and associations." (4)

Mixed landuse environments not only prove to be historically exciting and adaptable to twentieth-century life and business, mixed landuse becomes increasingly a concept for more socially focused planning programs. Laissez-faire urban development characteristic of the past has apparently been displaced by this rediscovered option. Mixed landuse ensures economic and functional compatibility with the needs

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(3) Dimitri Procos, Mixed Land Use, 1976, p.vii.
(4) Dimitri Procos, Mixed Land Use, 1976, p.viii.

of a transient society, and of an efficient urban lifestyle.

Historically, there was no practice of land use separation from antiquity to the modern age. Only after the Industrial Revolution, segregational planning was introduced and was based on attitudes stemming from social differences. This concept and attitude towards land use separation prevailed over the last two centuries.

On the surface, any advocacy for mixed land use is seemingly an adversary to the land use separation concept. Our inquiry should be one that provokes further thinking and searching of viable alternatives to the indulgence of segregationalism and notion of individuality. The solution we can trust to be one that enhances the quality of life and the coherence of appropiate functions within our urban environment. In doing so, we genuinely need to know what happened in the past, the different constraints and limitations of combining different uses coming along with the evolution of the land use concept, as well as the attempts recently made to reinstate mixed land use.

Often, housing has been an indispensable integral part in many mixed use developments. Architects have tried out various different formulas, to include and expand the possibilities of incorporating housing components into many mixed use projects. Naturally, there are numerous problems for them to overcome. These problems derive from political

climates, economic conditions and stability of the real estate market, interest and demand from both the public and private sectors. Coupling with the viability of the architectural schema as a response to the supply and demand of functional spaces, there are also considerations pertaining to the developers' budgetary demands or exigencies, legal technicalities, the commitment and support of financiers, projection of fiscal return and its sustainability, public opinion as well as reaction from local communities.

Apart from all these determinants mentioned above, which may, during the realization of a project turn unfavorable, planners can also explore the numerous possibilities of types and forms that characterize the building. No designers of conjunctive housing projects should overlook the primary prerequisites of the typology and form that will generate the feasibility and optimization of the uses. Complying the zoning by-law and code requirements, air rights restrictions, FAR (floor area ratio) limitations will impose undesirable restraints on creativity. Truly, there are attempts for some conjunctive housing types in our North American cities showing ignorance of the basic requirements in the design process, namely, contextualism, size, location, contrast, dominance. Very often, profitable return and programmatic requirements for a mixed use development domineer as the shaping forces of the building.

Combining the various functions in the mixed use building can be expressed in many different ways. There is no dogma about how the uses should be arranged. The combination of diversified uses will rely on the programmatic requirements that are usually generated as an integral response to all sorts of constraints and determinants. Generic forms of mixed use buildings can be generalized in a way representing the distinctive tendency of organizing the different functions and uses. The organization of different uses can sometimes be seen and analyzed in a numerable format of separation. Horizontal separation is frequently exemplified by many well known buildings in our North American cities. Vertical separation and clustered uses are comparatively not as common as their horizontal counterpart.

CHAPTER 1 : CONJUNCTIVE HOUSING IN HISTORY AND ITS IMPACT

1.1 CLASSICAL HERITAGE

As the mass of the people came together to live in cities, they had no concept of land use separation. Many historic examples depict that the urban dweller lived and sold his products in the same building where he dwelled. He manufactured most often his products in his dwelling which would thus also be his workshop. There was a minimal distinction made how rooms were used in the past. Activities of daily living and work were concentrated at the same place. The concept was similar to the notion of the agrarian societies where 'homestead' and 'farmstead' were synonyms.

Taking reference to the very beginning of urban civilization which were introduced into the Indus basin during the Harappan era around 2150 B.C., establishment of their urban culture was found by archaelogical discovery on the river bank of the Indus. The center of the Harappan civilization, Mohenjo-Daro, had a rather advanced town planning concept. The town presented a modified gridiron system with evidence of a wide range of home types,

> "from small single room 'tenements' to large houses, with several dozen rooms and courtyards. The larger houses were all inward-looking, with no openings on to the main streets. In many cases brick stairways led up to upper floors, or usable flat

> roofs," according to A.E.J. Morris, "shops have been identified along main streets in Mohenjo-daro; one such building, which could perhaps have been a restaurant, measured 87 by 64 1/2 feet on plan and had separate living quarters arranged around a courtyard." (1)
>
> A.E.J. Morris, History of Urban Form.

This early civilization pattern of settlement sheds light on how inseparable the mixture of housing with a wide range of shops and workshops can be.

Between the 7th and 4th century B.C., the Greek "city", was given the more or less synonymous term of 'city state' or 'polis'. The city was in fact the urban nucleus merged together of villages and cities were located in different regions of the Empire. These cities were small and relatively self-contained.

There seems to have been no doubt about the intensity and concentration of varied activities that happened in the early classic cities. And as they grew in importance, they became "polis". The agora, one of the typical Hellenic urban elements, along with shrines, theatre and gymnasia were found to be public places as well as focal points for social activities, to which dwellings, small and irregular in form, were subordinate.

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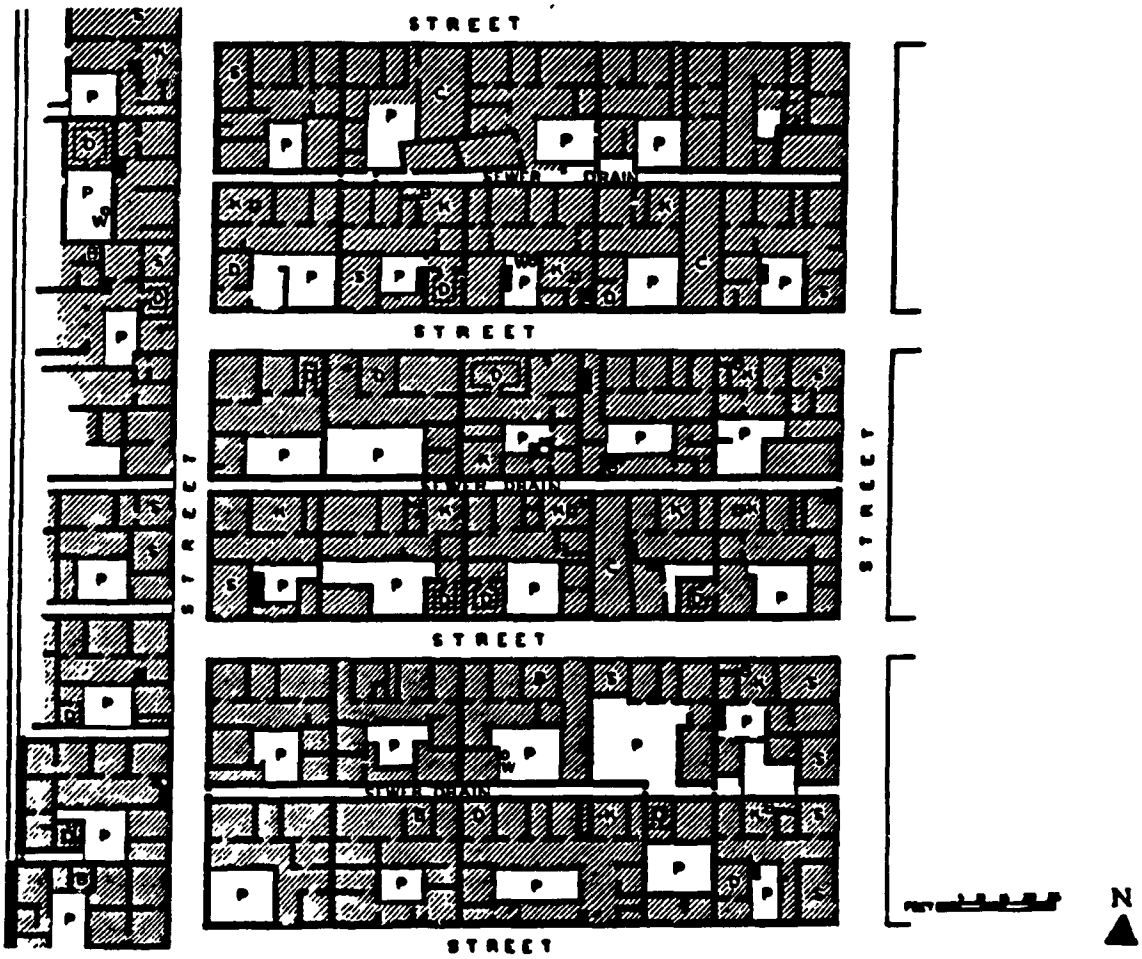
(1) A.E.J. Morris, History of Urban Form, p.16-17.

The dwellings in general opened into a courtyard and they developed eventually specific interior arrangements as well as relationships to the street system. (Fig. 1 & 2)



Key :

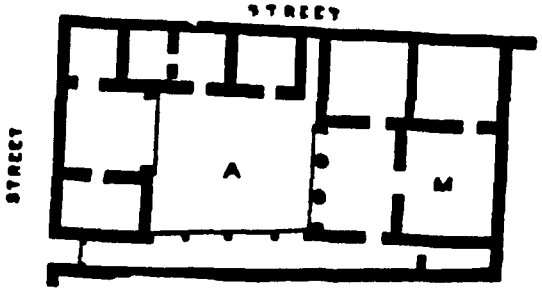
B	Bath	C	Storage or Stable
D	Dining room	W	Cistern
K	Kitchen	S	Shop
P	Patio		

Fig. 1 Partial Plan of the Town of Olynthus in Greece (in late 5th & early 4th centuries B.C.)

Reference : Gallion-Eisner, The Urban Pattern, 1975, p.16.

"Principal shopping was undoubtedly conducted in the agora, although there is evidence of small individual shops connected to some of the dwellings. These may have been the workrooms of craftsmen as well as market shops." (2)

Gallion-Eisner, The Urban Pattern.



Greek House, Fourth Century

Key :

A	Atrium
S	Shop
K	Kitchen
M	Megaron
L	Living room

Late Greek House

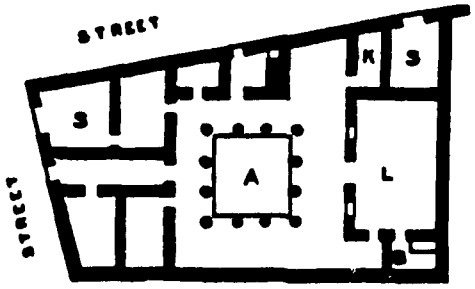


Fig. 2 Plan of a Greek House, Fourth Century and Plan of a Late Greek House.

Reference : Gallion-Eisner, The Urban Pattern, 1975, p.17.

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(2) Gallion-Eisner, The Urban Pattern, 1975, p.17.

The agora evolved from its simple function in older cities as an assembly place to a precinct comprising and accommodating diversified social functions. E.A. Gutkind in his 'Urban Development in Southern Europe, Italy and Greece' asserts that, " The agora was the soul, the moral exponent, the political symbol of polis." (3)

The agora expanded into an open colonnade, the stoa, which served as a useful general-purpose building. Conjunctively, they functioned for the daily heartbeat of the Greeks' civic life and the stoa became a characteristic feature of the Greek agora.

Throughout the Hellenistic period, new city building patterns were influenced greatly by the gridiron pattern in accordance with the design theory of Hippodamus of Miletus. The street system was organized orthogonally and thus buildings received a more rational arrangement. The agora retained its function as the 'place' and combined various important urban functions. Nevertheless, this concentration of civic usages on the agora, as seen in Miletus and the city of Priene towards the end of Hellenic period, did not bring forth a vivid example of adjoining housing components into this remarkable geographic center of the city. Housing remained a very subordinate component to be considered for mixing with other public functions.

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(3) E.A. Gutkind, Urban Development in Southern Europe, Italy and Greece, Vol.IV, p.508

Around the fourth century, out of the many less known towns of Asia Minor and Syria, Antioch began with a new approach examplified by a commercial strip of sixteen miles of colonnaded streets consisting of a mixture of both private and public buildings. An utilitarian service of street lighting was installed to enhance the commercial spirit and this service coupled with a socially functioning integration of residential and commercial use, made both day and night living in Antioch more attractive.

Development of the agora in the Greek cities paved the way for the dominant functions of the forum in Roman cities. Desirable urban functions were concentrated in these public spaces which evolved later into defined enclosed precincts. Vitruvius once prescribed that the treasury, the prison, and the council house ought to adjoin the forum. This evidently indicated that the mixture of various functions, both economical, political and social, had early been adopted and expanded.

Pompeii, a prosperous provincial Roman city, had revealed much of the details of the lives of Roman citizens in an environment where residential and commercial uses were successfully integrated during the period before the city was buried by volcanic ash in year 79 A.D.. Principal buildings of the Forum, temples, public baths, theatres and amphitheatre were surrounded by houses. The main streets

were aligned with shops flanked on both sides and opened towards the street. The house was occasionally surrounded by shops on three sides, having the living quarters at the rear of the lot. Small industries, which are today viewed incompatible with housing, were attached in a harmonic coexistence with residential use.

The atrium house was the standard type of town house of the well-to-do citizen of Pompeii and Herculaneum. It adapted the atrium from the Etruscans. Some large houses evolved into a form of house that occupied an entire block, with shops, two bakeries and three small residences as exemplified by The House of Pansa. (Fig. 3) (4)

The atrium was commonly situated at the center and in line with the entrance to the house. The poorer artisans occupied the small apartment dwellings attached to the main house where the wealthy occupants lived. (5) To some extent, this suggested mingling of classes and status in a striving process of urban housing development. It also conveyed an idea of the contrast between the Early Roman Houses and the late Roman House. The front of a house faced a blank wall and the streets were monotonous. But with the House of Pansa and other examples of houses, fronts of houses were devoted to shops and the entrance vestibule was located along the shop entrances.

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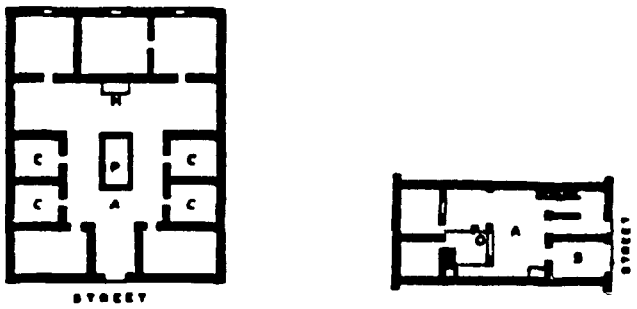
(4) Anderson and Spiers, The Architecture of Greece and Rome, 1907, p.305.
(5) Gallion-Eisner, The Urban Pattern, 1975, p.30.



Early Roman Houses

Key :

A	Atrium
B	Peristyle
C	Bed Cubicles
H	Hearth
P	Peservoir
S	Shop
E	Entrance Vestibule
L	Living room
D	Dining room
K	Kitchen

Late Roman House –
House of Pansa

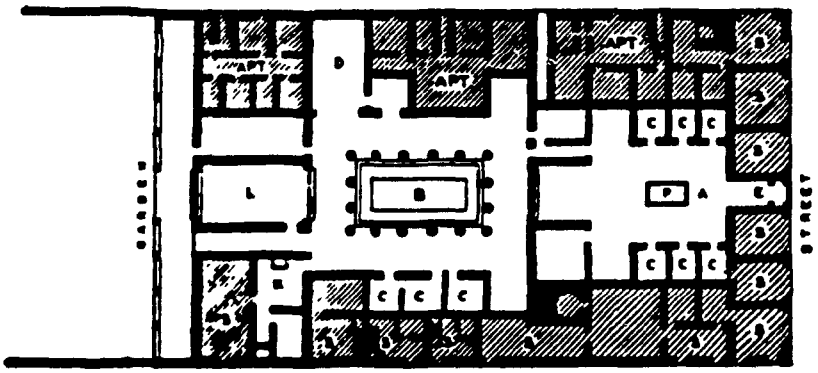


Fig. 3 Early Roman Houses and Late Roman House – Plan of House of Pansa.

Reference : Gallion-Eisner, The Urban Pattern, 1975, p.30.

Most of these shops could not be accessed from the rest of the house. Most shops consisted of a simple room, Some had smaller rooms at the back for storage and some had hearths. One or two shops had accesses to the house and these were probably run by slaves of that household. The presence of stairs in the shops, though rare, suggested a loft sleeping space above. The perimeter of the house consisted of apartments and shops lighted from the street, but the rooms of the main house derived light from the atrium and peristyle courtyard.

Another example was the house of Sallust, 2nd century B.C. (Fig.4). Again, the street facade was occupied by a series of shops, a bar and a bakery with access from inside of the house. One of the rooms by the vestibule, which was open to the atrium and the street, may have been the commercial room or the landlord's office. (6)

Pompeii and Herculaneum were places where we can witness examples of the integration of both commercial and residential uses, which represent generally a Roman urban practice. Population pressures and land values were always factors impacting on the ever-evolving formation of urban functions. In the towns of Campania,

> "the town houses became more compact, often with an upper story around the atrium and with galleries facing onto the street. Valuable

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(6) Anderson and Spiers, The Architecture of Greece and Rome, 1907, p.308.

street frontages are converted into shops, and many of the wealthiest families moved out of town altogether." (7)

J.B. Ward-Perkins, Roman Architecture

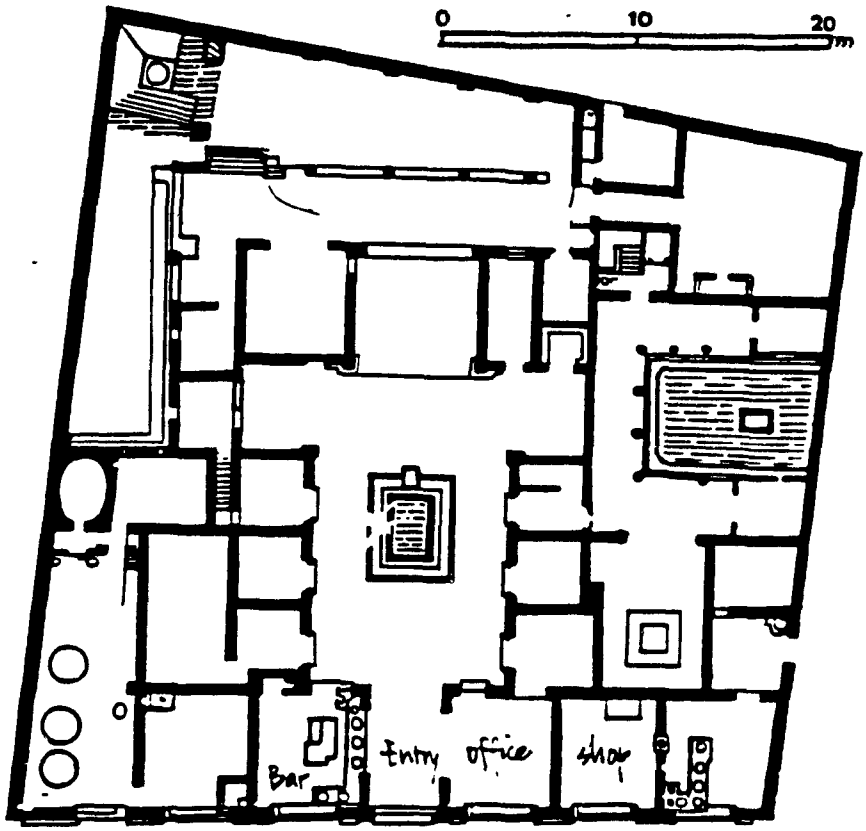

Fig. 4 Plan of the House of Sallust, Pompeii, 2nd century B.C.

Reference: J. B. Ward-Perkins, Roman Architecture, p.60, plate 70.

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(7) J.B. Ward-Perkins, Roman Architecture, p.51.

Nevertheless, shops with residential upper stories continued to exist and their existence enhanced many of these Roman towns growth of prosperity. (Fig. 5)

Fig. 5 Shops with residential upper stories overlooking the Via dell'Abbondanza, Pompeii.

Reference: J. B. Ward-Perkins, Roman Architecture, p.59, plate 67.

About the third century B.C., a part of Ostia at the mouth of the Tiber played an important role as a naval base during the Carthaginian Wars. Later it became a thriving commercial port for Rome with a growth and prosperity in an opulent way. Out of the many tenements, The House of Diana in this seaport is hailed as an exemplary apartment block. (Fig. 6)

Key :

S Shop
F Fountain
E Entrance

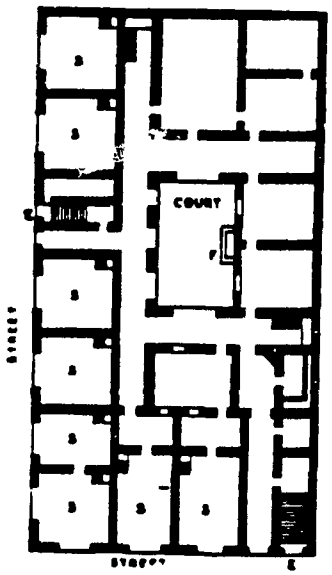

Fig. 6 Plan of the House of Diana, Ostia.

Reference : Gallion-Eisner, The Urban Pattern, 1975, p. 31.

This apartment house at Ostia,

> "was five stories high, built of brick masonry, although many of the tenements in Rome were constructed of wood and were serious fire hazards. In the House of Diana there was a row of apartments facing the exterior and a row facing the interior court. A balcony surrounded the third floor. Water was supplied to the tenants at a fountain in the courtyard, and it is probable that a latrine was located on the first floor whence waste could be disposed. Shops were on the ground floor with interior stairs leading from each to an apartment above." (8)
>
> Gallion-Eisner, The Urban Pattern.

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(8) Gallion-Eisner, The Urban Pattern, p.31.

The lineal arrangement of the shops along the streets reflected the full employment of advantages of enhancing street life. The apartments above the shops may be at some tenements crowded and at others more commodions. Somehow, they accommodated dwellers of different classes flocking to this seaport for trade. Part of the riverside harbor quarter at Ostia (Fig. 7) also consists of a mixture of different uses, from public warehouses, to shops, and to apartment houses. This precedence indicated a rationalized planning stemming from the pressure of the ever-growing urban density and in response of demographic or economic needs. The convenience of these apartment houses proved to be a viable option in the past that catered to both the commercial and domestic needs of all Ostia's citizens.

In the city of Rome, thriving commercial activities brought an increase in both traffic and population. In fact, Rome evolved many land use mixtures in history. Many scholars have compared the land use separation and intermixture between both ancient Greek and Roman cities. Accordingly, the Romans could live their life and transact their business with many of their co-citizens in a much easier manner than their Greek counterparts. In the Greek custom, commercial spaces were kept seperated from assembly spaces while the Romans had even introduced some specialized uses, for example, the special trading areas for the Macella (meat markets) and Fullones (clothmakers' halls) as auxiliary to the main public functions of large public spaces.

Key : 1 Street flanked by shops and a portico with apartment houses
2-4 Public Warehouses
5 Three-story private warehouse
6 Shops fronting on to a covered street with apartments above

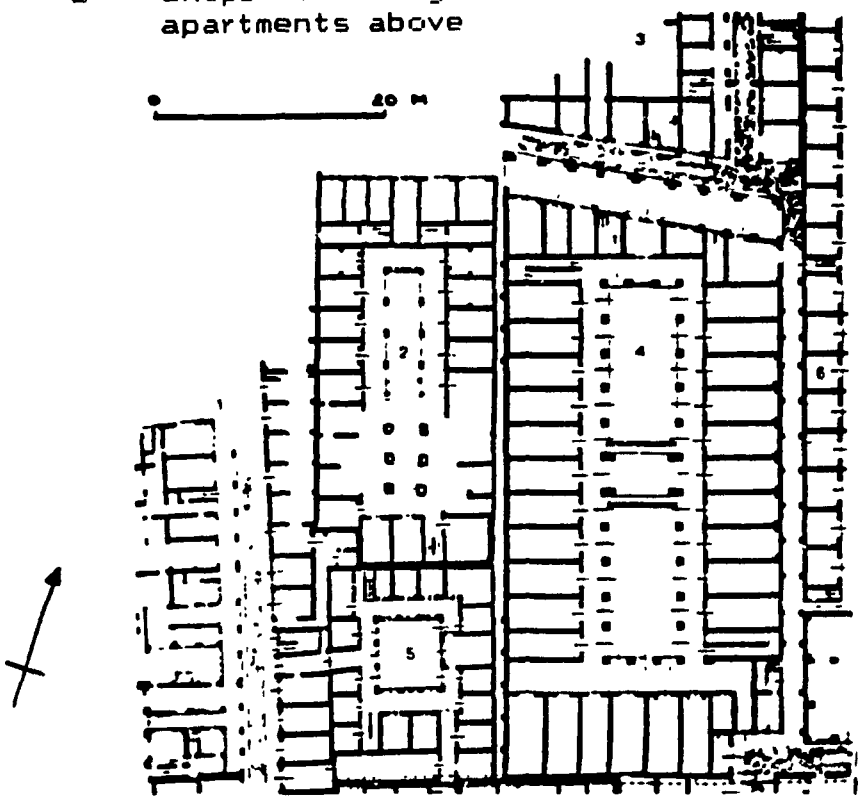

Fig. 7 Street scene with shops above, commercial quarter near the river, Ostia.

Reference : J.B. Ward-Perkins, Roman Architecture, p.191, plate 216.

According to Gallion and Eisner,

> "The Forum Romanum was the original center of business and political life in the early Republic. In it the triumphant generals built their memorials to the sucessful military campaigns. In the days of the Empire, the emperors built additional fora, and the total area was a magnificient collection of monumental buildings unparalleled in splendor. About these great public spaces were the innumerable shops and crowded tenements of the people." (9)
>
> Gallion-Eisner, The Urban Pattern

The public space was the center of public life, the place where citizens could take part in celebratory, festive and pleasurable activities, and felt, and became a part of it. To some extent, it might be the proportion and the scale of the forum which rendered this identity and feeling of belonging to Rome. Because of the triumphant past that brought Rome and the Empire into prosperity, the Roman Fora developed into a collection of monumental buildings to celebrate the glory of many emperors. In Rome, the forum was

> "a whole precinct, complex in layout, in which shrines and temples, halls of justice and counsel houses, and open spaces framed by stately collonnades, played their parts." (10) (Fig.8)
>
> Tahvildari, Raza, "The Downtown Shopping Center."

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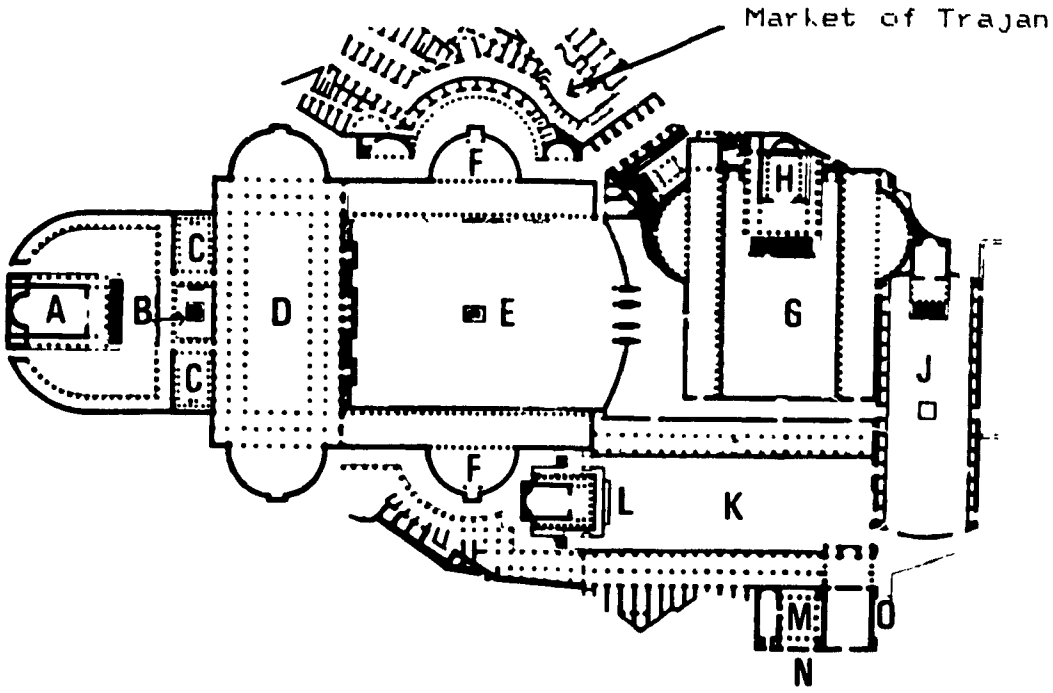
(9) Gallion-Eisner, The Urban Pattern, 1975, p.32.
(10) Raza Tahvildari, "The Downtown Shopping Center", 1987, p.15.



Key :					
	A	Temple of Trajan	H	Temple of Mars
	B	Trajan's column	J	Forum of Nerva
	C	Libraries	K	Forum of Caesar
	D	Trajan's Basilica	L	Temple of Venus
	E	Forum of Trajan	M	The Curia
	F	Retaining walls	N	The Comitium
	G	Forum of Augustus	O	Thoroughfare

Fig. 8 Location of Market of Trajan in the Imperial Forums in Rome.
Reference: A.E.J. Morris, History of Urban Form, 1972, p.50.

Facing the other side of the Capitoline hills lied the Markets of Trajan. (Fig. 9) These were new commercial quarters where the terraced levels of rows of shops with a market hall were planned imaginatively in conjunction with the forum-basilica complex. J.B. Ward-Perkins described, "Towering above the south end of the street were the three-story west facades of several distinct blocks of mixed shops and apartments, of which the east

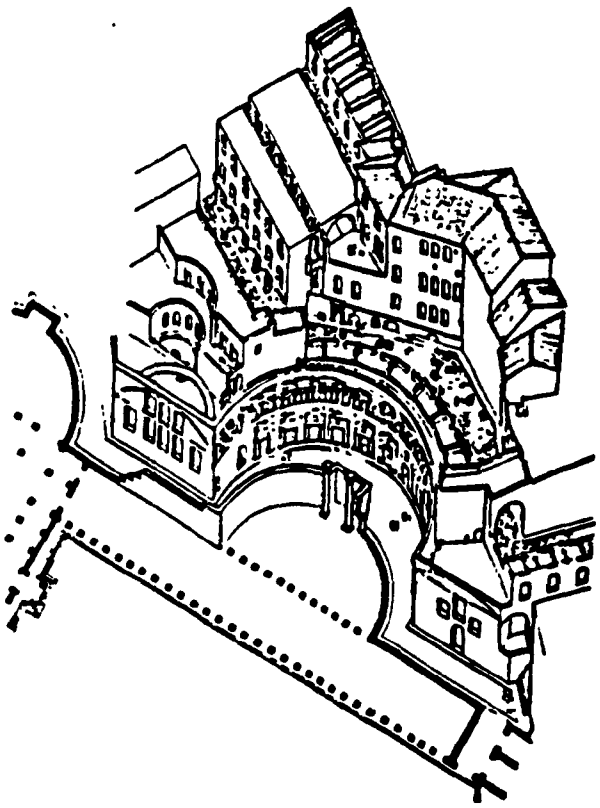


Fig. 9 Market of Trajan : restored axonometric view

Reference : J.B. Ward-Perkins, Roman Architecture, p.126, plate 143

frontage opened off a third street which followed the slopes at a yet higher level." By skilled planning, the integral complexity of this commercial quarter with residential elements above, though on a very awkward site, seemed to have been represented by a formal unity. "The complex displays the deceptive simplicity of design that springs from skillful planning" as Ward Perkins put it, that "tiers of shops could be arranged in a fashion where skylights from the terrace roof above served to light the interior and connection steps opened up additional levels to another tier of shops." (11) This observation suggests that the incorporation of various useful design elements were already sucessful in Roman times proving the sensibility of Roman architecture. This integration of various functions and uses served as a signifier of a new urban architecture during the Roman era.

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(11) J.B. Ward-Perkins, Roman Architecture, p.124-125.

When Rome evolved into a more complex urban form, as interpreted by Dimitri Procos,

> "the tabernae developed a residential mezzanine, then rows of such tabernae were built, eventually back to back, giving rise to the Roman insula, (Fig. 10) or multistory speculative tenement building. In its full glory..... .....the insula was a gigantic version of the atrium house and of the Mycenean megaron, with rows of dwelling units stacked sometimes more than ten stories high and completely surrounding an interior court, which was used for storage or for public baths. The street level was taken up by tabernae, facing outward toward the street." (12)
>
> Dimitris Procos, Mixed Land Use.

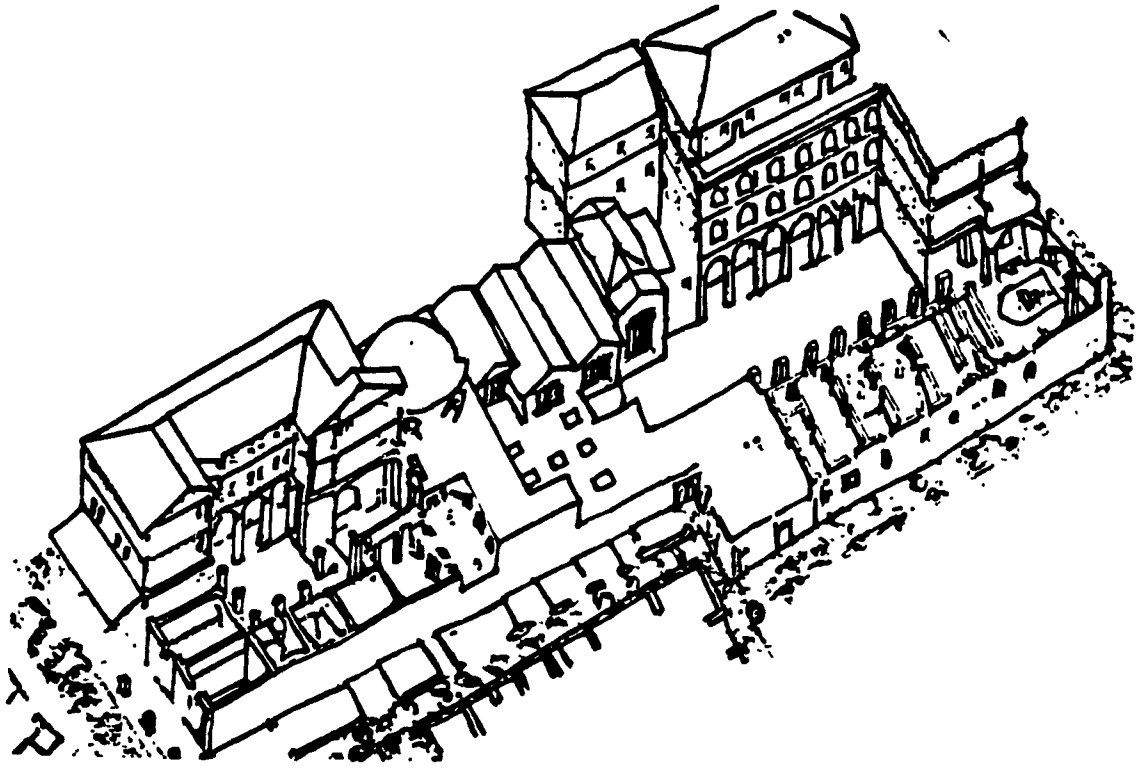

Fig. 10 The Roman Insula (multi-story speculative tenements) at Ostia.

Reference: "Mixed Landuse : Historical Background", The Canadian Architect, July 1971, p.25.

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(12) Dimitris Procos, Mixed Land Use, 1976, p.2.

As the main activity of the port of Rome shifted to Ostia around the second century A.D., the planning and the architecture reflected much of the pattern of the new urban architecture founded in the capitol. Essentially, the residential components of this new urban architecture included the taberna, the domus and the insulae. The "taberna" was a one room shop or workroom opening directly off the street with a one storied apartment above. These tabernae formed several blocks of mixed shops and apartments variously combined, as discussed above in the Markets of Trajan. Usually, the taberna opened directly off the street and a wooden loft was commonly incorporated, lit by a separate window and accessible by wooden steps. Artisans and small tradesmen lived above their place of work. The domus, on the contrary, was a type of single storey courtyard home occupied principally by the rich. In our today's version, we still call it the single-family house.

In fact, the majority of middle class citizens lived in multi-storied apartment blocks known as "insulae". These dwellings were situated over a row of shops with seperated entrances from the streets. The dwellings were accessible by one or more stairways from a central courtyard. These insulae consisted of several floors of self-contained apartments occupied by a number of different families. It suggested a complex of multi-family dwellings. Sometimes

the height of these buildings reached eight stories. The ground floor was often rented out for commercial use. (13) Ostia showed the relentless response, with simplicity of design and sound planning, to both domestic and utilitarian requirements of a busy commercial community.

1.2 MEDIEVAL TIMES

The Medieval town had well defined areas for commerce usually near the center of the city where a radial road system converged and potential clients came together. The medieval house was characterized by three major functions, the living quarters for the family, the workshop and the store. Residential and industrial functions continued to coexist. However, the Middle Ages also witnessed the gradual development of a separate marketplace and the establishment of guildhalls which handled administration and marketing of the guild's (craftsman of homogenous craft banded together into guilds) products. Identified precincts of particular trades became another characteristic of the Medieval city while the decentralization of social functions pioneered the concept of landuse separation. Nevertheless, industries although separate, were still located in close proximity to residential and public land uses.

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(13) J.B. Ward-Perkins, Roman Architecture, 1974, p.194.

Medieval cities had a very definite edge, the fortification wall, which distinctively separated the rural area from the city. Life in a Medieval city environment was in drastic contrast to the rural pattern of life that surrounded it. In the city, the main commercial streets, usually narrow, were lined with buildings. The main streets were occupied by merchant houses which enclosed a small garden in the rear of the buildings. Craftsmen's dwellings and workshops occupied the peripheral city blocks behind the main commercial streets.

The Placa was the main commercial street in Dubrovnik, the Yugoslavian city of the late Medieval period. Urban houses built along the Placa revealed the intrinsic features of the living pattern of such a mixed use structure in the southern part of Europe. (Fig. 11) According to the description of Norbert Schoenauer, "The typical merchant's dwelling along the Placa was a three-storied building with shops at sidewalk level and a main entrance from a side street. The piano nobile, or first upper story, contained the formal reception rooms (known as the representation rooms), the second upper story was used for family dining rooms, living rooms, and bedrooms, while the attic contained the kitchen and storage rooms and perhaps servants' quarters." (14)

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(14) Norbert Schoenauer, 6000 Years of Housing, 1981, Vol.3, p.79-81.

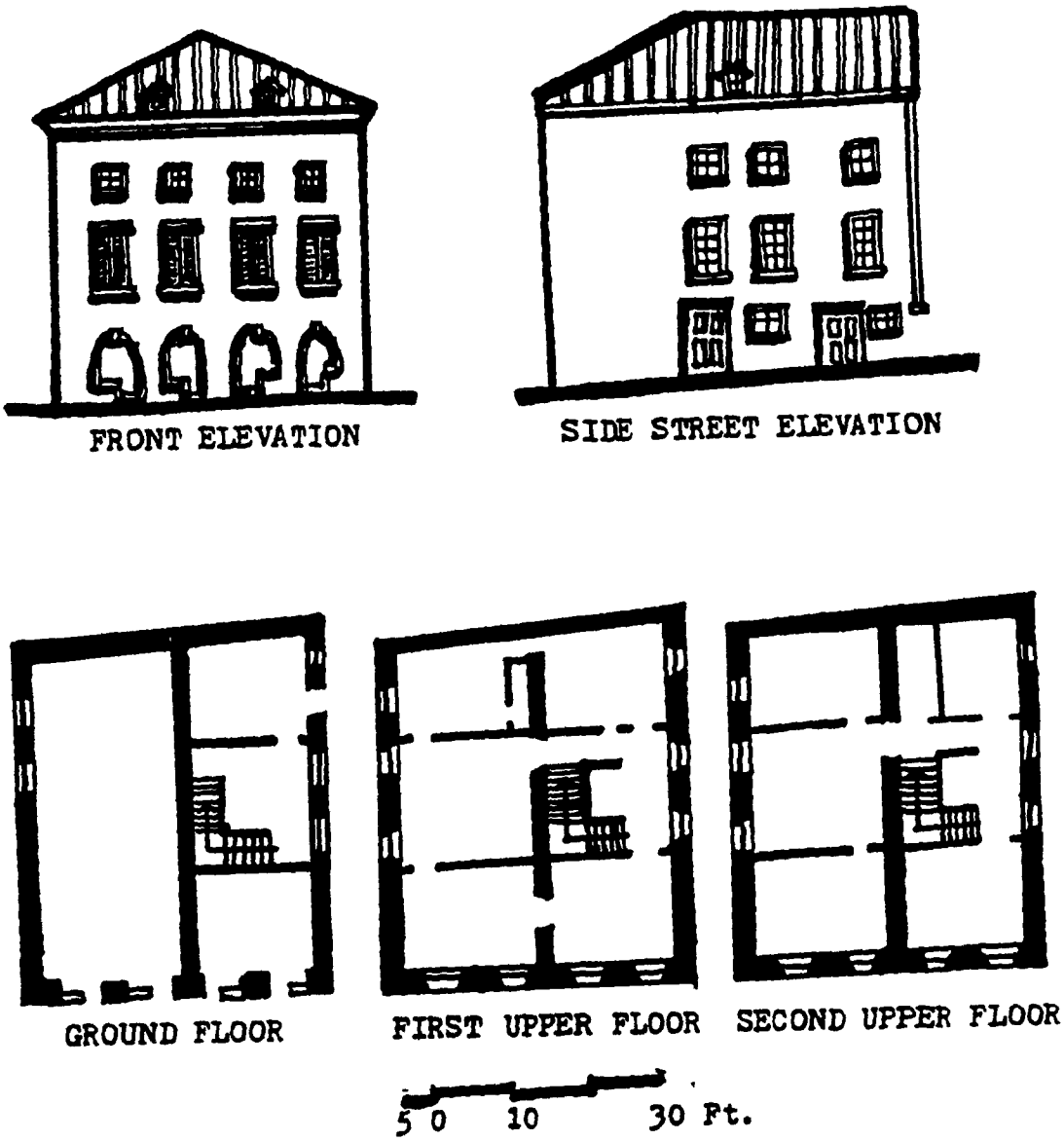

Fig. 11 Plans and Elevations of a typical urban house along Placa in Dubrovnik, Yugoslavia.

Reference: Norbert Schoenauer, 6000 Years of Housing, 1981, Vol.3, p.78.

Another example from Northern Europe is the Medieval English city of Salisbury. Here, the pattern of conjunctive use of the urban houses is also prevalent. It was the multitude of dwellings in combination with shops and workshops that gave this city its own unique character. Trading street frontage was seen of great value for commerce and narrow medieval plots were the result. "The narrow plan generally consisted of a front part with shops at ground level and chambers above, an open hall in the middle part and service rooms with chambers above at the rear." (15) (Fig. 12)

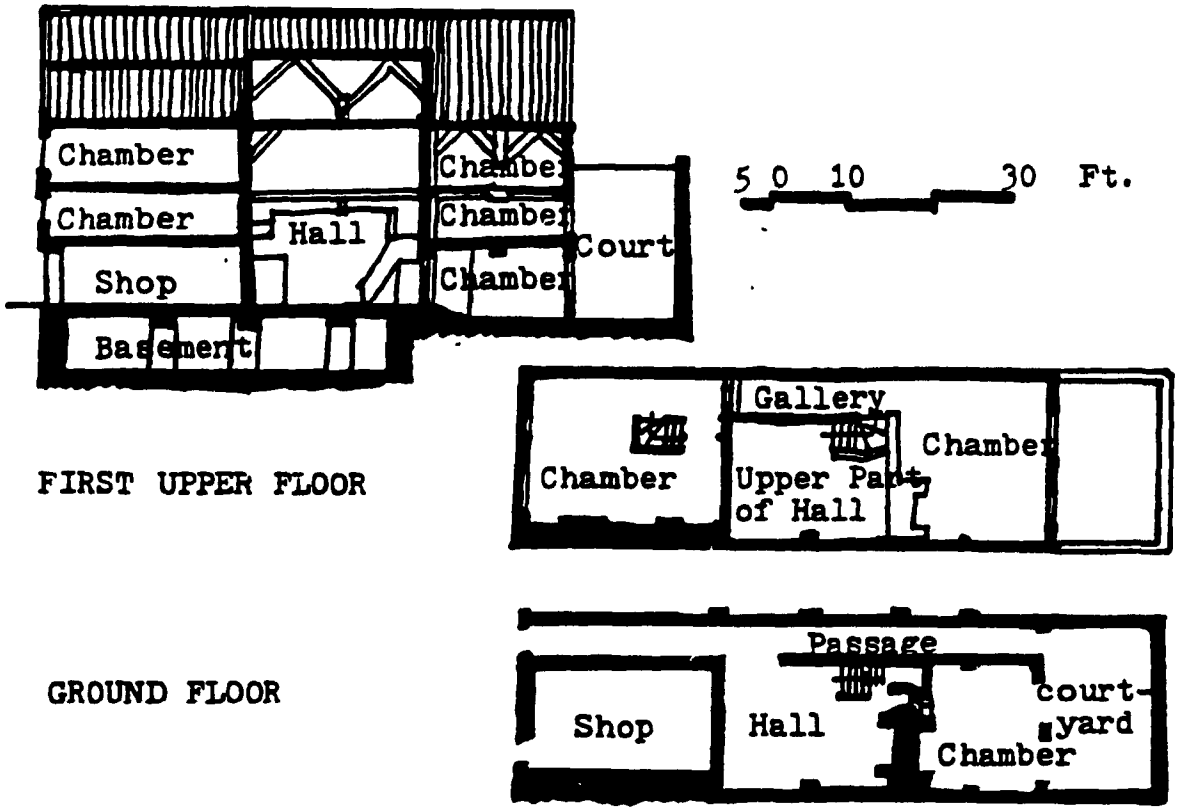

Fig. 12 Plans and Section of a typical narrow Medieval House in Salisbury, England.
Reference: Norbert Schoenauer, 6000 Years of Housing, 1981, Vol.3, p.106.

(15) Norbert Schoenauer, 6000 Years of Housing, 1981, Vol.3, p.107.

During the late Medieval period, there were numerous examples in English cities as well as in other European cities identifying the successful continuation of the practice of having both dwellings and workshops merged together in a building as complementary components. Of course, we could observe the various development patterns in the different regions which are worthy of further examination. Example of the hall-type urban house was also found in Oxford. For example, Tackley's Inn (Fig. 13) consisted of a row of shops above the undercroft used as a tavern, while behind them a hall and chamber block ran parallel to the street. (16)

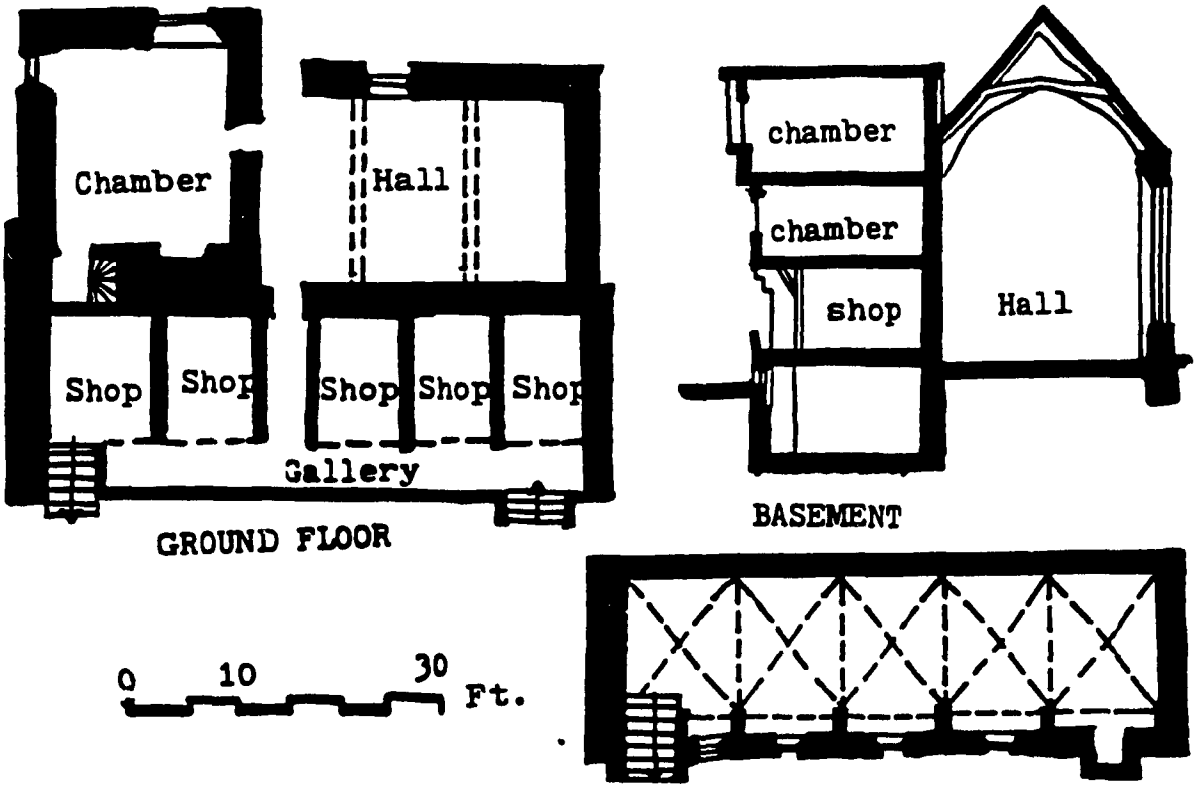

Fig. 13 Plans and Section of Tackley's Inn in Oxford, England.
Reference: Norbert Schoenauer, 6000 Years of Housing, 1981, Vol.3, p.118.

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(16) J.T. Smith, P.A. Faulkner, and A. Emery, Studies in Medieval Domestic Architecture, 1975, p.127.

Another example is found in Southampton where a mixed use Medieval dwelling illustrates the hall arrangement on a very narrow building site. (Fig.14)

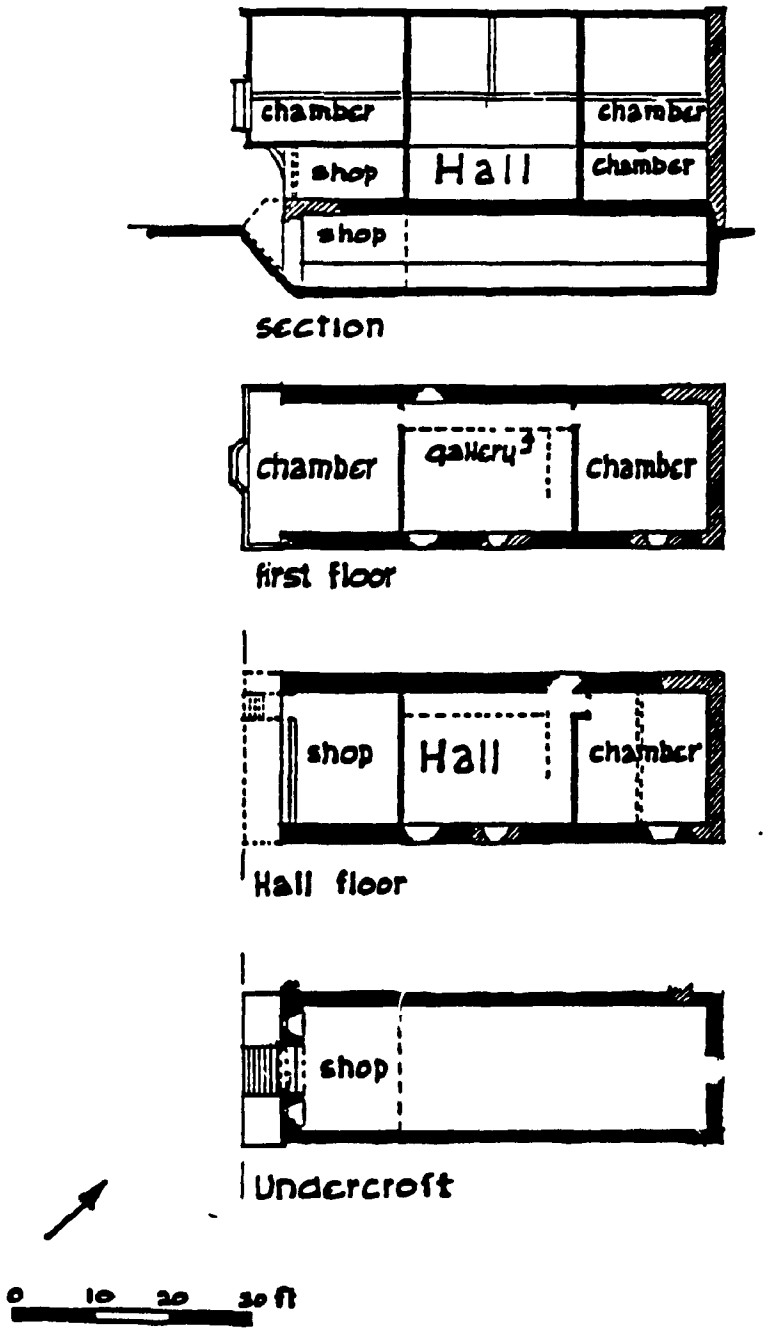


Fig. 14 Plans and Section of a mixed use Medieval dwelling on narrow site in Southampton, England.
Reference: Norbert Schoenauer, 6000 Years of Housing, 1981, Vol.3, p.120.

In Cluny, France, a masonry house illustrated the fronting of shops on street level and domestic quarters behind and above the shops. (Fig. 15)

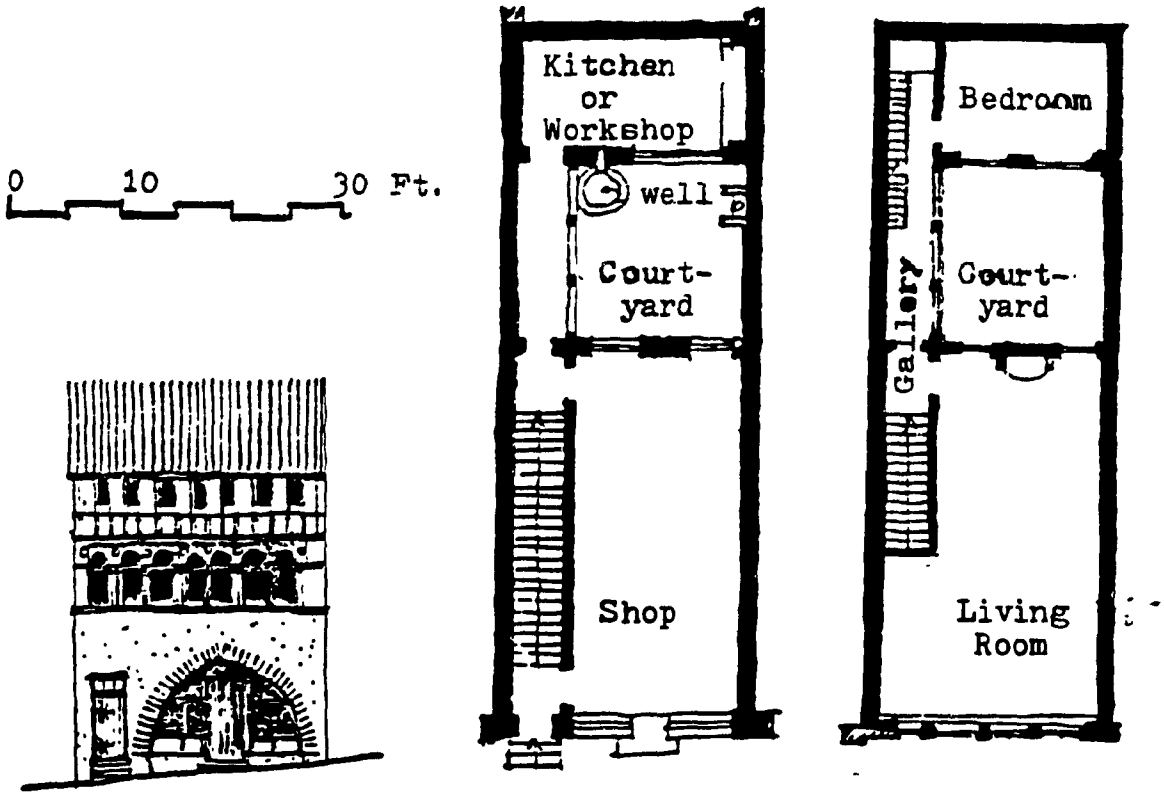
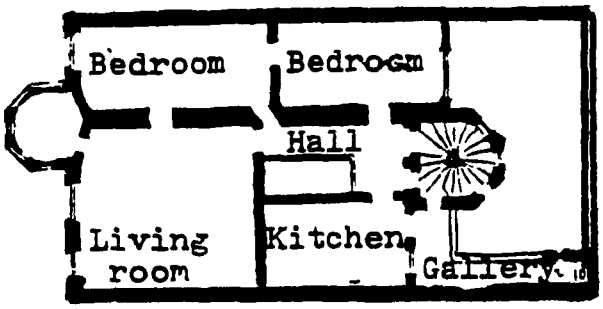


Fig. 15 Plans and Elevation of a Medieval Urban Dwelling in Cluny, France.

Reference: Norbert Schoenauer, 6000 Years of Housing, 1981, Vol.3, p.122.

An example of an arcaded Medieval merchant's house is found in Bern, Switzerland (Fig. 16) where arcades were continuous for weather protection of shoppers. Again, living quarters were arranged above the shops and workshops situated at ground level, the latter of prime

commercial and industrial uses. A similarity to the arcaded merchants' houses of Europe could also be cited in Chester, England. Leche House on Watergate Street displayed the



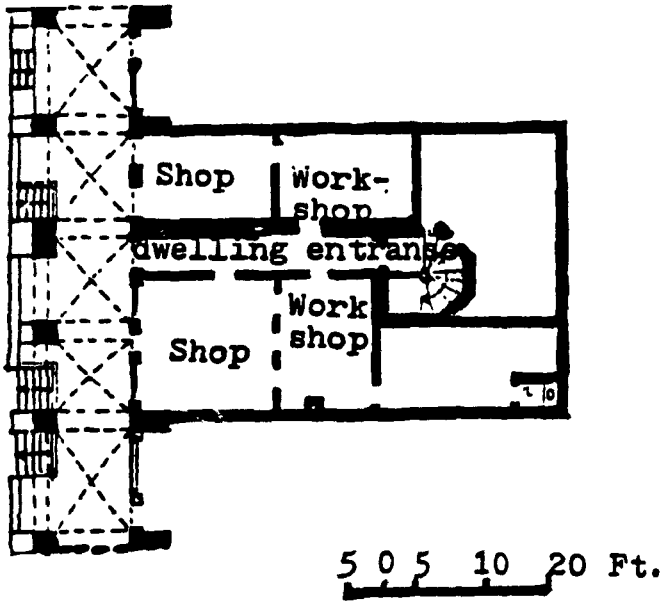


Fig. 16 Plans of a typical arcaded urban dwelling in Bern, Switzerland.

Reference: Norbert Schoenauer, 6000 Years of Housing, 1981, Vol.3, p.124.

unique feature of a side passage feeding both the front and rear bedchambers as well as the rear yards. The "Row" or elevated walkway with shops fronting on it was located at the front part of houses, the workshops in the cellars were gradually altered into shops, thus making a double tier of stores in these Rows. (Fig. 17) These covered elevated sidewalks prove the viability of the modern planning concept advocating vertical separation of vehicular and pedestrian movement.

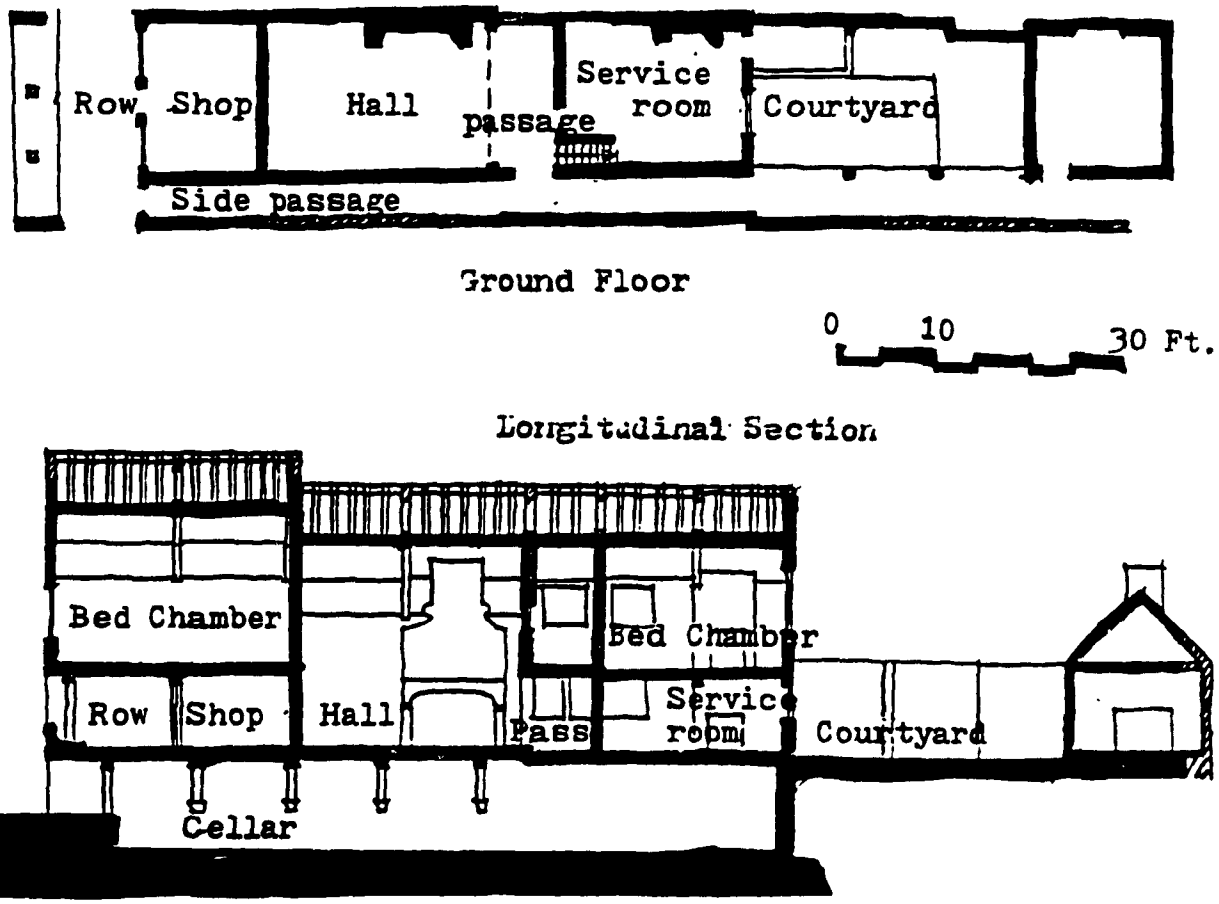


Fig. 17 Plan and Section of an arcaded merchant's house : Leche House on Watergate Street in Chester, England.

Reference: Norbert Schoenauer, 6000 Years of Housing, 1981, Vol.3, p.130.

Besides the Rows in Chester, many other vivid examples of these continuous rows of buildings survived such as the Market Square in Hirchberg, the Old Market in Gorlitz. These distinguished medieval establishments are valuable examples for today's planning of mixed use complexes.

1.3 RENAISSANCE

During the 15th century and thereafter when life was distinquished in many aspects from that of the medieval ages, an intellectual momentum altered the pattern and direction of European life. Literally, Renaissance is rebirth : a revival of interest in the classical art form of ancient Rome and Greece.

During the hundred years preceding the 16th century, "a new complex of cultural traits took shape in Europe. Both the form and the contents of urban life were, in consequence, radically altered", according to Lewis Mumford. (17) New patterns were generated from the vigorous quests for new political frameworks, new economic systems, and a new idealogical form.

A general description of the Renaissance period can be one that emphasizes expression, rationale and idealogical values. As concentrations of population in urban areas was

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(17) Lewis Mumford, The City in History, 1961, p.345.

brought about by trade and travel, centers on crossroads developed both demographically and commercially. The expanded mercantile economy caused some shifting in the status and social structure of society. Nobles, wealthy merchants and clergy became the privileged classes.

Florence and Venice demonstrate some evidence of the evolution steered by these privileged classes. In Florence, the leading families, both politically and economically, shifted their palaces away from the urban center whilst transactions of business remained where they were. Thus, the merchants increasingly commuted daily to their downtown offices. This signaled the end of a life pattern of medieval cities.

Venice, flourishing after Florence, demonstrates more advanced symptoms of landuse separation. As stated by Dimitri Procos,

> "A form of zoning which sent the glass industry to the island of Murano, consolidated cemeteries in Torcello and created a series of residential neighborhoods, each with its own campo (square), fountain, school, guildhall and church." (10)
>
> Dimitri Procos, Mixed Land Use.

Landuse structure transited from the autonomous Medieval town structure to the compartmentalized one, came to prominence. "New Town" plans of the Renaissance period,

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(10) Dimitri Procos. Mixed Land Use. 1976. p.3.

particularly in the seventeenth and the eighteenth century, played an eminent role in developing new trends also in government. The new system of government had powers in excess of those of the Medieval cities; new regulations were imposed that alloted space for each use and compartmentalized the Baroque town or city. Home stores and workshops were slowly disappearing in the eighteenth century. The late Renaissance had ushered in a greater measure in landuse regulation and separation. However, it is noteworthy that the positive effects of such regulations and separations have prevented the ugly and chaotic growth in the cities in the wake of the rapid population growth following the Middle Ages.

The Renaissance period complemented monarchy with monumentalism, in character, scale and form reminiscent of classic antiquity, which were revived in the city and its planning. Urban spaces were draped with formal facades and shaped in sculptural form. There were sharp distinctions between functions and spatial enclosures. Even the delicate intermingling of spaces and traffic functions in the medieval times was evaded to make way for the clarity and definition of spaces in urban areas. More precisely, provisions was made for traffic space, residential space and pedestrian space intended for various yet different functions commonly mixed and contained in medieval urban centers. Moreover, enclosures of buildings were typified to

their respective uses as civic, religious, residential, or commercial. Hence, landuse mixture had no place in their cities and in fact, it is difficult to offer known examples of conjunctive housing built during this era.

1.4 INDUSTRIAL REVOLUTION TO THE TWENTIETH CENTURY

Land use controls were symptomatic of attitudes prevailing not only in the Industrial Age, but also today. The distinction between the classes of urban population, between producers and consumers, as well as the burgeoisie and the working classes, ascertain the phenomenal land use separation of their respective environments. Exceptionally, Ebenezer Howard had in his Garden City proposal, a scheme of residential communities, complete with places of employment, allowing a certain land use mix on closely adjacent parcels of land. In many other industrial settings, complete separation of land-uses or user groupings became the norm of the suburbs and their neighborhoods. In this respect, Dimitri Procos envisioned that

> "it may at first seem surprising that an approach born out of the elitism of the nineteenth century bourgeoisie has survived the tremendous expansion of the middle class in the twentieth century and the switch to more populist consumption patterns." (19)
>
> Dimitri Procos, Mixed Land Use.

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(19) Dimitri Procos, Mixed Land Use, 1976, p.7.

The continental middle class urban living pattern, however, can be exemplified by a Paris apartment building on Ave. de la Grande Armee (Fig. 18 & 19).

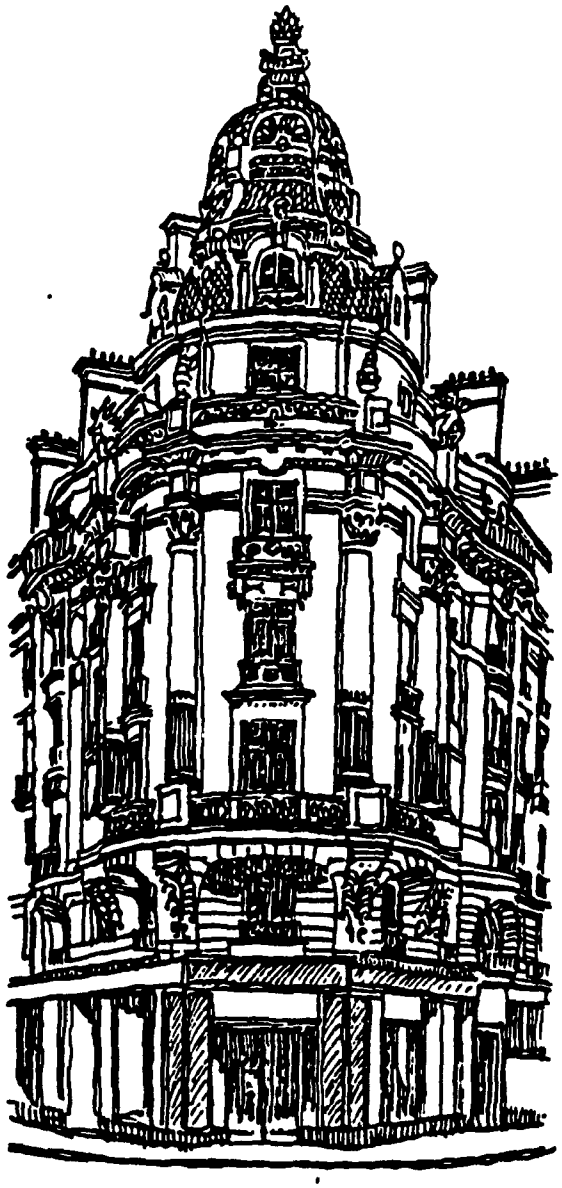
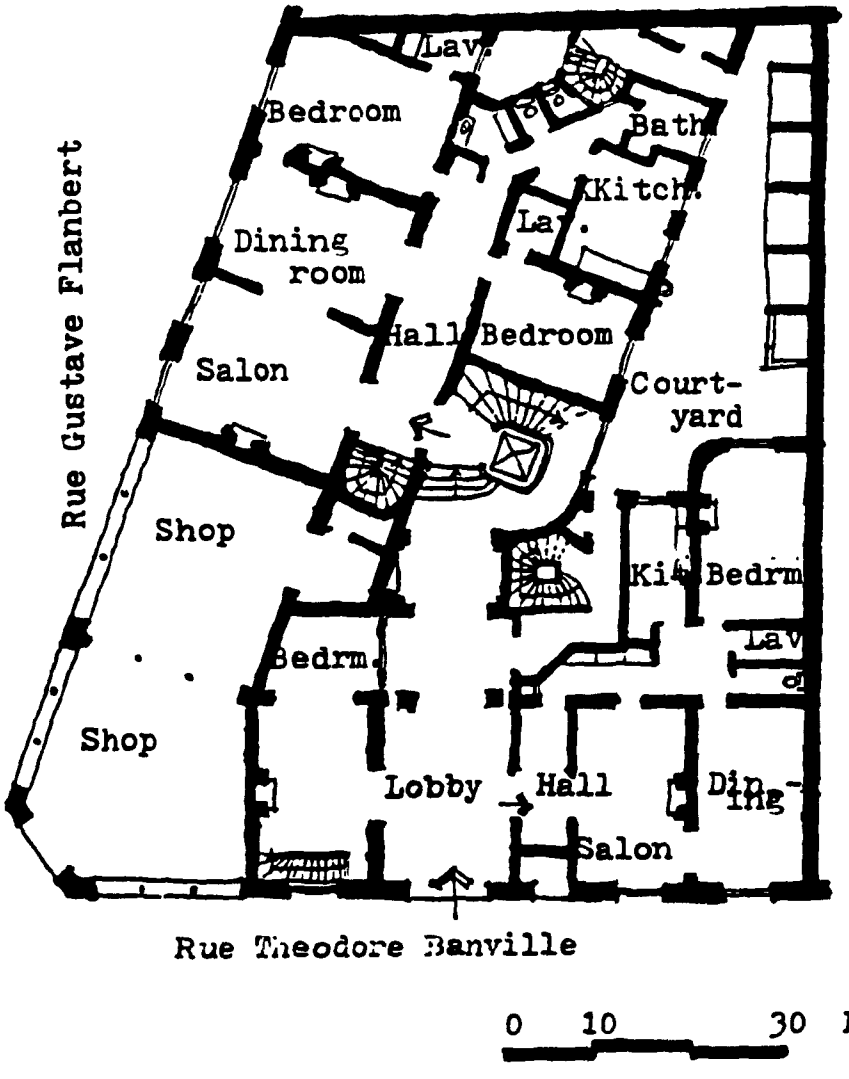


Fig. 18 Apartment House on Avenue de la Grande Armee in Paris.

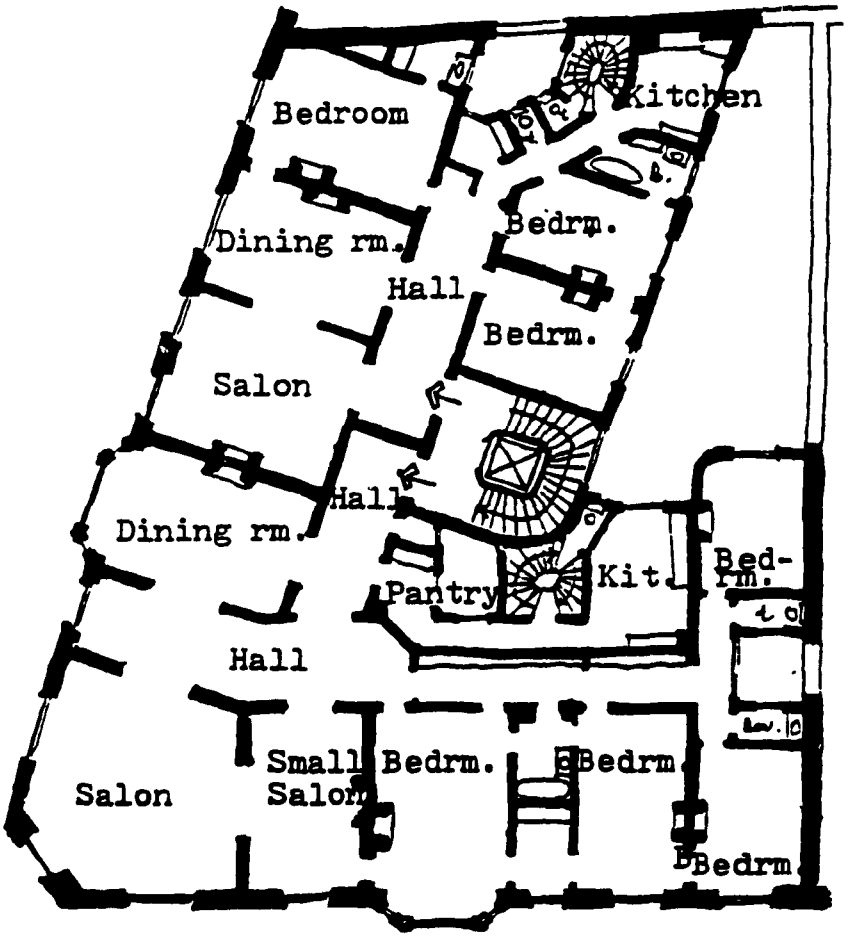
Reference: Norbert Schoenauer, 6000 Years of Housing, 1981, Vol.3, p.252.



GROUND FLOOR

Fig. 19 Apartment House on Avenue de la Grande Armee in Paris, plans.

Reference: Norbert Schoenauer, 6000 Years of Housing, 1981, Vol.3, p.250.



TYPICAL UPPER LEVELS FLOOR PLAN

Fig. 19 (continue) Apartment House on Avenue de la Grande Armee in Paris, plans.

Reference : Norbert Schoenauer, 6000 Years of Housing, 1981, Vol.3, p.251.

This typical apartment building contains several functions. The ground level, facing the Boulevard, was occupied by shops and some dwellings for enterpreneurs. The apartments on the piano nobile were usually occupied by the well-to-do. Smaller dwelling units in the attic were used by servants, some frequently occupied by artists or students. Naturally, we could picture a cross section of population living in the same building. According to Sigfried Giedion, the Parisian Apartment houses were criticized because they "artificially bring together functions which, in an industrial society, should be kept strictly separate." and, instated that "it is absurd in an age of industrial production to permit residence, labor, and traffic to intermingle." (20)

Despite the influence of the above statements by Giedion, there emerged a new conviction among many contemporary practising architects and town planners that the viability of the concept of mixed land use has relevance in urban areas. The potential imprint upon our cities could be very strong of conjunctive housing as reflected by the concluding sentences by Norbert Schoenauer in his "6000 Years of Housing", (Vol.3). There he comments,

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(20) Sigfried Giedion, Space, Time and Architecture, 1954, p.672.

"Urban housing is compatible with many other urban functions and it can in fact benefit from being a conjunct of them. Pluri-use buildings with a housing content suggest social and economic advantages; they also promise a lively and exciting living environment and the rejuvenation of our cities." (21)

Norbert Schoenauer, 6000 Years of Housing.

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(21) Norbert Schoenauer, 6000 Years of Housing, 1981, p.254.

CHAPTER 2 : MIXED LAND USE CONCEPT

In our contemporary urban environment, there are many good reasons to revive the concept of mixed land use and sustain the urban variety which has survived in urban redevelopment of many periods in our historic past. Historically, cities most often were composed of mixed use buildings. First, there is an obligatory need to define what mixed use development is. Conjunctive housing is a term for the scenario in which housing is in connective use or in combination with other functions and activities. Mixed use is, in its generic term, the unspecified mixture of land uses within one building. And as it is well pronounced in Dimitri Procos's "Mixed Land Use", the meaning of mixed land use is intended "to counter-balance that of separate or separatory land use" and "may be deemed to represent a mixture of functions and activities." (1)

Multifunctionality is represented when two different urban functions, such as apartment units and shopping facilities are combined together. Naturally, it becomes enlivened when the combination of a large number of urban functions within one physical framework is successfully achieved.

For those who are concerned about our cities today and dwell in them, some statements such as "the livelihood and

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(1) Dimitri Procos, Mixed Land Use, 1976, "preface", p.ix.

excitement of an urban lifestyle", "reviving the life within the urban core", "recycling the available urban resources", "true urbanity", "the downfall and the rejuvenation/regeneration", draw an alarming attention from many of us. People begin to care about what kind of recreated environment they could have in inner city living. Admitting the fact that negligence and mismanagement by our government, our city councillors and planners have led us into dismay, we must respond to the outcry and quest for "true urbanity". It is important and worthy to recover what the available tools and resources we have in the city in order to fulfill our yearning for a better and thriving urban environment.

Slum and decay always become a common phenomenon in our urban areas lacking proper attention and management. The scenario can be associated to the medieval time. There was an epidemic of Black Death in the fourteenth century, disease spreaded rapidly in times of the epidemic. The cities could not handle the growing population and this situation lingered causing congestion and overcrowdedness as well as causing the subsequent decaying of many potentially beautiful city centers. The grandiose building period of the Renaissance period followed, draping away many of the tangibly unresolved urban problems in cities.

History repeated itself when the Industrial Revolution brought the creation of many factory towns aiming towards

optimized land use as opposed to the imagined formula for the communalistic settlement of the working classes. However, this new industrial economy brought exploitation of the poor, and with poverty, emerged slums. As Gallion and Eisner would put it, "the degraded environment of the factory town hung like a cloud over urban life for the next century and half." (2)

Discounting many of the probable reasons attributable to the slums of the nineteenth century factory towns in England, New York City in the New World faced synonymous problems of congestion and slums during the industrial age. Tenements took different forms in different countries, yet one common characteristic they all shared, namely "excessive land coverage". The "Model Town", idea of industrialist of the nineteenth century seemed not capable to ease off the housing crisis. As the fervor for industrial expansion and the factory system drew more and more people to urban centers, the standards of housing of most of the urban population had degenerated.

The unprecedented urban expansion brought about plans of grandeur plans and of colossal scale with monumental proportions, to many American cities. The civic obsession of great plazas and broad avenues reflected another "classic revival" ! Civic centers became the theme for all

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(2) Gallion-Eisner, The Urban Pattern, 1975, p.70-71.

cities, and almost every city had its Civic Center. It was apparently a grasp of cut-throat criticism that

> "It was as though the planners had determined that the people must adjust themselves to the mighty formal arrangement. It failed to occur to them that the entire development of a city was essentially a derivative of human needs. The civic Center conception was one of removal from the life of the community rather than a functional entity within it. Removed from channels of enterprise, civic affairs had an air of divorcement. The grandiose buildings were imposing, not inviting. They held the spellbound citizen at arm's length. They did not fit the city, its life, its habits, or its manners; theirs was an air of disdain rather than dignity." (3)
>
> Gallion-Eisner, The Urban Pattern

Any establishment, grand or small, cannot be a mere functional entity on its own. It must assume the responsibility of fastening the communicative pattern of the affairs of people and community activities, so that the dwellers of cities can identify themselves with its life beat, find themselves fitting in and, be willing to participate in it without feelings of alienation and isolation.

Since financing and distribution became the basis of commercialism in our cities in the 20th century, the city stood for an investment bond or stockshares which must pay

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(3) Gallion-Eisner, The Urban Pattern, 1975, p.88.

dividends. The commercial city would tumble around its entourage of shops, hotels, offices and loft buildings, entertainment and residential developments, traffic and transportation as profitable ingredients. Commercial enterprises found it a promising avenue for progress, not merely in monetary terms, but also in urban life quality and progress of civilization.

So what is a concept justifiable to the versatility of contemporary urban lifestyles ? A number of factors pertaining to the availability of land and resources must be considered. The approach in terms of optimal usage of land in order to accommodate maximum functional requirements is significant. Mixed landuse offers a competitive solution to such approach. It also meets the demand of contemporary urban lifestyles to a great extent. Mixed land use concept should not be seen as any pioneering idea, since it had been proven to be a viable solution in many cases from various thriving cities of our past.

Firstly, the multiple use of land stems from past centuries when higher density was needed to be obtained. Mixed land use has the capability to moderate density in situations when greater densities are demanded. Air rights construction in the form of stratified land use admixture can achieve higher density under some circumstances of land

shortages and high land costs. The concerns, however, are the reduction in the overall use of the building, and the dilemma of making decisions, usually more political than economic, over such an intense use of land.

Secondly, if building underground is considered to be a land conservation device, multiple shared use of land can be applied. Creating spaces into the ground below guarantees further accommodation of functions other than the development at the ground level and above. But, if without careful examination and evaluation of these admixing landuses and devoid of human considerations, it can defeat itself as an idea.

Thirdly, the mounting demand of a cleaner and non-toxic environment alters the course of any careless admixture of landuses. The possible scenario of combining the presence of industrial functions in residential settlements can arouse great ecological and environmental consciousness. The decision for such an admixture of land uses will undertake attack on one end, whilst on the other end, industrial employment opportunities are provided. The ecological concern for energy generation and utilization systems has, to some extent, shed a light on the efficiency of utilizing the infrastructure commonly in mixed-use projects, which will be discussed in more detail later.

Lastly, reutilization of land can be considered as an approach whereby the original land use is maintained and additional uses are attached to it. In a way, building over a built-up site enables the new and old uses to coexist in this type of non-destructive redevelopment of land although they are rare in history. However, new tools will facilitate any incremental addition to the present stock of urbanized land with mixed land use, in a form of nondestructive urban intensification.

Here, we have not merely dwelt on the reclaiming of our urban lifestyle. We also try to examine options that are promising for us to feel and to regain the pulse of excitement and vitality of a workable urban environment. We understand that a strong interaction of all, or maybe, a selected amalgam of urban functions and facilities may contribute to a better defined and organically structured city. About two decades ago, one of the most influential writers on urbanism, Jane Jacobs, spoke eloquently on the very qualities of urban lifestyle that were so desperately needed in the American cities. Jacobs was a fore-runner on the issue of projecting mixed landuse as a valid alternative to land use separation. Her work was based on " the perceived vitality of these environments and on the need to preserve them or at least to deflect from them those changes

that could threaten their continuing existence," according to Procos. Procos himself perceived that "unless large population segments are brought into the orbit of mixed land use on terms familiar to them the advantages of a mixed land use mode will never be popularized." (4) Also, he states that, "Since much of the difficulty encountered in gaining community acceptance of mixed land use is due to psychological and traditional factors rather than the certainty of poor performance," that our exposure to as "many sucessful examples of land use mixtures as possible may help us to overcome certain prejudicial attitudes and to put forth future proposals which are as yet inconceivable within the present planning framework." (5) It is therefore the worthiness and rationale that make the study of conjunctive housing and the relevant mixed land use concept valid.

Conjunctive Housing derives from Mixed Land Use concept in a justly more specific realm that housing content is seen to be prevalent in various many sucessful mixed use projects. It stems from an understanding of the significance of sustaining our urban population by redressing the balance between the socio-economic thriving and reasoning, and the human element in the physical environment. The integration

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(4) Dimitri Procos, Mixed Land Use, 1974, p.7.
(5) Dimitri Procos, The Canadian Architect, July 1971, p.40

of functions to achieve economic success usually associates with private initiative in maximizing some form of gain. (6) This relates to the economic expansion and growth which the development project is expected to be able to contribute. The human element "is a quality of scale and integration which results neither from the satisfaction nor from the theories of form, volume and space. The human element emerges from the reality of man's need for compatibility with its surroundings, the sense of belonging and being a part of his environment. These considerations present a real challenge in the future redevelopment of our cities." (7) In different urban contexts, there had been attempts of redevelopment carried out by local authorities in partnership with private enterprise. Despite of the numerous rules, regulations and laws that govern and restrain, a well 'planned' or 'designed' city center redevelopment scheme can always yield to reintroduce a residential component into the commercial redevelopments. An outstanding example is the Barbican Redevelopment of 40 acres of land in the heart of London. (Fig. 1 & 2)

In my opinion, this is an outstanding example on a massive scale development that brings back housing to the city center. The benefits to the urban dwellers derive in this project from their proximity to shopping and cultural, as well as religious facilities.

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(6) Dimitri Procos, Mixed Land Use, 1974, p.28.
(7) Gallion-Eisner, The Urban Pattern, 1975, p.366.

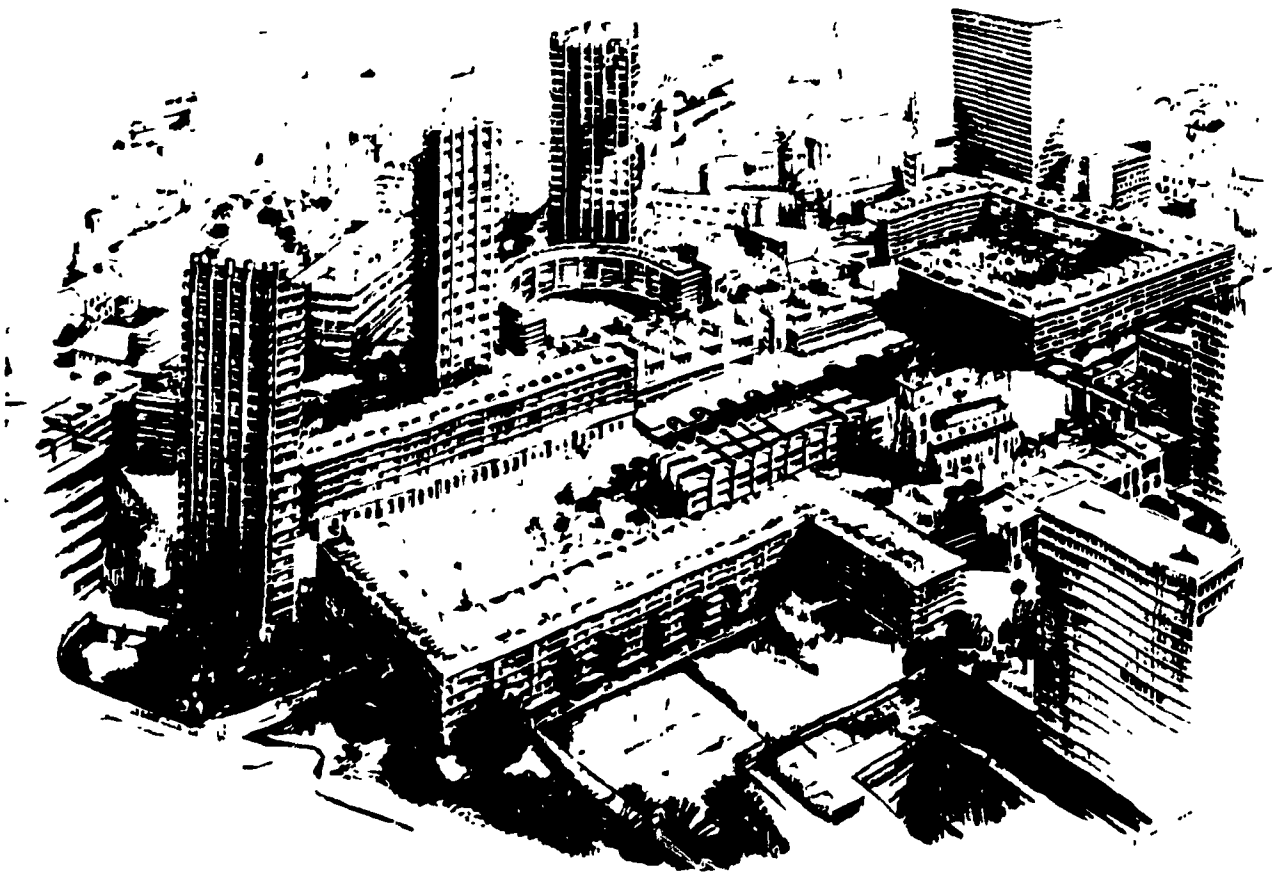

Fig. 1 A rendering of Barbican Redevelopment, view from the south-west. The residential area is designed on a series of courts formed by 7 story blocks above a podium within and under which are accommodated garages, offices and commercial premises.

Reference : Victor Gruen, Centers for the Urban Environment - Survival of the Cities, 1973, p.115.

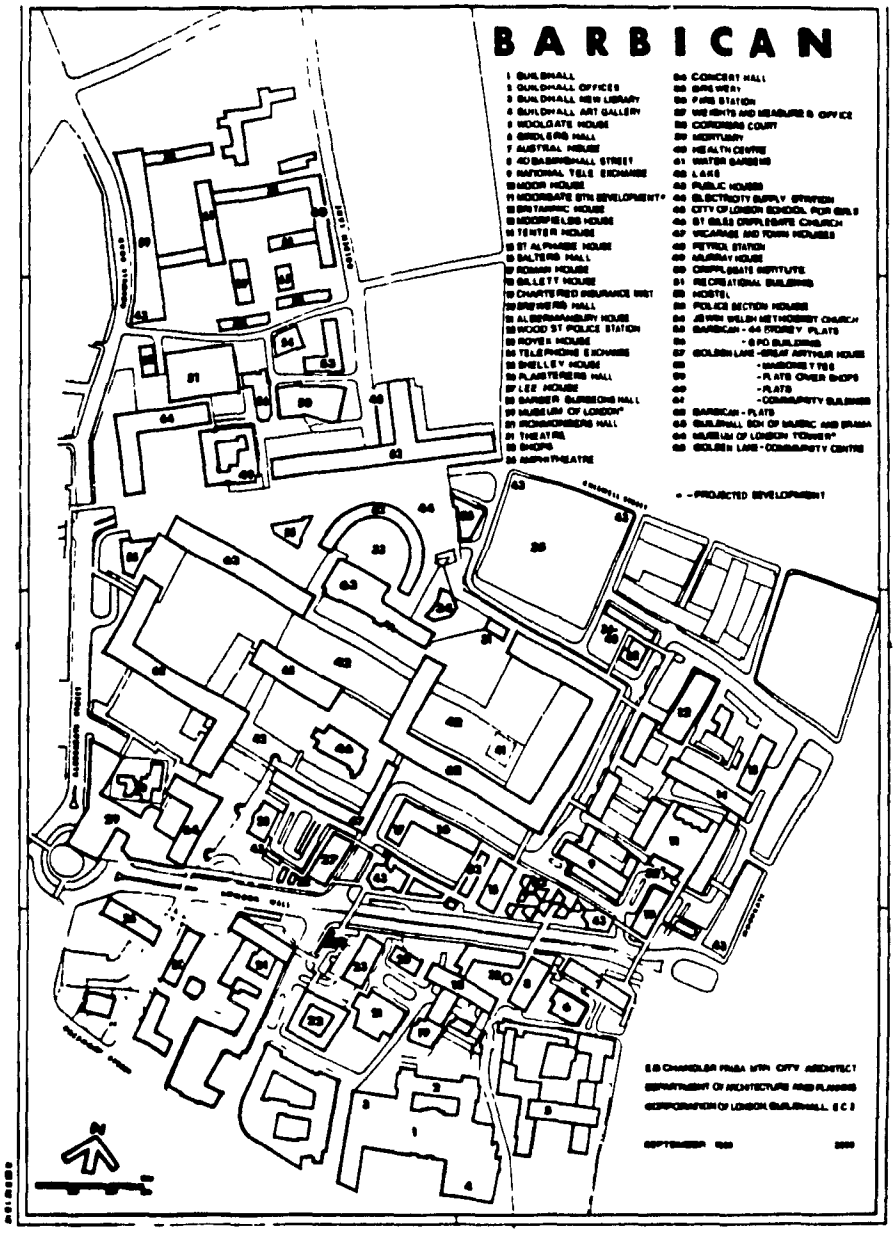

Fig. 2 Land Usage Plan of the Barbican Development.

Reference: Victor Gruen, Centers for the Urban Environment, 1973, p.114.

2.1 THREE DIMENSIONAL PLANNING

Three dimensional planning (Fig. 3) with stacked landuses, such as commercial, offices and housing, is utilized in the complex task of achieving the characteristics of urbanity. It is a planning technique considered to be superior than the traditional two dimensional planning approach where landuses are horizontally seperated. This technique is used to establish the vertical and horizontal relationships of the manifold urban functions in a visually clear fashion. It allows great flexibility in tabulating the various urban functions which are programmed for mixed use complexes.

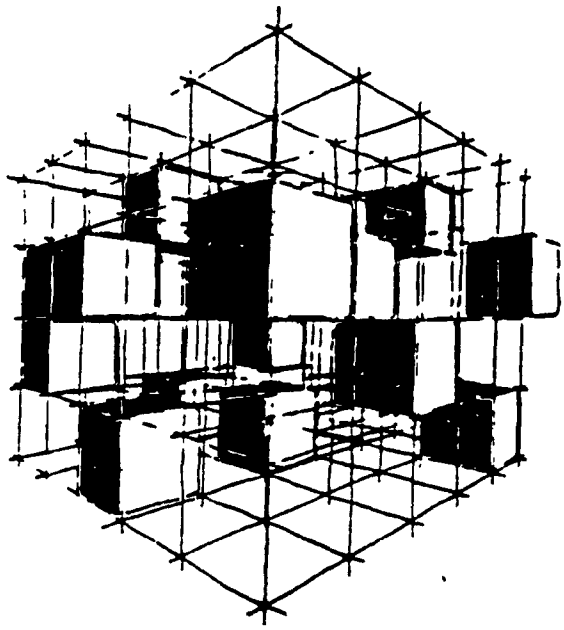

Fig. 3 Drawing of a space frame for visualization of three-dimensional planning.

References : Victor Gruen, Centers for the Urban Environment - Survival of the Cities, 1973, p.104.

A clearer perception and understanding can be obtained as regard to the layering of the numerous functions and activities. It becomes one planning technique worth applying in any conjunctive housing scheme.

As regard to the concept of individual land ownership, Victor Gruen has the following comment: "As a result of the application of the three-dimensional planning approach, the total available land area and each parcel thereof is utilized on various vertical levels for different functions in an integrated manner. For this reason, the concept of individual land ownership in relation to each participant of a multifunctional center cannot be maintained." (8)

2.2 REUTILIZATION OF URBAN RESOURCES

The idea was primarily a resolution to the situation that replacement of an existing land use with new facilities would bestow certain human or cultural sacrifices and high land cost in already built up areas. Versatility of mixed land use can be traced back to the urban bridges in England at the beginning of the Renaissance period. The original use of the bridge was maintained while housing and shops were attached to it. For example, the conjunctive use of the Old London Bridge (Fig. 4) served housing, commerce as well as transportation.

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(8) Victor Gruen, Centers for the Urban Environment - Survival of the Cities, 1973, p.104.

Fig. 4 Old London Bridge. A mix of housing, commerce and transportation route.

Reference: Dimitri Procos, Mixed Land Use, 1976, p.15.

This example for non-destructive urban intensification, opens avenues to contemporary urban mix of housing, shopping arcades and transit systems in one homogeneous structure. Many other conjunctive uses of bridges in Bath, and Birmingham in England were found with housing and shops established on them. In addition, there were examples in Paris of housing developments on urban bridges which suggest an exemplary variety of such conjunctive housing type.

In a mixed land use development with a housing content, the distinctive advantages are duly respected by many. Donn Logan, when teaching at the University of California in Berkeley, wrote about mixed use centers and considered that

> "a large resident population will provide continuous activity for the complex. Institutional and social service uses can provide an added dimension to the usual list of activities, and should be given more consideration in the development of mixed-use programs." (9)
>
> Donn Logan, "Anatomy of mixed use".

The present generation of planners and architects will have to learn to deal with diversity as a design problem. Equitably speaking, a good number of elements that promoted mixed-use fifteen years ago, are still the same, namely "enlightened citizens, environmental legislation, special zoning districts, rising construction costs, and the energy crisis ". (10)

The opposite of diversification of land uses would be the advocacy of unifunctional or homogeneous land use. Zoning regulations, in many instances, play a part in standardizing the environment, not to speak of the elimination of optimal and efficient use of many of our urban resources. It simply nullifies the opportunities for the ever-changeable and ever-growing city life in communities.

In the midst of the 'modern' trend of "unifunctional centers" such as industrial centers, civic centers, shopping centers etc., Victor Gruen's argument is that this

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(9) Donn Logan, "Anatomy of mixed use", Progressive Architecture 5:76, p.57.
(10) ibid., p.57

advocation was "contributing to the sickness of our cities and the downfall of true urbanity." This belief can be cited with reinforcement by many other scholars.

Urbanity is the quality of being characteristic of a city. "The city is in itself the powerful symbol of a complex society," denoted by Kevin Lynch. (11) The complexity demands careful planning and management. Loose devices need to be curbed into a functional whole. One of the researches of the past quarter of a century concentrated on re-introducing additional uses to high-priced inner city projects. Mixed use developments, measured a profitable return, are brought to experimentation. Edmund Bacon evaluated that mixed use developments may

> "...intensify the richness of living, enhance people's range of experience and create easy access to a nearly inexhaustible variety of activities. Mixed use developments are designed at a human scale and represent a positive attempt by the development community to achieve the public objective of keeping central cities alive and making cities a viable organism. In addition to enhancing downtown, they also facilitate focal points of regional significance." (12)
>
> Tahvildari, The downtown shopping center : an enquiry into the urban marketplace.

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(11) Kevin Lynch, The Image of the City, 1960, p.5.
(12) R. Witherspoon, Urbanland Institue, Mixed use Development Handbook, p.8, cited from Tahvildari, The Downtown Shopping Center : An Enquiry into the Urban Marketplace, 1985, p.122.

Mixed use developments genuinely require a healthy mix of people and uses. Coupled with certain favorable determinants, there could be profits that such a mix affords to offer. As Suzanne Stephens reckoned,

> "Therefore by means of incentives offered to developers in the form of additional floor area, to a relaxation of certain density, height, or setback restrictions for mixed uses, legal means are being concocted to lure private interests into ventures that will reinforce a district's economic and social vitality." (13)
>
> S. Stephens, "Mixed-use Buildings - Microcosms of Urbanity".

In today's cities, urban services tend to be agglomerated and many social functions are choosen to take place in urban cores. Other activities, festive or otherwise, such as carnivals, theatres, night club, entertainment, hotels, shops, cafes and restaurants tend also to cluster. (14) This becomes the mechanism that generates the coming together of people. Naturally, the concentration and mix of different land uses make possible the optimized utilization of urban resources, which could only be unilaterally patronized by seperated land uses. This brings us to the summary of the merits and drawbacks in the following areas:-

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(13) S. Stephens, "Mixed-use Buildings - Microcosms of Urbanity", Progressive Architecture 12:75, p.37.
(14) C. Alexander, A Pattern Language, 1972, p.59.

1. Effectiveness of the city's infrastructure and public services.

2. Enhancement of development in terms of land values, density etc.

3. Opportunity for the continuing 'internal regeneration'.

4. Ability to bring equitable distribution of users and avoidance of monotonous activities. Importance is the diversification in the uses.

5. Accommodation of a twenty-four hours use of the established functions.

6. Ability to make urban living, such as apartment living in inner city, more feasible and viable since it can equitably distribute the cost of housing.

7. Prolongation of the economic life in the city center.

8. Enhancement of the "catalytic" effect on community development than in single purpose projects. It may stimulate further revitalization projects to happen. Its presence as a city center, a meeting place for its citizens.

After displaying the various advantages that conjunctive housing seems to offer, limitations and drawbacks must also be taken into consideration. One of the problems may have been the coarse grain of these mixed use development which has tendency to destroy the scale of surrounding neighborhood. Also, the loss of street life due to internally oriented traffic patterns of users within the complex, or around the galleries or courtyards becomes a factor. A loss of pedestrian activity along the streets threatens many who bear the utmost concerns about the economic life of shopping streets. This appears to some critics as the seclusion and isolation that will eventually deteriorate the integrity of street life.

CHAPTER 3 : TYPOLOGY

3.1 MIXED USE HIGH RISE DEVELOPMENT WITH HOUSING COMPONENT

Housing content is very often integrated with various other functions in a building complex of mixed use development. A series of examples are presented for identification. The layout of housing components as well as other urban functions represent different approaches and organizational methods which, in most of the cases, might be the result of programmatic requirements. There might also be the result of a delicate arrangement and juxtapositioning of components in response to the functional needs of categorical types of activities. Following are some selected examples to illustrate the three major types of development.

The merits and advantages of mixed use high rise development ensure its occupants the possibility of having layered separation where the hierarchical realm of privacy can be achieved. The usual arrangement of the housing component in buildings is located on the higher levels where tenants can enjoy better light and view. Because of the height, the residential users can be isolated from the hustle and bustle of the downtown streets, both physically and psychologically. Yet, they are residents of dwellings in the heart of the city.

Sometimes we may wonder if there should be a way pointing towards new dimensions of town use, habitation and lifestyle

for the downtown working population. An example that accommodates six additional floors of housing within and above an existing office building suggest to us a promising flexibility of conjunctive housing concept. This example is a reinforced concrete building known as the Film House on 22nd Front Street West in Toronto. The office of Bernard Pasch tackled the problem by responding to the new criteria for the Toronto core giving bonuses for housing as a replacement for office density. (Fig.1) Genuinely,

> "because the political events in Toronto favoured mixed commercial and residential development in the downtown commercial core, particularly within one building, the feasibility of adding a residential component to this building was studied." (1)
>
> Citation of Projects, The Canadian Architect.

The residential addition created a total of sixty-six apartments wrapped around a large central landscaped court (Fig.2) which receives natural light from large overhead skylights. The height of the building is not so dramatic, apart from view (residential locations on top floors) and privacy (residents will be serviced by residents' elevator, segregated from the public elevator, from the ground lobby), the interaction, both visual and psychological, with the central court is achieved successfully by facing the dining room windows thereto.

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(1) Citation of Projects, The Canadian Architect, Feb.,1976.

Fig. 1 The Film House, Toronto, Ontario.
Architect : Bernard Pasch.
Reference : The Canadian Architect, Feb., 1976, p.42.

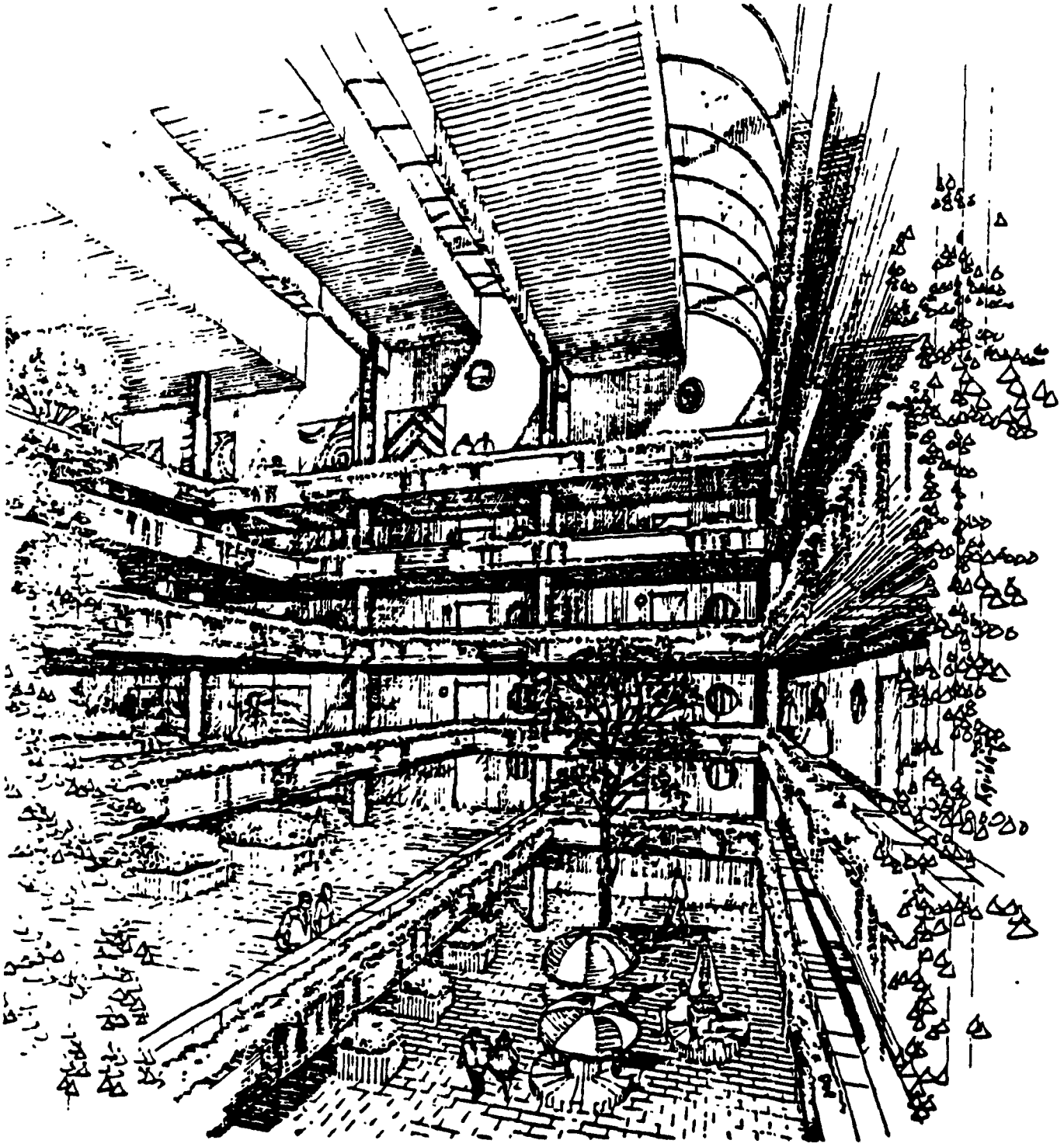

Fig.2 View of the central court, Film House, Toronto.
Reference : The Canadian Architects, Feb., 1976, p.41.

The court because in design nomenclature of its placement and dominance, becomes a characteristic feature in this mixed use project that ties and integrates the various functions together.

The proposal falls into the category of high rise development, since the original mid-rise definition for the existing eight stories office building was expanded into a fourteen stories high conjunctive housing project. (Fig.3) In fact, the design received two positive comments, one from Fred Lebensold and the other comment by Barton Myers,

> "this is a commendable effort to mix commercial and residential development in downtown Toronto. It is only in the manner in which this project is carried out that something could be hoped for." (2)
>
> Citation of Projects, The Canadian Architect.

> "Five or six floors of housing or mixed use development' The layered city' Given the programs of community support, schools and other facilities, to make it comprehensive socially, it leads one to all kinds of speculations' (3)
>
> Citation of Projects, The Canadian Architect.

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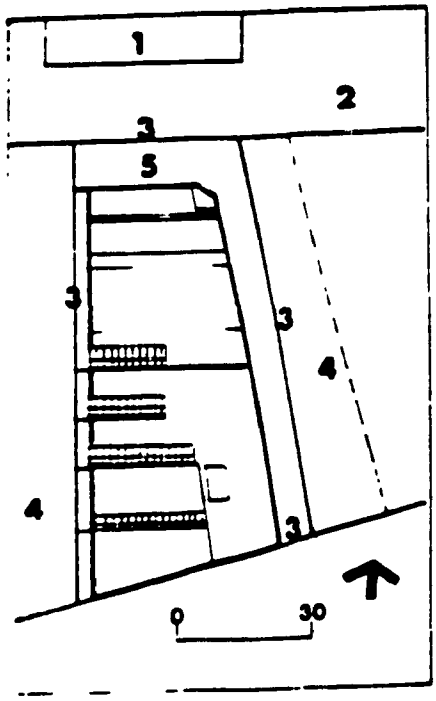
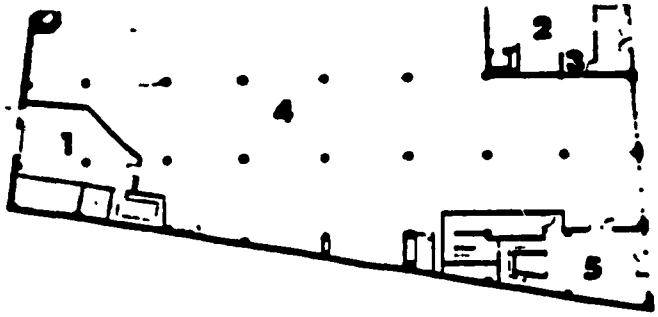
(2) Citation of Projects, The Canadian Architect, Feb., 1976.
(3) Ibid.



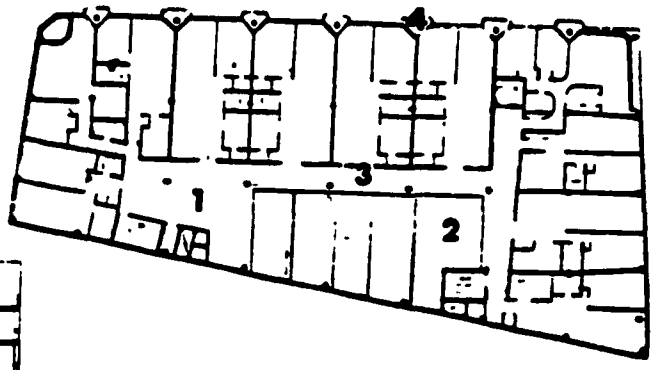
SITE PLAN

1. Brick Building
2. Old Brick Building
3. Property Line
4. Parking Lot



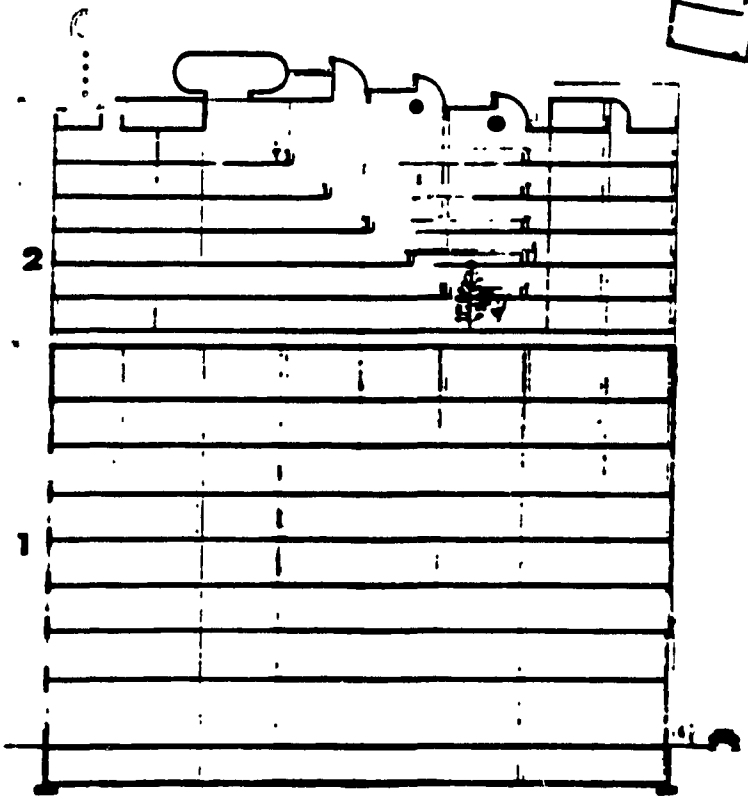
STREET LEVEL PLAN

1. Rear Lobby
2. Residential Lobby
3. Mail
4. Office Space
5. Office Lobby



RESIDENTIAL FLOOR

1. Landscaped Terrace
2. Six Storey high Garden Court
3. Corridor
4. Planter



NORTH - SOUTH SECTION

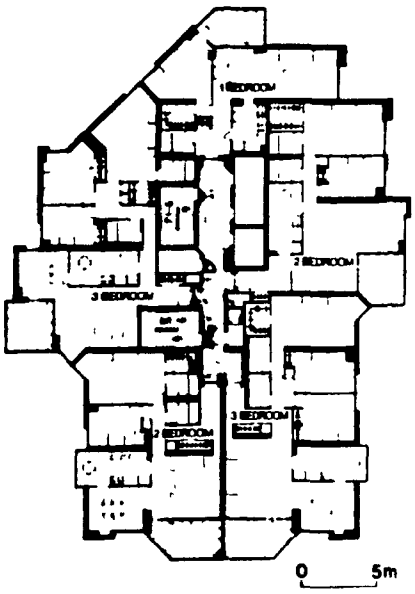
1. Existing Eight Storey Office Building
2. Six Storey Residential Addition

Fig. 3 Site Plan, Street Level Plan, Residential Floor Plan and North-South Section. Film House, Toronto.
Reference : The Canadian Architects, Feb., 1976, p.43.

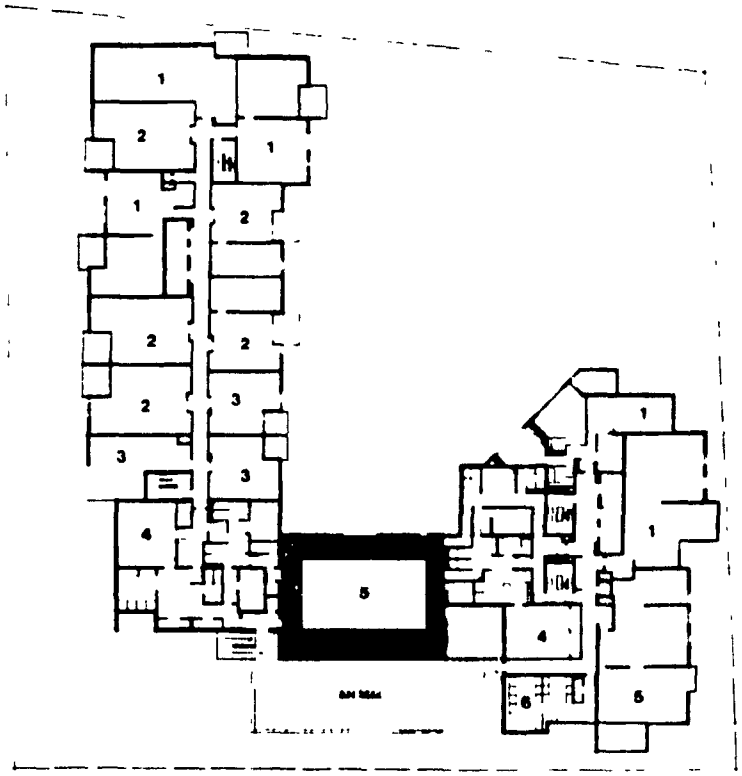
For the developers, a mixed use high rise development promises a more flexible use of space with a combination of more diversified functions. And this relates inseparably to the feasibility of the project at the onset of the planning process. Due to the high value of urban land, economic terms always come into the picture and become a major concern for any development venture. A measure to achieve a securable return in a development derives from optimization of buildable spaces on the building lot. In other words, by achieving a higher density in the project ensures certain confidence onto the developers. Of course, it also involves some skillful planning techniques to overcome certain barriers such as zoning regulations, FAR (Floor area ratio) limitations, landuse components to be incorporated in the program and the correlated marketing projection for future returns and profits. All these factors are linked to the realization of the project.

Housing content comes handy in high rise development because it ensures the anchoring down of a good proportion of the residential population that will end up sustaining other functions mixed therein. For example, in The Bay Charles Towers in midtown Toronto (Fig.4), the original zoning was for commercial use, but after a review by the city of its central area development policies, this was modified to permit a commercial building designed for a density of twelve times of the lot area, this enabled the architects to

Fig. 4 View of the Bay Charles Towers.
Architect : Klein and Sears.
Reference : The Canadian Architect, October 1981, p.21.

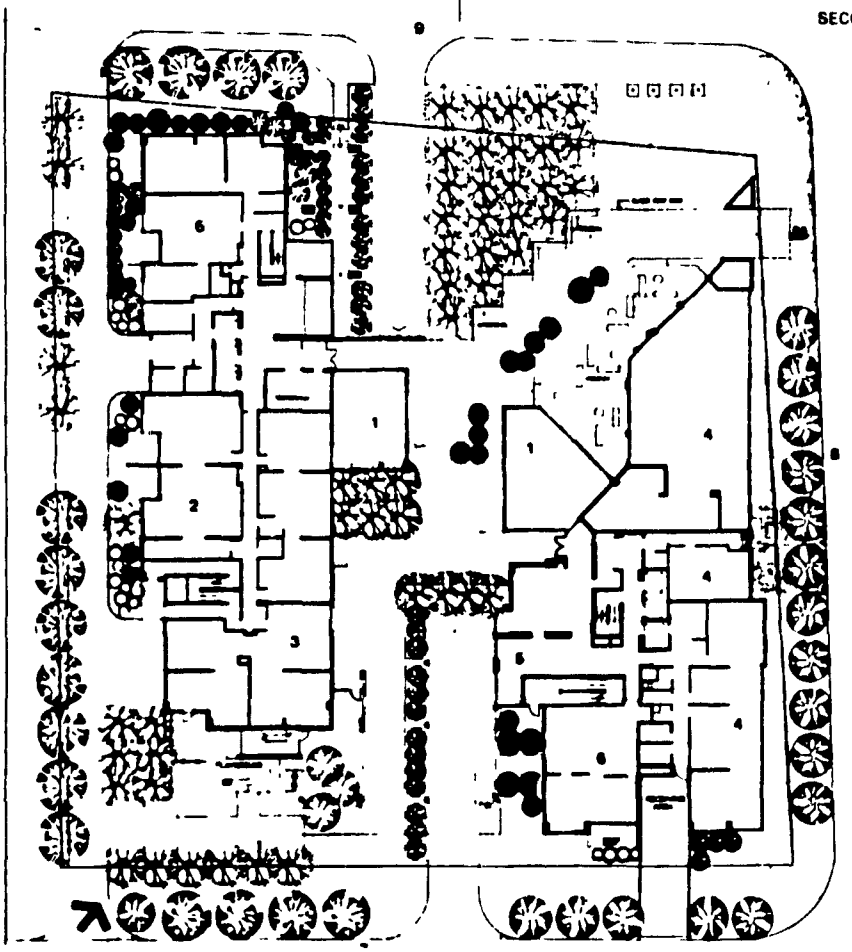


EAST TOWER TYPICAL FLOOR PLAN



SECOND FLOOR

GROUND FLOOR



SECOND FLOOR
1 two bedroom
2 one bedroom
3 bachelor
4 exercise room
5 three bedroom
6 laundry

GROUND FLOOR
1 open to below
2 party rooms
3 recreation
4 retail
5 lobby
6 superintendent
7 St Mary St
8 Bay St
9 Charles St W

Fig. 5 Plans - Ground Floor, Second Floor and East Tower Typical Floors. The Bay Charles Towers, Toronto.
Reference : The Canadian Architect, October 1981, p.22.

generate a mixed use development scheme combining two residential buildings and commercial facilities.

> "The residential buildings contain 20 storeys (246 units) and 32 storeys (148 units) with recreational amenities including an indoor swimming pool provided jointly at the second floor. Retail space is contained at grade level and parking in an underground structure." (Fig.5) " The development reflects the planning criteria of the city in that it provides some reinforcement of the existing commercial uses on Bay Street and at the same time provides a transition between the commercial and residential institutional uses to the west. The covered pedestrian space is a nice public feature on an intensely developed commercial street." (4)
>
> The Bay Charles Towers, Toronto, The Canadian Architect.

The altered density permission resulted not only in the sustainability of commercial activities in the project and its surrounding but created a considerable amount of inner city residents living in these two residential blocks, altogether 394 units.

The architecture office of Klein and Sears has also designed another project in Toronto employing the conjunctive housing concept. The Holly-Dunfield mixed housing development (Fig.6 and 7) creates layered precincts. Designed for both family and non-family housing, this project maximized the

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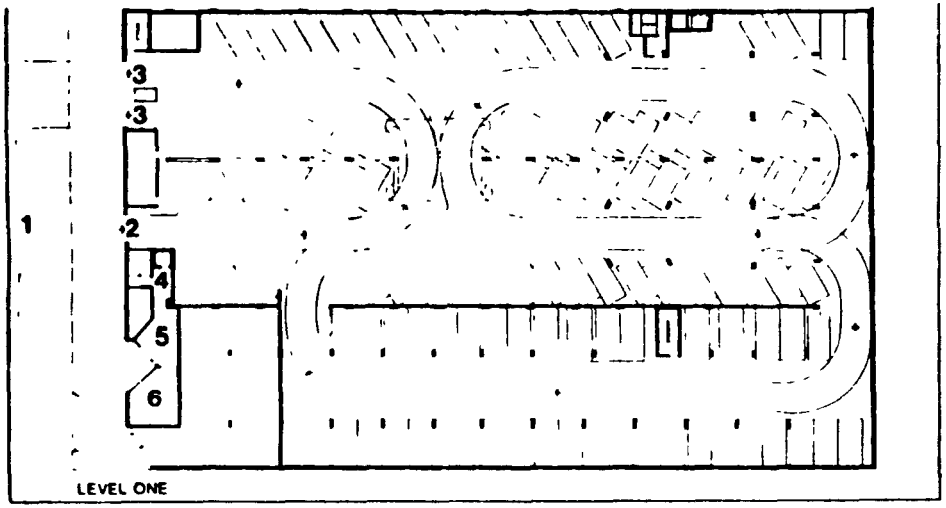
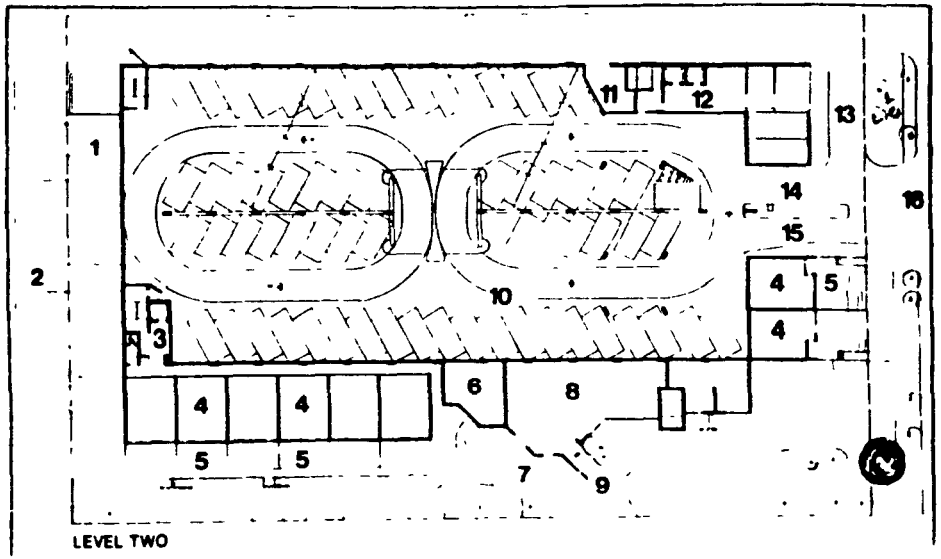
(4) "The Bay Charles Towers, Toronto", The Canadian Architect, October 1981. p.20-24.





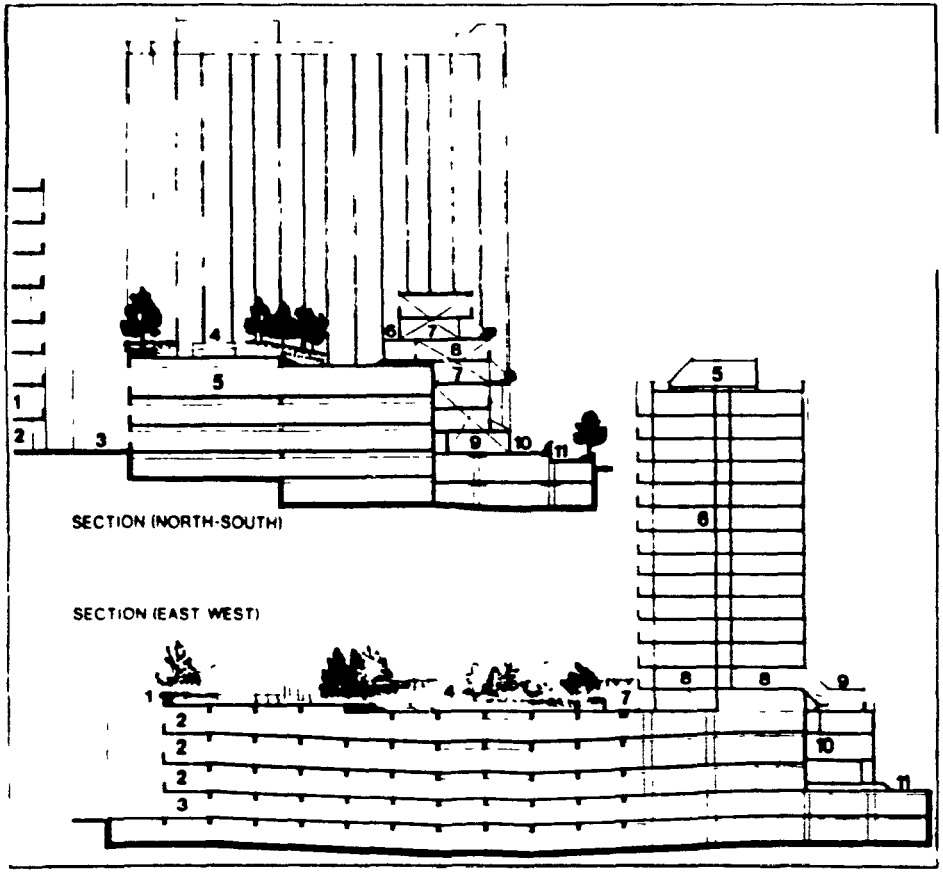


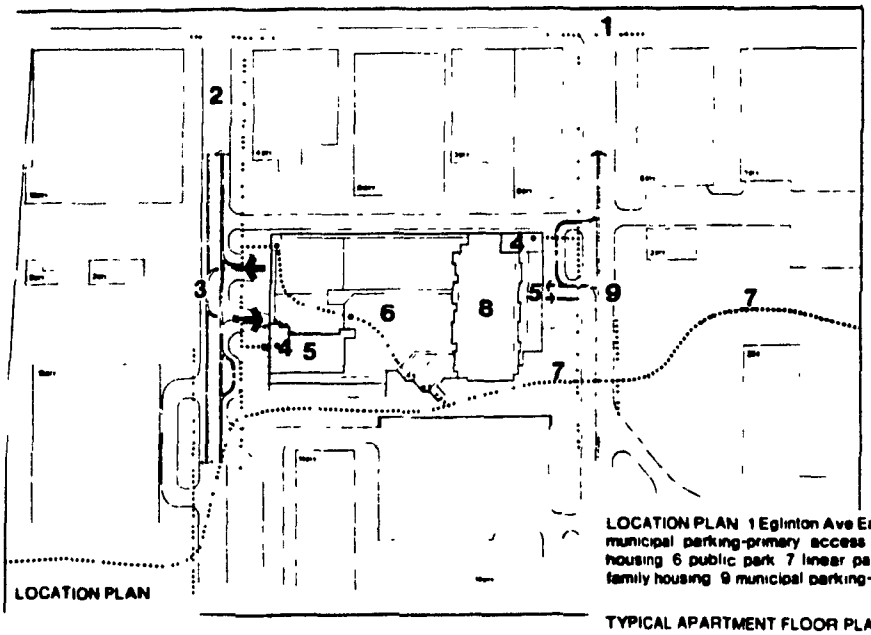
Fig. 6 Level Plans and Sections showing Holly-Dunfield Mixed Housing in Toronto, Ontario.
Reference : The Canadian Architect, December 1976, p.48.

LEVEL TWO 1 exit 2 entrance 3 lobby 4 family housing 5 private yards 6 mechanical space 7 outdoor play area 8 children's recreation area 9 walkway 10 municipal parking 11 garbage room 12 apartment lobby 13 drop-off 14 emergency entrance 15 emergency exit 16 Dunfield Street

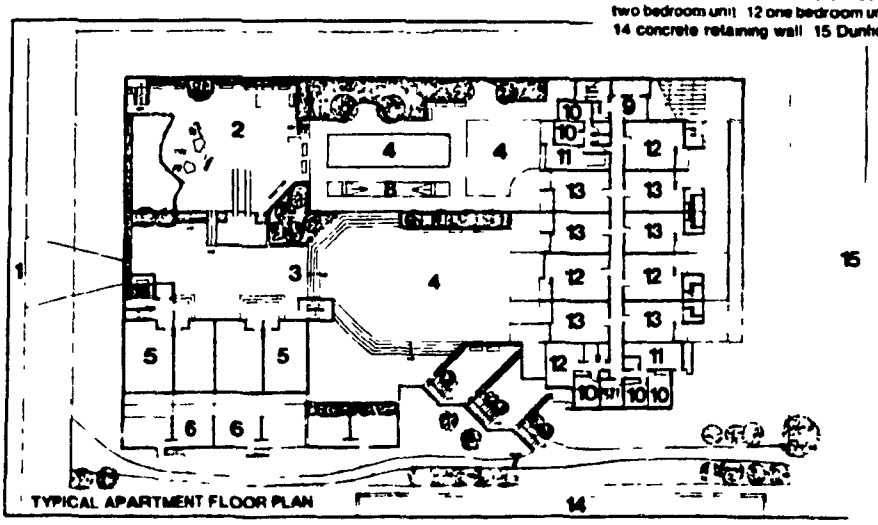
LEVEL ONE 1 Holly Street 2 entrance 3 exit 4 elevator lobby 5 vestibule 6 mail and storage

SECTION (NORTH SOUTH) 1 adjacent office building 2 parking 3 lane 4 public park 5 municipal parking 6 gallery 7 family units (two storey three bedroom) 8 family housing 9 family units (three storey four bedroom) 10 private yards 11 walkway

SECTION (EAST WEST) 1 main deck 2 parking 3 Holly Street 4 public park 5 mechanical room 6 non-family housing 7 private yard 8 upper level of two storey unit 9 family housing 10 four bedroom unit 11 Dunfield Street



LOCATION PLAN 1 Eglinton Ave East 2 Holly Street 3 municipal parking-primary access 4 lobby 5 family housing 6 public park 7 linear park walkway 8 non-family housing 9 municipal parking-secondary access



TYPICAL APARTMENT FLOOR PLAN 1 Holly Street 2 children s play area 3 public park 4 lawn 5 upper level two storey, three bedroom unit 6 private yards 7 walkway 8 shuffleboard 9 elevator lobby 10 bedroom 11 two bedroom unit 12 one bedroom unit 13 bachelor unit 14 concrete retaining wall 15 Dunfield Street

Fig. 7 Location Plan and Typical Plan, Holly-Dunfield, Toronto, Ontario.
Reference: The Canadian Architect, December 1976, p.47.

conjunctive usage of municipal parking which is by its own virtue a public facility by situating a public park above the parking structure. Service and other support systems serving the housing units are arranged lineally on two perpendicular sides of the lot. The sections indicate a layout pattern which can be considered as vertical separation of different uses. This issue of vertical separation will be discussed and analyzed in Chapter 4.

Infrastructure itself requires a vertical circulation system to be stacked together. This may ensure a more economical use of the systems and spatial arrangement around it. Also, the layout of such services and the other associated support systems can be much more simplified for the users to follow. Therefore, it can prove to be a better orientation for the users themselves or visitors to the complex.

The vertical movement of people becomes a characteristic in many of these types of mixed use developments. Transiting large numbers of users in the complex usually requires numerous banks of elevators, ecalators, corridors, concourses, and, on accassions, even skywalk within an atrium, or likewise, in an interior court. Critically, circulation spaces generated by unskillful planning may sacrifice profitable rental spaces. Without careful and articulated planning, circulation spaces could lend to jeopardizing the functional cohesiveness of the complex.

From our urban design point of view, a mixed use high rise development may open up more space for accommodating a plaza or a concourse at the ground level which may become a feature so much enjoyed by both the public and the users of the building. Since it provides an area where different types of activities can happen in and around the building. The possibility of open spaces is usually denied by the physical demands of this type of development on small urban sites.

Many designs entertain the idea of maximizing rental spaces, others may give away certain functional spaces to circulation purposes. Inefficiency in spatial planning and organizing will easily compromise these 'open spaces' away. 'Open spaces' can create and stimulate interaction among the public and can create dialogue between the public and the established functions and activities housed inside these mixed use high rise developments.

Due to the desire to create greater density as well as due to the notion of being the representative image in the cityscape, the scale of many mixed-use buildings may at times overwhelm surrounding buildings. The examples on pages 82 & 83 illustrate how imposing such buildings have become in their respective cities.

The optimization process that instills creation of more occupyable space to higher levels results in huge towers

that dominates the skyline of a city. It also lures a considerable number of objections and protests by some city dwellers. Since high rise development may take away the access to perpetual sunshine of many of the surrounding lower buildings, perpetual shade results preventing the enjoyment of sunshine, a right they are entitled to; this has been an issue of many discussions in the urban design realm.

Form generation is a major concern of this type of high rise conjunctive housing. Creation of dominant towers nurtures the competition for more zoning and F. A. R. conversion or amendment to air right restrictions. Gradually, this competing "high-rise tower" stereotype brings resonance, from both the professionals and the public alike concerning the phenomenon of shaping our city scape. Scale and characteristic of high rise development in conjunctive housing to a certain extent dominate the life of our urban dwellers.

The scale of high rise mixed use development originates from the early schematization when programmatic requirements were laid down. The obvious fact is that by making the project feasible, optimization of any probable and buildable space, ground to air, would be considered. Commonly, the attempt to gain maximal inclusion of all programmed uses caused the generation of a megestructure. With limited urban site area

coupled with limited opportunities to expand horizontally, invariably a large scale development will result.

In Chicago, both the Hancock Center (Fig. 8) and Marina Towers (Fig. 9), testify to the seemingly encapsulations of downtown's adoption of large mixed-use buildings as their emblem. They are truly synonymous in scale and height to skyscraper type of high rise towers. Both are products of giantism as many North American cities adopted not more than a quarter of a century ago. Nevertheless, they take a sculptured appearance, contrasting each other and identifiable in their respective character by many of the city dwellers and visitors alike.

Fig. 8 Hancock Tower, Chicago, Illinois, U.S.A..
Reference : SOM, Architecture and Urbanism, 1973-1983, 1984, p.105.

Fig. 9 Marina Towers, Chicago, Illinois, U.S.A..
Reference : Architecture in Chicago and Mid-America, (Canada: McClelland & Stewart Ltd), 1968, p.174.

[illegible] twin towers each with 42 stories of apartments carrying [illegible] balconies. They stand by the canal in the city center where the dual "common-the-loop" becomes a logo for the building itself. Its outstanding character attracted movie-makers which in turn got the building more fame and popularity. At the base are car parking of spiral ramps superimposed on commercial facilities and a marina, which contributed later to many on-going discussions about the "magnet for transportation" or numerous high rise mixed use development proposal.

The John Hancock Center was even bigger, as described by Dimitri Frodon,

> "In Chicago, long given to the gigantic building solution, the John Hancock Center's tapered silhouette, already a landmark, encloses from the bottom up 5 stories of commercial space, 6 stories of parking, 30 stories of office space, 50 stories of apartments, which with observation decks, restaurants, television equipment, and assorted mechanical hardware come to a very grand total of 100 stories". (5)

Dimitri Frodon, Mixed Land Use.

Even though these two exemplar high rise towers carry their respective significance in the evolution of high rise construction housing building type, there are other new building types emerging in the content of mixed use programs. Under different circumstances of mixed use environments, the form, scale, character are apt to explore inherent possibilities for change.

(5) Dimitri Frodon, Mixed Land Use, 1978, p. 31.

3.2 MIXED USE MEDIUM RISE DEVELOPMENT WITH HOUSING COMPONENT

In exemplary highrise development projects discussed above, the common characteristic was the arrangement of mixed uses based on the combination of several to many diversified functions in one planned development package. The urban services tended to be agglomerate, while the social infrastructure therefore could be made more efficient. This gives an impression that the mechanism of a mixed use complex can be almost associated with the general purpose community, providing our urban dwellers with more diversified offering of services. Hence, mixed use complexes tend to be bigger and larger.

It is a basic concept for many people that in the typical mixed use development, retailing is one of the key project components. Furthermore, retail environment as the main factor of diversity and movement, must physically and functionally relate to a series of other uses. Therefore, the agglomeration of all kinds of uses generates the unusual 'bigness', some calling it 'Giantism'. Though 'giantism' (in retail market) opened up opportunities for mixed use, today there are contemporary trends dealing in our urban scape with a much more careful approach. Encountering all the constraints imposed on urban land, such as the zoning regulations, height limitations, and even contextualism, the larger and impersonal products of the aforementioned high

rise category may not be found to be a solution to conjunctive housing problems. Mixed-use giantism has to a certain degree filtered down to smaller buildings. And, these smaller buildings of comparatively timid scale offer an often amazing range of land uses within their limited space.

Therefore, a new category of medium rise development must be addressed, which ascertains the positivity of combining many desirable characteristics of both the low-rise and high rise developments. To further define such divisions, we can refer the housing users to the analysis done by Christopher Alexander and others in their book "A Pattern Language : Towns, Buildings, Construction."

In high rise buildings, residents enjoy horizon living, views having merely a remote contact with ground activities. This applies to all buildings above the limit of mid-rise.

In contrast, medium rise buildings usually enjoy an indirect contact with the ground. They commonly comprise 3 to 6 stories, in exceptional cases even 8 to 12 stories, with at least two elevators serving vertical circulation core. The practical advantage of medium profile building is that the building can be constructed without any sophisticated, if not conventional, building systems.

Low rise buildings may comprise only 1 to 2 stories, and it

appears frequently having 3 stories with no elevator service. Inherently, it has a more direct ground relatedness than the previous two catogories and is usually more suitable for families with children.

Mixed use medium profile development with a housing component tends to relate its dwellers to functions and activities evolving around them. This generates some patronage in the complex and helps to stimulate more interaction between residents and its other users.

Since medium use developments seem to shy away from megastructures and large scale mixed use high rise developments, they lend themselves to the possibility of greater ease of blending with the existing urban fabric. That is to say, medium profile buildings will not create for themselves too drastic a contrast in terms of scale, height, form, shape and contextual response.

From antiquity to the present time, the pleasant combination of commercial uses at ground level and residential uses on upper floors make us feel comfortable. This may have been caused by the convenience one can get from the adjacency of shops to where he lives. In fact, street front retails encourage more interaction from within and from the outside of the complex. More interaction guarantees a more lively environment as well as a more enduring sustainability.

The vertical circulation system, especially the elevator

core in this type of medium rise development can easily be utilized to its fullest. Though the average efficiency per unit serviced is low, codes and laws do not allow the absence of elevators, stairs and/or ramps in the medium rise conjunctive housing complex.

Following are several examples illustrating the various design efforts of mixed use medium rise conjuncting housing developments that were sensible and compatible in the urban context.

By the harbor in Vancouver, B.C., Arthur Erickson has arranged housing units on only the third floor level of an office building.(Fig. 10 & 11) Other floors are mainly used for office use, with garages occupying the bottom two floors. In this example, view is becoming the asset sharable, yet geared mostly towards the major occupants. The housing content is included as a subordinate component in this mixture. Although a gymnasium is even included in the living quarters level in this mixed use complex, the building rises to ten storey high from the ground.

Hoyt-Schermerhorn Mezzanine proposal in Brooklyn, New York, is a creation of new development land with mixed land use. (Fig. 12) The scheme includes public housing built over the existing mezzanine level of the Hoyt-Schermerhorn subway station. An eleborate network of retail and entertainment facilities will also be weaved into this new expansion

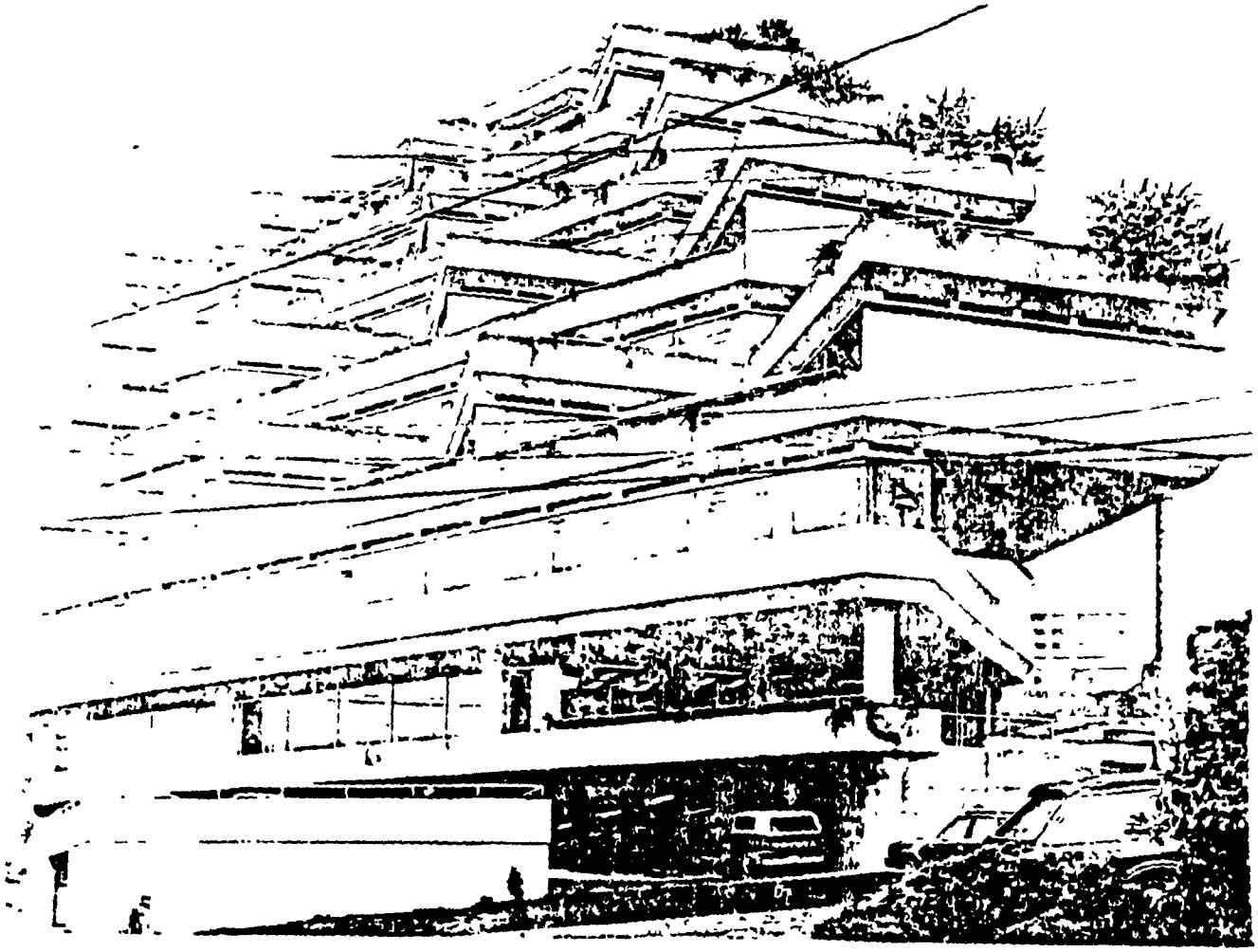
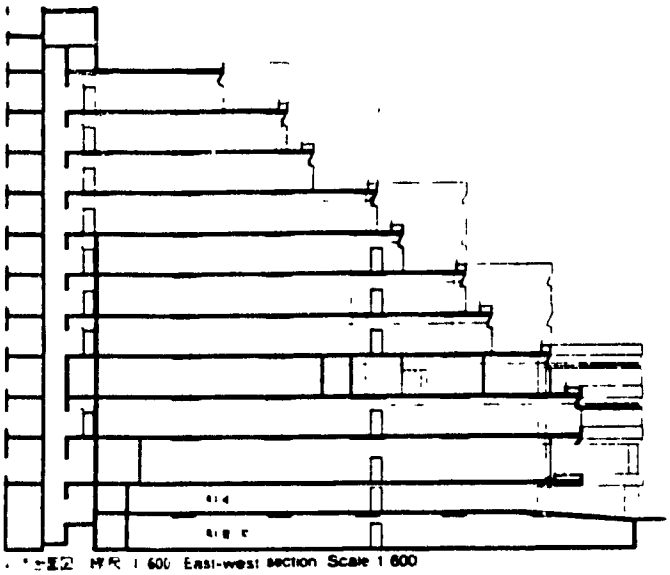
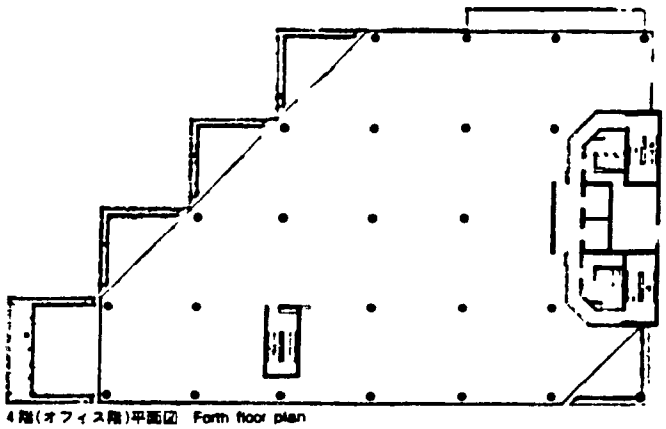


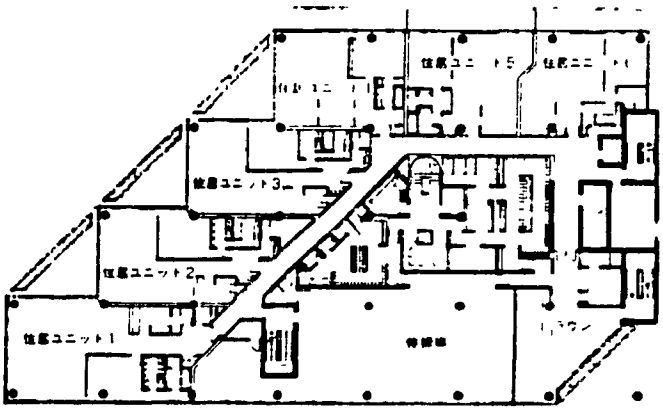
Fig. 10. Exterior View from the North, Office Building by Arthur Erickson, Vancouver, B.C..
Reference : A + U, May 1982, p.49.



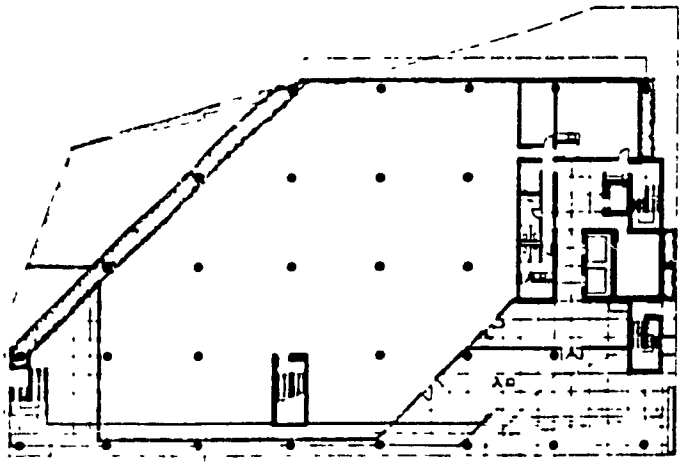
東西断面図 縮尺 1:600 East-west section Scale 1:600



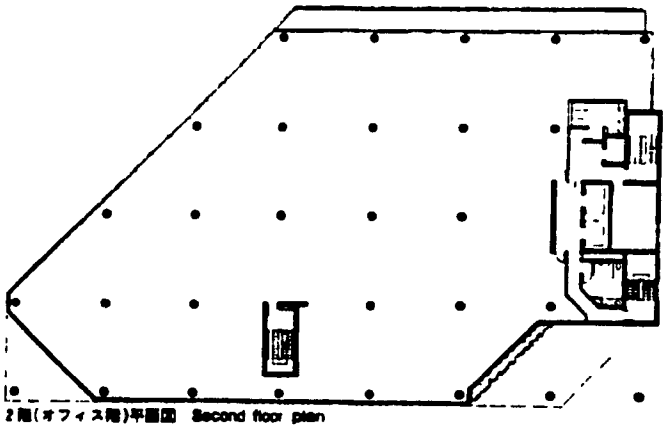
4階(オフィス階)平面図 Forth floor plan



3階(ヘルスクラブ/住居階)平面図 Thurd floor plan



1階(オフィス階)平面図 縮尺 1:600 First floor plan, Scale 1:600



2階(オフィス階)平面図 Second floor plan

Fig. 11. Plan and Section, Office Building by Arthur Erickson, Vancouver, B.C..
Reference : A + U, May 1982, p.53.

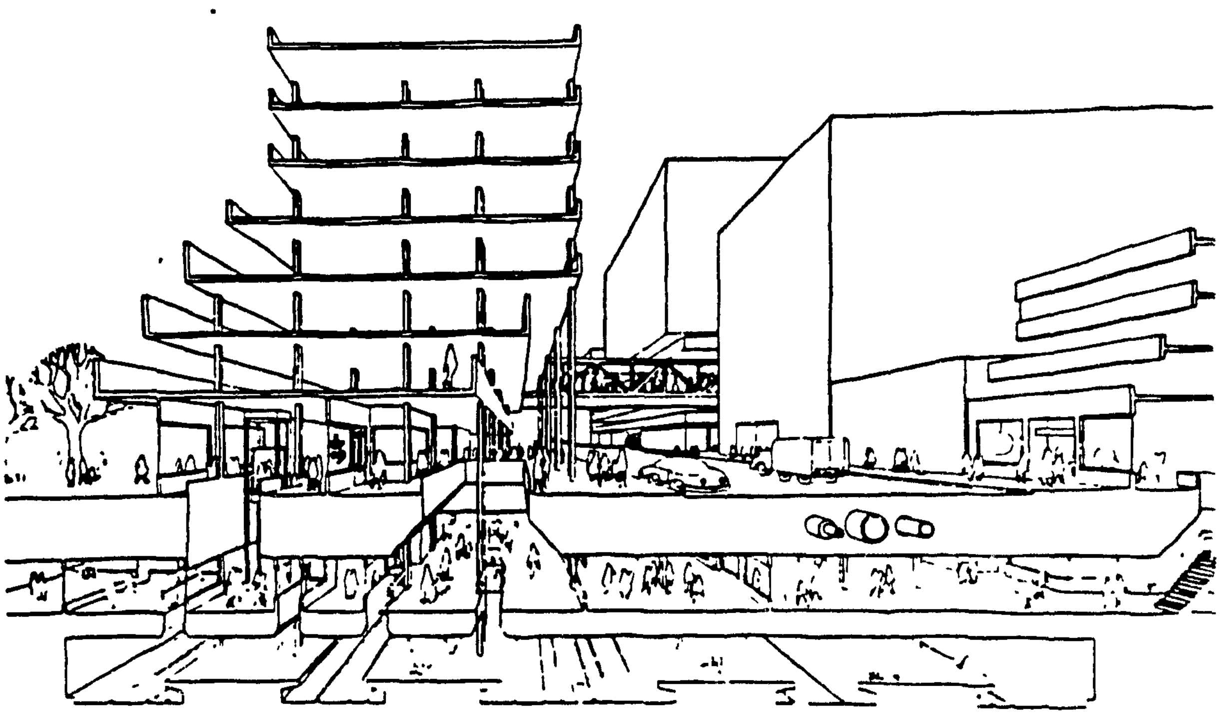


Fig. 2 Hoyt-Schermerhorn [illegible], New York.
Reference: Dimitri Procos, [illegible]

scheme of the station and will represent the evolvement of a single purpose subway station into a multifunctional mixed use complex with attention given to the use of public air space for conjunctive use possibilities.

Another alternative for conjunctive housing as proposed by Helmuth, Obata, and Kassabaum is the new headquarters of the International Amalgamated Union in Washington, D.C.. (Fig. 13) The proposed condominiums and offices are facilitated by seperated elevators and lobbies on different levels. This project tales advantage of recent zoning changes and aims at re-attracting residents to the city. The supports for this conjunctive housing scheme include :- Higher permissible FAR (Floor Area Ratio), to encourage in-city residential development, mixed use, to encourage urban vitality after working hours, and the stimulation of mass transit, to maximize planning benefits of the new metro system.

One Canadian version of mixed use development is the commercial development proposal in Gastown, Vancouver (Fig. 14) by Henriquez and Todd, architects. This proposal draws a categorical difference from its European counterpart that follows. The sectional perspective shows the North American preference for separating apartment floors from office floors in this mixed use building which even contains two theatres of 55,000 sf.. This proposal is seen as an experiment towards even smaller complexes.

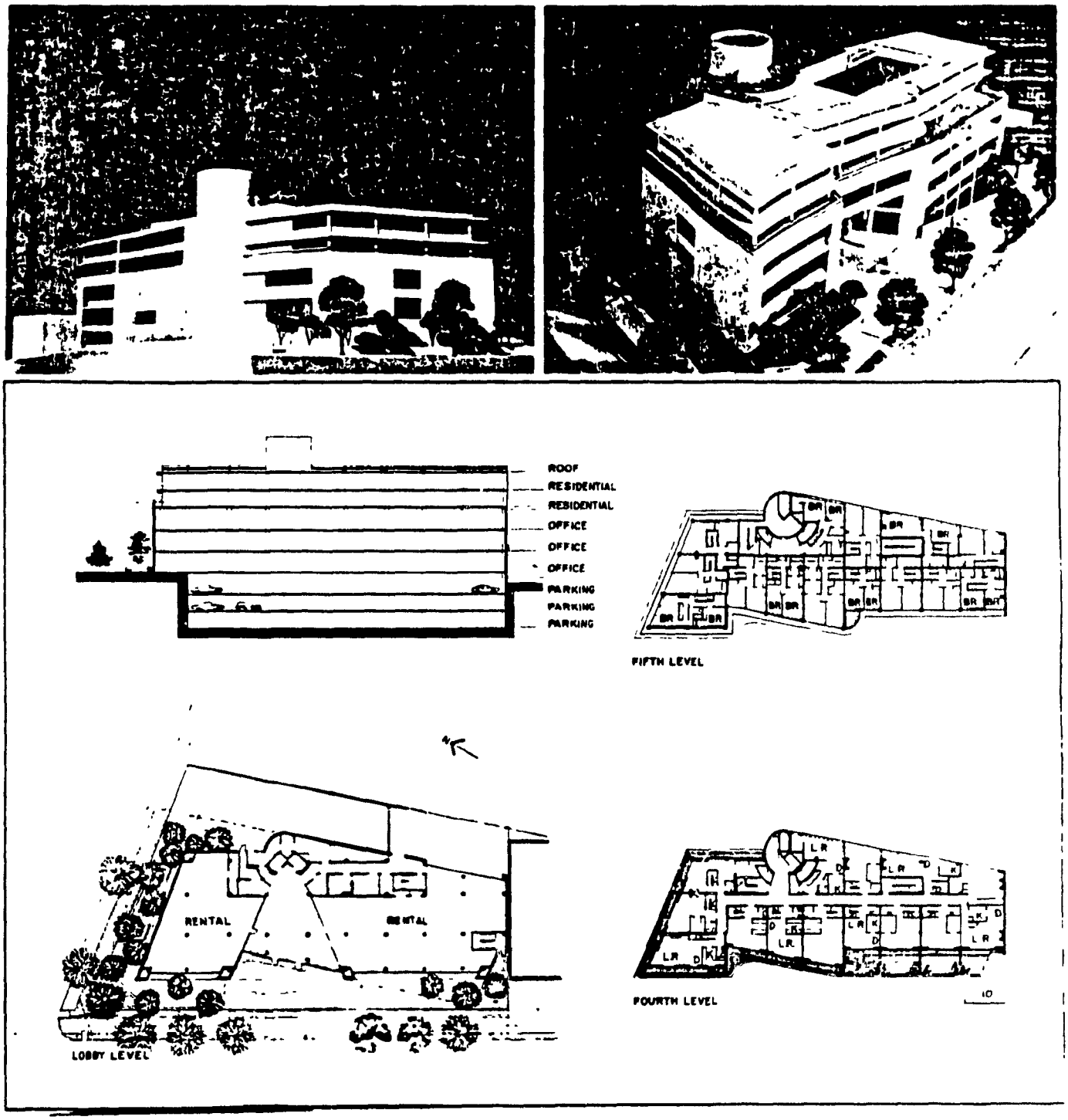


Fig. 13 Plans and Section, International Headquarters of the Amalgamated Transit Union, Washington, D.C.
Reference: Architectural Record, March 1980, p.124.

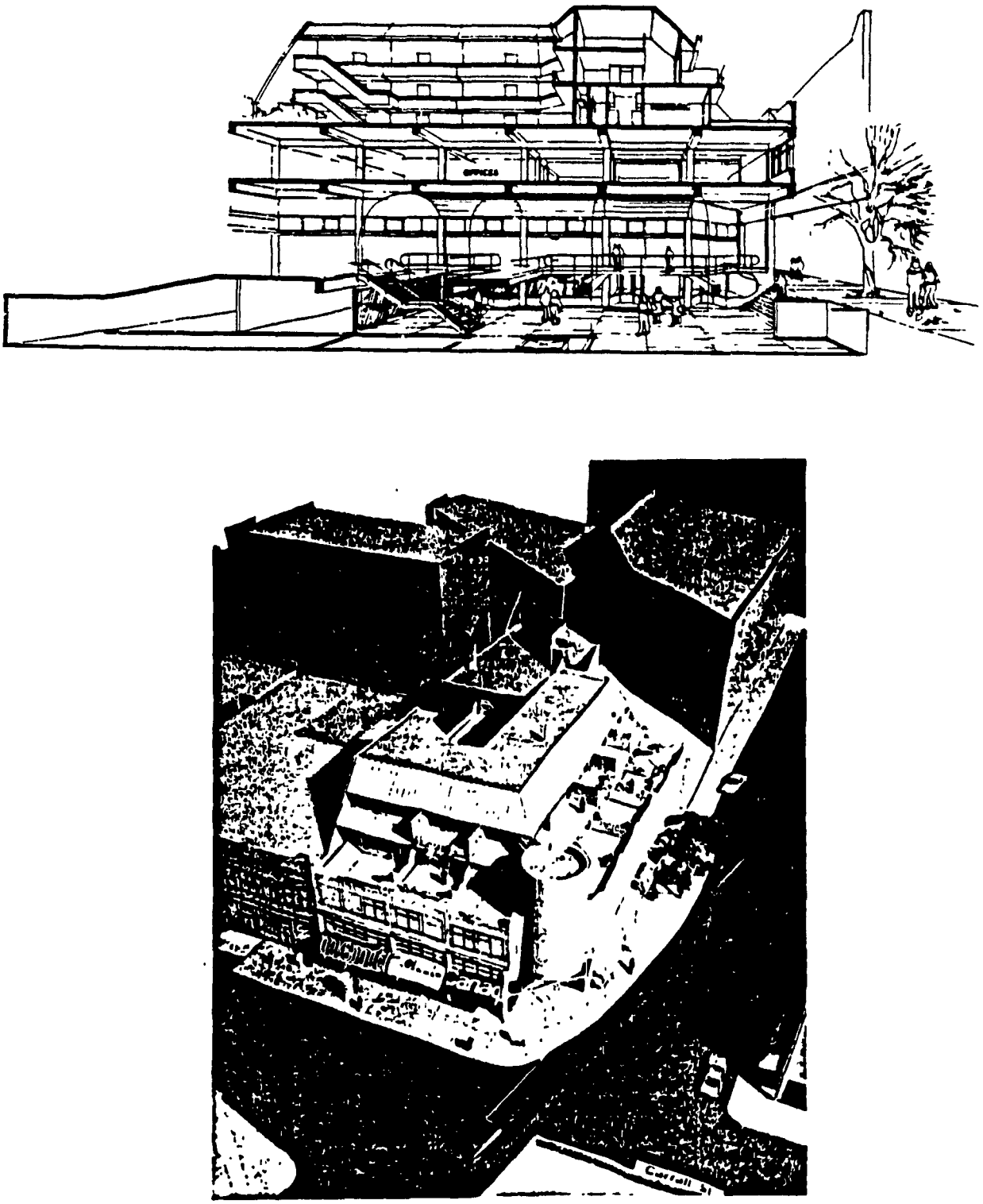


Fig. 14 Proposal for Commercial Development with Housing Component at Gastown, Vancouver, B.C..
Reference: Dimitri Procos, Mixed Land Use, 1976, p.114.

Gemeinschaftswarenhaus (Community Shopping Building) in Ratia, Davos, Switzerland (Fig.15) by J. Dahinden, exemplifies a pioneering attempt of physically integrating apartments and offices on two interlocking levels by common internal spaces. Such degree of integration of different land uses has been considered impossible in the past. This medium rise building also contains other urban functions, such as parking, restaurant and retail shopping.

Meyers and D'Aleos's new mixed use proposal for the redevelopment of Baltimore's inner harbor (Fig.16), Scarlett Place, consists of 66,000 sf. of commercial space, 181 luxury condominiums, retail shops and parking facilities. Articulation of terraced buildings in this four to thirteen stories high development renders a new image and identifies the demand of a sustainable urban living environmnet by urbanities.

This example of Scarlett Place has already been viewed by many as a national model for urban renewal that combines new construction into adaptive use through the conversion of turn-of-the-century seven-story brick warehouse into a ten-story office structure. The architects also realized their intention to create a stepped village reminiscent of a "Mediterranean hillside town", as reflected by the terraced buildings, the playful scale from a ground related loggia and colonnaded shopping tiers to elevated condominium towers. Moreover, they stretched the notion of medium rise

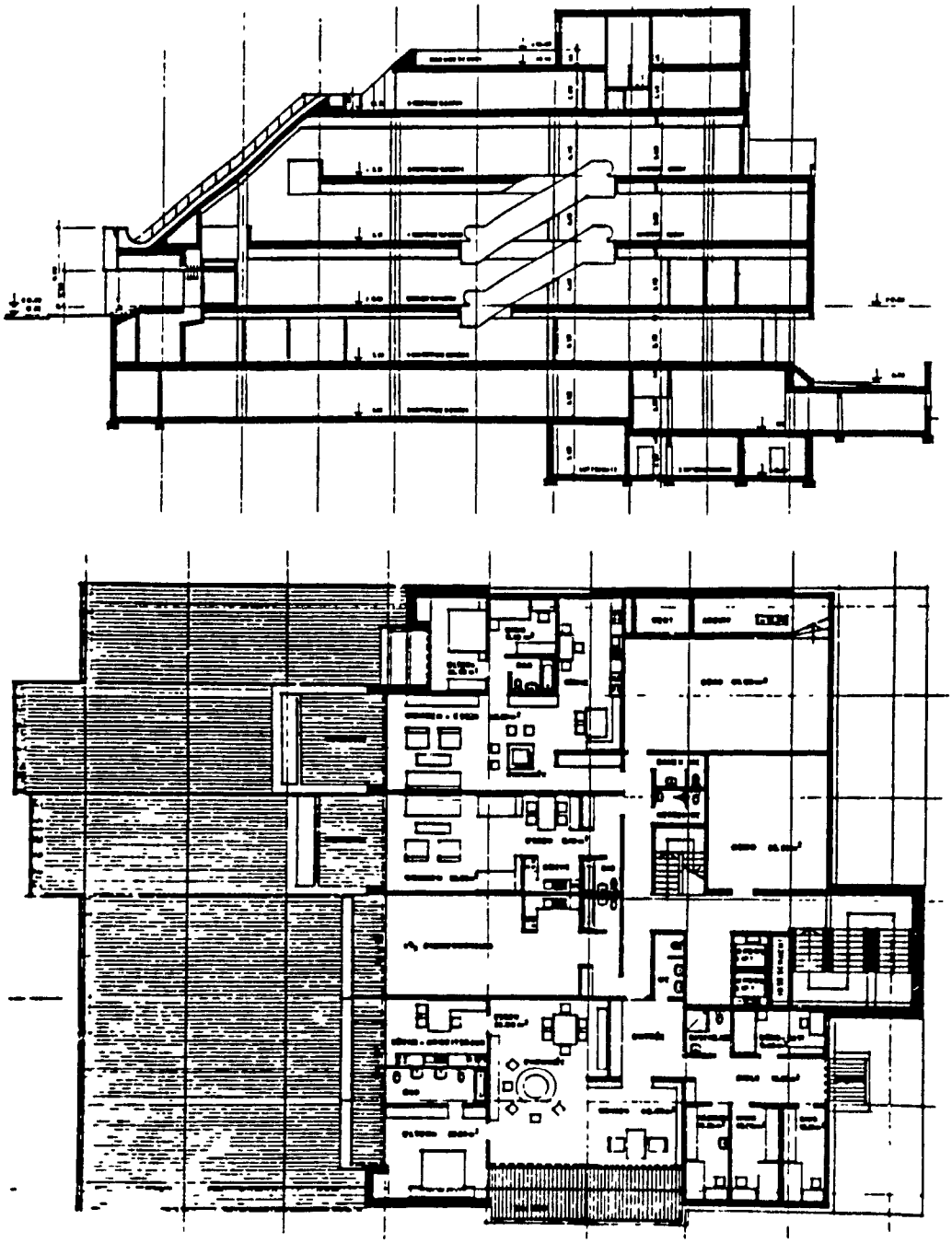


Fig. 15 Plan and Section of Gemeinschaftswarenhaus (Community Shopping Building) Patia, Davas, Switzerland.

Reference : Dimitri Procos, Mixed Land Use, 1976, p.113.

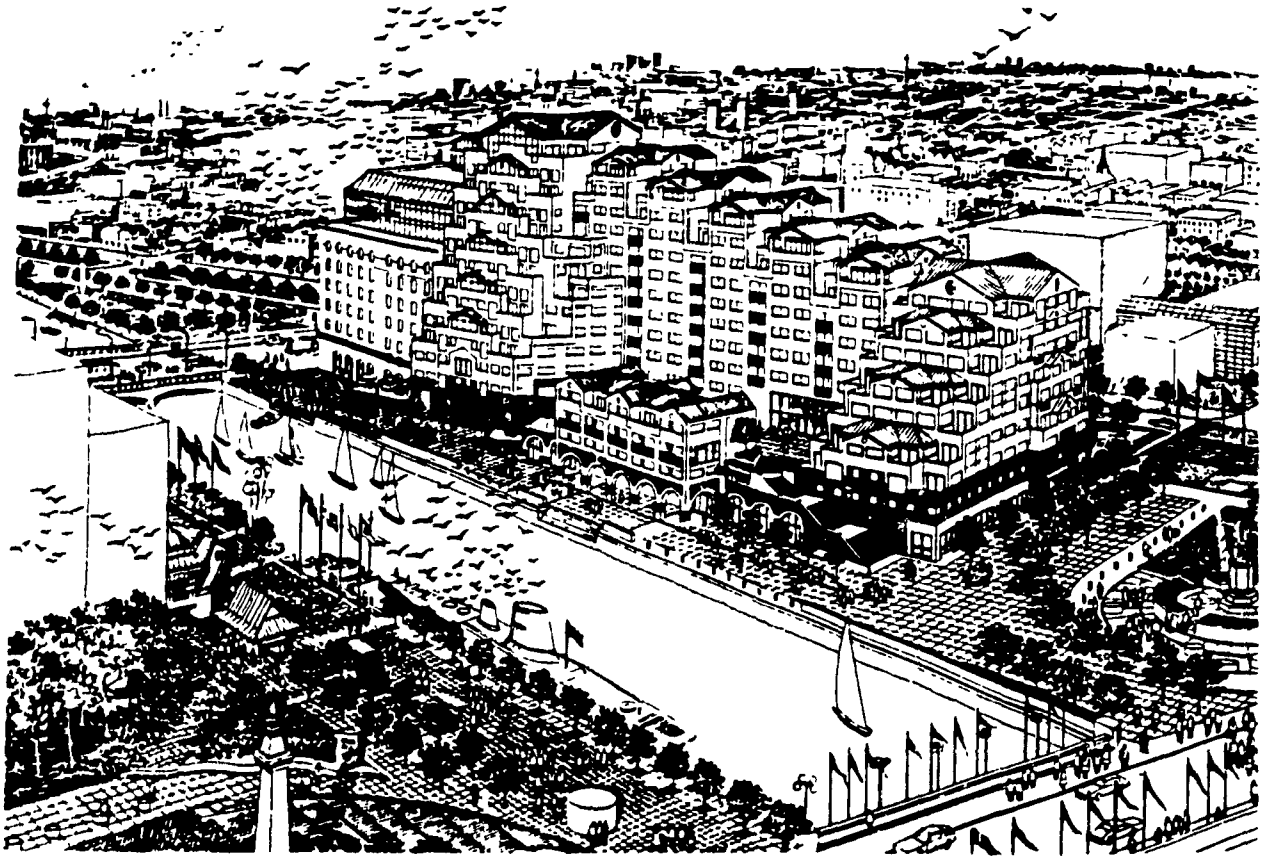


Fig. 16 Redevelopment Proposal of Scarlett Place at Baltimore's Inner Harbor, Maryland.
Reference : Design News, Architecture Record.

building to a high profile complex. The four to thirteen stories residential hubs stand not just for a basic supporter and sustainer to the revitalised urban surrounding, but also as a predominantly noticeable urbanistic signifier in the city's bustling Inner Harbour. If this conjunctive housing statement proves to be successful for the rejuvenation of urban life in the inner city, the matter whether medium rise or high rise may become secondary.

3.3 MIXED USE LOW RISE DEVELOPMENT WITH HOUSING COMPONENT

In low rise development schemes, it is also possible to meet the challenge of generating a project, appropriately fit on the site and responding to the demand of economic return by the owners and developers, while being sensible to the needs of its dwellers. It is clear that low-rise development stands for more imposing restraints in terms of profitability, with financing of the project being directly related to the incentive of the developer, zoning and building height restrictions, coding and fire hazards etc.. Sometimes, the limited size of acquired land disallows mixing of a wider range of uses, or to a certain extent, sufficient range of functions which can sustain competitive economic survival. All these reason contribute to the final decision of the feasibility issue from the onset of the project.

Pickering Wharf in Salem, Massachusetts (Fig.17 and 18) --- a mixed use project comprising housing, offices, retail space, restaurant, a museum/theatre, a marina and a water-side public walk was designed by Architects ADD Inc. of Cambridge, Mass. This project was approved on social and financial consideration as well as our notion of after hours functions enhancing the social vitality of the neighborhood. This mixed use residential and commercial development can be classified as a product of traditional

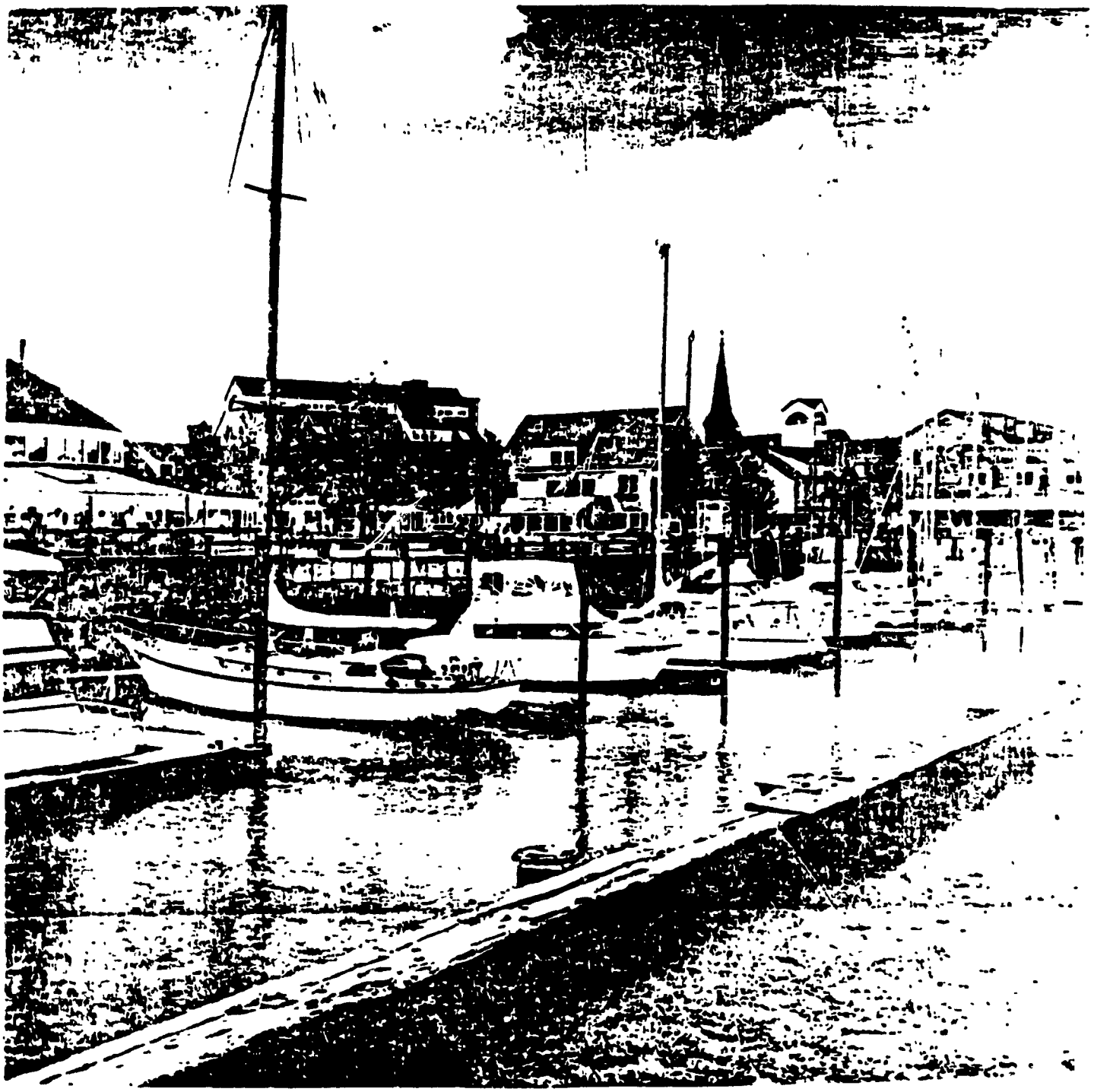


Fig. 17 Pickering Wharf in Salem Massachusetts.
Reference : Architectural Record, March 1980, p.120.

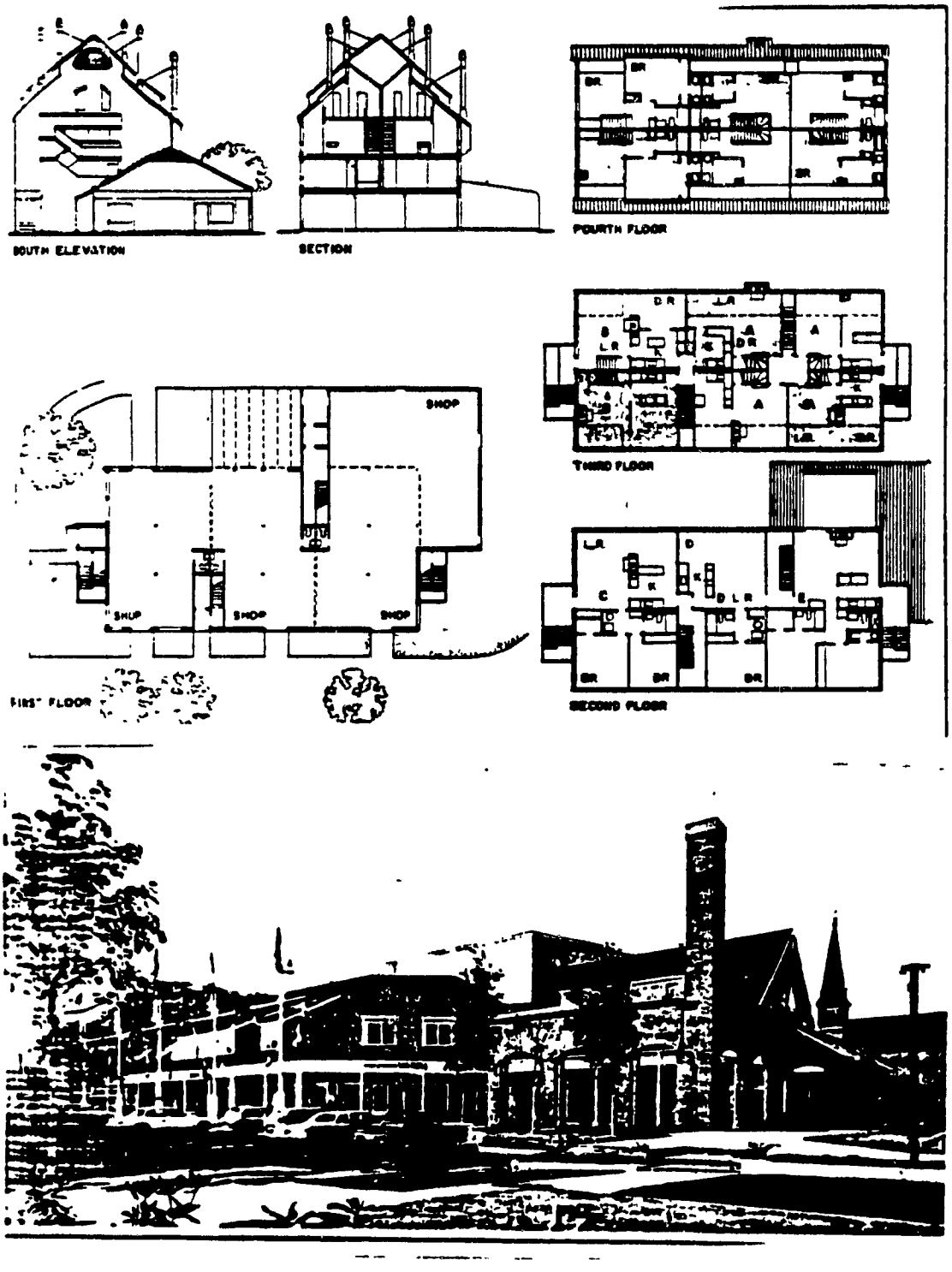


Fig. 18 Plan, Elevation and Section.
Pickering Wharf in Salem, Massachusetts.
Reference : Architectural Record, March 1980, p.123.

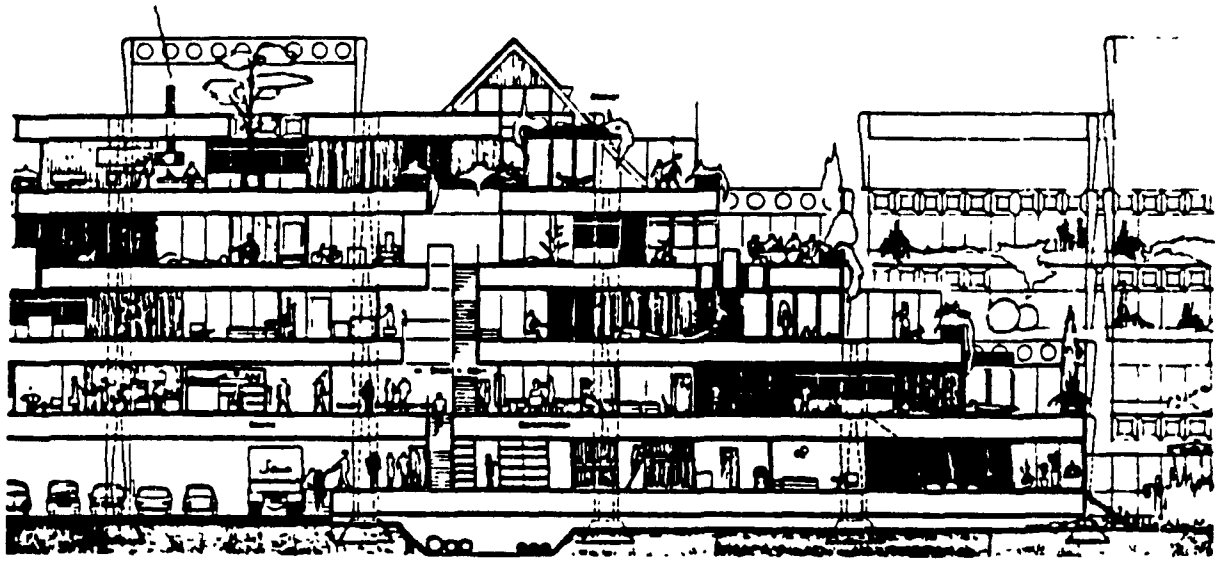
low rise conjunctive housing development, lowrise units on the scenic waterfront offers a vernacular flavor to the area while the mix of shops and condominiums appropriately sustain the economic life to this part of Salem's major urban revitalization commitment.

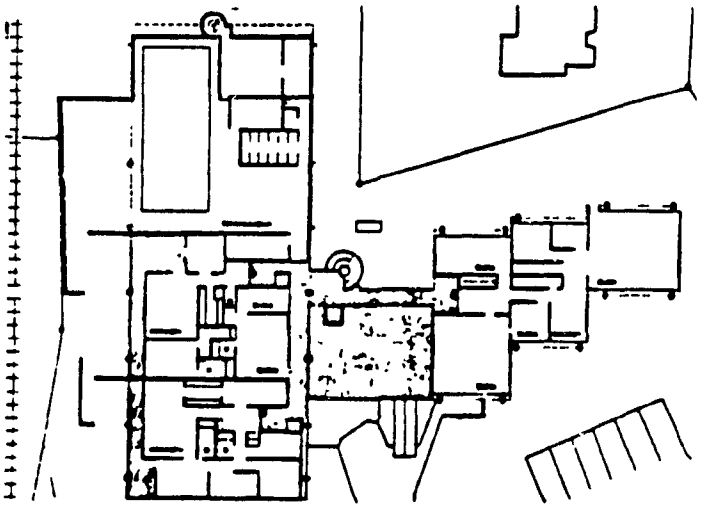
Pickering Wharf is designed as a self-contained neighborhood. From a tower at the main entrance to the cobblestone pavement, and shops opening onto the sidewalks all signify the uniqueness of the community. The ground floors of all buildings in the precinct are allocated to retail activity, chiefly crafts shops and boutiques. Second and third floors are dedicated to highly sought after professional offices. Another format of these low-rise buildings contains condominium housing which becomes a major component in the complex. Many living quarters are located over the shops, taking advantage of waterfront views along the southern edge.

The architects realized the tradition in the past that neighborhood merchants and their families lived above the store they worked can be a renaissance in this low rise development attempt. On one hand, the purpose here is to suggest the distinctive architectural quality of New England building in this community of Salem. On the other hand, it may be a courageous attempt to try to satisfy the owners' and realtors' ever-increasing attention to combining uses in single developments.

Typologically, the site accommodates comfortably the layout for a low-rise mixed use development. Other profile of mixed use development will not be compatible in this given setting. Here, besides brick and clapboard siding, the historical Salem is brought back to its natives by having these low-rise buildings projected with dormer windows, and with steeply pitched roofs. From building to building, the plans of apartments vary considerably. In our illustrations, there are lofty apartments (A) staggered on the third and fourth floor. Some duplex apartments (B) mixed with the loft ones on third floors while there are some single floor through apartments (C,D,E) laid on the second floor with stairs connected to the outside at the back or streetfront, over and through a volume of shop spaces on the ground floor. The atypical plans show the variety of the dwelling anatomy one could create, yet blending well with the overall appearance in terms of building style. And, in the modest scale and without an overwhelming tone of the complex infrastructure like the other two types of development, the mixture of commercial facilities weave into the residential fabric in harmony.

Another option of low rise development is a flexible mixed use structure built under the 4-D system (Fig. 19) by Helmut Paschmann (System development) and Peter Kamm, Hans Kundig, architects, in Zug, Switzerland. According to Dimitri Procos, this conjunctive housing type is "an intimate





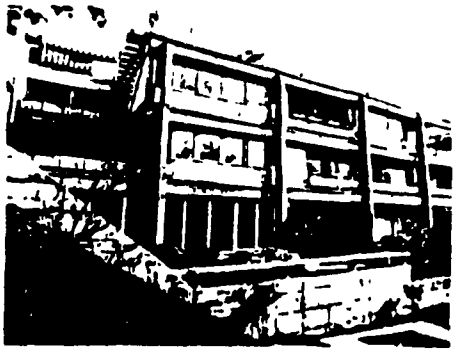


Fig. 19 Flexible mixed use structure, Zug, Switzerland by Helmut Paschmann, Peter Kamm, Hans Kundig Architects.

Reference: Dimitri Procos, Mixed Land Use, 1976, p.85.

mixture of apartments and offices. The system is based on complete interchangeability, not only between such different land uses, but also internally within housing units changing occupants over time."

This flexibility is enjoyed and appraised as a guarantee for its smooth and efficient functioning. It may be seen also as a rather radical approach as to the validity of "free choice" pertaining to changing spatial requirements. "Enabling Flexibility" is one answer, the other answer, according to Dimitri Procos,

> "lies in the concept of 'cybernetic alteration' in which certain one-off 'rearrangements' are pushed toward greater and greater permanence or 'alteration' depending on the frequency with which they are chosen by users". Some designers would therefore reckon that "cybernetic alteration could be instrumental in bringing about participatory design and in freeing the public from some of the more arbitrary controls exercised by the design professions. It would allow people's conscious and unconscious spatial behavior patterns to be registered and to become the basis for a form of artificial design intelligence". (6)
>
> Dimitri Procos, Mixed Land Use.

Nevertheless, this is an exploration into the fourth dimension of time, namely its land use implication is in conjunct with people's spatial behavior. The building in

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(6) Dimitri Procos, Mixed Land Use, 1976, p.86.

this case is typified as a low-rise development. The two components, offices and apartments, though contradictory, at times coexistable, came into a proportionate mixture in this project. However, a question arises whether the practicality of this 4-D system can be applied to a more complex structure such as a high-rise or medium rise developments. The time-change, space change alternation scheme may bring more of disorientation than the pleasure that will be accompanied with this type of behavorial compatibility.

In Canada, two low-rise conjunctive housing projects in Toronto are worth our attentions. One of them emphasizes in the building costs, the other "affordable housing" at medium density with mixed use.

The Village Stream by Romano Erba, (Fig.18) is designed to mix 3345 sq.m. of rentable store space on three levels, 557 sq.m. of office space and eight one-bedroom apartments. The combination comes with an interior mall, mirrored court, fountain and sculpture. This building was tendered in July 1980, completed in August 1981, and 4.2 million in building cost. The average was priced at $471.01 per sq.m. (or roughly $50 per sq. Ft.) It envisaged a promising aspect of low-rise development, mixing considerable numbers of working, shopping and living functions that could provide a workable formula for owners and developers to contemplate.

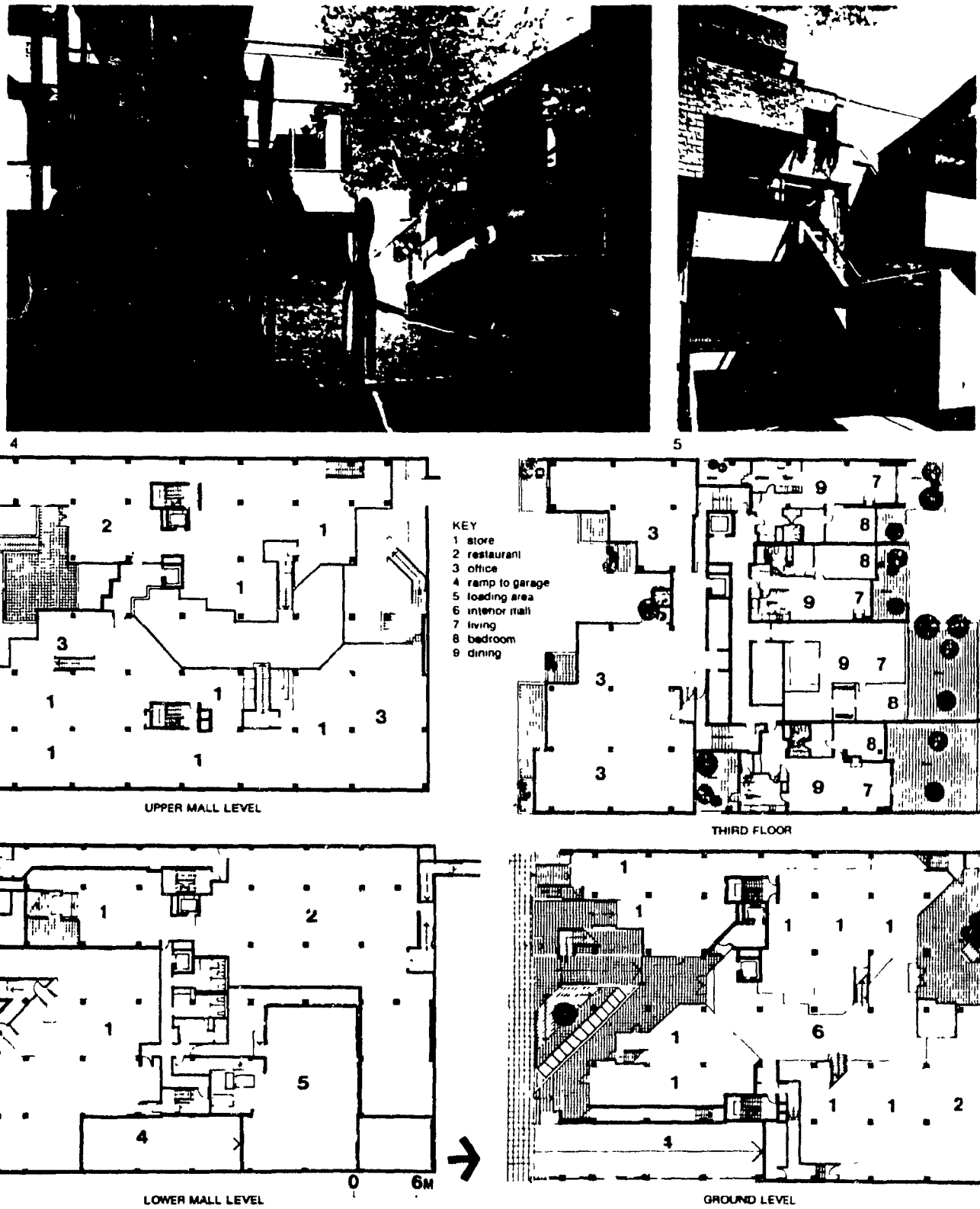

Fig. 20 Terrace Exterior Stairs and Level Plans of The Village Stream in Toronto.
Reference : The Canadian Architect, January 1983, p.24.

Another noteworthy aspect of this project is the "Spinal divider" which is the circulation space on the third level where we can diagnose the symptom of the "vertical separation of uses" which constitutes part 4.2 of Chapter 4 The office and residential functions conjunctively utilize the circulation area, integrated horizontally, but seperated vertically. If converted to a high-rise development, this layout would certainly reinforce the notion of "vertical separation of uses", of which there are very few valid examples.

When we discussed ground relatedness of lowrise buildings, a development built on an open parking lot in one of Toronto's busiest midtown areas was described. This project was sponsored jointly by the city's Non-Profit Housing Corporation and the parking Authority. It is a mixture of about 15000 sq. ft. of retail space situated on top of a 2 to 3 levels of underground parking space, combining 108 dwelling units from a bachelor to a 4 bedroom, with the majority being 1 bedroom. The design earned an Award of Excellence, and the project as was described in The Canadian Architect, January 1979 :

> The first three storeys of the housing plan comprises a series of 'four-plexes', with every 28 feet (8.5 m) containing an open entry porch, leading to an inside lobby. Four grade-connected units are joined in this way with the two facing the street having fenced porches, the two rear units having private courts. This design allows for a format similar to that of a

> conventional street, with as much front-door housing as possible. The remaining units are reached via an elevator located in the link off the fourth floor corridor. This corridor has a skylight and is treated as an interior small-scaled 'street' lined with 'windows'. A rear lane connects the retail court and playlot area. A deep, narrow 14 ft. (4.2m) unit module is employed to maintain the 5-storey building height. This blends with the 28 ft. (8.5m) parking module below. The building reaches a 70 ft.(21m) depth at some levels. Double height voids are introduced in places which allow visual connections between floors and provide for individual tenant fill-ins. Most of the large units are on two or more levels, as many of the small units. The exterior structure is natural concrete and the infill is light, metal, window panels." (7)
>
> Award of Excellence. The Canadian Architect.

This scheme with dwellings, shops, parkette, lane, walkway and public and private parking (Fig.21) responded to the site context with a high density, multi-use urban mode as well as traditional residential neighborhood, and called upon a density of 100 units per acre plus parking, retail and commercial facilities. The design and planning on Alvin Avenue, earns much positive comment for its ingenuity in solving many of the barriers present in our complex urban sites. And yet, it offers another attractive alternative for making conjunctive housing workable and interesting in the inner city.

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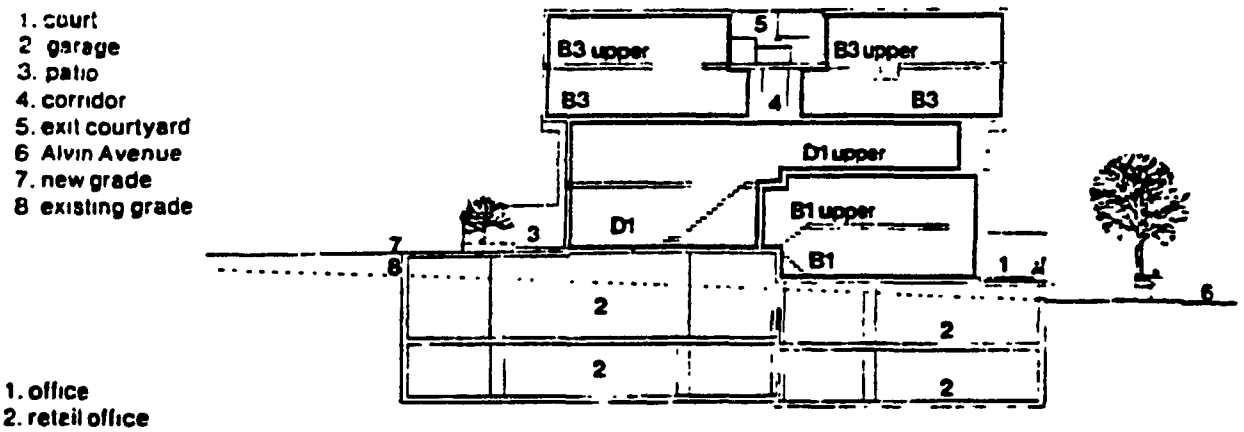
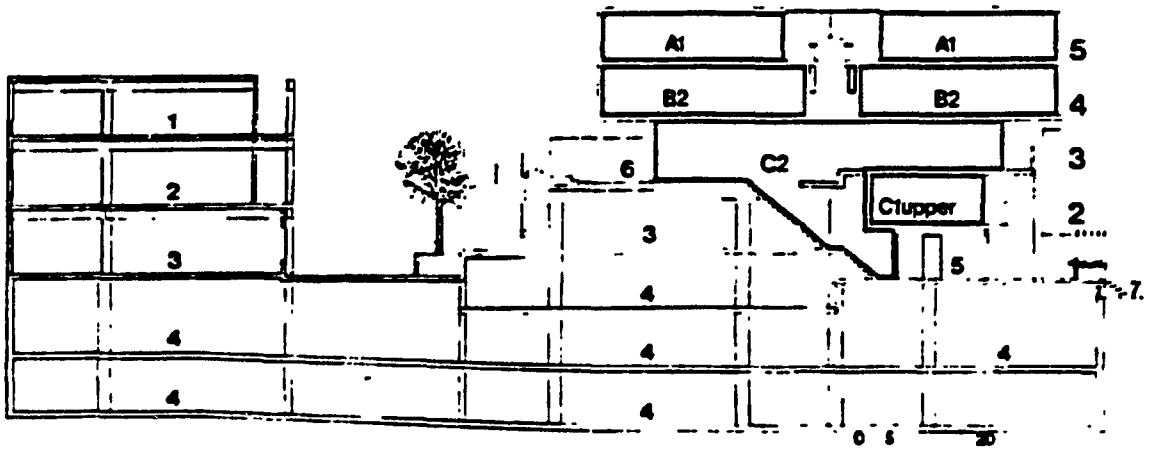
(7) Award of Excellence, The Canadian Architect, Jan. 1979.



SECTION AA



SECTION BB

Fig. 21 Sections. Mixed-use development of a city-owned parking lot, Toronto, Ontario.
Reference: The Canadian Architect, January 1979, p.20.

CHAPTER 4 : GENERIC FORMS OF MIXED USE BUILDINGS

In generic terms, we define a mixed use building as one complex or one planned development package which incorporates mixed landuse planning, zoning and density requirements; it consists of a great many functions and facilities oriented towards working, shopping, entertainment and living, to name a few. Each use or function develops its own spatial requirement and characteristics. Very commonly, it requires a network configuration for the circulation within any one of the mixed use complexes. " A network configuration consists of random paths that connect established points in space." (1) Apparently, this happens to be the most closely described pattern a mixed use complex would require in its circulation within. In this chapter, we try to understand from a considerable number of mixed use establishments, which illustrate well enough the employment of the conjunctive housing typology, the different categories of spatial organizations as opposed to the separation of different uses. From here, we will proceed to analyze their formal characteristics, spatial relationships, and contextual responses of this organization.

The realm of this type of development of conjunctive housing complex, allows and enables imaginations and all possible creative formula and dynamics in the mix. Hence,

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(1) Francis Ching, Architecture : Form, Space and Order, 1979, p.271.

no one form is typified as a prime reference or solution to the problem. The challenge is there always open to all designers in the planning and design professions. The ever-changeable programmation requirement for a conjunctive housing complex requires an equally ever inquisitive mind and persistent effort to shape and mold the form of the building.

It is equally important, to begin with our examination of the different usage separation patterns, the basic ways a building's spaces can be related to one another and organized into a coherent pattern of form and space. The spaces, not necessarily to be homogenous, can be composed and integrated within the complex, related to one another by function, proximity, or a circulation path. This is to say, the type of use, the organized location and the transit system within the very infrastructure of the building become the starting point of our study.

4.1 HORIZONTAL SEPARATION OF DIFFERENT USES

As we consider housing separation, we think of a "layered" formation. Methodologically, it is a technique that distinquishes certain uses or functions from each other. Theoretically, a mixed use development pulls all these functions and facilities together to form a combined whole. Some of these uses may be of more advantageous to be

separated. The separation then brings about the question of how it should be separated horizontally or vertically. And, what priority should be considered for certain functions and activities when they come into the orbit of the hierarchical privacy realm.

Very commonly, horizontal separation of different uses is found in many high rise towers. They usually appear as an unitary complex, built in the CBD (Central Business District). This type of unitary complex shares a common feature which is the vertical integration of uses.

In New York City, the renowned Galleria still bears its reputation of being a single building which explored the mixed use concept as a route towards a more efficient building. It was a bold experiment in mixed use, an offspring from incentive zoning agreeable to many people. Upon the 90 ft. tall atrium (Fig.1) open a restaurant and health club with six layers of offices between. (Fig.2)

With a frontage of 60 ft. on East 57th and 112 ft. on East 58, running a depth of 200' 10" across, it is adjacent to the Ritz Tower Hotel on Park Avenue. (Fig. 3) The building was limited by its site area and due to incentive zoning, adopted this form of layering which strongly suggest the idea of horizontal separation of different uses. The section (Fig.4) clearly illustrates, the concept and

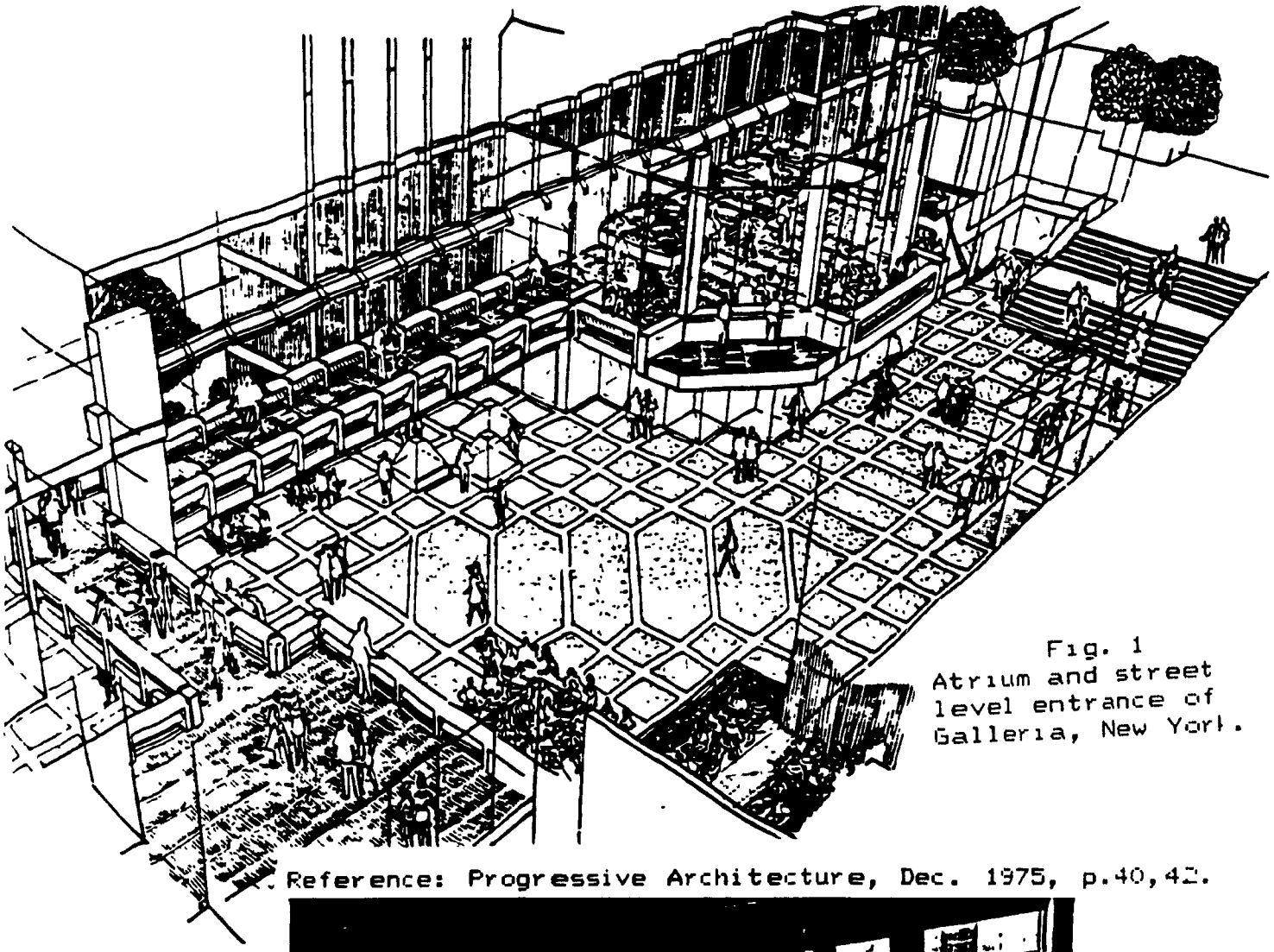
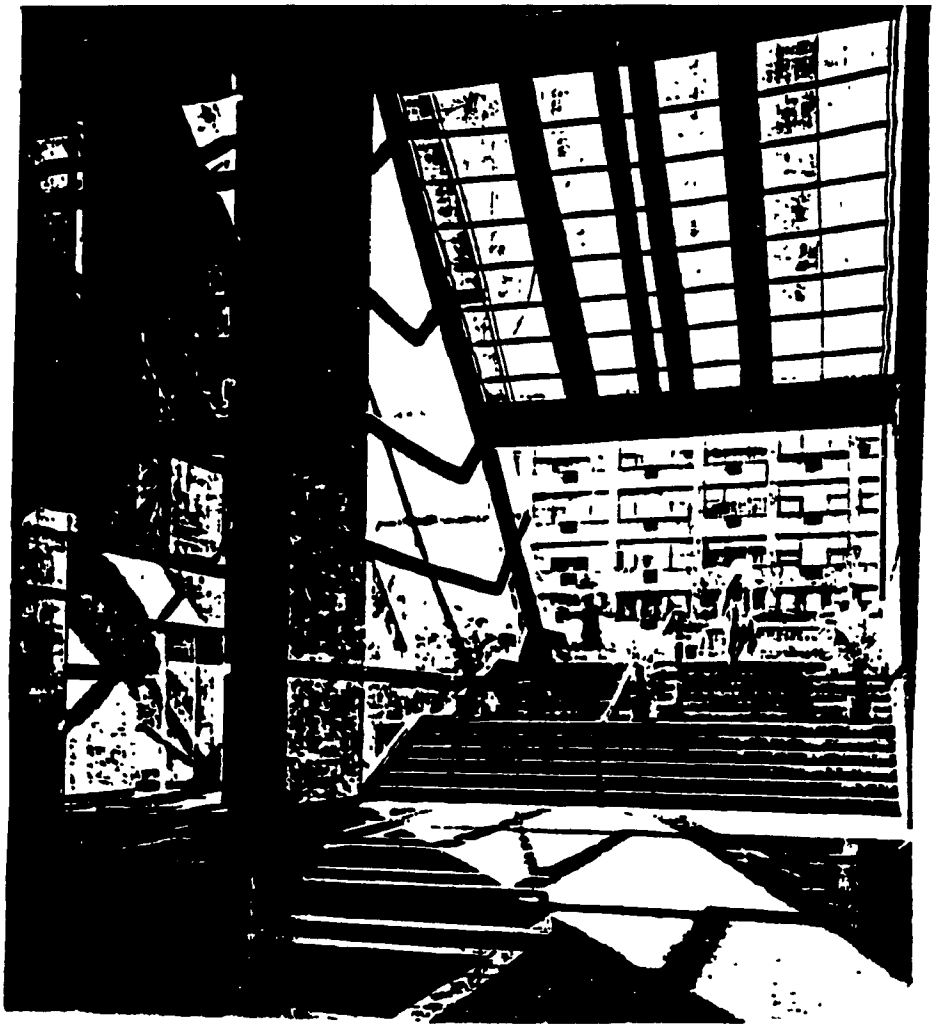


Fig. 1
Atrium and street level entrance of Galleria, New York.

Reference: Progressive Architecture, Dec. 1975, p.40,42.



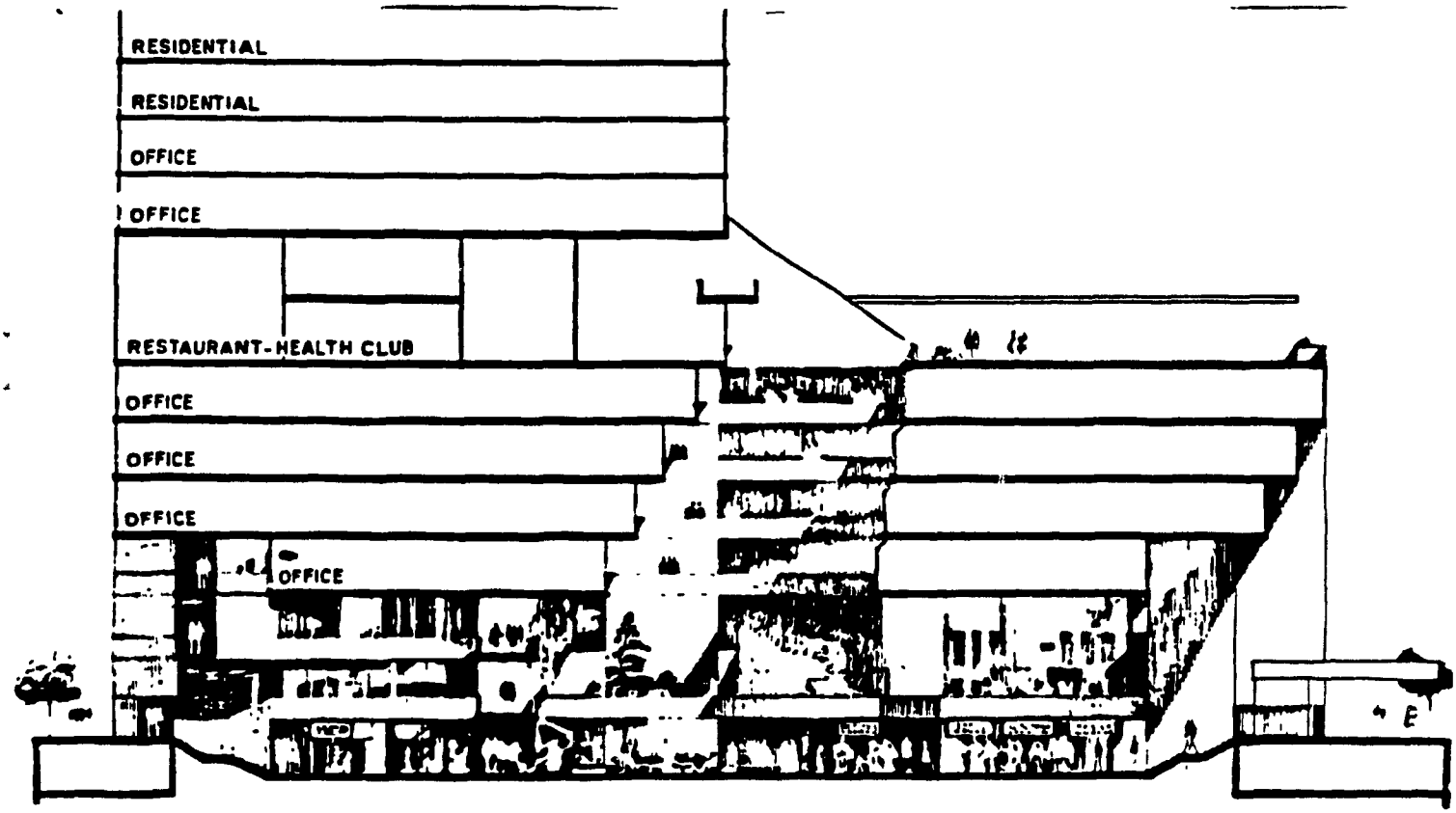


Fig. 2 Conceptual Building Section, Galleria, New York.
Reference: Progressive Architecture, Dec., 1975, p.41.

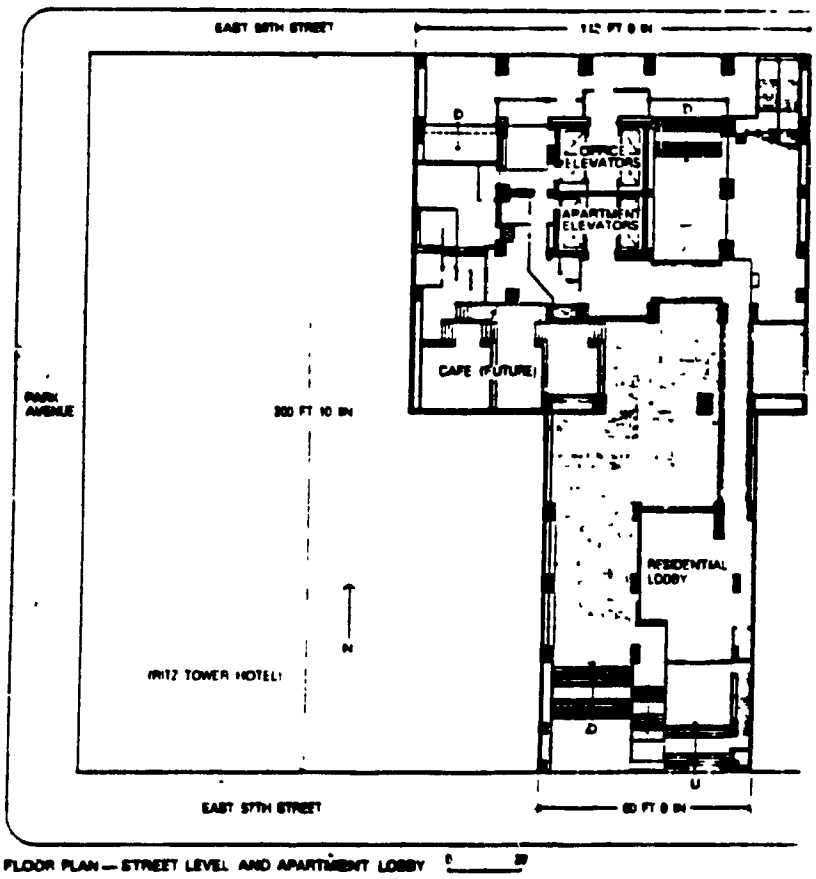


Fig. 3 Plan of street level and apartment lobby, Galleria, New York.
Reference: Progressive Architecture, Dec., 1975, p.41.

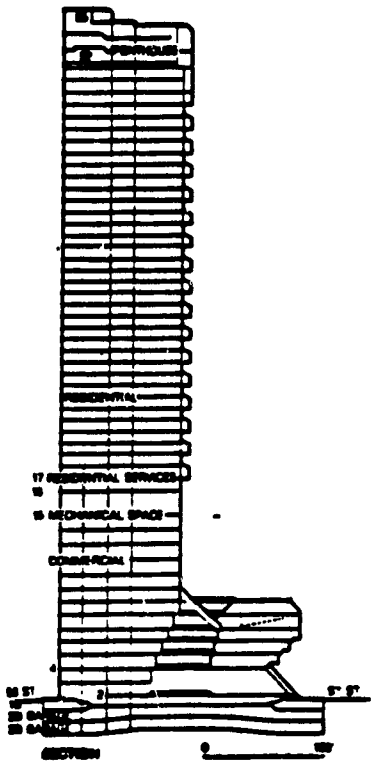


Fig. 4 Section of Galleria, New York.
Reference: Progressive Architecture, Dec. 1975, p.41.

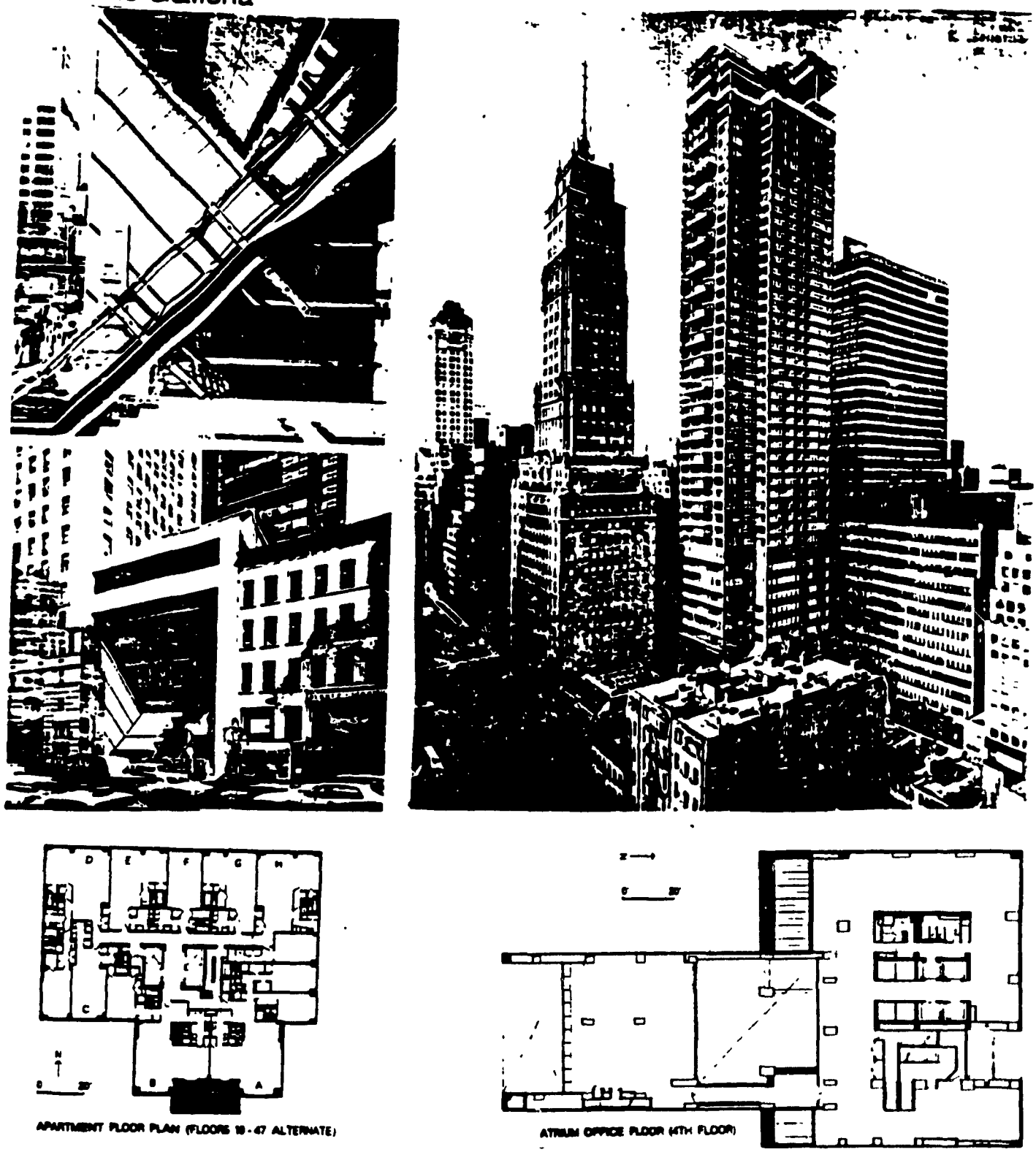


Fig. 5 Views of Entrance and Perspective of the Building, Plans of apartment floor & atrium office floor, Galleria, New York.

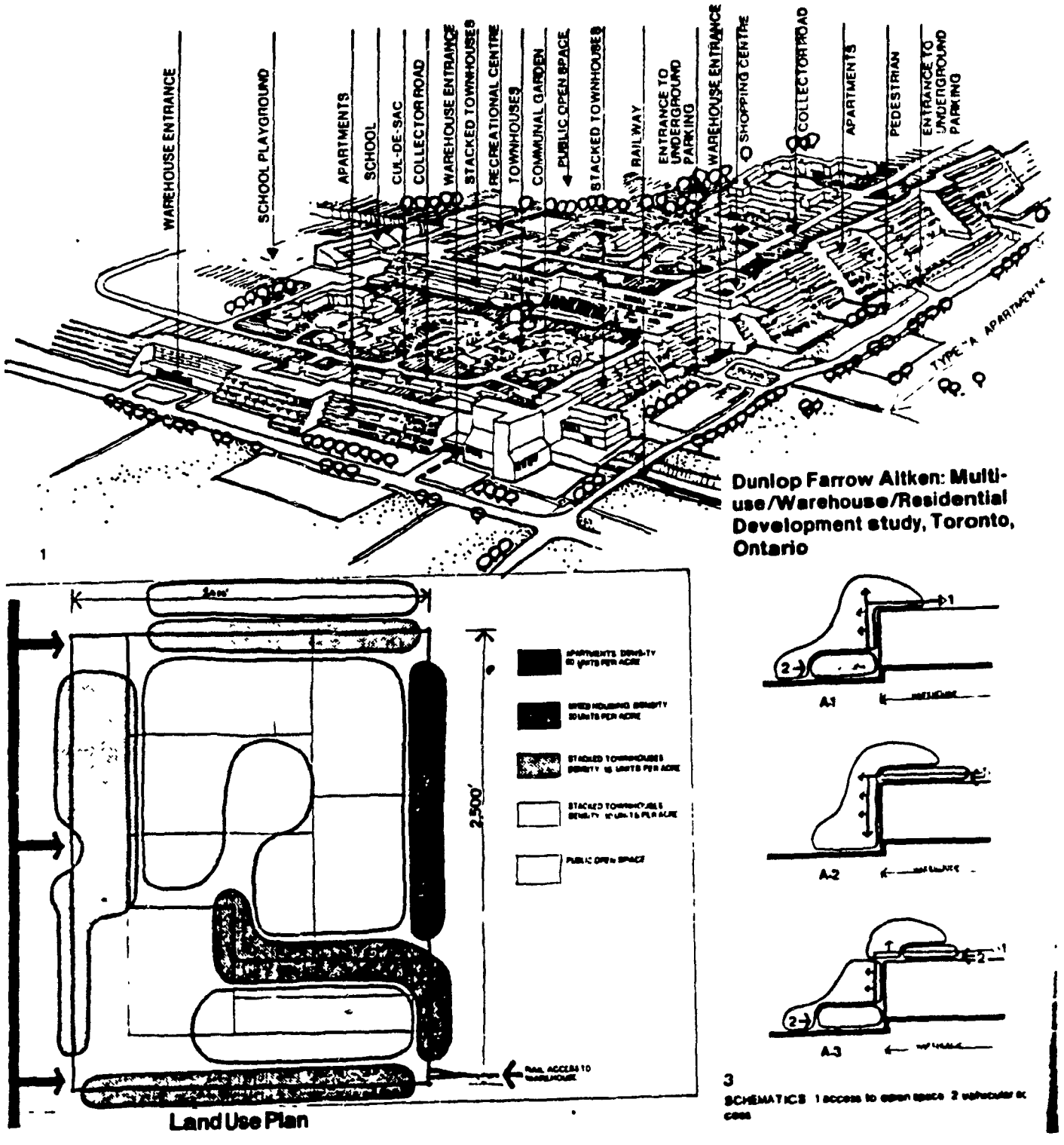
Reference: Progressive Architecture, Dec. 1975, p.41.

methodology of integrating different defined uses, with clear separation among each other in a horizontal format. Above the mechanical space is located the residential services floors, followed by 40 stories of condominium apartments (Fig. 5). At the very top there are multi-level penthouses with greenhouses. The building is intended for a 24 hour-a-day use, particularly for this important district, and it proves to be an important building in its contribution to the city.

4.2 VERTICAL SEPARATION OF DIFFERENT USES

It will be clear to reiterate in this section the definition of vertical integration of uses, which is reflected by the horizontal layering of different functions as discussed above in Section 4.1. Here, vertical separation of uses emphasizes the treatment of two or more uses which take up space and volume vertically, combined or otherwise in its very adjacency, still belonging to the whole entity.

An example is cited here for an attempt to understand better how this can be achieved. A Multi-use/Warehouse/Residential Development Study in Toronto, Ontario (Fig. 6) was done by the office of Dunlop/Farrow/Aitken. This was an attempt to combine warehouse facilities with housing viewed by many of us as imcompatible uses. Of course, this approach uses economic arguments for the feasibility of combining housing



Dunlop Farrow Aitken: Multi-use/Warehouse/Residential Development study, Toronto, Ontario

Fig. 6 Multi-use/Warehouse/Residential Development Study, Toronto, Ontario by Dunlop Farrow Aitken

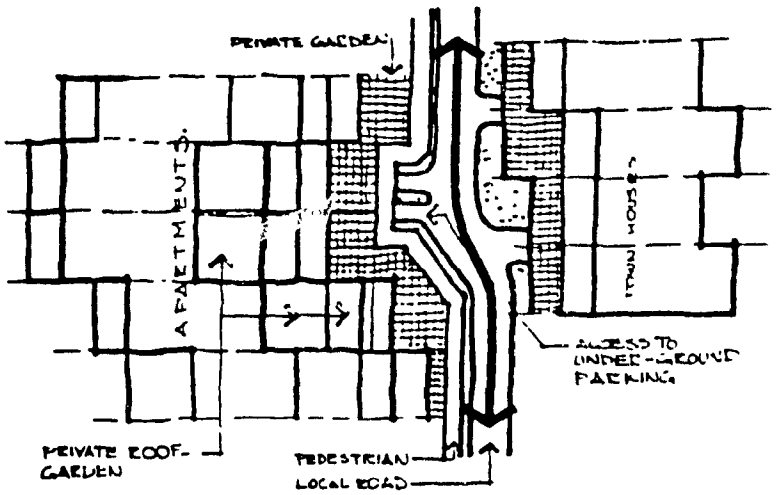
Reference: The Canadian Architect, February 1976, p.38.

with warehousing. It is an genuine experimental exercise bringing different densities of apartments, mixed housing, stacked townhouses etc. onto the site.

Attention is drawn to the plan and section (Fig. 7) where we are given the hint of the integration of housing, warehousing, parking and vehicular access. The most significant treatment of the apartments and the 55 ft. high warehouse volume is that they are leaning against each other, integrating a stacked cluster, yet separated vertically by the warehouse wall. The wall divides, yet opens for access to an underground parking, and flanks a pedestrian walk and a local road. This feature of a vertical partitioning signifies the tangible separation, in whatever direction it may face, of uses.

This design approach opens up avenues for vertical separation of various uses. Nevertheless, it allows a possible stacking of townhouses by taking advantage of sunlit open spaces for their dwellings and their private gardens. The raised platform, which in fact is the roof of the warehouse, can be built on, similar to some addition to buildings which are bermed up.

The two illustrations (Fig. 8) show clearly how stacked housing and the juncture of the high and low levels of the warehouse roof and a mix of terraced housing at the perimeter of the warehouse is arranged.



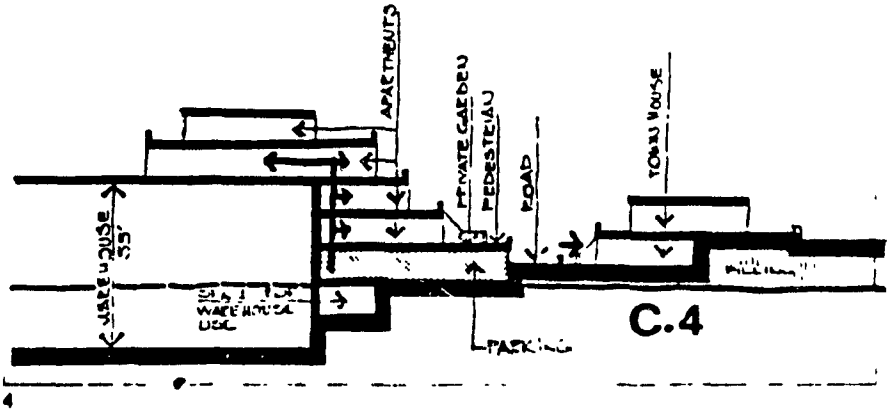
1
General impression of the development, showing the proposed treatment of the walls and roof of the warehouse

2
Land use plan

3
Suggested conceptual treatments of warehouse wall with related parking and access

4
Plan and section showing integration of housing and warehousing parking and vehicular access

5
Schematic scheme for juncture of warehouse wall and roof



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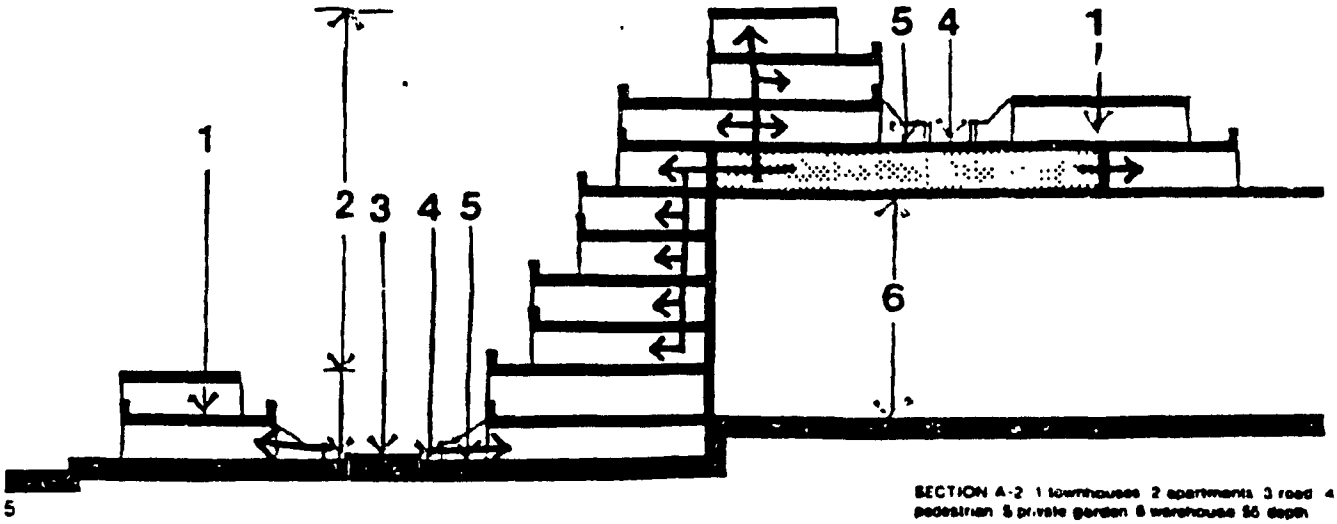
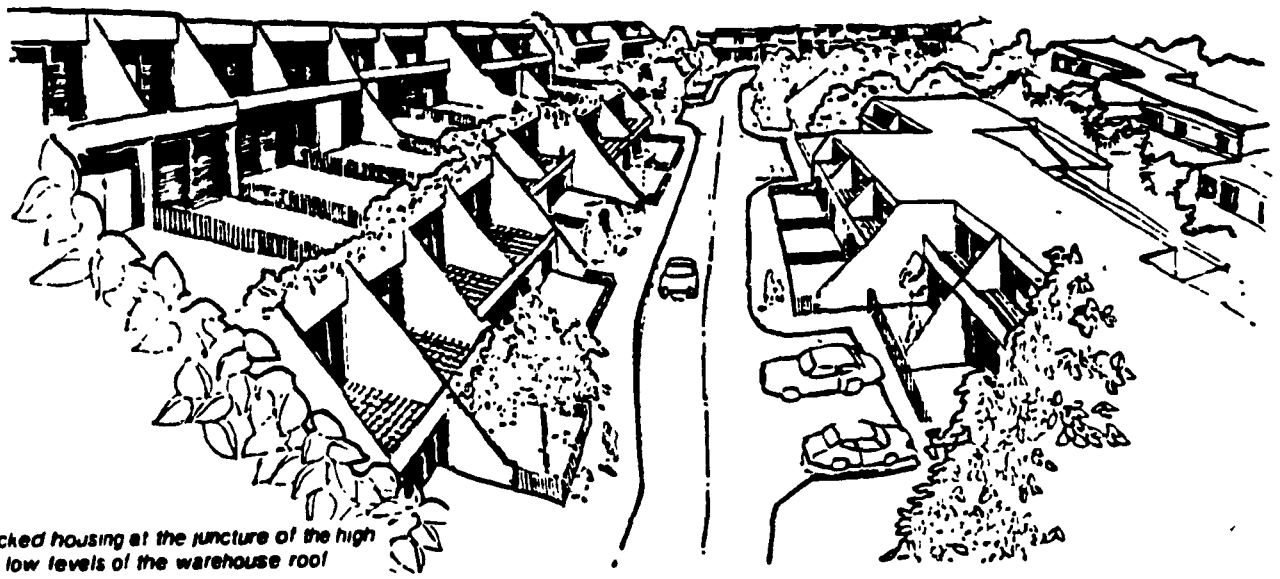


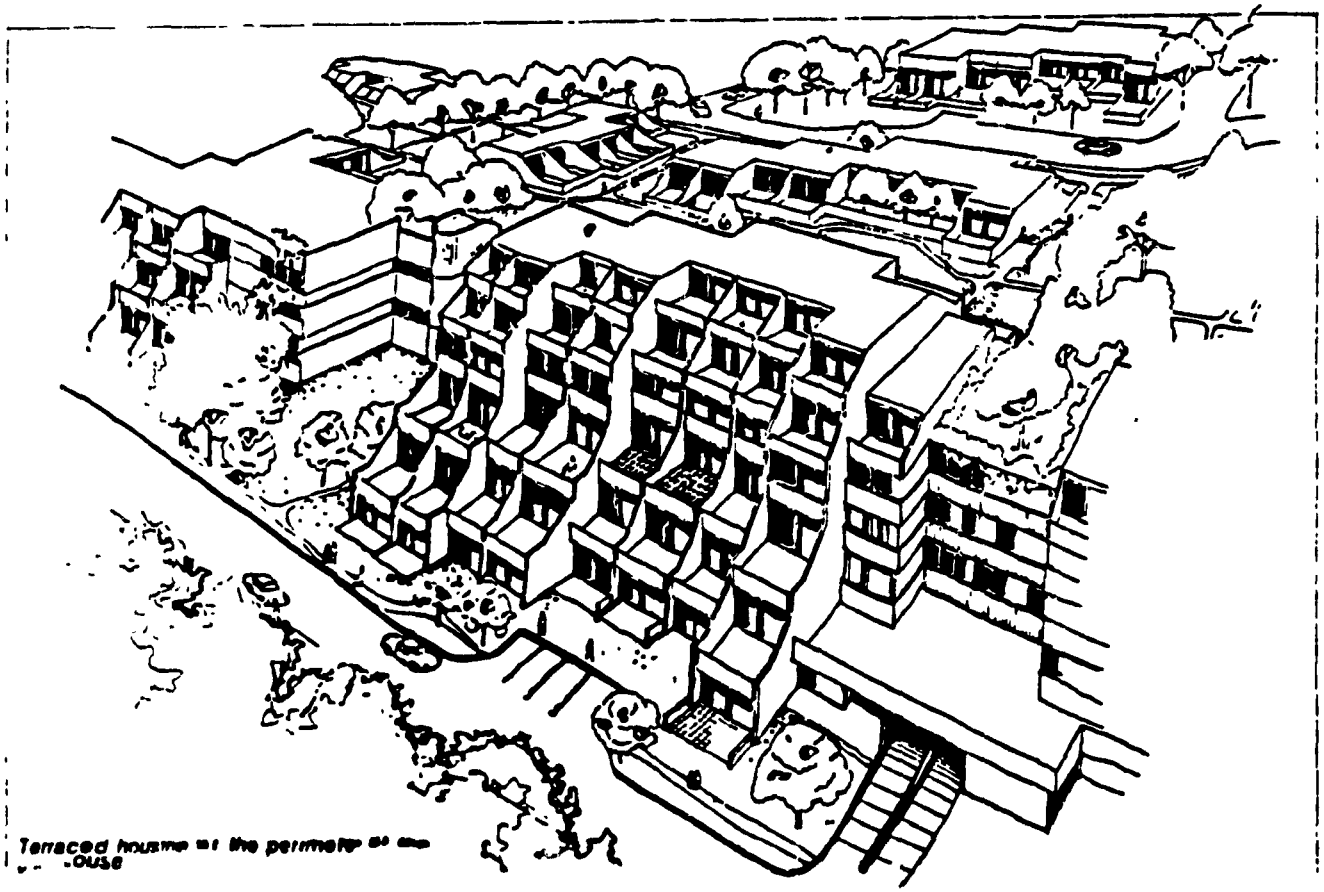
5

SECTION A-2 1 townhouses 2 apartments 3 road 4 pedestrian 5 private garden 6 warehouse 55 depth

Fig. 7 Plan and Sections showing integration of housing and warehousing, parking and vehicular access.
Reference: The Canadian Architect, February 1976, p.39.



Stacked housing at the juncture of the high and low levels of the warehouse roof



Terraced housing at the perimeter of the warehouse

Fig. 8 Formation and Lineation of stacked housing and terraced housing on the roof, and at the perimeter of the warehouse.

Reference : The Canadian Architect, February 1976, p.40.

From the above examples, we can clearly see the design approach of the designers' conviction of the viability of the mixed landuse concept. The concept does provide flexibility in the creation of fascinating and interesting mix. It is certain that many upcoming schemes will furthur ensure the belief in ever-possible flexibility of mixed use conjunctive housing development.

4.3 CLUSTERED USES

Once again, we dwell on the formal characteristics, spatial relationships and contextual responses as a theoretical approach to understand spatial organization, or the rationale and the original principle behind the arrangement of different uses in this category. The kind of spaces that are grouped by proximity or by sharing of a common visual trait or relationship, in Francis Ching's term, is defined as clustered spatial organization. Despite of all the sophistication and over-scrupulously emphasis on today's marvelling about the Roman planning rationale, it is somehow worthy for us to re-examine the basics of the Architectural nomenclature. They may lend us some insights into the understanding of this type of spatial organizational pattern. The illustration (Fig.9) assists us graphically in aligning one thought about what clustered organizations can be, prior to Ching's lesson which begins with,

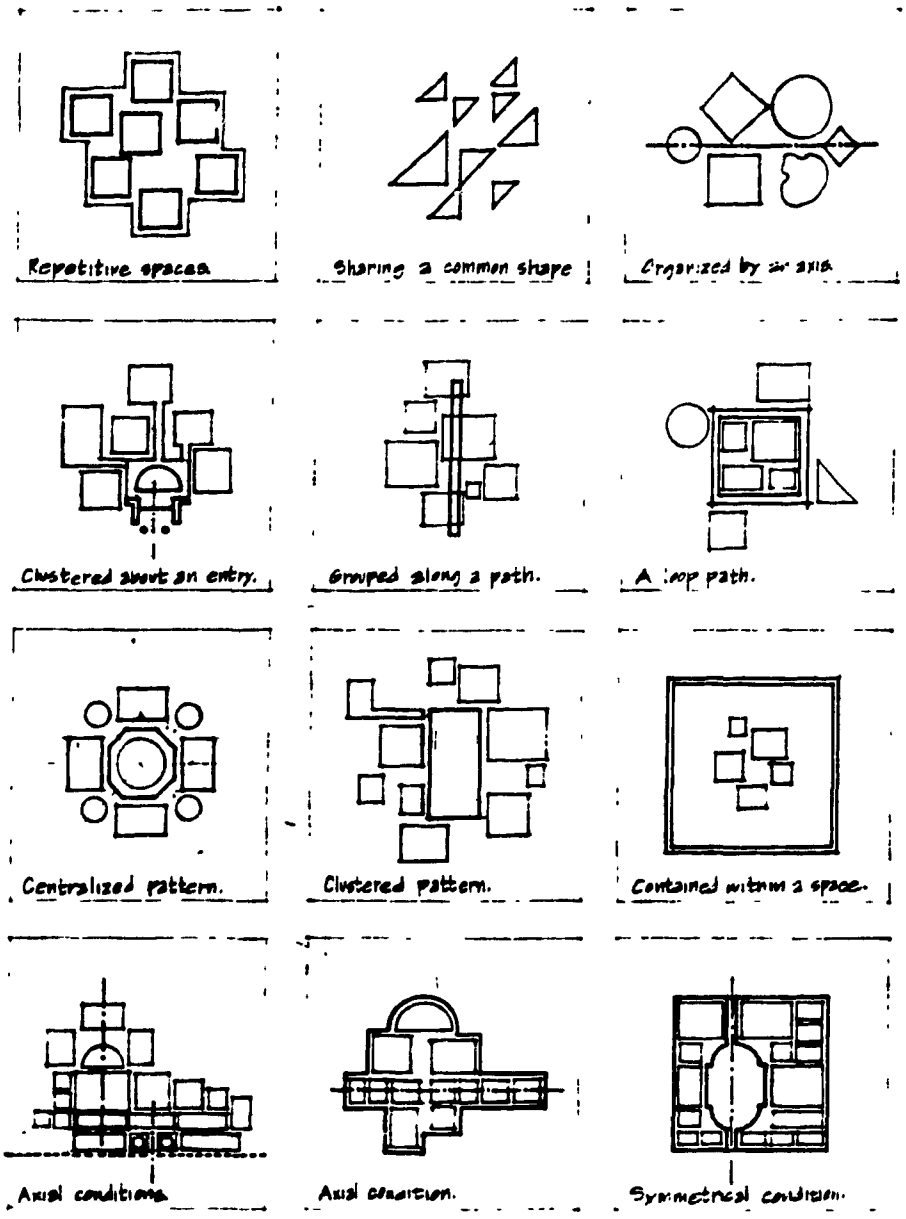


Fig. 9 Diagrams showing various clustered organization.
Reference: Francis Ching, Architecture: Form, Space & Order, 1979, p.230.

> "A clustered organization uses proximity to relate its spaces to one another. It often consists of repetitive, cellular spaces that have similar functions, and share a common visual trait such as shape or orientation. A clustered organization can also accept within its composition spaces that are dissimilar in size, form, and function, but related to one another by proximity and a visual ordering device such as symmetry or an axis. Because its pattern does not originate from a rigid, geometrical concept, the form of a clustered organization is flexible, and can accept growth and change readily without affecting its character". (2)
>
> Francis Ching, Architecture : Form, Space and Order

With these tools, we proceed to analyze two examples in Montreal, Quebec. One is located in the city of Westmount and the other in the downtown area of Montreal; both carry with them values challenged for the last two decades. Yet, these two mixed use developments, approved or rejected by many of Montrealers, still have an appeal to many urbanites, especially those who come from foreign countries to live in the inner city.

More than 20 years ago, one of the 'Fathers of Modern Architecture', Mies Van der Rohe designed and built the Westmount Square complex in Montreal. On a site in the city of Westmount, west of downtown Montreal, covering some

---

(2) Francis Ching, Architecture : Form, Space and Order, 1979, p.230.

155,000 sq. ft., Mies carried out a commission of planning and designing a residential-commercial complex.

> "containing two 21-story apartment buildings; a 22-story office building; a shopping concourse, restaurants, and cinema beneath the grade-level plaza; and parking on two levels below the concourse. Direct access from the complex to the Montreal Metro subway is provided by a stairway leading from the concourse level to a tunnel connector". (3)
>
> "Mies a Montreal", Domus.

The project is composed of different functions such as office, residential, commercial, and parking. Mies' plan was a 5'-3" plan module and a standard bay dimension of 5 modules (26'-3"). Following that single, coordinate system, all spatial requirements of the various functions were so organized. Westmount Square (Fig.10) took the notorious form Mies was famous for, giving the metal and glass buildings the expressions of their true spirit. The two apartment buildings and the office buildings are characterized by rectangular blocks wrapped in curtain walls of aluminum and glass. The buildings float on large concrete columns and elevator cores, supported seemingly by the transparent glazed lobbies. The substructure as well as the buildings above grade level were constructed of reinforced concrete. The plaza, tower lobbies and the core walls and concourse were paved and covered with travertine.

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(3) "Mies A Montreal", Domus, May 1971.

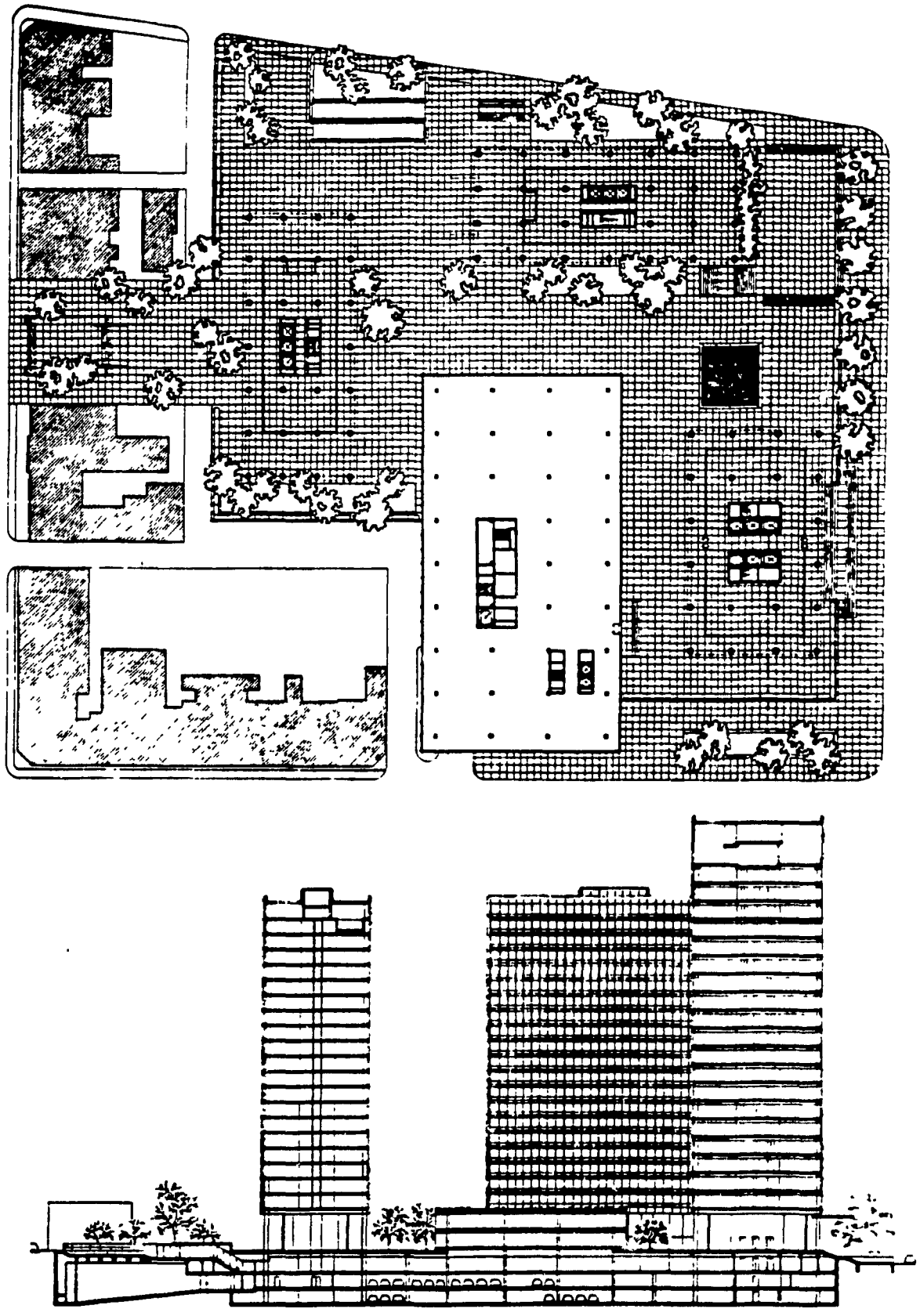

Fig. 10 Plan and Section showing the spatial organization of Westmount Square, Montreal.
Reference: Domus, May 1971, p.5-6.

The residential and office towers were clustered about the plaza which is the 'platform' structure defining the boundary of the project. A shopping concourse is created under the towers which connects to the metro station and plaza over the street level. On the plaza, a self-contained open air area ties the garden and walkway together.

The towers relate themselves to a grid with aligned rows of columns. The plan module works for the formal arrangement of the different blocks. The architect may also have had the intention, on this gridiron as a planning device, to align the vantage point from a lobby to a church across the street. The axial arrangement has also been employed for organizing the circulation pattern down in the shopping concourse under the plaza. It helps to unify the elements of a clustered organization. Presently, the concourse connects to the Atwater Metro Station one block away, over it sits another major mixed use complex named Alexis Nihon Plaza. The continuous growth of more commercial developments and civic activities in the area, together with the support of the residential neighborhood, will ensure a revitalised retail and commercial activities attributable to this mixed use concept.

The housing content in conjunction with all commercial and shopping and entertainment activities enhances the sustainability of each other. Residents enjoy the choices of withdrawal or participation in the bustling activities

around them. In fact, the advantage of the clustered organization of uses really gives the residents in the housing blocks a great amount of convenience, apart from the already enjoyed prestige of living in one of these landmark buildings. The entrance lobby and the housing blocks located above the plaza are defining the realm of privacy. This arrangement enables control over the access by unexpected public through improved security and surveillance.

The plaza which links up the buildings signifies a contained space where both office workers and the tower residents belong to. The garden and walkways elevated from the street level provides landscaped space for rest and play, also a horizontal linkage to the separate tower lobbies within the complex. It is a civic feature yet corresponding to the need for an underground system, a tradition in Montreal.

The circulation system is found generous and ample. Stairways connect different levels and tunnel walkway to the Metro. Individual elevator systems which allow exclusive use by the residents living above if they patronize the shopping facilities at the concourse level. Today, Westmount Square shares the benefit of being located on one of the city's major nodes for inner city living, for its proximity to various kinds of civic activities, namely, sporting events, entertainment, shopping, offices, civic and medicare services etc.. It entertains its occupants with the

provisions of various types of uses common in any conjunctive housing.

A drawback may be the time-use cycle mentioned in an earlier chapter. Users seem not to be very successful in generating liveliness since it is quite evident that after hours the concourse activities fade away. An appropriate mix of uses falls on the responsibility of the operation and management entity. The changing economic environment, demanded a revival of the shopping precinct in this complex and became an urgent issue. Yet, renovation for more efficient operation, attractiveness and profitable returns for the owners is pending on reaction of the public with respect to the preservation of this landmark complex.

La Cite is Montreal's first large-scale mixed-use comprehensive downtown development. Eva Vecsei, an associate and head project designer, worked with Arcop's partner-in-charge Ray T. Affleck in the early 70's on this project for Concordia Estate Development Company, the developer of La Cite. Place Bonaventure, a preceding mixed use complex of retail mart space, office space and a roof-top hotel, also a well known and well-studied building, was completed just in time for the opening of Expo '67.

Vecsei began working on La Cite with Dimitri Dimakopoulos, another partner of Arcop, but later founded her own office. Directors of Concordia soon agreed the complete transfer of

the whole job to Vecsei's office in December, 1973, she, together with associated architects Dobush Stewart Longpre Marchand Goudreau, worked on the job with an upcoming crucial deadline.

The buildings on the seven-acre site are located at the intersection of four city blocks, at the crossing of Avenue du Parc and Prince Arthur Street. Under the pressure of opening a 500 room hotel before the opening of the 1976 Olympics, it was impossible to complete the entire design for the complex, and the office faced a possible further delay by a new election for a city council. Politically and socially, there was a public outcry against high densities which led to a reduced programmed floor area ratio (F.A.R.) from 12 to 6. This implied that the building would only have 1.5 milliopn sq. ft. above ground with the remaining 1 million sq. ft. below ground. Furthermore, the financial crisis of Concordia almost halted the realization of the project.

The Vecsei team continued the design process, but had to redesign the project. She said, "I put underground everything which doesn't need daylight. This is a civic responsibility". As recorded in the article on La Cite in January 1978,

> "The fundamental issues in the design of urban housing, Vecsei believes, are not highrise versus low-rise or high-density versus low-density. Both can work.

> Whichever approach is called for, the architectural problem is first to find a way to organize the enclosed space required by the program in a manner which allows the remaining open space on the site to be a real amenity for the users of the project and for the general public. The second problem is to find the right architectural vocabulary to define these spaces". (4)
>
> "La Cite", Architectural Record.

In this example, the concern for open space for the general public (Fig.11) creates a focal point for major interaction of both dwellers in the complex and passers-by It is located at an important intersection of streets, a node socially frequented by many residents of the neighborhood. The terrace, (Fig.12) however, since it belongs to the hotel, fails today to really service the community as an open space, a natural amenity anyone could enjoy.

Each of the three apartment towers have a public space at ground level and a series of stepped up private terraces. (Fig.13)

> "The landscape areas of the three residential towers comprise two acres of open space. These 30-story towers are located near the center of each city block, and step down gradually to meet the scale of the houses across the street". (5)
>
> "La Cite", Architectural Record.

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(4) "La Cite", Architectural Record, Jan. 1978, p.114.
(5) Ibid.

Fig. 11 Views of apartment terraces and the nodal open space at the street intersection, La Cite, Montreal.
Reference : Architectural Record, January 1978, p.114.

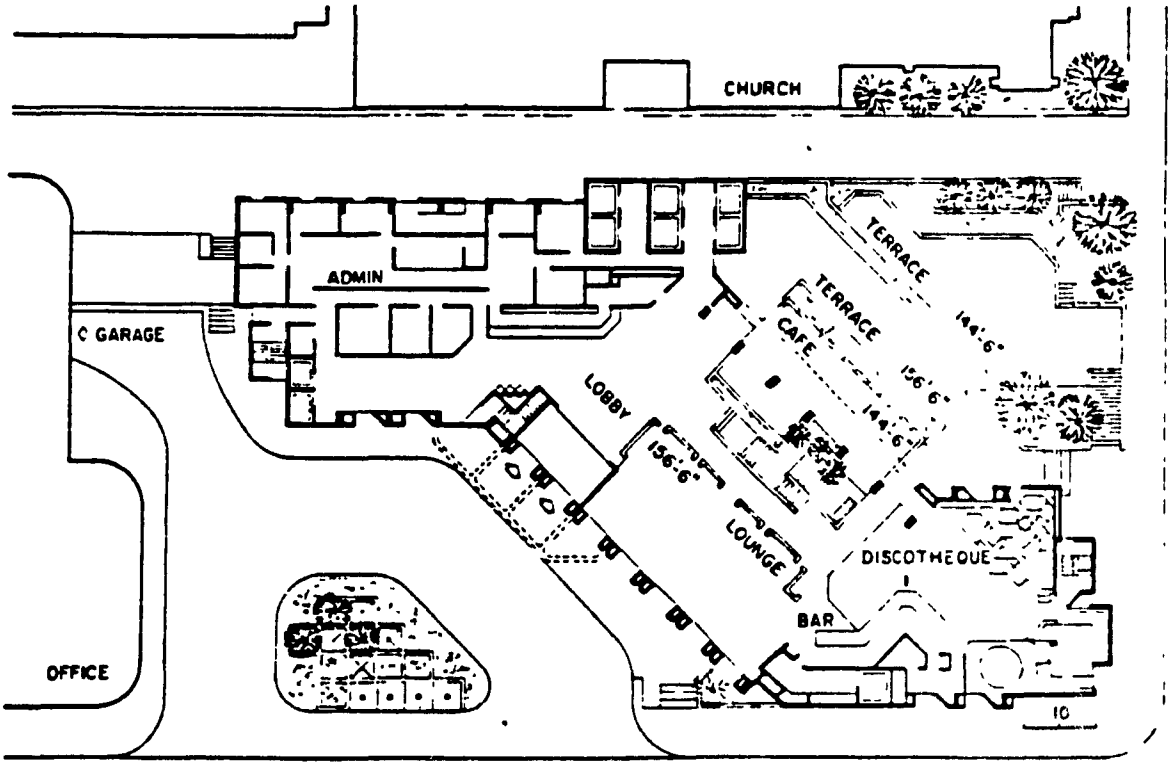

Fig. 12 Hotel street level plan and the terrace, La Cite, Montreal.
Reference: Architectural Record, January 1978, p.112.

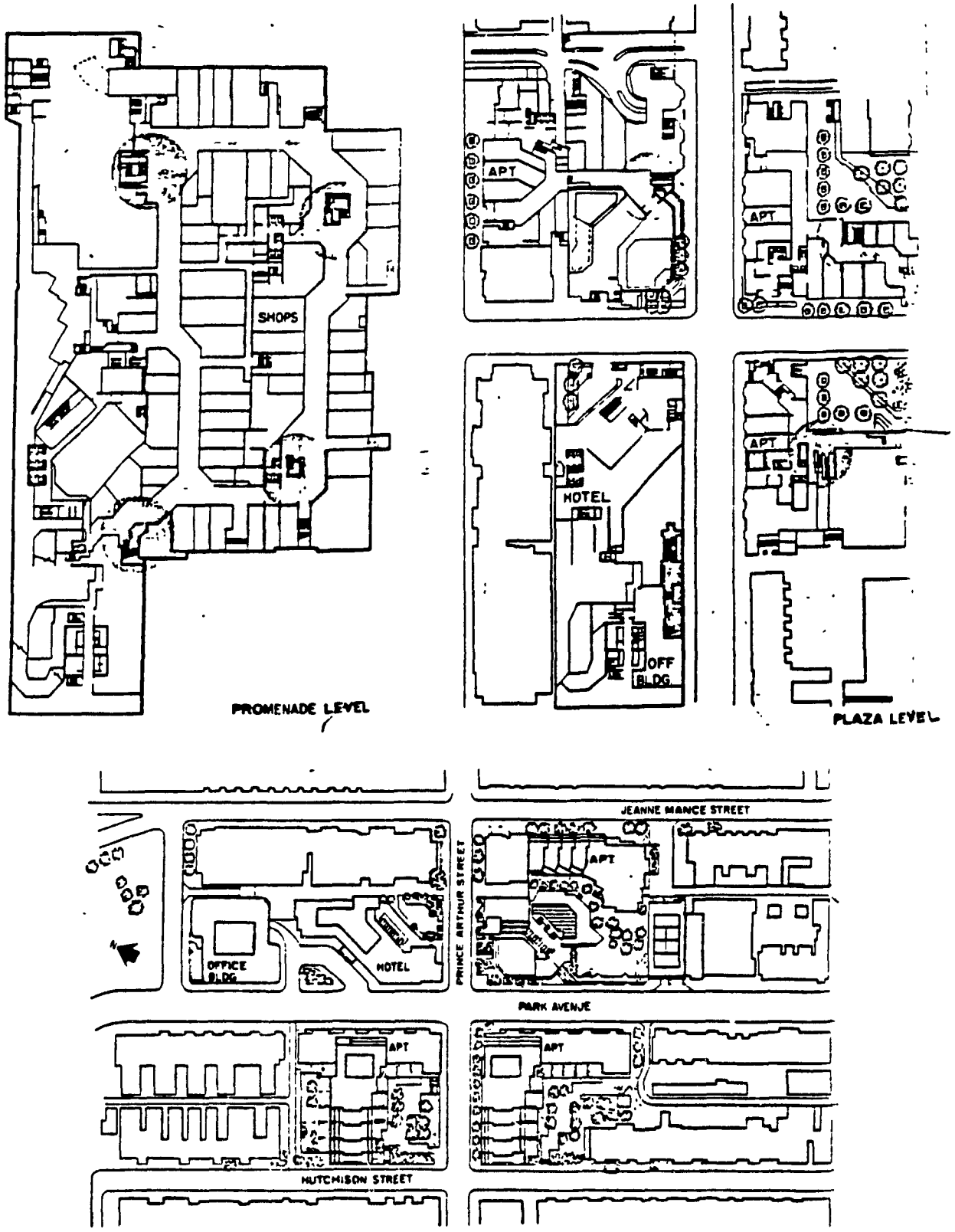

Fig. 13 Plans of promenade level, plaza level, and street level, La Cite, Montreal.
Reference: Architectural Record, January 1978, p.115-116.

The clustered organization, again, is envisaged by the creation of an identifiable interconnection of an underground infrastructure which includes a two level, 220,000 sq.ft. retail area (Fig.14),

> "which provides an all-weather connection between all parts of the project. The upper level of the retail space frames the street level plaza, and serves as a prominent entrance to the lower-level shopping concourse". (6)
>
> "La Cite", Architectural Record.

Public gardens were designed to relate to the main entrance plaza and to the street level retail areas. This device, once again, is used to interconnect the garden and the street level retail areas to the strategically located entrances.

The specialty in the internal transit system is the vertical circulation core in each individual block leading down to a pivotal circulation system in the lower retail area. Each residential towner can reach the retail level, together with a coupling set of vertical circulation cores, connected to the four split tiered garage below. The four pivotal circulation cores,

> "provide residents, hotel guests and office tenants access to the health club. The indoor recreation facilities of the club and gym,

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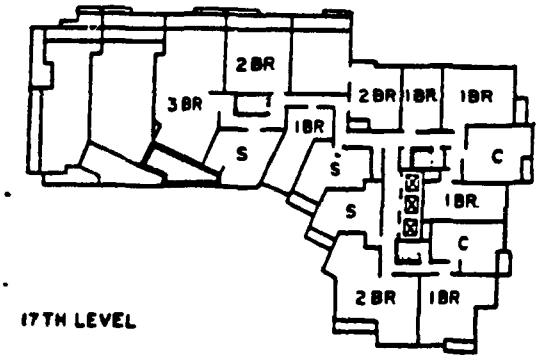
(6) "La Cite", Architectural Record, Jan. 1978. p.116.



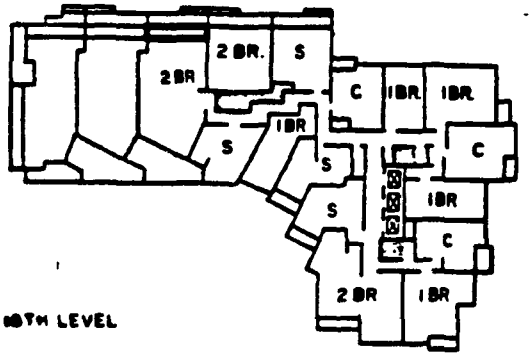


Fig. 14 Plans of upper levels with private terraces, La Cite, Montreal.

Reference : Architectural Record, January 1978, p.115.

> swimming pool, squash courts and saunas. Outdoor is another swimming pool (connected to the indoor one in such a way that it is possible to swim through a glass door from one to the other), a wading pool, game courts, sundecks and a tennis court. The indoor and outdoor facilities are connected by the elevator". (7)
>
> "La Cite", Architectural Record.

The tower's placement frames the skyline, viewing from the park at the foothill of Mont Royal. The 'hi-tech' looking office tower is indeed distinquishable from the other towers in which people dwell.

The Hotel (Fig.16) is the entertainment center in this microcosm of a city for 3000 residents and about 10,000 office workers and commercial employees who live and work in La Cite. It shares the parking and trucking facilities of the complex and ties into and manages the health club.

La Cite (Fig.17) comprises a 26 story office building, a 500 room hotel, three residential cluster towers with 1352 units, a two-level shopping area with 100 boutiques and an indoor-outdoor health club, possessing many amenities such as an attractive and well planned public open space network above and below ground, has proven a considerable achievement in this daring project. For more than a decade, the La Cite Development project was in financial trouble. The shopping facility could not be self-sustained.

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(7) "La Cite", Architectural Record, Jan. 1978, p.116.

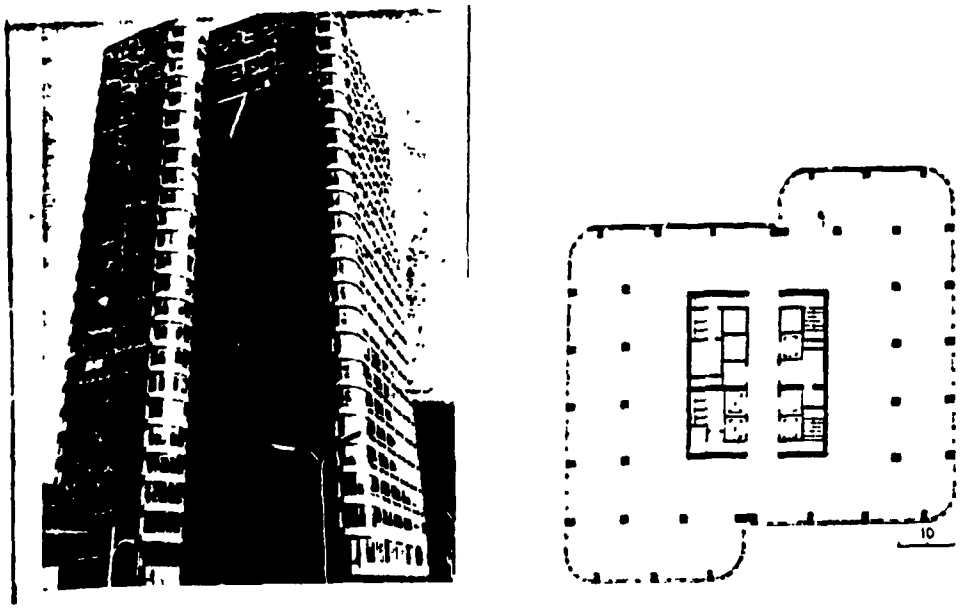

Fig. 15 View and Plan of Office Tower, La Cite, Montreal.
Reference : Architectural Record, January 1978, p.115.

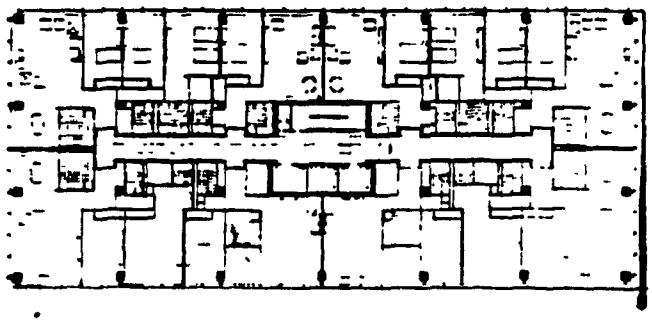

Fig. 16 Plan of Hotel typical floor, La Cite, Montreal.
Reference : Architectural Record, January 1978, p.115.

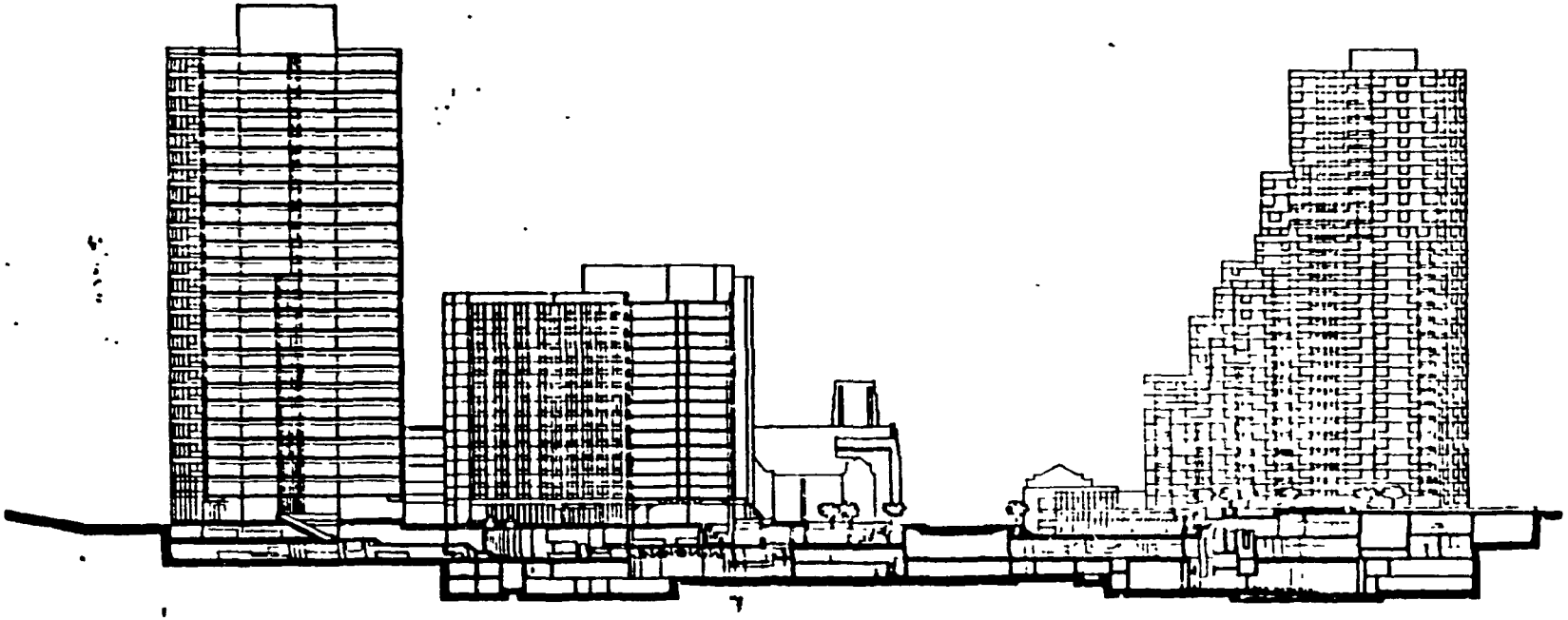

Fig. 17 Section of La Cite, Montreal.
Peference : Architectural Record, January 1978, p.113.

It shows a receding competiveness due to its proximity to, but not linked with, downtown shopping. In order to ascertain the survival capability of the commercial functions, improvement to part of the circulation system and the attractiveness in indoor shopping area justify the recent renovation. The clustered organization of uses is a very choiceable design option for accentuating the effectiveness of incorporating the various uses and functions into one formula in responding to and satisfying the demanding program requirements.

CHAPTER 5 : CONCLUSION

Since the idea of multifunctionality has been testified by numerous precedents in history, the concept of combining housing content within other urban functions is still viable. "Conjunctive housing" may make a vital contribution to whatever urban functions it comes into contact with. It cannot be denied that conjunctive housing does lend considerable support to the sustainability of a project by establishing a dependable basis of patronage through the population inhabiting these mixed use complexes.

At one point, conjunctive housing in mixed use complexes can be unjustly accused as an accomplice for the crime of transforming the whole building complex into a microcosm of the city, as many of the opponents to the mixed landuse concept state. In many of the projects we have seen and discussed, the housing component, if proportionally mixed with such functions as entertainment, education, retail and services etc. would definitely diminish the demand of such from elsewhere in the city otherwise needed. Will this then be the 'threat' or even the destructive factor to our 'street life'? No matter how the question is addressed, the motives for building mixed use complexes with or without housing content should be the same: to revitalize business into an attractive, functional habitable environment in our inner cities.

We have seen some of the advantages and disadvantages discussed in Chapter 2 concerning the reutilization of urban resources. The loss of street life due to the internally focused galleries and courtyards is one shortcomings of recent development, but equally valid is the criticism regarding the lack of housing in most mixed use complexes. With respect to the development of a modern mixed-use building type for our contemporary cities, one of the most interesting concerns may be identical to what Donn Logan had analyzed, "a large resident population will provide continuous activity for the complex. Institutional and social service uses can provide an added dimension to the usual list of activities, and should be given more consideration in the development of mixed use programs." (1)

Jane Jacobs, one of the early advocates of mixed land use and an eloquent speaker for the livelihood in our inner cities, reckoned that 'diversity' should be the basic ingredient which would bring forth 'vitality and liveliness' to our cities in replacement of 'stagnation and decay'. In simple words, 'diversity' contains two tiers of uses: primary uses and secondary uses. 'Diversity' attracts flow of people, while they gather for primary uses.

"However, when a primary use is combined effectively with another use that puts people on the street at different

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(1) Donn Logan, "Anatomy of mixed-use", Progressive Architecture, May 1976, p.57.

times, then the effect can be economically stimulating: a fertile environment for secondary diversity." Jacobs continued, "Secondary diversity is a name for the enterprises that grow in response to the presence of primary uses, to serve the people the primary uses draw."

In his concluding paragraph, Donn Logan favors Jane Jacobs' suggestion, which reads "It may at last be clear that urban mixed use buildings are necessary. They offer urban lifestyle qualities that have been disappearing from American cities..... Jacobs and other writers on urbanism influenced a whole generation of architects and planners to the extent that perhaps we have learned to deal with diversity as a design problem. Now the economic and political situation is working in favor of this diversity. Enlightened citizens, environmental legislation, special zoning districts, rising construction costs, and the energy crisis promote mixed use." Therefore, it is important to know what challenges have to be faced by conjunctive housing and what future role it should play.

Challenges

Naturally, we observe that there are some theoretical linkages to the challenge faced by mixed use projects with or without housing. Garo Gamusyan in his attempt to explore this subject included the following aspects:-

1. The purpose to achieve the scale and density of the development and in the meantime, endeavor to create an attractive, functional environment to meet the needs of each component. A high density patterns implies many disadvantages and dangers commonly associated therewith.

   Hence, careful planning is inevitably necessary if high density interferes with basic human requirements like access to air and light, the need for privacy and restfulness in any conjunctive housing scheme.

2. Land acquisition is an eminent determinant in obtaining land for the project at supportable land values as well as the period of time needed for the development.

3. Market potential in term of achieving the eventual effect of multiple uses as well as creation of development potentials.

4. 'Design plan' implies the collaborative work between the architect-planners and the developers in striving for an efficiently functional whole in the physical design such that any preset objectives can be fulfilled.

5. Infrastructure becomes the key component in a complex of design problems that requires resolution in terms of functionality.

6. It will be the strategic planning of the building phases which in whatever situation or segment of time must ensure the functional viability of the project.

Future Pole

It is projected that conjunctive housing may serve our society as an alternative approach to urban living. Habitation in the inner city is a viable alternative to suburban habitation that dominates at present many of our cities. Housing within a multifunctional complex may also offer a new horizon for many potential urban dwellers. Social and cultural advantages add color to the urban lifestyles while more attention has recently been drawn to the vitality of the numerous mixed use schemes, most containing a housing component. Conjunctive urban housing may prove itself to be a viable alternative to other urban housing forms since the faithful to urbanization will find their cities to be more liveable and exciting environments, reminiscent of cities of the past.

By going through the previous investigation into the reasoning of why we need a viable alternative to urban housing and the validity of mixed land use concept, we also have the opportunity to examine how conjunctive housing types had been developed and popularized in history. These precedents not only set path for the contemporary mixed use

complex development, they reveal the possibilities in our perspective about what true urbanity can be. Those early developments set examples of diversity, types and patterns that planning for today's conjunctive housing may follow. All assist in displaying the promises and restraints that this housing alternative encounters. As we go along in the hope of revitalizing our cities as well as accommodating more potentials for urbanization, we must not, overlook the benefits housing in mixed land use can offer. Conjunctive housing, will remain a promising alternative in urban living as well as a productive component in any mixed use complex. It will simultaneously serve as a fascinating research topic for the many who follow.

Advocates of the mixed landuse concept will face many challenges and pressures. Much of them derive from the cynical interests of the domineering powers, while the other from the enormity of the complex issues involved in achieving a workable solution for conjunctive housing development. In the same fashion, as architects encounter the general criticism, Alfred Lorenzer submits these,

> "for carrying out commission without taking into consideration the consequences of their actions for society and the continuous 'user'", as much as " the architect as a mere technical aid to the dominant powers, corresponds to the ideal of consequent functionalists.

> The Sacrificism intellectus of these architects is architecture."
>
> Houston, J.M., "A Social Geography of Europe" (1)

To revive and to preserve the vitality of a thriving and exuberant urban environment demands sensitivity and compassion of generations of architects and planners to work on and respond to the ever-changing factors and ideas in our society. We must bear an attitude ever willing to explore avenues in shaping our urbanscape based on principles and virtues founded in our successful past.

There is never one simple answer to the many questions concerning complex urban issues. Yet, persistent inquiry about the viability of a workable concept supported with historical evidence, can ensure us the possibility and potential of creating an urban environment, that once again celebrates the vitality of a superior mode of urban living that our city dwellers may cherish.

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(1) Houston, J. M., "A Social Geography of Europe", London 1963, p.157, as quoted by Norberg-Schulz, Christian, London, Academy Editions Academy, 1980, p.195.

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10. Exterior view from the North. Office Building by Arthur Ericlson, Vancouver, B.C..

11. Plans and Section. Office Building by Arthur Ericlson, Vancouver, B.C..

12. Hoyt-Schemerhorn Mezzanine Proposal. Brooklyn, New York.

13. Plans and Section. International Headquarters of the Amalgamated Transit Union. Washington, D.C..

14. Proposal for Commercial Development with Housing Component at Gastown, Vancouver, B.C..

15. Plan and Section of Gemeinschaftswarenhaus, (Community Shopping Building) Ratia, Davas, Switzerland.

16. Redevelopment proposal of Scarlett Place at Baltimore's Inner Harbour, Maryland.

17. View of Pickering Wharf, Salem, Massachusetts.

18. Plans, Elevation and Section of Pickering Wharf, Salem, Massachusetts.

19. Flexible Mixed Use Structure, Zug, Switzerland by Helmut Paschmann.

20. Plans and Views of The Village Stream, Toronto, Ontario.

21. Sections. Mixed-use Development of a city owned open parking lot, Toronto, Ontario.

CHAPTER 4

1. Atrium and street level entrance of Galleria, New York.

2. Conceptual Building Section, Galleria, New York.

3. Plan of Street level and apartment lobby, Galleria, New York.

4. Section of The Galleria New York.

5. Views of entrance and perspective of the building, plans of apartment floor and atrium office floor, Galleria, New York.

6. Multi-use/Warehouse/Residential Development Study, Toronto, Ontario.

7. Plan and sections showing integration of housing and warehousing, parking and vehicular access.

8. Formation and lineation of stacked housing and terraced housing on the roof and at the perimeter of the warehouse.

9. Diagrams showing different Clustered Organizations.

10. Plan and section showing the spatial organization of Westmount Square, Montreal.

11. View of the nodal open space at the street intersections, La Cite, Montreal.

12. Hotel Street Level Plan and the terrace, La Cite, Montreal.

13. Plans of Promenade level, plaza level, and street level, La Cite, Montreal.

14. Plans of upper levels with private terrace, La Cite, Montreal.

15. View and plan of Office Tower, La Cite, Montreal.

16. Plan of apartment floor, La Cite, Montreal.

17. Section of La Cite, Montreal.

BIBLIOGRAPHY

ALEXANDER, Christopher.
A Pattern Language
New York: Oxford University Press, 1977.

ANDERSON, William J. and
SPIERS, R. Phene
The Architecture of Greece & Rome: A sketch of its historic development
London: B. T. Batsford, 1907.

ARGAN, Giulio C.
The Renaissance City
New York: George Braziller, Inc. 1969.

BACON, Edmund N.
Design of Cities
New York: The Viking Press, 1976.

BATSOS.
New Concepts of Urban Housing
Montreal: McGill University Thesis, 1979.

BENEVOLO, Leonardo.
The Architecture of the Renaissance. Vol.1&2
London: Routledge & Kegan Paul Ltd. 1978.

BLOOMFIELD, Reginald.
Renaissance Architecture in England. Vol.1&2, 1500-1800 A.D.
London: George Bell & sons. 1897.

BOR, Walter
The Making of Cities
London: Leonard Hill, 1972.

BROWN, Frank E.
Roman Architecture
New York: George Braziller. 1961.

BURKE, Gerald
Towns in the Making
London: Edward Arnold Ltd., 1971.

BURNETT, John.
A Social History of Housing, 1815-1970
Vermont: David and Charles, 1978.

Caffin, David P.
The Villa in the Life of Renaissance Rome.
Princeton, New Jersey: Princeton Univ.Press.1979.

CHING, Francis.
Architecture:Form, Space and Order
New York: Van Nostrand Reinhold Company, 1979.

COULTON, George Gordon
Life in the Middle Ages
Cambridge: Cambridge University Press, 1967.

DIEHL.
Perimeter Planning for a New Urban Housing Design
Montreal: McGill University Thesis, 1982.

DIOXIADES, Konstantinos Apostolou
Architectural Space in Ancient Greece
Cambridge, Mass.: MIT Press, 1972.

GALLION, Arthur B.
EISNER, Simon
The Urban Pattern:City Planning and Design.
New York: Van Nostrand. 1975.

GAUBE, Heinz
Iranian Cities
New York: New York Press, 1979.

GIEDION, Sigfried
Space, Time and Architecture
Cambridge, Mass.: Harvard University Press, 1954.

GRINBERG, Donald I..
Housing in the Netherlands, 1900-1940,
Delft: Delft University Press, 1977.

GRUEN, Victor
Centers for the urban environment --- Survival of the Cities,
New York: Van Nostrand Reinhold Co., 1973.

GUMUSYAN, Garo
Mixed Land Use Zoning,
Montreal, McGill University thesis, 1979.

GUTKIND, Erwin Anton
International History of City Development
New York: Free Press of Glencoe, 1964-1972, 8 vols. --- vol. IV: Urban Development in Southern Europe, Italy and Greece.

HEGEMANN, Werner.
City Planning --- Housing. Vol. 1
New York: Arch.Book Publishing Co., 1936-38.

HIORNS, Frederick F.
Town Building in History.
London: G.G. Harrap, 1956.

JACOBS, Jane
The Death and Life of Great American Cities
New York: Random House, 1961.

LIEBERMAN, Ralph
Renaissance Architecture in Venice, 1450-1540,
New York: Abbeville Press. 1982.

LOTZ, Wolfgang
Studies in Italian Renaissance Architecture,
Cambridge, Mass.: The MIT Press, 1977.

LYNCH, Kevin
The Image of the City
Cambridge , Mass.: The M.I.T. Press,1979.

MORRIS, A. E. J.
History of Urban Form: Before the Industrial Revolutions - second edition.
London: George Godwin, 1979.

MUMFORD, Lewis
The City in History
New York: Harcourt, Brace & World, Inc., 1961.

The City in History: Its origins, its transformations, and its prospects.
London: Secker & Warburg, 1961.

MURRAY, Peter.
The Architecture of the Italian Renaissance.
New York: Schocken Books. 1963.

Norberg-Schulz, Christian
Genius Loci:Towards a Phenomenology of Architecture,
London, England: Academy Editions London, 1980.

PIRENNE, Henri
Medieval Cities: Their origins and the revival of trade
Princeton, N. J.: Princeton Univ. Press. 1925.

PROCOS, Dimitri
Mixed Land Use
Pennsylvania: Dowden, Hutchinson and Ross, Inc., 1976.

RASKIN, Eugene.
Architecture and People
New Jersey: Prentice-Hall, Inc.1974.

RASMUSSEN, Steen Eiler
Experiencing Architecture
London: Chapman and Hall, 1964.

ROBERTS, M. Hugh
An Urban Profile of the Middle East
London: Croom, Helm, 1979.

SAALMAN, Howard
Medieval Cities
New York: Braziller, 1968.

SCHOENAUER, Norbert
6000 Years of Housing
New York: Garland STPM Press, 1981.

SMITH, J. T., FAULKNER, P. A. and
EMERY, Anthony
Studies in Medieval Domestic Architecture,
U. K.: The Royal Archaeological Institute, 1975.

TAHVILDARI, Raza
The Downtown Shopping Center: An Enquiry into the Urban Marketplace.
Montreal: McGill University Thesis. 1987.

Uhlig, Klaus.
Pedestrian Areas
New York: Architectural Book Publishing Co.1979.

WARD-PERKINS, John Bryan
Cities of Ancient Greece and Italy
New York: Braziller, 1974.

Roman Architecture
New York: Harry N. Abrams, Inc. 1977.

From Classical Antiquity to the Middle Ages.
London: Oxford University Press. 1984.

WARD, W.H.
The Architecture of the Renaissance in France.
London: B.T. Batsford. 1911.

Wiedenhoeft, Ronald.
Cities for People
New York: Van Nostrand Reinhold Company. 1981.

WILSON, John
The City in Communist China
Stanford, California: Stanford Univ. Press, 1971.

WYNN, Martin
Housing in Europe,
New York: St. Martin Press, 1984.

PERIODICALS

"Anatomy of mixed-use". Progressive Architecture. 5:76. p.51-57.

" The Bay Charles Towers, Toronto." The Canadian Architect. 1981. p.20-23.

" A Bridge for Our generation ". The Japan Architect. August 1987. p.46-49.

" Microcosms of Urbanity ". Progressive Architecture. 12:75. p.37-51.

" Mixed-use in a Single Building, The Galleria in New York ". Architectural Record. 12:75. p.76-79.

" Colony Square in Atlanta ". Architectural Record. 12:75. p.80-83.

" Stores and Shops, Water Tower Place in Chicago ". Architectural Record. 4:76. p.136-140.

" La Cite, A Mixed-use Development in Downtown Montreal ". Architectural Record. 1:78. p.111-116.

" Pickering Wharf,Pickering Wharf in Salem, Mass". Architectural Record. p.120-123.

" Headquarters of the International Amalgamated Transit Union, Washington, D.C. ". Architectural Record. 3:80. p.124.

" Award of Excellence ". Mixed-Use Development Project on Alvin Avenue, Toronto, Sponsored by City of Toronto's Housing Corporation and Parking Authority. The Canadian Architect. 1:79. p.20-25.

" The Bay Charles Towers, Toronto by Klein and Sears ". The Canadian Architect. 10:81. p.20-23.

" Mixed Use Elegance, The Village Stream by Romano Erba ". The Canadian Architect. 1:83. p.22-24.

" Mixed Use Renovation, The Manhattan Apartments, Vancouver, by Norman Hotson ". The Canadian Architect. 11:83. p.42-45.

" Mixed Use : Rebuilding a Wharf, Market Square, Saint John, New Brunswick, by ARCOP Associates ". The Canadian Architect. 6:84. p.20-29.

" Award of Excellence, Mixed-use Development, Main and Terminal, Vancouver, by Paul Merrick/ Chandler Kennedy ". The Canadian Architect 12:85. p.21-25.

" Mixed-use Design, Federickton Medical Clinic, New Brunswick, by Jones and Kirkland in assoc. with Fellows & Co.". The Canadian Architect. 2:86. p.26-29.

" A Bridge for Our Generation, At Yokohama, Kanagawa Prefecture, by Kazuhiro Ishii ". Japan Architect. 8:87. p.46-49.

" Office Building, Vancouver, Canada, Offices and Residential Units by Arthur Erickson ". A + U. 5:82. p.47-56.

" Mies A Montreal, Westmount Square in Montreal, 1968 by Mies Van der Rohe ". Domus. 5:71. p.5-6.

" Citation - Zeidler Partnership: Mississauga City Centre, Missisauga, Ontario ". The Canadian Architect. Feb. 1978.

" Citation - Dunlop Farrow Aitken:Multi-use/ Warehouse/ Residential Development Study, Toronto, Ontario ". The Canadian Architect. Feb. 1976. p.38-40.

" Award of Excellence ". The Canadian Architect. Dec. 1978.

" The Canadian Architect Yearbook Awards : Klein and Sears : Holly-Dunfield Mixed Housing,. Toronto, Ontario". The Canadian Architect. Dec. 1976.

" Citation - Bernard M. Rasch : Film House, Toronto, Ontario". The Canadian Architect. Feb. 1976, p.41-43.