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The city as living room: the criticalities of urban design in an age of empowerment in sub Saharan Africa.

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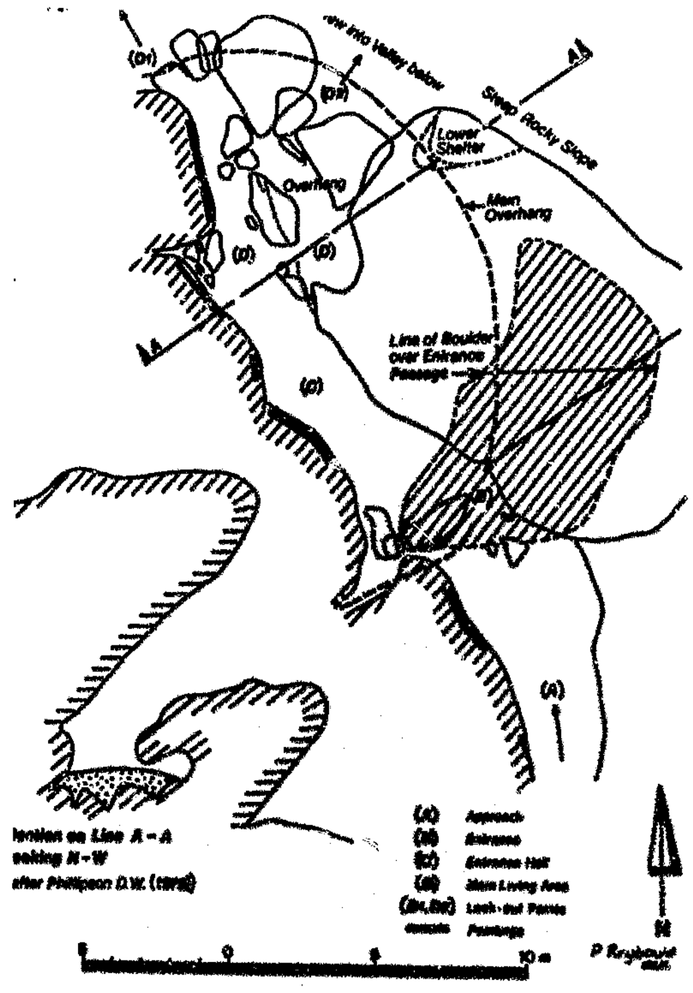
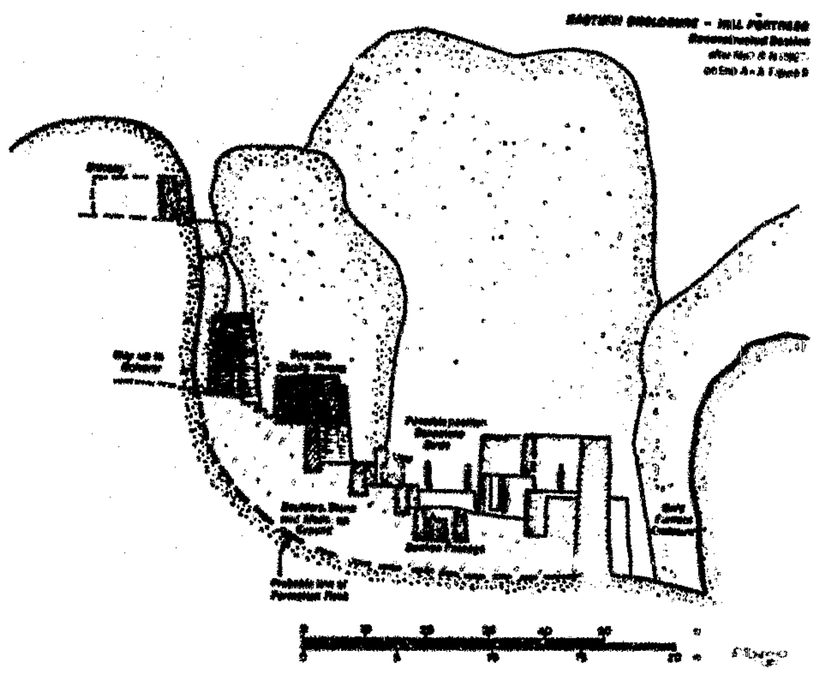
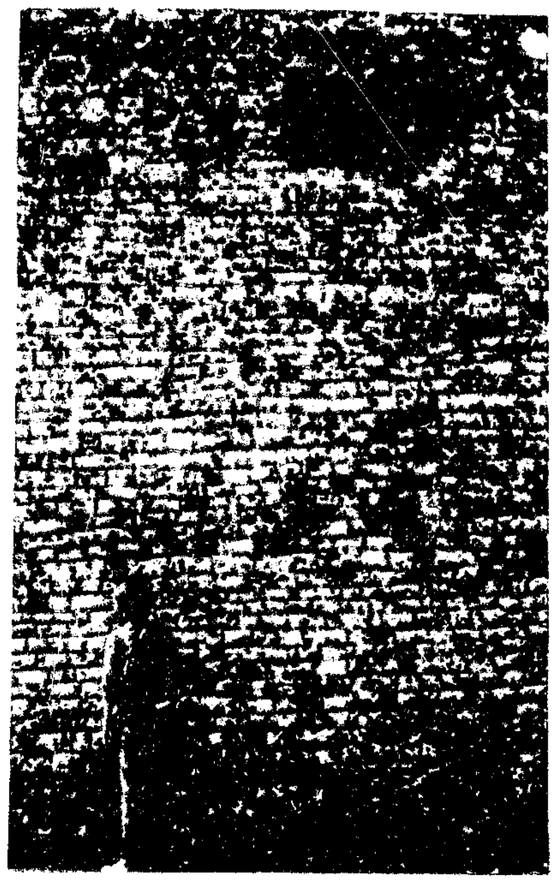
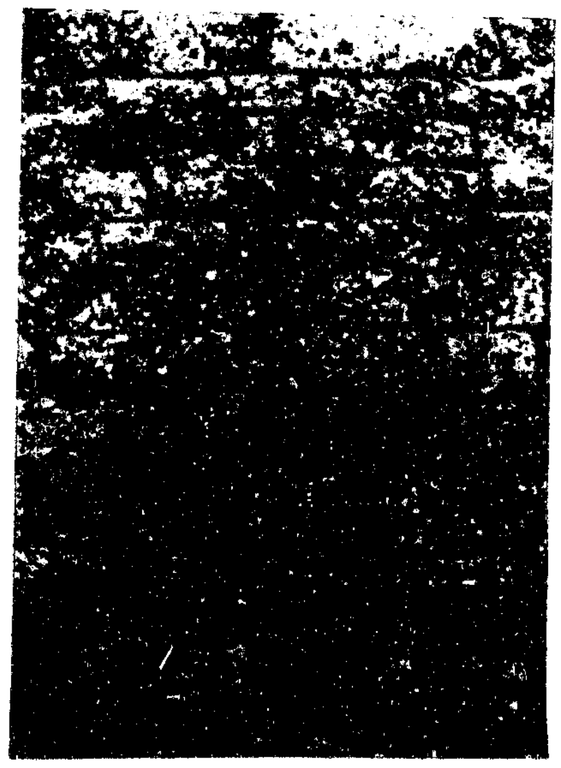
ELEMENTS OF THE PUBLIC REALM	ANCIENT ZIMBABWE (700-900 AD uncertainty as to exact date)
- Residential	The living environment inside the Makwe rock shelter catered for the basic needs of the community, in which the beginning of human living space had been created by Stone Age Man. The fortress was a space everybody made for and lived in.  **Figure L.7.** : Makwe Rock Shelter. **Source** : Mallows, W. Op. cit, p.18.
- Religious	Enclosures were built to house "cult" objects, namely the famous birds carved on soapstone posts. The Audience Chamber enclosure was the priest-king's vestry, when the room was not used to house cult objects.  **Figure L.8.** : Eastern Enclosure - Hill Fortress. **Source** : Mallows, W. Op. cit, p.31.

ELEMENTS OF THE PUBLIC REALM	ANCIENT ZIMBABWE (700-900 AD uncertainty as to exact date)
- Administrative	The Hill Fortress was a place were Stone Age hunters could watch the movement of their food supply and intruders could be perceived as a result of elevation and limited access. e.g. The rock shelter at Makwe, Zambia. (4th and 3rd millennia B.C. - occupancy dates). The limited accessibility and narrow passageway meant that access in military terms was "fully under control". Basically, the Hill Fortress was in itself a straightforward piece of military planning.  **Figure L.9.** : Air view of the Hill Fortress from the west. **Source** : Mallows, W. Op. cit, p.19.
- Political (Military)	In the Inyanga district, there is a simple fort, situated at the top of a hill. These forts are sometimes just one enclosure, or a series of enclosures clustered round a central enclosure. The Hill Fortress incorporates the rules of fortified planning, being controlled and carefully guarded. The Balcony of the Hill Fortress was ideal for the protection of the king and his court. Safety and effective military administration appears to be dominant forces in the city building process. (See figure L.9.).
- Historical	
- Educational	
- Recreational	
- Retail	
- Commerce/Office	
- Industrial	The Gold Furnace Enclosure contained relics of a gold smelting furnace made from very hard cement of powdered granite, with a chimney of the same material with neatly slanted edges.
GENERAL i.t.o built form	

ELEMENTS OF THE PUBLIC REALM	ANCIENT ZIMBABWE (700-900 AD uncertainty as to exact date)
- Scale and Mass	The scale was very large, with an amazing and unique exertion of manpower and energy.  **Figure L.10.** : Great Wall of the Great Enclosure. **Source** : Mallows, W. Op. cit, p.40.
- Materials	
- Walls and Facades	All walling is without any mortar, it is all dry stone-walling where the stones are fitted together without any bonding material in either the horizontal or vertical joints. The stones used in the Great Zimbabwe ruins have been standardized in shape, size and weight to achieve a smooth finish to the wall face.  **Figure L.11.** : Detail of the Great Wall. **Source** : Mallows, W. Op. cit, p.44.
INFRASTRUCTURE	

ELEMENTS OF THE PUBLIC REALM	ANCIENT ZIMBABWE (700-900 AD uncertainty as to exact date)
MOVEMENT (physical connections)	
Movement as a consequence of form	The passageways which led to the Great Western Enclosure only permitted a single-file movement.  **Figure L.12.** : Parallel Passage, Great Enclosure. **Sosurce** : Mallows, W. Op. cit, p.43. The function of the Western Enclosure was as a guard house which controlled all primary entrances from the exterior and all secondary entrances to the heart of the Fortress. Within the Valley Ruins, long passageways and parallel walls both direct movement as a result of the form.
Movement as a generator of form	The long approach passageways reflect the necessity of controlling access. A series of intermediate smaller enclosures linked by narrow passages are also evident. The arrangement of passages gave rise to an extremely well-planned system of movement. The natural gaps in the great rocks were utilized and systematised in a very skilful manner. The inhabitants of this city were in harmony with nature, together with making the most of the existing natural attributes. Within the Great Enclosure of the Valley Ruins, access and egress were tightly controlled. All exits and entrances acted as checkpoints with a change of level and steps, thus forcing the stranger either to look down or stumble and a crowd unable to "rush" the gap.

ELEMENTS OF THE PUBLIC REALM	ANCIENT ZIMBABWE (700-900 AD uncertainty as to exact date)
VIEWS, VISTAS AND SKYLINES (visual connections)	On the north side of the Hill Fortress the inhabitants made use of the rock peculiarities as a balcony overlooking the whole Audience Chamber and the space behind it, known as the Balcony Enclosure. Extensive views exist in many of the remaining ruins e.g. the East Ruins of the Valley Ruins.

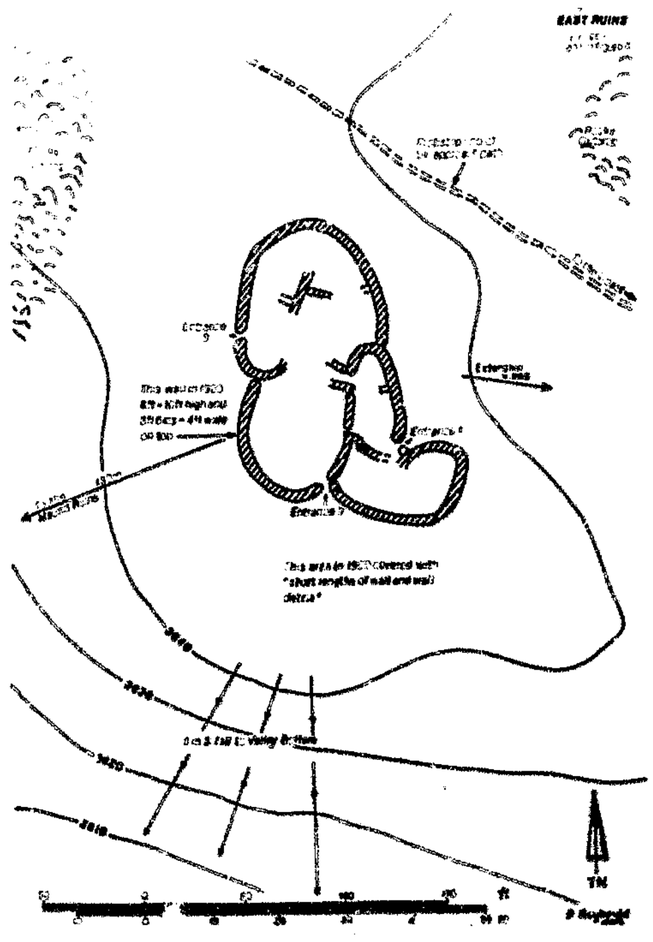


Figure L.13. : The East Ruins.
Source : Mallows, W. Op. cit, p.36.

The fact that the Valley Ruins were lower than the Hill Fortress, permitted an onlooker to keep strict control of the Valley Ruins from the Hill Fortress. The walls within the Ruins did not cater for any type of roof construction. The conical towers which appear to be useless are characteristic of the Great Zimbabwe (perhaps these towers, which were solid, were used as a significant landmark). All these towers are found adjacent to entrances or passageways. Another suggestion for the use of these towers (made by Mallows, 1984) could have been a fire tower to give light at night (a phallus with a fire on top), which would have lit up most of the interior and exterior surrounding.

ELEMENTS OF THE PUBLIC REALM	ANCIENT ZIMBABWE (700-900 AD uncertainty as to exact date)
ORIENTATION	The Hill Fortress and the Valley Ruins appear to be totally divorced from one another, however a double connection of sight and sound is clearly evident. Conical landmarks in most of the ruins serve as some kind of orientating device. e.g. emphasizing entrances, significant focal points, etc.  **Figure L.14.** : Conical Tower from north end of Sacred Enclosure. **Source** : Mallows, W. Op. cit, p.42.
NATURE	
FLOORSCAPE (surface contours and materials)	

INFLUENCES	ANCIENT ZIMBABWE (700-900 AD - uncertainty as to exact dates)
- Technology	The terracing of hillsides was undertaken in accordance with the water courses with exactitude. Gold-bearing quartz was extracted by exposure to heat prior to crushing. Relics of a gold-smelting furnace were found together with crucibles used for smelting the gold, within the Gold Furnace Enclosure. The absence of any variation in the building technique to provide for bonding at intersections reveals the limited nature of the stone technology. The brick technique used was a single-man technique, not a massed labour technique. The standardization of the stones in terms of size, shape and weight have been the result of human intention, effort and skill. Generally, most of the stone cutting was done at the quarry and not at the site, except for the Great Wall of the Great Enclosure where precision fitting was required. The level of competence and quality amongst the different groups of masons varies. A rule of thumb was utilized in wall building which related the three dimensions of the width at the base, the total height and the width at the top. All walls at the top were wide enough for a man to walk along them with ease. Evidence of some hydraulic knowledge can be perceived with the use of drains, (which were long, narrow wooden troughs) and the damming of the valley of the Hill Fortress,(which must have ultimately been the main water supply for the Hill Fortress).
- Political Life	
- Ecclastical (of the church)	
- Secularism	
- Concentration of power political economic religious	The concentration of gold which was mined on the eastern edge of the Gold Furnace Enclosure was economically significant. In addition, this topographical position was a natural collecting point for storing trade goods prior to their annual transhipment to the coast. Trade goods, namely Ancient gold, Arabian pottery and glass were found in one of the enclosures of Renders Ruin. In another enclosure of the ruin, beads and other trade goods were found, thus suggesting that at some period in history, these ruins (the Valley Ruins) were traders' camping sites.
Power hierarchy	The settlement pattern reflects this social hierarchy where the dwelling units are clustered around the chief. It has been assumed that whoever was in power in the Fortress tended to direct control of productive actions in various enclosures of the other ruins. Some of the recent theories assume that these ruins were constructed for the containment of slave labour for the gold and copper mining industry or perhaps for the trade industry. Mallows (1984) identifies the Great Enclosure as having been a prison, due to its height of the wall, the width at the top, the smooth face, the exceptional visibility of the interior and the position in the Valley Ruins. According to Mallows, the indigenous slavery of Africa was a form of adjustment of accepted social obligations in a society that had only a subsistence economy and so no surplus wealth, only labour for the settlement of debts or disputes.

ELEMENTS OF THE PUBLIC REALM	KWARRIELAAGTE (pre-colonial settlement, established in c.1903)
URBAN SPACE	
- Squares	Eventhough, the Bantwane settlement is arranged on a circular format, various elements of the public realm, exhibit the functions of congregation and sociability which tended to be associated with squares. The main Kgora located in the centre of the settlement fulfils the traditional functions of the square (stimulating spontaneous discourse and human contact), including the Kgoras of each family dwelling, but to a lesser degree.
- Streets	The radial streets relate directly to the concentric layout of the settlement, with service roads being located on the circumference of the settlement. The circumferential streets are intersected by radial passage accesses, which provide access from the Kgoro arena to the successive outer rings of the semi-circular layout. Accessibility is very important in society, due to the fact that most of the inhabitants are reliant on a pedestrian mode of transport. The public nature evident in the street space is also significant in the urban design arena.
- Parks	
- Vacant Land	
- Meeting Place	The meeting place of the men is situated between the cattle kraal (Byre) and the chief's place at the head of the settlement. The cattle kraal is the neutral centre of the social and political space adjacent to it.
- INDOOR/INTERIOR SPACE	
INTERFACE	
CITY PLAN (layout)	The layout of Kwarrielaagte is a result of the establishment of a traditional social/political and symbolic/conceptual spatial order. The cattle kraal (byre) is the generator of the settlement, being the neutral centre of the social and political space which surrounds it. The layout exhibits a concentric settlement pattern which complements the radial movement system.  Figure M.1. : The Concentric Housing Enclosures. **Source:** Rich, P. The Bantwane Settlement at Kwarrielaagte, Architecture SA, November/December 1982, p.40.
BUILT FORM (relative to the public realm)	

ELEMENTS OF THE PUBLIC REALM	KWARRIELAAGTE (pre-colonial settlement, established in c.1903)
- Residential	The domain or boundaries of the homestead are defined by the orthogonal courtyard walled enclosure. The architectural concept of the outdoor room allows for extensions to be made in accordance with the dictate of the plan and roof construction.

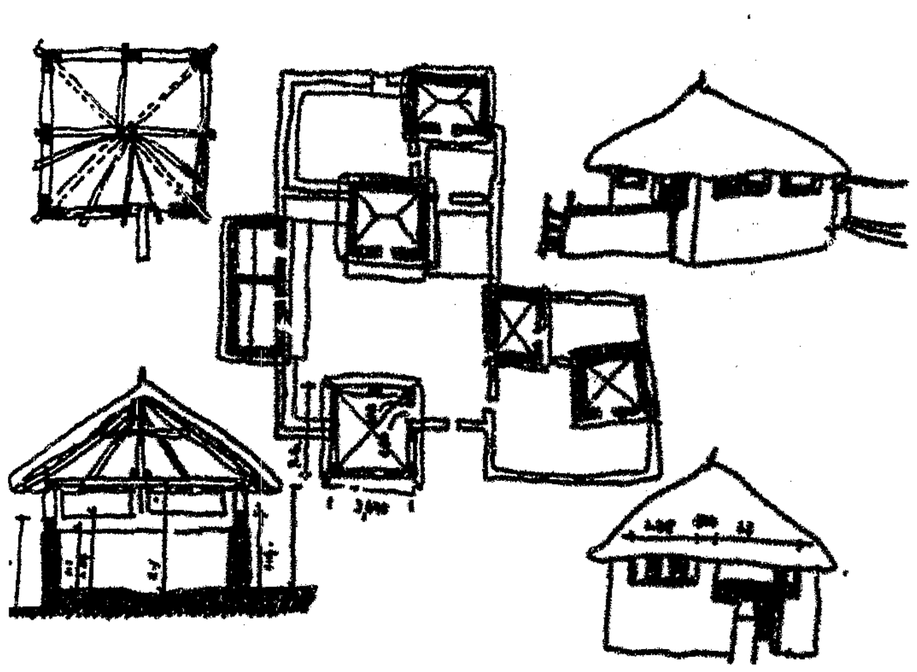


Figure M.2. : The Homestead (concept of outdoor room).
Source : Rich, P. Op. cit, p.42.

The traditional verandah forms a sheltered extension to both the house and outdoor rooms.

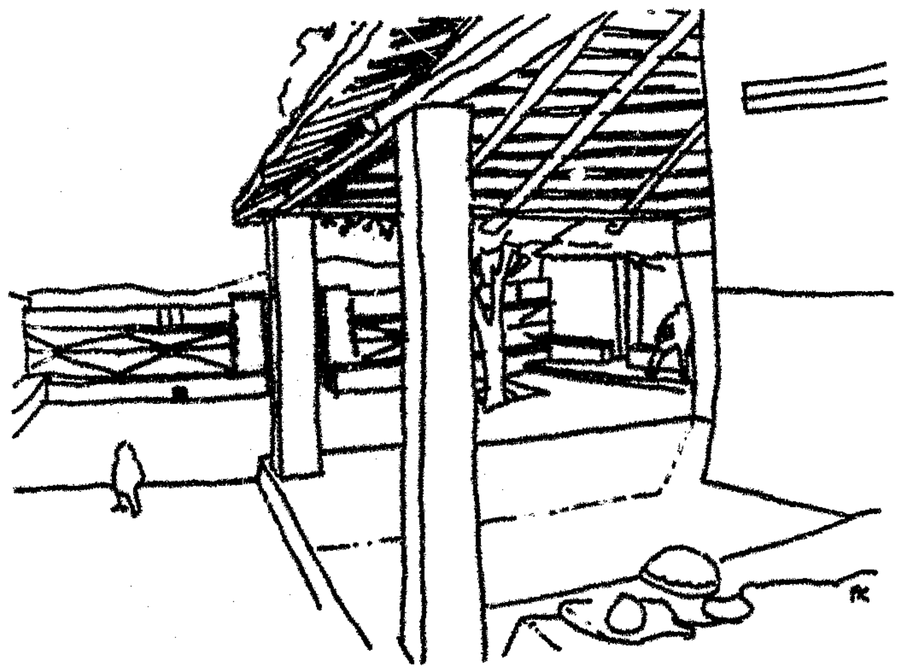
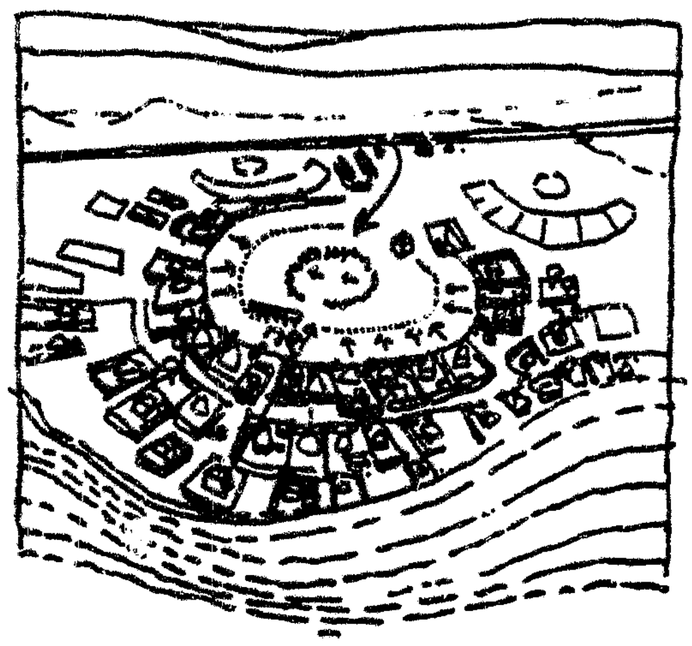
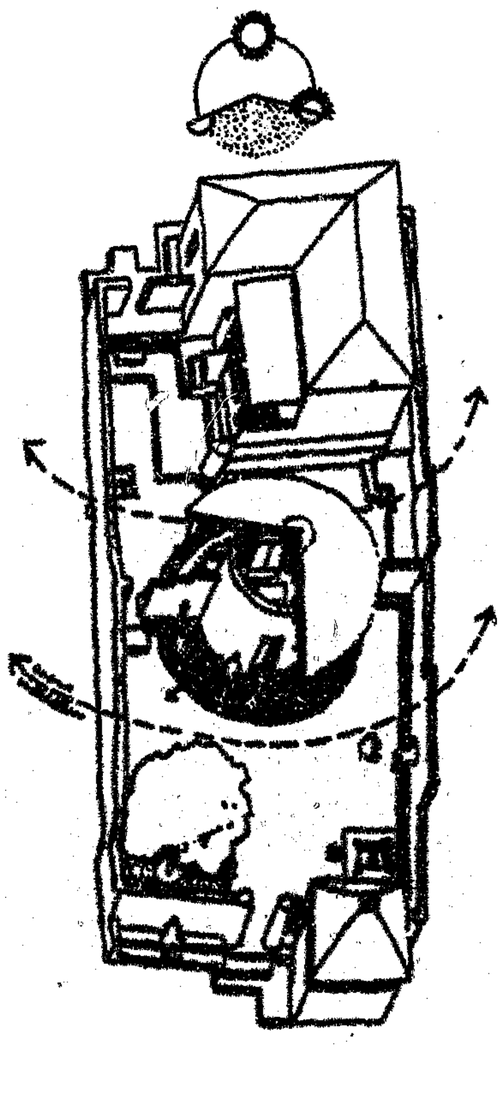
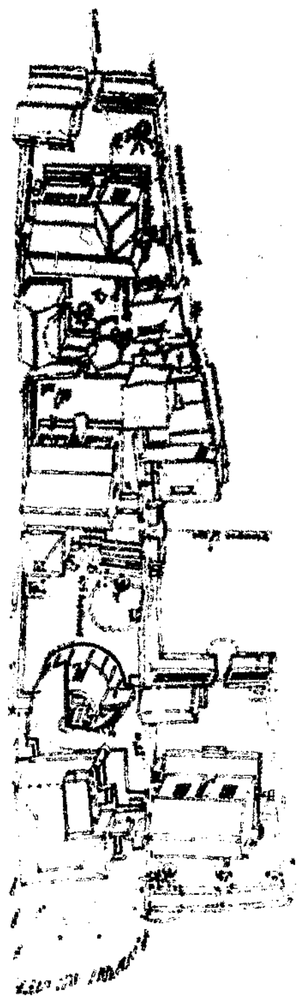
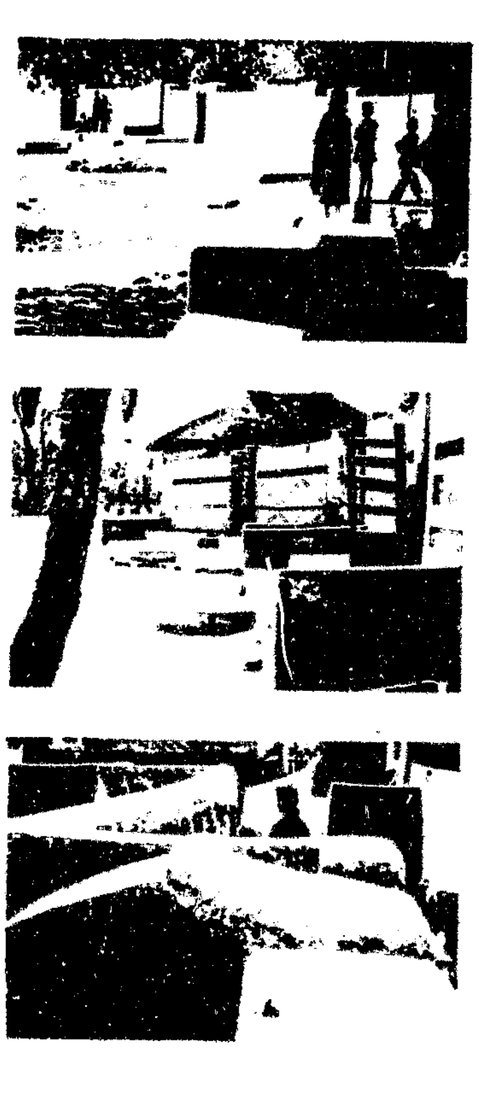


Figure M.3. : The traditional verandah
Source : Rich, P. Op. cit, p.42.

ELEMENTS OF THE PUBLIC REALM	KWARRIELAAGTE (pre-colonial settlement, established in c.1903)
- Religious	The cattle kraal (Byre) is perceived as the sacred heart of the community, being the burial place and the setting for sacrificial rituals. The kraal is infact the generator of the settlement.  **Figure M.4.** : The Kgora is perceived as the main social and ritual arena. **Source** : Rich, P. Op. cit, p.41.
- Administrative	The semi-circular homestead enclosure defines the Kgoro as the central political space of the community. Today, the building of the tribal authority serves as the chief's office and court house.
- Political (Military)	
- Historical	
- Educational	
- Recreational	
- Retail	
- Commerce/Office	
- Industrial	
GENERAL i.t.o built form	
- Scale and Mass	The scale tends to be related to human dimensions.
- Materials	Traditional building materials (namely, earth, dung and coarse aggregate stone) have been utilized in most of the built forms within the settlement.

ELEMENTS OF THE PUBLIC REALM	KWARRIELAAGTE (pre-colonial settlement, established in c.1903)
- Walls and Facades	The courtyards are formed by lapa walls which consist of the traditional building materials displaying a plastic quality. The embellishment on the walls is minimal apart from the entrance portals. The stylistic embellishment conforms with the simple decorative mural art which is in earth colours.  **Figure M.5.** : The lapa walls which form the courtyards. **Source** : Rich, P. Op. cit, p.43.
INFRASTRUCTURE	Service roads are existent along the radial and circumferential streets. Pit latrines are also evident, being strategically located at intervals in both the public and private domains.
MOVEMENT (physical connections)	

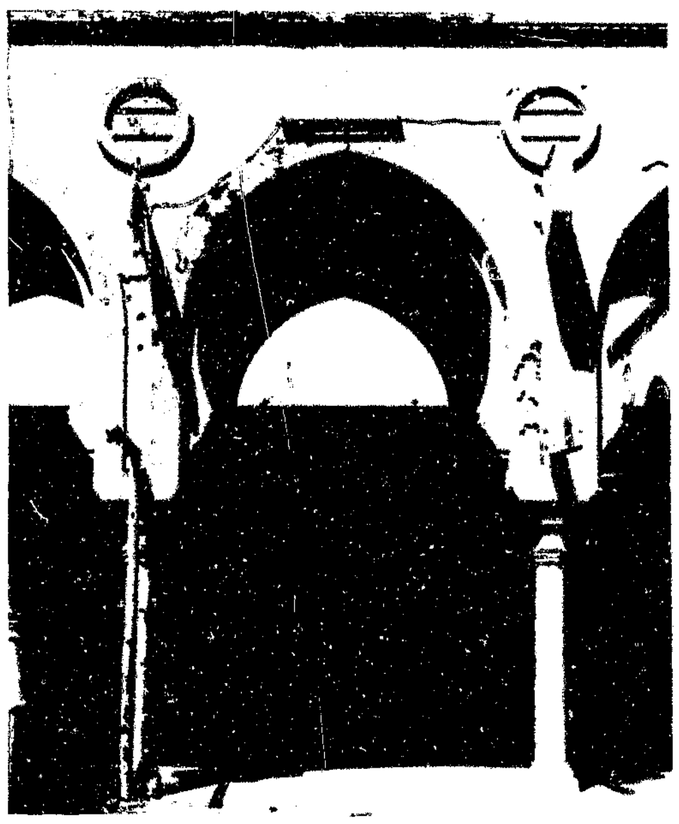
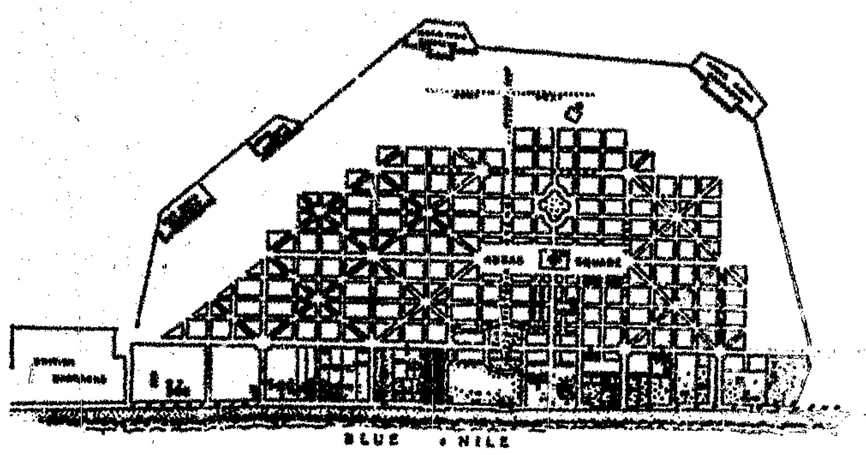
ELEMENTS OF THE PUBLIC REALM	KWARRIELAAGTE (pre-colonial settlement, established in c.1903)
Movement as a consequence of form	The radiatory circular settlement pattern creates a network of public circulation routes with circumferential streets intersected by radial passage accesses.  **Figure M.6.** : Radial access pattern. **Source** : Rich, P. Op. cit, p.43. The widening of the chief's homestead at the outer limits has resulted in a chequer - board gridded pattern. Public passageways have been included between every two or three alternate homesteads, to allow for access from the Kgoro arena to the successive outer rings of the seme-circular settlement. The radial movement system and circular settlement layout complement one another.
Movement as a generator of form	The public passage and radial axis of the homestead are responsible for the distortion of the courtyard walls.
VIEWS, VISTAS AND SKYLINES (visual connections)	

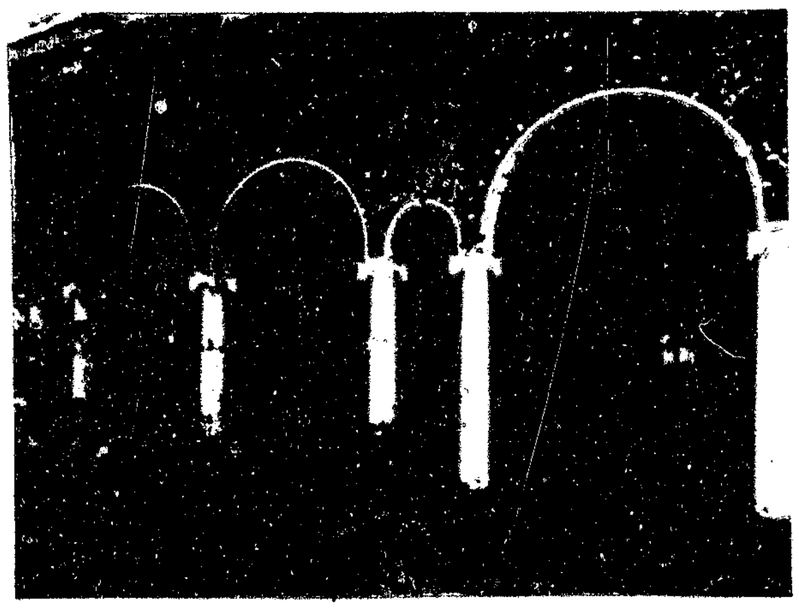
ELEMENTS OF THE PUBLIC REALM	KWARRIELAAGTE (pre-colonial settlement, established in c.1903)
ORIENTATION	The Bantwane homestead works effectively in terms of climatic adaptability regardless of orientation.  **Figure M.7.** . Courtyard ventilation (climatic control). **Source** : Rich, P. Op. cit, p.43.
NATURE	Nature has been incorporated in order to enhance the homestead's spatial organization, with the use of ball-shaped citrus trees.
FLOORSCAPE (surface contours and materials)	

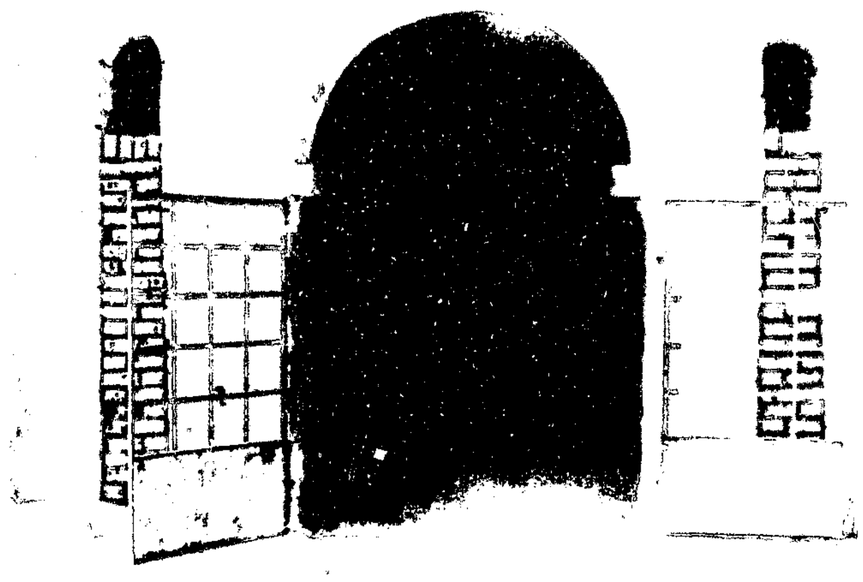
INFLUENCES	KWARRIELAAGTE
- Technology	
- Political Life	
- Ecclastical (of the church)	
- Secularism	
- Concentration of power political economic religious	The cattle kraal is representative of economic power, as well as being the generator of the settlement. The centrality of the cattle kraal within the settlement is symbolic of the importance associated with the cattle and their protective enclosure.
- Power Hierarchy	The semi-circular layout is expressive of the patrilineal structure of the society. ie. each semi-circle denotes a different father's name. The Kgore's (the inhabitants of a group and the related public space) are arranged in order of seniority with the chief's homestead being located at the top of the semi-circle (symbolic of his political status), being the only place of dual patrilineage. The social hierarchy is representative of the Pedi model of being to the left and the right in accordance with seniority. The segmental arrangement of families from the front lapa outwards provides a reference to the family structure of the Kgore. Slope and approach also influence settlement layout, with the chief's homestead being located on the highest ground with the ritualization of movement (ie. the chief always passes through the portals of his grandparents from lapa in moving to and from his house).
- Culture	The Bantwane have adopted the Bapedi culture, through the bond of language. Kwarrielaagte exhibits characteristics of a traditional settlement model whose inception, growth and evolution has occurred in the twentieth century.

ELEMENTS OF THE PUBLIC REALM	KHARTOUM (Colonial city, established in 1898)
URBAN SPACE	
- Squares	The market areas are often surrounded by various porticoes forming a continuous arcade. The spatial arrangement encourages interaction between the space and the volume of the building. The market place is a focus for social life where the individual may experience participation and belonging.  **Figure N.1.** : The Market Place **Source** : Norberg-Schulz, C. Op. cit, p.131.
- Streets	The streets are wide and regular being characteristic of the colonial city, which was planned by Lord Kitchener after the British conquest in 1898. It can be assumed that Kitchener used the "union Jack" as his ordering device when he planned the orthogonal and diagonal streets of Khartoum, emphasizing emperialisitc ideals (Norberg - Schulz, 1980). Additionally this street arrangement represents the general natural order of the cardinal points, enhancing the cosmic interrelationship. Tree-lined streets are characteristic of the colonial town, thus softening the harshness of the desert.  **Figure N.2.** : El Khalifa - El Gami Avenue. **Source** : Norberg-Schulz, C. Op. cit, p.123.
- Parks	

ELEMENTS OF THE PUBLIC REALM	KHARTOUM (Colonial city, established in 1898)
- Vacant Land	
- Meeting Place	The combination of several private dwellings creates a public domain being comprised of the semi-private access street, the public corridor and the public suk (which is where the profane functions of social life are focused).  **Figure N.3.** : The suk in Khartoum. **Source** : Norberg-Schulz, C. Op. cit, p.114. As a result of the natural surroundings (the confluence of the Nile) the meeting place becomes part of the basic place structure, as opposed to being a historical product.
- INDOOR/INTERIOR SPACE	

ELEMENTS OF THE PUBLIC REALM	KHARTOUM (Colonial city, established in 1898)
INTERFACE	The arrangement of porticoes which forms a continuous arcade creates the notion of an urban "inside". The interface is further enhanced through the introduction of trees, which forms a "natural portico" creating a transition between the built and natural landscape. The arcades in Colonial Khartoum form an urban "inside".  **Figure N.4.** : The arcades in Colonial Khartoum. **Source** : Norberg-Schulz, C. Op. cit, p.131
CITY PLAN (layout)	The city layout of Colonial Khartoum encompasses the co-ordinates of the compass and the directions of the Nile.  **Figure N.5.** : Lord Kitchener's plan for Khartoum. **Source** : Sporre, D.J. Op. cit, p.123.
BUILT FORM (relative to the public realm)	

ELEMENTS OF THE PUBLIC REALM	KHARTOUM (Colonial city, established in 1898)
- Residential	The houses are open to the environment, with continuous porticoes running along the fronts. The classical features of the colonial houses and the open porticoes, give the houses a semi-public appearance.  **Figure N.6.** : Colonial house in Khartoum. **Source** : Norberg-Schulz, C. Op. cit, p.131. The colonial houses are perceived as being 'extrovert', expressing an open relationship between man and nature, whilst creating a continuous public milieu which encourages human interaction.
- Religious	Religious buildings tend to be rare, being mainly of two typologies: namely: square hall mosques flanked by slender minarets, and domed tombs. The main mosques of Colonial Khartoum are based in the simple grid pattern which differentiates the sacred spaces of classical Islam.  **Figure N.7.** : The Mosque and tomb in Khogali. **Source** : Norberg-Schulz, C. Op. cit, p.135.

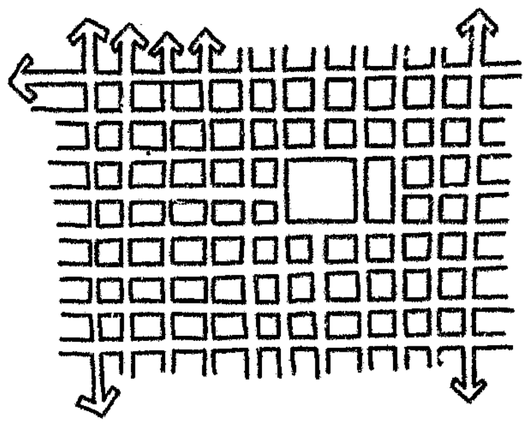
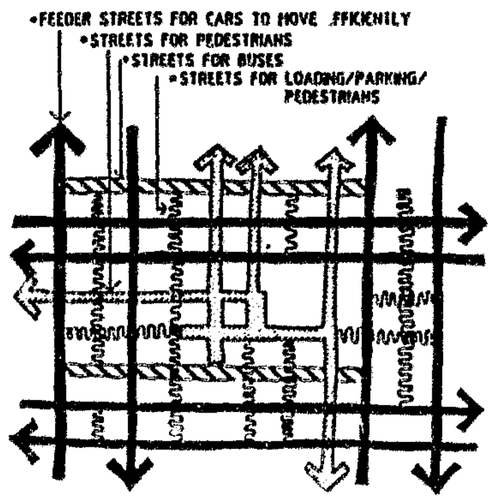
ELEMENTS OF THE PUBLIC REALM	KHARTOUM (Colonial city, established in 1898)
- Administrative	In Lord Kitchener's Palace, the width of arches are utilized as an ordering devices necessary in distinguishing between primary and secondary axes in the grandiose layout.  **Figure N.8.** : Lord Kitchener's Palace. **Source** : Norberg-Schulz, C. Op. cit, p.134.
- Political (Military)	
- Historical	
- Educational	In the University, a "monumental" character is created through rhythmically placed columns which are engaged with piers. The pointed arches of the University reflect the gothic influence of colleges in England.
- Recreational	
- Retail	The retail areas lend to be flanked by articulated arcades, being wide and narrow, alternatively. At the corner kiosks, this treatment becomes a basic theme, with a wide arched opening being flanked by a narrow slot on the adjacent sides  **Figure N.9.** : Corner Kiosk. **Source** : Norberg-Schulz, C. Op. cit, p.124.
- Commerce/Office	
- Industrial	

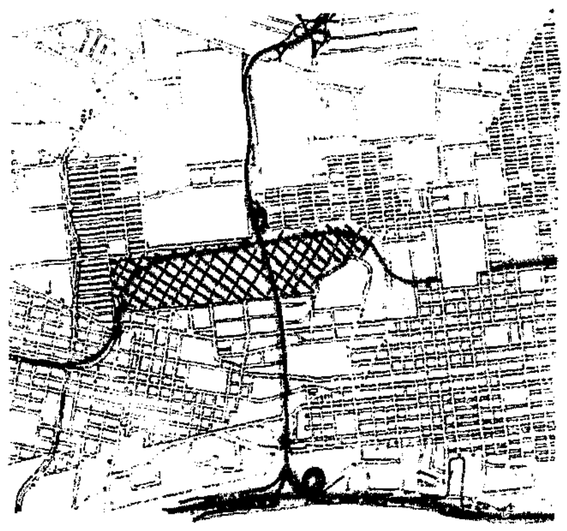
ELEMENTS OF THE PUBLIC REALM	KHARTOUM (Colonial city, established in 1898)
GENERAL i.t.o built form	
- Scale and Mass	An openness is present in the urban structure, which tends to be human, spacious in terms of scale and of a low density. An Alley at Tuti is land which reveals the scale and massing of the built form.  **Figure N.10.** : Alley at Tuti island. **Source** : Norberg-schulz, C. Op. cit, p.190.
- Materials	Pre-fabricated concrete is utilized in the colonial houses. In the market place, wood, metal and concrete predominate, maintaining a certain independence and flexibility, whereas in the residential areas, mud and brick are common.

ELEMENTS OF THE PUBLIC REALM	KHARTOUM (Colonial city, established in 1898)
- Walls and Facades	Enclosing walls between houses have a tendency to be of a transparent nature. Columns, arches, architraves and porticoes are characteristic elements which define the facades of various buildings, eg. residential and public buildings. The articulation of narrow and wide arcades creates interesting facades particularly within public buildings, thus giving rise to a lively and ordered rhythm within the urban space.  **Figure N.11.** : Kiosk with rhythmically disposed openings. **Source** : Norberg-Schulz, C. Op. cit, p. 130
INFRASTRUCTURE	The circulation infrastructure in Colonial Khartoum is an important ordering device, which has taken local factors into consideration, forming a complementary and harmonious city pattern.
MOVEMENT (physical connections)	
Movement as a consequence of form	
Movement as a generator of form	Within Colonial Khartoum movement was a significant ordering device, influencing city building processes and the resultant city form.
VIEWS, VISTAS AND SKYLINES (visual connections)	
ORIENTATION	

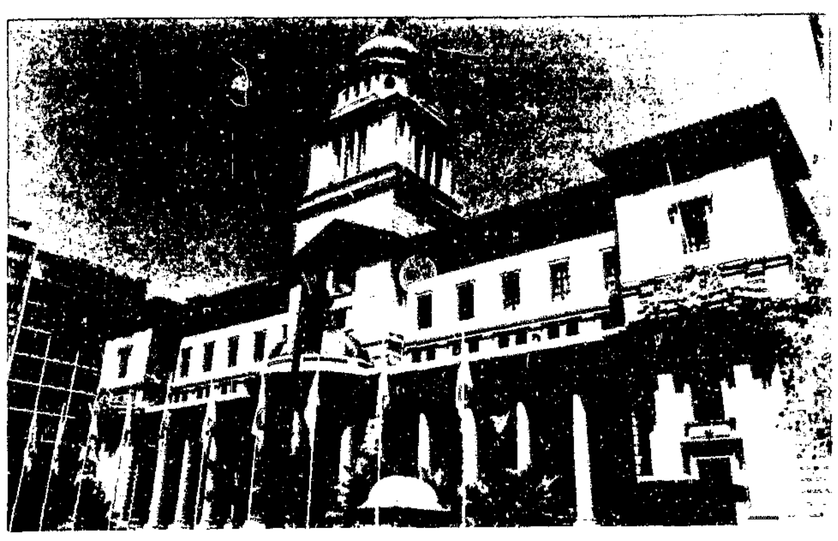
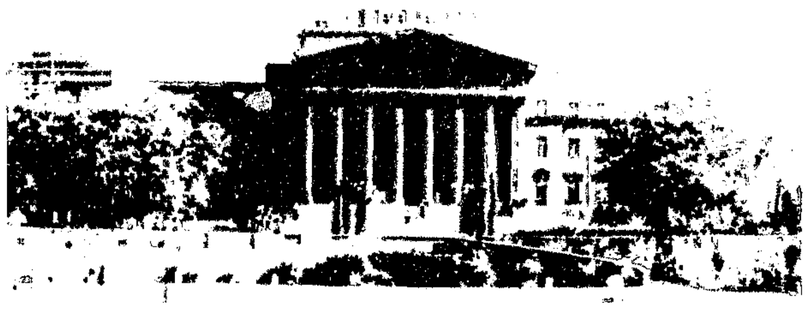
ELEMENTS OF THE PUBLIC REALM	KHARTOUM (Colonial city, established in 1898)
NATURE	The colonial influence is evident in the ordered manner of tree planting along the main streets. A contrast exists between the city with its trees and the surrounding desert. Kitchener attempted to transform the urban milieu into an enclosed oasis, thus becoming a human alternative to the desert.  **Figure N.12.** : Longitudinal oasis (The Blue Nile). **Source** : Norberg-Schulz, C. Op. cit, p.119.
FLOORSCAPE (surface contours and materials)	

INFLUENCES	KHARTOUM (Colonial city, established in 1898)
- Technology	
- Political life	
- Ecclastical (of the church)	
- Secularism	
- Concentration of power political economic religious	
- Power Hierarchy	
- Culture	Arabic, African and European forces are evident in Khartoum, being expressed in the colourful public life of the city, with its heterogeneous, diverse population. The different cultural traditions have been adapted to the local situation.

ELEMENTS OF THE PUBLIC REALM	JOHANNESBURG (post colonial city, established in 1886)
URBAN SPACE	
- Squares	Numerous historical, public squares have been swallowed up by public buildings. Few public squares remain for today's city users, such as the Civic Spine, Van der Byl Square, Von Brandis Square, Mary Fitzgerald Square, Smal Street Mall, the Rondehof and Square Court of the Carlton Centre (not all of the above mentioned examples are categorically squares, however, they do significantly contribute to legibility of the city).  **Figure O.1.** : The Mary Fitzgerald Square. **Source** : Blum, F. et al (1986) Johannesburg 100 years, p.83.
- Streets	The existing street grid is designed to cater for vehicles rather than pedestrians, and moreover the street environment is aesthetically disappointing and lacking in legibility.   **Figure O.2.** : The street grid. **Source :** Van Wyk Roos, P. (1990) Of Honeypots and Spider webs, pg. 25

ELEMENTS OF THE PUBLIC REALM	JOHANNESBURG (post colonial city, established in 1886)
- Parks	
- Vacant Land	The western sector of the city tends to be largely vacant, underdeveloped or, in some instances, derelict. Generally, this has been a result of large-scale installations becoming redundant, namely the old power station, abattoir and fresh produce market. Vacant or 'nomans' land adjacent to the motorway, which further fragments the city. The Marshalling Yards located on SATS land can also be perceived as being inefficiently utilized.
- Meeting Place	
- INDOOR/INTERIOR SPACE	
INTERFACE	
CITY PLAN (layout)	Johannesburg evolved as a linear city in an east -west direction in accordance with the mining belt, being connected by the railway line. Logically, this corridor of maximum accessibility should have been indicative as to where the most intense development in the city should have been located. The railway line and the motorway do not serve to interact with the city, but form rather harsh impenetrable barriers.  **Figure O.3.** : The Impenetrable Barriers.
BUILT FORM (relative to the public realm)	

ELEMENTS OF THE PUBLIC REALM	JOHANNESBURG (post colonial city, established in 1886)
- Residential	Within the city centre of Johannesburg residential accommodation is severely lacking. A large residential component does exist in Hillbrow and Berea, however, a majority of city users have been located in the satellite town/city of Soweto.  **Figure O.4.** : Soweto. **Source** : Blum, F. et al. Op cit, p.70 The process of decentralization has resulted in the movement of the more affluent sectors to the suburbs (to north of the city). Opportunities for significant contributions to the residential component are inherent in Fordsburg/Burgersdorp. Old housing stock still remains in the western sector of the CBD, which consists richly diverse and vibrant pre-Group Areas Act community.
- Religious	In terms of religion, the cultural diversities reflected in the built form is immense.
- Administrative	Generally, the majority of administrative buildings are located within the administrative/government seat of South Africa, namely Pretoria.
- Political (Military)	

ELEMENTS OF THE PUBLIC REALM	JOHANNESBURG (post colonial city, established in 1886)
- Historical	Johannesburg does possess some old buildings which are valued for their elegant craftsmanship and period styles. Some historically significant buildings have been declared national monuments. eg. the City Hall, the Wilds and the Rissik Street Post Office.  **Figure O.5.** : The Rissik Street Post Office. **Source** : Blum, F. et al. Op. cit, p.286.
- Educational	Facilities for higher education are existent within Johannesburg. The University of the Witwatersrand caters primarily for the English language whilst the Rand Afrikaans University (RAU) caters primarily for the Afrikaans language. Ethnic universities in the rural areas, colleges and correspondence courses are also located in Johannesburg.  **Figure O.6.** : Central Block of the University of the Witwatersrand. **Source** : Blum, F. et al. Op. cit, p.175.

ELEMENTS OF THE PUBLIC REALM	JOHANNESBURG (post colonial city, established in 1886)
- Recreational	The City Hall is still utilized for symphony concerts and political meetings. The Majority of the theatres tend to be located in or near Braamfontein, the Civic, the Alexander, Intimate, Andre Huegenot and the old Alhambra theatre in Doornfontein.

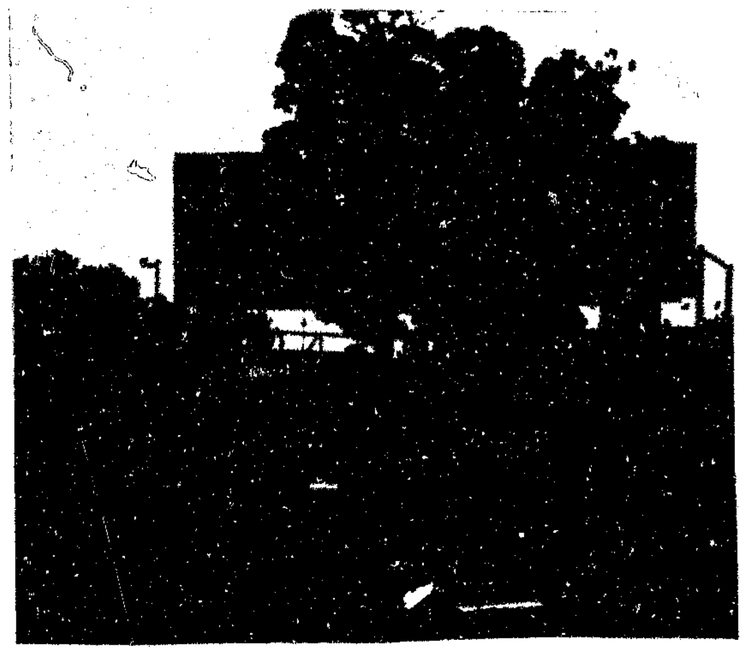


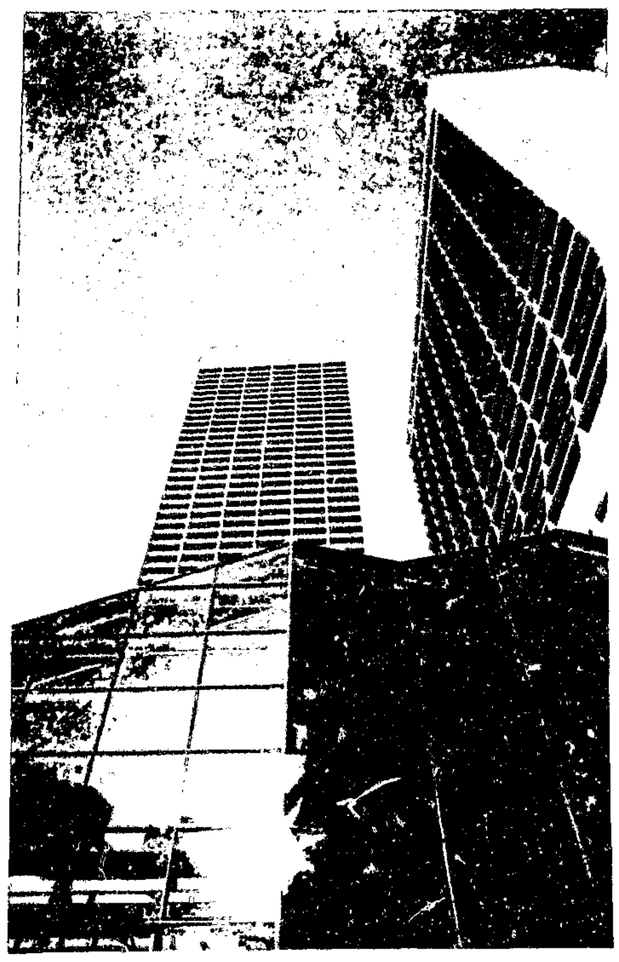
Figure O.7. : The Alhambra Theatre.

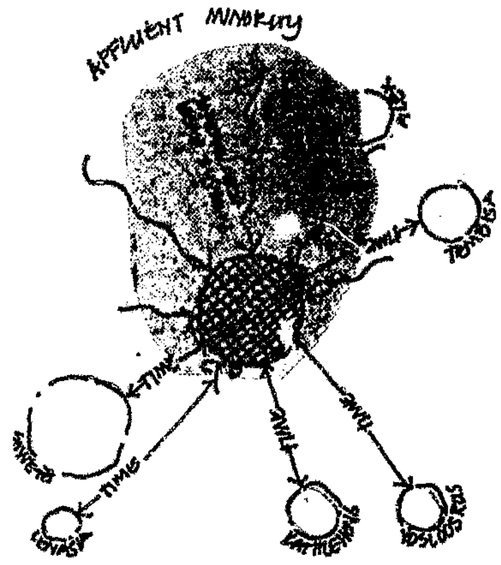
Opportunities exist for the transformation of the Market Theatre area into a cultural precinct (further encouraged in accordance with the Newtown developments). The Colosseum on Commissioner Street was supposed to become a major theatre, concert and convention venue as a gift to the city on its centenary. (insufficient funds). Ellis Park is a major recreational facility, however, this facility is severely under utilized (particularly during the week).



Figure O.8. : Ellis Park.
Source : Blum, F. et al, Op. cit, p.61

ELEMENTS OF THE PUBLIC REALM	JOHANNESBURG (post colonial city, established in 1886)
- Retail	Retail is becoming increasingly dependent on motorcar-transported customers. (e.g. hypermarkets, regional shopping centres). Hierarchies of the retail component is evident ranging from regional shopping centres and hypermarkets, neighbourhood and community centres, to strips and corner shops. Generally the larger retail components do not contribute towards the public realm. The changing retail component has become increasingly orientated towards office workers and Black customers. The informal component has become an influential force in terms of retail.
	
	Figure O.9. : The dominant informal sector, locates at the intersection of passing trade (eg. Westgate Station).
- Commerce/Office	Within the hub of the city centre, various facilities serving the entire metropolitan region have concentrated, namely offices, banks, comparison and luxury shopping, department stores and civic buildings. An increasing predominance of the office function has become evident in the Johannesburg CBD.
- Industrial	Warehousing and light industry are being forced out of the CBD for economic reasons. Heavy industry requiring extensive land has tended to locate to the east of the city in Germiston, Alberton and on the East Rand (where land is flatter and less expensive). However, service and repair industries are still located in relatively close proximity to the CBD (due to skilled labour demands and labour intensivity).
GENERAL i.t.o built form	

ELEMENTS OF THE PUBLIC REALM	JOHANNESBURG (post colonial city, established in 1886)
- Scale and Mass	Johannesburg's town planning scheme has prescribed certain controls for building height and coverage. However, by the 1970s skyscrapers were permitted and dominant the city skyline today e.g. The Carlton Centre which has a gigantic scale.  **Figure O.10.** : The Carlton Centre (the era of modernism). **Source** : Blum, F. et al. Op. cit, p. 60 The skyscrapers were built during the period of modernism, in which traditional values tended to be ignored (Post-Colonial characteristic).
- Materials	A variety of materials comprise the built form of the CBD. It is difficult to distinguish between differing materials due to the utilization of a heterogeneous mix of materials. The 'Diamond building' is a dominant landmark due to the nature of the building materials which have been utilized, namely, reflective, one way glass.  **Figure O.11.** : The Diamond Building.

ELEMENTS OF THE PUBLIC REALM	JOHANNESBURG (post colonial city, established in 1886)
- Walls and Facades	A diversity of facades and walls is inherent within the CBD. Eventhough vitality and complexity are enhanced, the overall legibility is often neglected, through the unintegrated treatment of facade surfaces. Within the older building, the facade treatment has been catered for as opposed to the modern buildings, where the facades tend to be neglected.
INFRASTRUCTURE	
MOVEMENT (physical connections)	An inferior public transportation system characterizes Johannesburg, resulting in an environment which lacks cohesiveness and legibility and fails to meet the needs of the lower income sector. Due to the fragmented nature of the apartheid city, the majority of the city's population has to be transported backwards and forwards on a daily basis, resulting in energy inefficiency.
	 **Figure O.12.** : Physical connections with the city user's. **Source** : Van Wyk Roos, P. Op. cit, p.20. Mini-bus and taxi services have increased at an astronomical rate, becoming a dominant force in terms of movement. Rail is still an important mode of transport, with the major stations being Park Station, Westgate and Faraday Stations.
Movement as a consequence of form	The character and nature of the built form of Bank City has influenced the movement pattern. However, Bank City does take cognizance of the original movement structuring device, namely, the grid.
Movement as a generator of form	Diagonal Street has been a significant generator of form, determining the structure, position, orientation, etc of the built form. (Diagonal Street is also historically important in the original layout of Randjeslaagte).
VIEWS, VISTAS AND SKYLINES (visual connections)	The skyline tends to be dominated by high rise buildings and towers (eg. the Brixton Tower). The skyline of the CBD enhances legibility through its' form which is compact, high rise and high density.
ORIENTATION	The grid of Johannesburg can be perceived as an important orientating and structuring device inherent in the city structure, the movement systems and the built form.
NATURE	
FLOORSCAPE (surface contours and materials)	

INFLUENCES	JOHANNESBURG
- Technology	The commencement of television transmissions in 1976 opened a new era of communication. The head office and large studios of SABC-TV were constructed in Johannesburg adjacent to RAU.
- Political life	Johannesburg has been characterized by the racial ideologies of apartheid, resulting in a segregated city.
- Ecclastical (of the church)	
- Secularism	
- Concentration of power political economic religious	Large scale gold deposits in South Africa and the advent of intensive gold mining on the Witwatersrand in 1886 has contributed to the generation of economic activity. The gold mining industry rapidly became the dominant growth force of the South African economy, ultimately supporting Johannesburg and the whole Witwatersrand. The Government policy of deconcentration of economic activity away from established urban areas and the discouragement of industrial development in these areas has had a negative impact on the growth of the Johannesburg CBD.
- Power Hierarchy	The ideologies of apartheid have characterized the city building processes within the South African context. The classification of land on the basis of race has fragmented the city into a low density capitalistic system.
- Culture	

CHAPTER 3

ANALYTICAL SUMMARY OF THE ELEMENTS

ANALYTICAL SUMMARY OF THE ELEMENTS OF THE PUBLIC REALM

SQUARES

This element has been important during the city building processes over time, thus re-emphasizing its significance in the design of today's cities, in order to stimulate congregation. Unlike the street, the square is a concrete place, a specific experience in its own right with its own distinctive image. The notion of the polis is an important concept, which was perceived as a place where people could congregate freely. Principles which have been utilized in the past and which are currently relevant include the enclosure of space, the utilization of strong visual accents and the creation of a sense of expectation and enticement. A variety of principles which have been mentioned are the most dominant ones throughout time.

STREETS

The street is an element which goes hand in hand with city building. The street has played an important role throughout history. However, with the advent of the motor car, street related problems have become exacerbated, and in todays context the street needs to be carefully considered within the urban design arena. Historically, the incorporation of pedestrian into street design was essential. Today, the pedestrian is largely excluded, however there are various examples where attempts have been made to incorporate the pedestrian eg. Kaerntner Strasse in Vienna, Vasterlanggatan in Stockholm, Kalverstraat and Nieuwendijk in Amsterdam. In attempting to make the city more of a 'peoples place' this principle is particularly relevant, together with the provision for human convenience. Symbolic destinations have been repeatedly utilized in differing contexts, and are still pertinent to contemporary cities, further enhancing legibility.

Within the urban environment through creative urban design, street space is one of the most important ways of establishing a memorable, highly imageable cityscape and a 'sense of place'. The urban designer should take cognizance of the interrelationship between the functional and aesthetic values the street. "The street is probably single most important viewing platform of the city and much work needs to be done on elevating it to a place of prominence in its own right rather than, as is sadly too often the case, regarding it as some left-over space of necessity. (Midrand Report, GAPS, May 1990, pg.32).

PARKS

Traditionally, formal gardens were incorporated into suburban and country villas. The Roman notion of the park merging into the natural landscape is a very significant principle in terms of visual aesthetics and ecological implications, and is applicable in todays city. Nature within the city needs to be cultivated, rather than ignored or subdued, as nature is an essential force which permeates the city. When considering the place of nature in the city

it is essential to consider the whole as an integrated system, as explicated by Renaissance designers in the park of Richelieu, and the contemporary landscape theorist, McHarg (1969). The utilization of visual axes which relate to various places as evident in the park of Versailles, is a useful principle which also enhances legibility. The urban designer should understand the historic development of the city as a sequence of cultural adaptations, from which its' initial identity is derived, which creates value within the open space and park system.

MEETING PLACE

Traditionally, the meeting place was the heart of the city which tended to be multifunctional in nature , where the townfolk assembled for the handling of affairs. This principle is relevant in the encouragement of democracy, making provision for the heterogeneous nature of city users. The meeting place presents numerous opportunities for the redirection of the city's form in the public dimension based on the public realm (catering for the heterogeneity of needs).

INDOOR/INTERIOR SPACE

For the Greeks and the Romans interior space tended to be spacious, fully illuminated and uninterrupted. The Byzantine era experienced a shifting of perspectives and an emphasis on light as a mystical element which transformed the building into an abstract spiritual vision. The enlightenment was characterized by decorativeness and refinement, which progresses towards the production of a complete, flexible environment in the twentieth century. The way in which the urban designer handles interior space is important particularly in places which tend to be primarily public in nature.

INTERFACE

In ancient times, the interface adopted the form of a barrier, with a minimal degree of interconnection between the interior and exterior. During the Byzantine era a spatial and visual transition was evident between the interior and exterior realms. The age of industry also catered for this transition between public and private domains, as did the twentieth century designers, in which the interior arrangement of space was reflected in the exterior form of the building. Permeability across the public/private interface is particularly pertinent within the urban design arena, when attempting to enrich the public domain through the gradation of space, which ultimately increases the responsiveness and legibility of the urban environment, in terms of physical form and activity patterns.

CITY PLAN

The various city plans which have been incorporated into the city building process over time tend to include administrative efficiency, fortification and safety, and legibility. In today's context these principles are significant and the urban designer should attempt to promote and incorporate these in the urban design arena. Legibility is particularly important to ensure that city users can understand and relate to the language of the city, particularly those who are dependent on the functions and needs which the city provides and satisfies, respectively, as a result of the agglomerations of scale.

RESIDENTIAL

Traditionally, the residential element fell under the mixed use category, which has progressed over time towards the perception of the dwelling unit as a complete environment in itself i.e. the residential dwelling unit is now capable of the fulfilment of a variety of needs. Even though, this concept does exist in some instances, the majority of the populace are still dependent upon the multifunctionality of the city and the re-introduction of the ideas surrounding mixed use would be appropriate in the South African city encouraging residential/employment proximity, and ultimately compacting the city thereby increasing legibility. Multifunctionality, infact, becomes an element in its' own right. It is important in the urban design arena when attempting to achieve the most efficient urban systems, enabling the fulfilment of a wide range of demands, which may be made upon the city environment. Enrichment and the optimal utilization of resources are encouraged through the incorporation of multifunctionality into the public realm.

RELIGIOUS

In ancient Greece, religious buildings were primarily simple shrines to protect statues dedicated to their gods, however, emotion was experienced. Many ancient prototypes were in fact resurrected later during the age of Industry. Later in the twentieth century, this notion of spiritual feeling has been reinterpreted in the spatial form which reflects the function of the building. During the Byzantine era, religion becomes regal in nature, in which harmony and the suitability of composition are used to relate man to his aspirations. The synthesis of Renaissance ideologies and reflection were signified in the papacy as a force and the Vatican as a symbol of the force.

ADMINISTRATIVE

In Ancient Greece the stoa and bouleterion, were symbolic structures representative of democracy and civic organization. The Roman's perceived the public buildings as an expression of dignity and diversity of the state. The forum was established as the focus of the town and the container of religious, commercial and administrative functions, namely a multifunctional node. During the middle ages the form of the public administrative buildings emitted a sentiment of publicness. Form was a indicative of function, thus enhancing legibility within the city (also evident during the Renaissance, the age of industry and within the African context, where militaristic and political ideals were incorporated into a central space). In Khartoum, the colonial influence is obvious in the grandiose layout of administrative structures, eg. Lord Kitchner's Palace. The urban designers should take cognizance of how various chronological eras handled administrative city components and how legibility was ultimately achieved?

POLITICAL (Military)

In the Ancient Greek and Roman times politics played a significant role in city life, with the resultant forms being incorporated into the city building processes, namely the stoa and the forum of Pompeii, respectively. The stoa and the forum are examples of the city's form which have been directed in the public realm. (However, uncertainty does exist as to whether these resultant city forms were delivered through democratic processes). The form of the Byzantine city responded to the ideologies surrounding the monolithic state. A relevant principle evident in the early Renaissance inherent in political built form is that of scale, which was utilized to signify the degree of importance. (In

today's context this principle is very applicable and relevant to the urban design arena. Within the African context (particularly in Ancient Zimbabwe) safety and effective military administration appear to be dominant forces in the city building processes. The chronological analysis reveals the major influence which political forces play within the city building processes. Thus, the urban designer should take cognizance of the dominant political forces evident within the city and attempt to direct the resultant city form in the public dimension in accordance within the politics of the city.

HISTORICAL

The Greeks tended to depict historical events in a mythological disguise (eg. the altar of Zeus, c175 B.C.) in contrast to the Romans who utilized actual historical events with an emphasis on narrative fact. (eg. the arch of Constantine (AD 312-315)). During the Romanesque period of the Mid. le Ages the utilization of campaniles was evident, which played an important role in enhancing and promoting legibility within the city, (eg. the campanile of Pisa (1053 - 1272)) which forms part of the legible entity, namely, the grouping of buildings of Pisa. It is evident from the chronological analysis, that the significance of historical form has lessened with time. However, in order to encourage the creation of a link with the past the incorporation of historical form into the public realm of the city is necessary and essential in the promotion of legibility.

EDUCATIONAL

Educational form has a significant role to play in contributing towards the public realm. In Ancient Greece the philosophy of Stoics was undertaken in the Stoa, which was a significant dimension of the public realm (emphasizing the interrelationship between the educational and public dimensions). The adoption of a humanistic approach was an important advancement in the educational field. During the late Middle Ages universities began to replace the monasteries as significant centres for learning. The educational facilities of the eleventh and twelfth centuries were characterized by franchisement, (eg. Oxford University, Salamana University (Spain), University of Bologna (Italy), University of Paris) enhancing the public nature of the universities, as opposed to the previous incorporation into the monasteries. (ie. the educational dimension becomes directed into the public realm through its' form, as a result of franchisement).

The invention of the printing press during the Renaissance revolutionized education, making educational opportunities accessible to a wider range of citizens. In terms of democracy, the promotion of greater range of public access to education is particularly significant in the South African context. Within the twentieth century, educational correspondence opportunities have been introduced. A positive attribute of the correspondence system is access to educational opportunities (enhancement of democratic ideas), however, these systems do not effectively contribute to the public realm.

Within the African context, the colonial city of Khartoum, exhibits a monumentality of educational structures which reinforces colonial ideals. (reflecting the influential interrelationship between colonialism and built form). The pointed arches reflect the Gothic influence of England (symbolic connotations of the significance of English

Universities) eg. Oxford, Cambridge etc). In the context of Johannesburg the segregation of university education in terms of language, race and affordability contribute negatively to the public realm and the achievement of democratic ideals. In the South African context, the encouragement and promotion of access to educational opportunities is essential within the urban design arena (particularly within the lower income sector).

RECREATIONAL

Recreational facilities are particularly important in the fulfilment of certain psychological needs, whilst encouraging citizens to participate within the public dimension based on the public realm. In Ancient Greece theatrical productions were interlinked with yearly festivals, encouraging the participation of citizens within the public realm. The built form of the Greek theatre also interacted with the surrounding landscape in a harmonious relationship (where the circular theatrical form was incised into the adjacent topography, usually a hillside). The dexterous planning of space (revealing skill and understanding of the spatial concept) was evident in the Epidaurus. In Ancient Roman times the amphitheatre and public baths were dominant within the recreational arena. The Colosseum involved the careful management of architectural space to fit the variety of complex functions, reinforcing the urban design principles of complementarity and multifunctionality of space. The Colosseum is a significant example of city building, due to the incorporation of correlated public and private convenience. Centrality and symbolism of location contribute to the success of the Colosseum, emphasizing its' significance as a world theatre where all citizens of the empire could democratically congregate. The Baths of Caracalla (AD 215) provided space for intellectual and physical recreation and leisure contributing towards the public realm. The baths which were also social and cultural centres, were an indispensable part of Roman civilization. (However, these baths tended to be exclusionary, thus, failing to incorporate democratic ideals).

During the era of the Enlightment technological advancements in the Royal Theatre of Versailles (1742) contributed towards enhancing public convenience, thus encouraging participation in the public dimension. The twentieth century city building processes are also characterized by significant technological developments (which should strive to incorporate and accommodate the public citizen).

RETAIL

In Ancient Greece and Ancient Rome, the principle of multifunctionality was incorporated into the retail component of city building processes, thus contributing to the public dimension through the multifunctionality of space. (ie. markets under the stoas surrounding the agora in the Greek context and streets lined with complex and diverse facilities eg. the Via dell' Abbondanza in the Rome context). During the age of Industry the form of the retail component tends to follow function, with an inadequate emphasis being placed on its' contribution to the public realm. The introduction of exclusivity within the retail component has contributed negatively to the achievement of democratic ideals within the public realm. In the African context, the penetration of ' ' Colonial influence is evident in the retail component of Khartoum, with the utilization of articulated arches. Johannesburg's retail component has become increasingly car orientated, which tends to ignore

the public realm. However, the informal retail component does significantly contribute to the public dimension based on the public realm. The urban designer should realize the potential opportunities which are inherent within the retail component, when directed in the public dimension based on the public realm.

COMMERCE/OFFICE

In the context of Ancient Greece offices were found under the stoa of the multifunctional agora. This commercial component contributed towards the public dimension as a result of the principle of multifuctionality. The Age of Industry tended to be characterized by the prototypical "skyscraper". In the Twentieth century (age of modernism) office towers tend to be offset from the property perimeter creating its own private envelope of open space, exhibiting an ignorant attitude towards the public realm. Functionality of built form is twentieth century evident in city building processes. Within the Johannesburg context an increasing predominance of the office function has become evident together with the incorporation of the principle of functional magnetism.

In the urban design arena the commercial/office component has a contributory function to the embellishment (cross subsidization is also important) of the public realm. Thus, the urban designer needs to take cognizance of this valuable contribution which the office element can play, whilst providing opportunities in public realm for embellishment and cross subsization.

INDUSTRIAL

The Industrial component is an element of the built form (city building processes), which presently does not really contribute towards the public dimension based on the public realm. However, opportunities are inherent in the light industrial component which could be redirected into the public dimension, thus contributing to the public realm. Economic constraints have also tended to direct the location of the industrial component beyond the confines of city boundaries.

GENERAL IN TERMS OF BUILT FORM

SCALE AND MASS

Within the urban design arena the utilization of human scale is particularly important in contributing towards the public dimension (as evident in Ancient Greece and Khartoum).

In numerous contextual settings scale has been utilized symbolically in the promotion of monumentality and grandeur (eg. Rome (Pantheon), the Byzantine era, the High Renaissance, the Baroque era, the twentieth century, Ancient Egypt and Ancient Zimbabwe). The grandeur of scale and extensive manpower is often characteristic in the African context (eg. Ancient Egypt and Ancient Zimbabwe). Scale and mass has also been incorporated in the built form in order to promote the notion of genuis loci, as evident in the Pantheon as a result of the conception of the interior scale.

In order to promote legibility, the scale and mass of the city's form should complement and enhance the function which this form fulfils. The urban designer should

reinforce this concept when attempting to redirect the city's form into the public dimension based on the public realm. The careful incorporation of scale and mass into the urban design arena can be utilized in the enhancement of cohesiveness and unification in terms of city form.

MATERIALS

The utilization of materials in city building has changed in accordance with technological advancements. Technological developments in material utilization have resulted in the advancement of the city's form which has reached new ideals in terms of the resultant form. Materials cannot essentially redirect the city's form in the public dimension, however, the sensitive utilization of materials can enhance and contribute towards the public realm. Differing materials have differing characteristics resulting in diversity within the city. eg. Within the Ancient Greek context high quality marble was utilized in significant civic buildings contributing towards the processes of city building, enabling the attainment of high standards of perfection within Greek architecture.

Generally the type of materials used depends on availability of the material in differing context. (eg. Marble in Ancient Greece; limestone in Ancient Egypt; earth, dung and coarse aggregate stone in Kwarielaagte, etc).

Malleability, flexibility and the symbolic use of materials are significant principles in the urban design arena. In the twentieth century, building materials adopt a new role which is that of structural expression, whereby the engineering properties of materials are extended to the limit.

WALLS AND FACADES

Walls and facades can contribute positively or negatively to urban space and consequently to the public realm. depending on the way in which the urban designer treats these elements. The treatment of walls and facades directly influences the interface and can contribute to the achievement of the desired effect. Walls and facades can be characteristic elements of built form which have been utilized in Chinese city building processes. (whereby walls served no bearing or structural function, but were purely aesthetic). Differing eras of city building have placed differing degrees of emphasis on the treatment of the facades and walls (exteriors) eg. the Byzantine era, the early Renaissance and Kwarrielaagte (African context) placed minimal emphasis on the exteriors, whereas wall and facade design was highly elaborate and complex during the Middle Ages. Walls and facades can also be perceived as definite elements characteric of certain eras. Symbolic connotations have also been reinforced through facade treatment, eg. in the Gothic period verticalism in the exterior facade was symbolic of religious aspirations. During the Baroque period an integratory relationship was evident between interior and exterior facades in the resultant products of the city building processes, contributing towards spatial relationships, rhythm and legibility in the public dimension. In the twentieth century, facade treatment has taken cognizance of the interrelationship between exterior and interior facades as well as the environmental context. Facade and wall design can also enhance the principles of visual appropriateness (contributing to overall perceptual experience). Walls and facades can be functional, (screening devices, as in Chinese architecture and the Age of Industry, or structural) aesthetic)eg. Art Nouveau, Tell el Amarna in Ancient Egypt and/of symbolic. An interesting wall

building technique was evident in Ancient Zimbabwe, whereby no bonding material was utilized.

The urban designer should take cognizance of these principles inherent in city building processes which have been chronologically utilized in the treatment of facades. The interrelationships between differing facades (interior and exterior) and differing contextual settings should be considered in attempting tc promote positive urban environments (and legibility).

INFRASTRUCTURE

Infrastructure is an important structuring device in city building processes, significantly contributing towards the public realm, through re-directing the city's form in public dimension. (eg. the circulation infrastructure in Khartoum is an important ordering device complementing the city pattern). Generally, in most contextual settings the governmen. has been responsible for the provision of services. In Ancient Rome the government was the provider of a wide variety of services (as explicated in table C) which were efficiently administered and managed. In the modern city, the initial buyers of unservice' land often tend to incur the associated costs.

Infrastructure and circulation channels should be interrelated, in the endeavour to be cost effective, particularly important in the low income sector. In attempting to achieve positive environments through the design fundamentals of compaction (densification) the urban designer should take cognizance of the additional demands incurred on the carrying capacity of services and infrastructure.

MOVEMENT (PHYSICAL CONNECTIONS)

Movement is a criticality within the city building processes being influential of the resultant city form (ie. movement as a consequence of form and/or movement as a generator of form). Within the South African city a viable, efficient public transport system is essential in fulfilling the needs of the city users (with a particular emphasis on the low income sector). Additionally, movement is important in enhancing accessibility to opportunity and choice (consequently promoting democratic ideals). The urban designer need to take cognizance of the interrelationships between pedestrians and vehicles (eg. In the forum of Pompeii, the segregation of vehicles and people was evident). In order to achieve cohesiveness and legibility within the city environment the transportation becomes particularly relevant (particularly the public transport system when dealing with the needs of the low income sector). Connectivity between the various modal forms of transport should be carefully considered, particularly in the context of Johannesburg. In attempting to enhance accessibility to opportunities, the efficient interrelationship between modal transportation forms should be encouraged. (In the context of Johannesburg the urban designer needs to resolve the interchange between rail and the dominant forces of the taxi and mini-bus services.

Fumihiko Maki (1964) refers to movement channels as being the glue of the city, uniting all activity layers and the physical form of the city. Movement channels are significant influential forces which contribute towards the understanding of urban structure. Within the urban design arena movement channels are important tools for restoring urban coherence and guiding new development in desired directions.

MOVEMENT AS A CONSEQUENCE OF FORM

Within the urban design arena strong spatial corridors are necessary to connect important built form and public spaces, resulting in the clarification of the total urban structure. eg. In Greece the Panathenaic way linked some of the most significant sacred places (a sacred way) whilst being the main street of Athens. In attempting to increase accessibility to opportunities, movement channels arise as a consequence of these opportunities. During the Romanesque period (the Middle Ages) complex movement channels where evident as a result of the complexity inherent in the built form. Progressive movement can also be achieved through the progression of form. eg. The Temple at Luxor (Ancient Egypt, Dynasty XV111). Urban form becomes an important directive of movement, within the urban design arena eg. narrow passageways in the Valley Ruins in a single file; and within the context of Khartoum where the radial settlement pattern results in the formation of a radial movement system.

MOVEMENT AS A GENERATOR OF FORM

Chronologically, movement channels have been important structuring devices of urban form. eg. the Panathenaic way which was initially a consequence of form (ie. the sacred way) which developed into a generator of form by becoming the central spine along which the principle mercantile, industrial and political activities located. The Hippodamian plan (Ancient Greece) was a generator of form with the major ordering principles being that of the rectangular movement channels. In various contextual settings the grid (promoting efficient movement) has been a major structuring device, responsible for the generation of form. eg. the cardo-decumanus scheme in Ancient Rome, and Johannesburg (± 80m x 80m). Through the principle of integration, movement channels can also become important generators of form eg. Versailles. Ancient Rome and Ancient Zimbabwe are examples where movement channels have been utilized as military structuring devices, generating associated city forms.

Generally, movement as a generator and consequence of form tend to be interrelated, being capable of contributing to public realm through redirecting form in the public dimension.

VIEWS, VISTAS AND SKYLINES

These visual connections contribute to one's experience and perception of the public realm, enhancing legibility, identity and imageability within the city environment. A significant vantage point in terms of height can be utilized to strengthen symbolic connotations eg. The Acropolis (Ancient Greece) which is set upon a towering platform of rock, and the Hagia Sophia (Byzantine period) which was constructed on a high ridge. Visual connections can also be incorporated to enhance and reinforce physical connections eg. the sanctuary of Fortuna Primigenia (Ancient Rome). Chronologically skylines have often characterized certain contextual settings. eg. the pitched roof dominated the skyline of China, the pyramidal form characterized the egyptian skyline, multiple - integrated towers and spires (the Middle Ages), the conical towers (Great Zimbabwe), towers etc. Views, vistas and skylines should complement the legibility and reinforce the character inherent within the city context. These visual elements have been incorporated in city building processes in the attainment of certain religious ideals.

In the urban design arena it is necessary to utilize these elements for the achievement of legibility, identity and imageability. Additionally, these visual connections should enhance and correlate with the physical connections, thus strengthening legibility and coherence within the total urban structure.

ORIENTATION

Through the careful incorporation of various orientating devices, the urban designer can achieve a significant amount of legibility within the public realm. eg. In Great Zimbabwe conical landmarks served as orientating devices emphasizing points of entrance and egress, significant focal points, etc. Within Johannesburg the grid can be perceived as an important orientating device of the city's form. landmarks also have an important orientating function, which should enhance legibility within the city, in the creation of positive urban environments. Within the urban design arena orientation devices have a significant role in guiding city form, movement, activity patterns and city users. The urban designer should utilize orientation devices in order to redirect the city's form into the public dimension.

NATURE

Nature is a significant element which provides a contrast with the hard form of the built environment, creating an energizing effect within the city. Through the incorporation of nature into the urban environment the urban designer can provide contrast, spiritual upliftment, and places for recreation and social integration (Trancik, 1986). Nature has a significant role to play in redirecting the public realm into the human dimension, encouraging the creation of positive urban environments.

Maintaining a balance between society and nature and the built form and nature is particularly important in creating harmony and complementarity within the urban environment. "Contact with nature is a basic entitlement of urban dwellers" (Dewar, D and Uytenbogaardt, R. (1990), op. cit. p.38). Thus, the urban designer should encourage the creation and maintenance of positive relationships between urban development and nature (providing both relief from the hard urban environment and accessible recreation).

FLOORSCAPE (surface contours and materials).

The floorscape is significant at the street scale, particularly where pedestrian movement is dominant. eg. In Sienna's Plaza del Campo the floor is raked dowm towards the dramatic gothic public building reinforcing the role of this space as a focus of social life. Careful attention to the floorscape can enhance the urban experience, contributing to the character of the public realm. The floorscape can be used in order to promote continuity, legibility, intimacy of scale and/or a transition between the private domain and the public territory. Additionally, the floorscape could also contribute to the visual wealth of the city (history could also be reflected).

CHAPTER 4

THE POWER HIERARCHIES

THE GOLDEN THREAD

The City must continue to nurture civilization.

HOW DOES THE URBAN DESIGNER TAKE COGNIZANCE OF THIS ?

Through focusing on the urban elements of the public realm.

WHERE SHOULD THE URBAN DESIGNER BEGIN ?

With a chronological overview of city building processes concentrating on the urban elements of the public realm.

WHAT CAN THE URBAN DESIGNER LEARN FROM HISTORY ?

That the elements of the public realm have been delivered in accordance with the needs and desires best served by the power elites.

HOW CAN THE URBAN DESIGNER RECTIFY CHRONOLOGICAL DOWNFALLS IN THE CITY BUILDING PROCESS?

Through the establishment of fundamental urban design criticalities which redirect the public dimension based on the pubilc realm.

HOW DOES THE URBAN DESIGNER APPLY THESE URBAN DESIGN CRITICALITIES ?

Through redirecting the city's form in the public dimension based on the public realm as demonstrated in the urban design framework.

HOW DOES THE URBAN DESIGN FRAMEWORK BECOME TANGIBLE?

Through substantial government investments as a "gift to the city", together with cross subsidization and embellishment opportunities and incentives.

THE POWER HIERARCHIES

Having thoroughly analyzed the chronological city building processes in various contexts, we find the recurring theme of cities being built by power elites and hence according to the devices and desires that best served these elites. Through time the power elites have generally been responsible for the provision of the public realm and associated embellishments (being symbolic of the power hierarchy) with the use of slaves as the producers of these city building products. The dynamic processes of rising and declining structures of power elites have been evident through history, influencing the resultant form of city building processes. During periods of prosperity city building processes reinforced the dominance of the rulers. (eg. the chronology of Egyptian city of its rulers) which revolved around the dynasties. Contextually, the ideals of the power elites have influenced the resultant form of city building processes. eg. In Greece, during the late fifth and fourth centuries the power elites tended to promote ideals of idealism, intellectualism and emotionalism which can be perceived in the various city building energies of the period, eg. the acropolis which typifies the idea of idealism through the incorporation of balance, order, etc. When focusing on the African context, the patrilineal structure of society (namely, Kwarrielaagte) is reflected in the city building processes and form. Within the Roman context, the city building processes were characterized by class struggles. Military achievements were responsible for the prosperous city building periods. Religion was also a significant force in the concentration of power. eg. Christianity in the Early Middle Ages. During the Renaissance, the early stages of capitalism became evident, whereby the city's form exhibited tendencies of being directed in the private dimension. City building processes have often been for the selfish reasons of the power elites who have influenced the resultant public arena. eg the de Medici's.

During the fifteenth century in Italy, the Medici family (namely Cosimo de Medici, Piero de Medici and Lorenzo de Medici) were great patrons of this period being highly influential over the city building eventuality.

A significant example expressing the notion of power elites is that the Ponte Vecchio, which was built during the Renaissance by Neri de Fioravanti. The Ponte Vecchio is the bridge which extends across the Arno River connecting the place of residence of the Medicis to the place of business (namely, the Uffizi which is located on the opposite side of the Arno River). The Ponte Vecchio is an example of city building which was delivered for purely selfish reasons, (by the Medicis) which has been inherited democratically as a significant element of the public realm, which is life enhancing and generative in nature overcoming gaps in the city fabric. In response to the Ponte Vecchio, various entrepreneurs developed shopping facilities, taking advantage of this public element and thus adding to the success of the Ponte Vecchio as a generative force within the public realm.

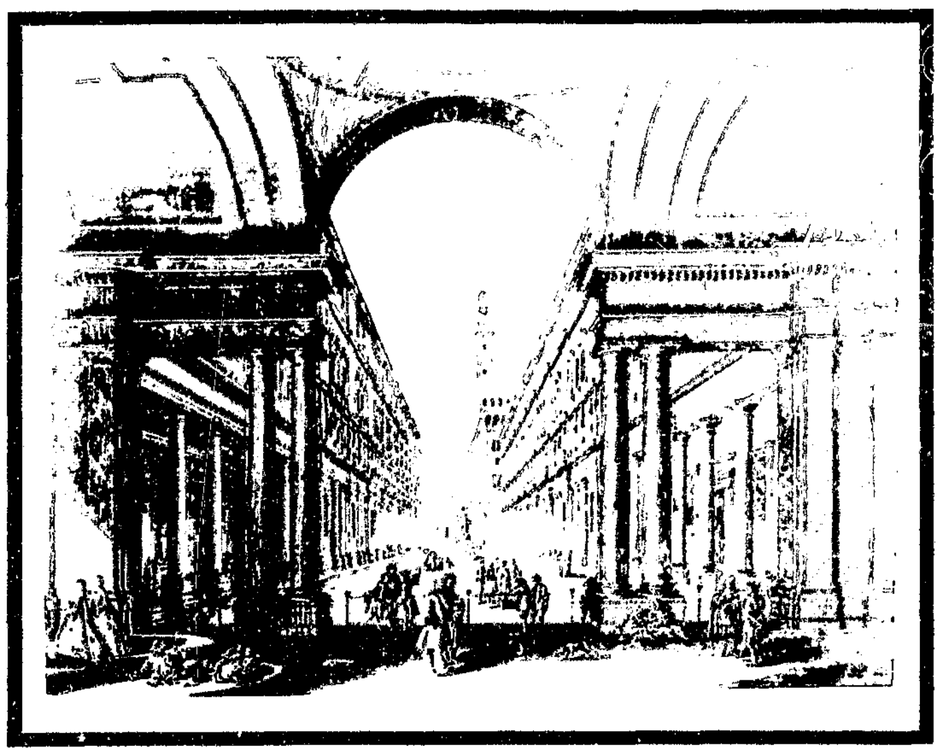


Figure 4.1 : The elongated piazza of the Uffizi Palace (c.1560) created to link the Arno River with the Piazza della Signoria.

Source : Webb, M. Op. cit, p.73.

Eventhough, this thesis doesn't focus on process, the urban designer should still take cognizance of the democratic delivery of those urban elements which comprise the public realm.

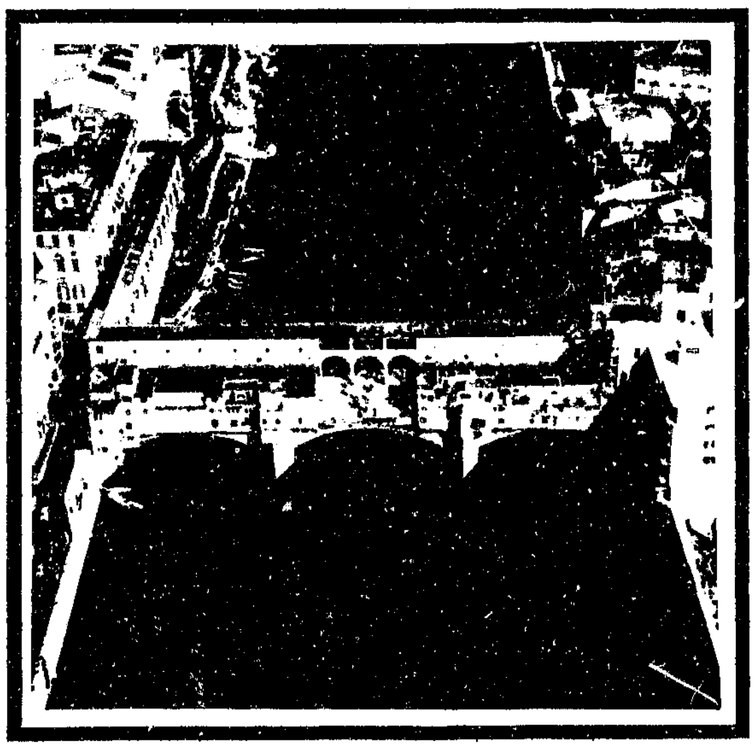


Figure 4.2 : The Ponte Vecchio illustrates the possibility of using bridging devices to overcome gaps in the fabric (Today, the Ponte Vecchio has been inherited into the public dimension)

Source : Trancik, R (1986) op. cit, p.224.

Secularism, characterized the city building processes during the Enlightenment, with a new focus being placed on secular architecture as opposed to religious architecture. The age of Industry liberated the city building processes from patronage, encouraging change within various activity domains (i.e. the guild system was replaced with capitalism). The promotion of Liberalism, ultimately enhanced middle-class power and aspiration (through the reduction of religious and authoritative dominance and the removal of economic barriers). During the Twentieth Century, city building processes have been directed in the private dimension based on private commercial interests.

Thus, in the contemporary city, the urban designer should attempt to redirect the city's form in public dimension based on the public realm (within the urban design framework).

The urban designer needs to establish how to provide the fundamental elements which comprise the public realm through a democratic delivery process? In an age of empowerment this concept of democracy within the urban design context is particularly relevant to South Africa. The resultant products of city-building of the modern movement reinforces the argument that democratic empowerment results in a stripped-down, unresolved public realm as a result of its inability to muster resources and also by virtue of the schism that has increased between capital (which becomes increasingly private and held at arms length from the public realm) and utility (those who depend on the accessibility of resources). The city becomes the poorer for the withdrawal of private capital and dependent on inadequate public capital. Cities have become dependent on the direction taken in the private dimension, resulting in the junking of the public realm.

The urban designer should attempt to strip the public realm of its follies and focus of the criticalities or fundamentals of urban design, through democratic city building and delivery processes, ultimately promoting a democratic city in an age of empowerment. However, the relationship between public and private sector is very important to the achievement of financial viability, the development of under-utilized assets and later opportunities for embellishments within the city.

Through the urban design framework the urban designer should attempt to direct the city's form in the public dimension based on the public realm.

According to Kruger (1992) Modernist planning has tended to fail as a result of its absence of public space in contrast with the resilience of traditional city-formation and positive public space-making. The initial provision of the public elements need not be elaborate, but should be flexible, to allow for change in order to suit the needs of the users. Later the opportunity should be provided for embellishment within the public realm by the power elites through the incorporation of incentives and relaxations on bulk and height restrictions. The adornment of public space is important in adding interest and contributing to the splendour of the public realm. eg. the Signoria of Florence with its Loggia dei Lanzi. The urban designer needs to discover what very basic elements of the public realm which promote legibility within the city are?

THE PERCEPTION OF THE ENVIRONMENT AS AN ENTITY

In the modern environment, there has been an emphasis on one or two of these urban elements of the public realm with an ignorance on others. "The emphasis of CIAM was on buildings, and what goes on within buildings that happen to sit in space, not on the public life that takes place constantly in public spaces" (Appelyard, Jacobs; 1987, pg113).

Historically, environments were designed through the consideration of the working relationship of all elements as a whole. eg. The Greek temple was part of an extensive environmental concept, stressing the interrelationship between the temple, its approach, the surrounding environment and other elements. The utilization of all the urban elements of the public realm in a coherent whole provides the opportunity for a higher degree of legibility, expressiveness and diversity. The interrelationship of these urban elements of the public realm is a powerful image that allows the city to be analogous to an organism.

Due to the heterogeneous nature of the South African population, it is essential for the urban designer to encourage diversity through the inclusion of a range of relevant public elements, in order to cater for the needs and aspirations of the users, whilst incorporating heterogeneous value systems into the urban design processes, thus promoting democracy.

DEMOCRATIC CITY BUILDING AND DELIVERY PROCESSES

The urban elements of the public realm should facilitate and satisfy the needs and aspirations of all sectors of society. "....if design is the element most overlooked in cultural planning, accessibility is the most overlooked element of design." (Perlman, 1983, pg 84). The urban designer should ensure that the urban elements of the public realm are accessible to all sectors of the community, thus promoting the ideals of democracy. The manner in which these public elements are delivered is also significant in the city building processes (i.e. democratic delivery processes). The public elements of the city need to be accessible to a wide cross-section of society, thereby stimulating the mutual dependency relationship between society and the city. In order to facilitate democracy, design intervention within the city should grow out of a dialogue between the urban designer and city users.

The urban designer as an enabler of city building processes needs to utilize existing administrative structures and create new ones which integrate these processes with the needs and aspirations of the community, thereby increasing accessibility. The urban designer should create conditions which facilitate the prosperity of city building processes. In this instance the urban designer would incorporate the notion of capital web and the establishment of the fundamental elements of the public realm, together with the provision of opportunities for later embellishments.

PERMANENCE AND MEMORY

The significance of memory and permanence should be incorporated into the urban design process through the continuity and preservation of the built artifact. Within the public realm materials and aesthetically solid constructions should be of a tangibly permanent quality and of unequivocal simplicity of form and style (embellishments to these areas can be applied at a later stage of the urban design process). The location of the forum in cities corresponds to that of the principal room of a house.

THE INTERRELATIONSHIP BETWEEN ELEMENTS AND FUNCTIONS

It is essential for the arrangement of urban elements to exhibit a close dependency relationship with the function which defies the space, together with the encouragement of opportunities for the activities which stimulate public life. This relationship is evident in the Forum Romanum which was utilised as a theatre of gladiatorial combats, with dispersed columns and balconies arranged around the central area, thus enhancing views of the spectacle.

During the Middle Ages and Renaissance public squares formed an entirety with the buildings which enclosed them. In today's context the urban designers should incorporate opportunities which enhance the relationship between the public realm and the buildings which dominate this domain. (eg. the first floor of these public arenas should be public in terms of character, activity and function, and should include all sectors of the community, i.e. the functioning of these spaces should not be exclusionary in any way).

EMBELLISHMENT OF PUBLIC OPEN SPACES

In the design of public spaces the urban designer should incorporate opportunities which allow for the embellishment of this space by the wealthier sectors of society. The adornment of public space is important in adding interest and contributing to the splendour of the public realm. eg. the Signoria of Florence with its Loggia dei Lanzi.

VISUALIZATION, COMPLEMENTATION AND SYMBOLIZATION.

The spatial structure should complement an existing context, whilst consisting of concrete objects of identification "Human identity presupposes the identity of place" (Norberg-Schulz, pg.22). Visualization, complementation and symbolization are important processes necessary in city building, which links up with the notion of genius loci.

CHAPTER 5

THE FUNDAMENTALS OF URBAN DESIGN

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BASIC FUNDAMENTALS OF URBAN DESIGN

It is all very well to promote the ideologies which revolve around democracy, however, it is essential for the urban designer to establish the fundamentals of urban design which promote democratic ideals. Having stressed the importance of democracy (particularly in the South African context) and the significant role which urban design can play in the achievement of democratic ideals, an exploration of the design ideas will be undertaken. Examples will be extracted from the chronological analysis of city building.. Examining the city building works of our forbearers at close range is necessary in the determination of how much of it may be adapted to modern conditions (Sitte, c. 1945).

In order to establish boundaries or direction for this study, the establishment of the needs and aspirations of the user group is essential.

NEEDS AND ASPIRATIONS

The urban designer should discover the best fit between the physical and cultural context and the needs and aspirations of contemporary users. In order to create truly unique contextual places, the urban designer should examine the local history, the needs and aspirations of the populace, and the political and economic realities of the community.

The contextual setting, as explicated in the introduction is South Africa, with a particular focus on the lower income sector, having been excluded in past city building processes (comprising 80% of the population). The needs of this sector, act as a significant guiding device in terms of the city building eventuality.

These people come to the city in order to gain access to the economic opportunities and the social and commercial services which can be generated through the agglomerations of large numbers of people. Within the South African context there has been a tendency to ignorantly emphasize a conventional basket of facilities, without re-thinking the real needs of urban dwellers (whether established or newly-urbanizing). Thus, urban forms have been established which are inappropriate to the fulfilment of the needs of the users (Dewar, 1986). The urban designer needs to take cognizance of the fundamental questions, of how the urban elements of the public realm should be incorporated and accommodated in order to best meet the needs of the inhabitants? What urban elements should be encapsulated within our cities to ensure that qualitatively rich, efficient and socially supportive environments result, which will continue to nurture civilization?

In order to logically derive the various resultant forms of city building processes the needs of the people who live within the cities should be carefully considered. These needs should be respected if the urban environment is to operate efficiently and if human living is to be facilitated within cities (Dewar, 1986).

The consideration of liveability of the city for this lower income sector, facilitates the determination of the form and structure of the city. According to Dewar (1986) there are four categories of needs which are particularly significant in the derivation of the basic fundamentals of urban design (in the South African context).

These four categories of needs should be addressed simultaneously, as they cannot be arranged in priority order.

1) **OPPORTUNITY GENERATION**

The city generates large thresholds of support together with increasing levels of specialization and diversity, which is enhanced through the agglomeration of scale. The city possesses the ability to generate opportunities for city users (self-generated employment ie. the informal sector is flourishing within the South African context), which reinforces democratic ideals. Thus, the urban designer needs to provide a minimum stimulus in order to elicit the maximum response in terms of the city's generative capacity, furthering the active assimilation of people within the city. The notion of urban generation reinforces the characteristics of compactness, complexity and multifunctionality which gives opportunities and choice for the fulfilment of needs.

2) **ACCESS**

Access to opportunities and existing facilities is particularly significant when dealing with the low income sector of society, whose marginal cost of overcoming access-restricting barriers is very high. The concept of democracy is reinforced through easy and equitable access to urban opportunities. It is important for the urban designer to constantly pursue the improvement of access to opportunities in spite of the existence of inequality and contradiction. Moudon (1987) defines publicness as one's right to free and unlimited access to the public realm providing a framework in which a true public culture can develop and flourish.

The spatial implications of access reinforce the concepts of compactability, multifunctionality and complexity which all increase agglomeration, and exhibit capabilities of supporting higher orders of opportunities, activities and facilities. In the South African context, the majority of the population cannot afford personalized motor transportation in order to gain access to urban opportunities and facilities. Thus, an efficient, viable and co-ordinated public transport system which is accessible to all, is a criticality within the public realm. This would ultimately reduce spatial marginalization and material improvishment by city form (essential for the urban poor). Increased accessibility increases the range of choices to which people are exposed (Dewar, 1986).

3) **SOCIABILITY**

The city facilitates social interaction and communication, thereby ensuring that the congregatory processes continue to occur, which is essential for the nurturing of civilization. The morphology of the elements of the public realm should promote and enhance both formal and informal interaction and communication. The urban designer should focus on the community-orientated activities of urban life and the accommodation of these collective activities which foster and augment sociability. Additionally, the urban designer should take cognizance of the social ties and networks which reinforce social security and insurance, which are fundamental in the processes of urban socialization.

The notion of sociability reinforces the need to promote intensive cities which are complex, compact and multifunctional.

4) **INDIVIDUAL NEEDS**

In the fourth category of needs is that of individual needs which include physical needs (nutrition, hygiene, safety, shelter, employment, adequate water and sewerage, etc), social needs (facilitation of sociability), psychological needs (security, identity, a sense of acceptability and a sense of individuals being able to affect their own destinities) and sensory needs (stimulatory environments). The fulfilment and satisfaction of these individual needs reinforces the significance of access to opportunity and choice.

The previously discussed categories of needs are representative of the most significant ones relative to city building in the South African context. Urban design must be capable of accommodating the needs of a complete range of users, processes and technologies through which cities are built. The promotion and incorporation of certain principles of urban form are essential for the fulfilment of these needs. These principles (which are closely interrelated) contribute to the creation of urban environments which are responsive to human needs, are as follows:

Compactness

Integration

Multifunctionality

Complexity

Dynamism

Flexibility and Constraint

Democracy

Stimulation

Legibility

(Note: Those principles are not arranged in order of priority).

There are important physical and structural relationships which need to be maintained in order to promote these principles. These relationships fall into three classes namely, order, structure and form.

Order

The urban designer should provide an order which facilitates the expression of relationships in human activity, utilizing physical resources (action) which ultimately result in the establishment of a spatial order (reaction).

Structure

In terms of structure, the urban designer should provide a spatial geometry in context with the environment which promotes legibility of the city as a whole. Opportunities for the response of human activity should be catered for within the structure of the city.

Form

Form is perceived as the resultant entity of the application of order and structure to the site.

There are various pre-conditions which encourage the achievement of legible, high-performance urban environment which reflect and fulfil the immediate needs of the inhabitants.

COMPACTNESS

The compaction of the form of the city facilitates the achievement of positive, high-performance urban environments. This pre-condition also reinforces democratic ideals, through the provision of a wide range of potential economic opportunities available to a maximum number of inhabitants, which would ultimately result through the compaction of the market. Compaction of the city reiterates the necessity of maximizing the generative capacity of urban systems, particularly in the case of small

economic enterprises, which are characteristic of the lower income sector in the South African context.

It is necessary for the urban designer to ensure that the larger enterprise fits into an urban framework which allows for other, smaller activities to benefit from their presence. In the more compact city, the levels of social and commercial service are higher, convenience and equity of access to these services is greater, and can be experienced by a greater range of inhabitants (particularly on foot). The compact city also supports the initiation of viable forms of public transportation. Thus, the urban designer should encourage a more compact, integrated and diverse land use pattern to increase the real need of accessibility (as opposed to mobility).

In more compact cities, the unit costs of social and other services to the consumer tend to be lower. The higher levels of support per facility and the associated cost implications are critical in the urban design arena when dealing with the lower income sector. Dewar and Uytenbogaardt (1991) suggest that in order to compact the city, it is necessary to limit the range of residential options, within the boundaries defined by the good of the overall system.

INTEGRATION

Integration is a necessary pre-condition for the promotion of positive urban environments, allowing for a greater number of people to benefit from a wider range of opportunities and facilities, than an environment that is not unified. Through the incorporation of integration, the lower income sector can gain access to opportunities and facilities which are generated through the resources of the wealthier sector. However, it is the task of the urban designer to ensure that the delivery process of access to these opportunities and facilities is democratic and equitable, which is particularly relevant to the South African context.

There are three factors which contribute to the achievement of integration, according to Dewar and Uytenbogaardt (1991). These are as follows:

1) The continuity of the urban environment, which is an essential pre-condition for a viable and efficient public transport system;

2) The manner in which connector routes are utilized as structuring devices within the city, as these routes interconnect certain parts and elements of the city. In this instance, it is necessary for the urban designer to encourage the occurrence of a symbiotic and mutually generative relationship between movement intensive flows and human intensive activities. Having taken cognizance of this interrelationship, the resultant form tends to be that of activity spines which maximizes the generative capacities immanent in urban agglomerations, promotes democracy, encourages greater exposure to community facilities and the facilitation of integration between differential scales and activity types.

3) The areal pattern of accessibility is an important determinant in the spatial distribution of opportunities. The movement flows can be perceived as the "glue" which integrates the city as an entity, with the movement and public spaces being the channels which determine how the glue flows. In order to increase the potential of the accessibility web as an organizing element of intensive activities, the urban designer should attempt to promote the maximum continuity and directness of routes. For

the achievement of the maximization of democracy the urban designer should aim for the maximization of spatial opportunities. The achievement of these concerns reinforce the significance of the compact city.

MULTIFUNCTIONALITY

Multifunctionality has an important role in the provision of facilities, through increasing the range and choice of the population (particularly that sector of the population, whose degrees choice tends to be limited. Multifunctionality, reinforces the performance of the associated functions, contributing to the inclusion and integration of these functions into wider community life and the fabric of the environment as a total entity. Economically, the multifunctional use of space and facilities is essential, as the availability of social and public resources are massively outstripped by demand within South African cities. The notion of multifunctionality should operate to the benefit of all users, thus being consistent with democracy. Maximum advantage can be gained from limited resources (minimum stimulus to elicit maximum response) and the burden of maintenance can be dispersed. The principle of multifunctionality would encourage the compaction of the city, thereby increasing access to choice and opportunity for the majority of the population, and promoting the legibility of the city as a whole.

COMPLEXITY

The complexities inherent within the city and the hierarchies of order are key issues to the release of opportunities. The greater the degree of complexity, the greater the availability of choices, thereby reinforcing democracy. The dominant city building processes are inextricably interlinked with the economic, technological and political circumstances. These complex influential circumstances both inform, and are informed by the character and structure of cities in a fundamental manner. Within the environment, complexity is essential in the promotion of richness, spontaneity and the presence of the unexpected, achieved through the incorporation of a freedom of response into the design which allows many people to contribute to the delivery process. In the public realm, the qualities of richness, spontaneity and the existence of the unexpected are vital to collective, urban life, leading to eminently livable cities, as opposed to monotonous and sterile environments.

The participation of many people in the delivery process, contribute to the effective circulation of financial investments over a widest possible sectors of society (particularly the low income group). Complexity increases the available range of choices, thereby increasing the manoeuvrability of people around their own needs and resource limitation, whilst establishing their own space requirements. The urban design process should make provision for the evolution of complexity and genius loci, resulting from social interaction. It is particularly important for the urban designer to stimulate the complex development and delivery processes, in order to contribute to the environmental and economic attributes of the city. However, in order to reduce political patronage and economic exploitation by a limited number of people, the urban design process, furthering democratic ideals.

DYNAMISM

Dynamism is an important principle in the promotion of qualitatively rich environments, which are diverse, with the occurrence of overlap and contradiction. Dynamism of the relationship between public institutions, public spaces, movement patterns and significant social institutions determines the functional paradigm of the environment, reflecting various symbolic relationships. As the urban system is never a closed entity the urban designer should recognize the operative, dynamic forces which manifest themselves in the environment. Thus, the urban designer should ensure that the elements of the public realm incorporate the potential for the release of individual creativity, ingenuity and resources, whilst encouraging the freedom of expression in the urban form.

FLEXIBILITY AND CONSTRAINT

It is essential for urban design to be flexible in that one cannot attempt to impose a way of life upon the urban dwellers through the imposition of rigid design conceptions, as environments are subject to change (dynamism). When conditions do change a totally pre-determined environment generally performs inadequately. Thus the urban designer should incorporate the notions of flexibility and robustness, into the urban design arena.

On the other hand, a certain degree of constraint is mandatory for the stimulation and release of choic individual freedom and creativity. The unrestrained pursuit of individual interests may result in the exploitation and manipulation, ultimately being detrimental to the urban environment, exacerbating the conflict between individual interests and the interests of the majority. In examining the chronological analysis of city building, the paradigm of power elites has been influential and inherent in the majority contexts. Thus, this principle of constraint is critical to the underlying theme of the discourse, namely democracy, in controlling the public good against excessive individual freedom, thus providing coherence and continuity to the whole. Constraint can also be utilized in the urban design arena, in order to preserve relationships or characteristics of perceived value, to the benefit of the community. It is critical for the urban designer to ensure that the elements of the public arena provide the necessary constraint for the generation of significant opportunities, which stipulates an urban logic to which investors respond, which is essential to the process of city building.

DEMOCRACY

Through the continual processes of city building, it is important for the urban designer to make a conscious effort towards the creation of the widest possible spectrum and the most spatially equitable distribution of opportunities. In the South African context (and in cognizance with the underlying theme of the discourse) it is essential for the urban designer to establish and incorporate the "real" needs of the contemporary, urban users and to make the city accessible (in its form) to the majority who are dependent on the city for the fulfilment of their needs and aspirations.

STIMULATION

Urban environments need to exhibit stimulatory qualities (which are generative) in order to encourage congregation, thus ensuring that the city continues to nurture

civilization. The elements of the public realm require the minimum input of stimulus (action) in order to elicit the maximum response (reaction). The city and the associated elements of the public realm are important tools in the educational context, thus emphasizing the significant role of stimulatory environments. In order to encourage positive, stimulatory environments the urban designer should attempt to create and maintain collective relationships of value within the community, thus enabling individuals to fulfil their own sensory needs.

LEGIBILITY

Legibility is closely interrelated to the logicality of the Urban system, to which the urban designer should respond. The relationship between the various elements of the public realm is significant in attempting to promote readability of the city, entrenching urban logic which ultimately results in the creation of a legible city. The character, rhythm and form of the differential elements of the public realm, provides a dominant memory of the city as it is experienced, thus moulding the users perceptions and increasing overall legibility.

Legibility is particularly significant at two levels, namely physical form and activity patterns. It is important to utilize the potential of the public elements to the full. The awareness of the physical form and the activity pattern must complement and harmonize one another. Bentley (1983) compares legibility in the differing contexts of the traditional and modern city. Within the traditional city, those elements of the public realm which were most significant looked most important, and the places of public relevance could easily be identified. However, within the modern city, the large office corporations and bureaucratic enclaves visually overwhelm publically relevant places, spaces and facilities, confusing important activity patterns. In attempting to achieve greater legibility, the urban designer needs to take cognizance of both the physical layouts and the activity patterns. In addition to this, the urban designer needs to be aware of the fact that it is the user, rather than the urban designer who forms the image of the city. (The urban designer merely arranges the physical layout in order to promote the achievement of legibility). The urban designer will need to establish a framework which incorporates the previously discussed principles, guides the impulses and processes of city building, and protects and creates relationships of value. These guiding principles will be incorporated into the final, physical design in the formulation of an urban design framework.

CHAPTER 6

APPLICATION OF THE FUNDAMENTALS OF JRBAN DESIGN

THE GOLDEN THREAD

The City must continue to nurture civilization.

HOW DOES THE URBAN DESIGNER TAKE COGNIZANCE OF THIS ?

Through focusing on the urban elements of the public realm.

WHERE SHOULD THE URBAN DESIGNER BEGIN ?

With a chronological overview of city building processes concentrating on the urban elements of the public realm.

WHAT CAN THE URBAN DESIGNER LEARN FROM HISTORY ?

That the elements of the public realm have been delivered in accordance with the needs and desires best served by the power elites.

HOW CAN THE URBAN DESIGNER RECTIFY CHRONOLOGICAL DOWNFALLS IN THE CITY BUILDING PROCESS?

Through the establishment of fundamental urban design criticalities which redirect the public dimension based on the pubilc realm.

HOW DOES THE URBAN DESIGNER APPLY THESE URBAN DESIGN CRITICALITIES ?

Through redirecting the city's form in the public dimension based on the public realm as demonstrated in the urban design framework.

HOW DOES THE URBAN DESIGN FRAMEWORK BECOME TANGIBLE?

Through substantial government investments as a "gift to the city", together with cross subsidization and embellishment opportunities and incentives.

compactness

Within the city, compaction is particularly important in the maximization of the generative capabilities inherent in this context. Through compaction the urban designer should redirect the generative capabilities of the city building processes into the public dimension based on the public realm, in order to cater for the needs of the low income sector. Further, the principle of compactness within the city encourages congregation due to the maximization of it's generative capacity becoming inherent in the urban environment, which is essential in ensuring that the city continues to nurture civilization. Numerous opportunities exist within the site for compaction, (and increasing the generative capacities of the city) namely, the Marshalling Yards which should be relocated to a more viable and economically feasible location. (i.e. Kazerne or Soweto), the buffer areas or the 'nomans' land adjacent to the motorway and the various development vacuums.



Figure 6.1

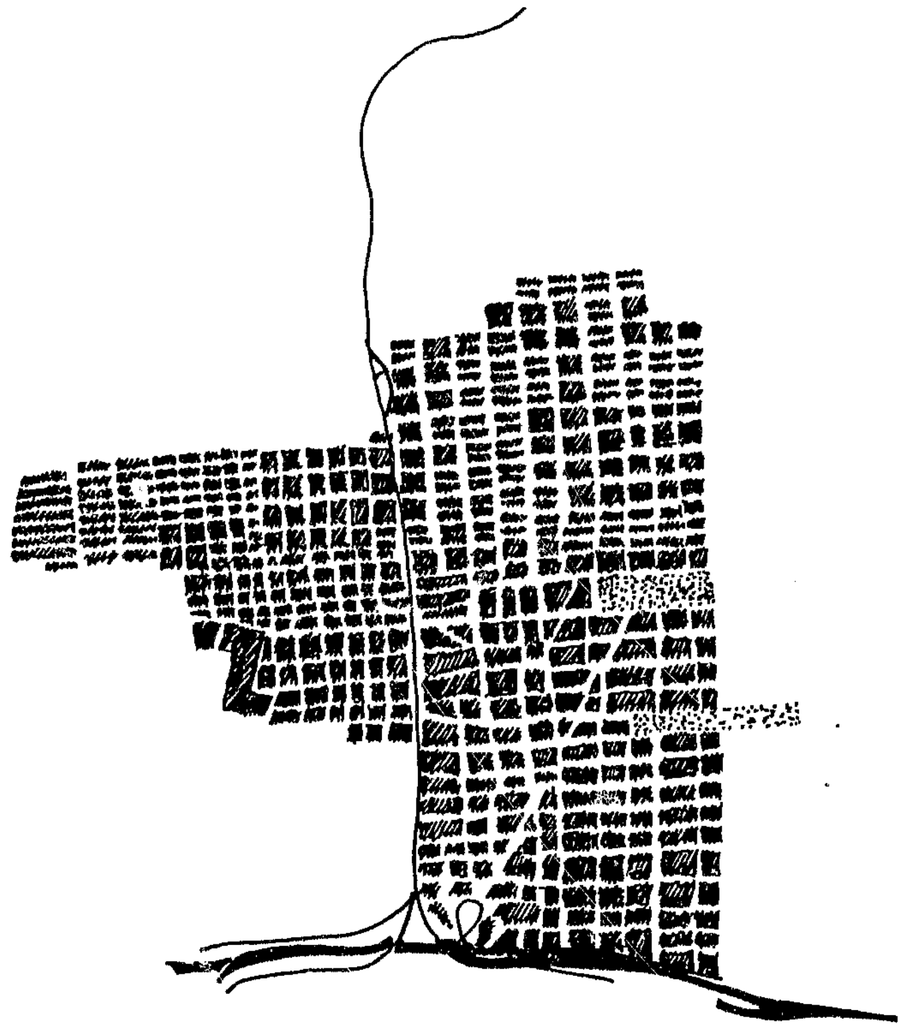


Figure 6.2

The principle of integration should grow organically over time. Utilizing movement systems as a integratory structuring device is very efficient if they are well conceived in relation to the larger systems of movement and if they are rendered articulate.

The major routes which define the city are very pertinent structuring elements, which possess a dominant integratory function in the promotion of legibility of the city.

It is also possible to integrate a contextual setting through the incorporation of complementary and/or multifunctional uses (as explicated in figure 6.5).

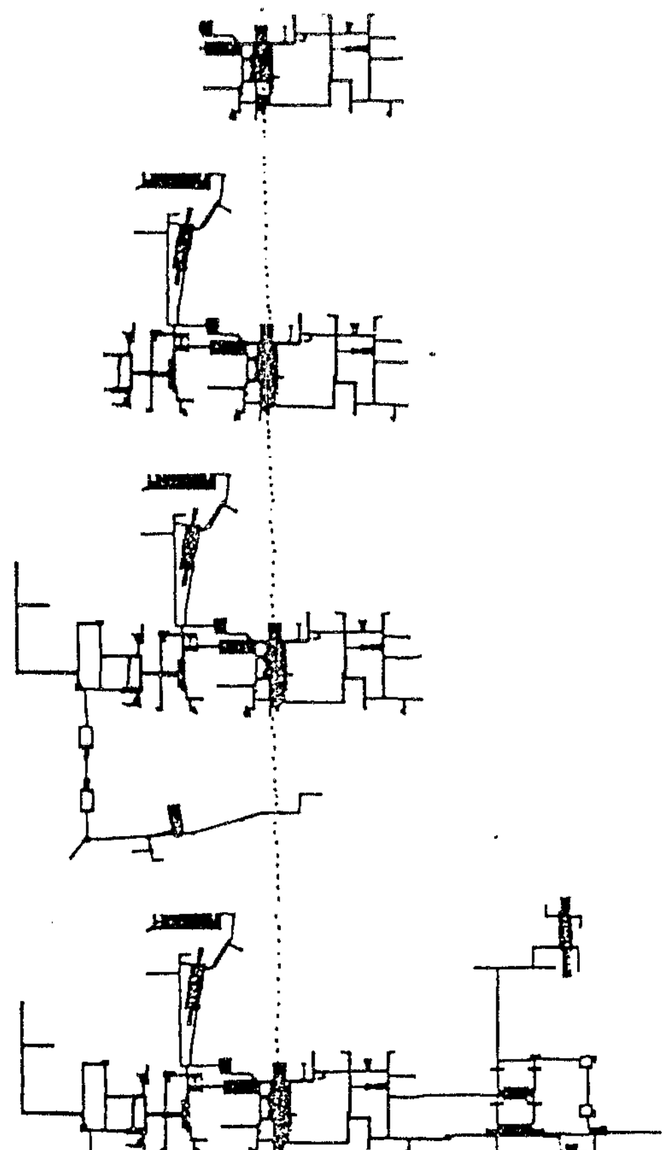


Figure 6.3

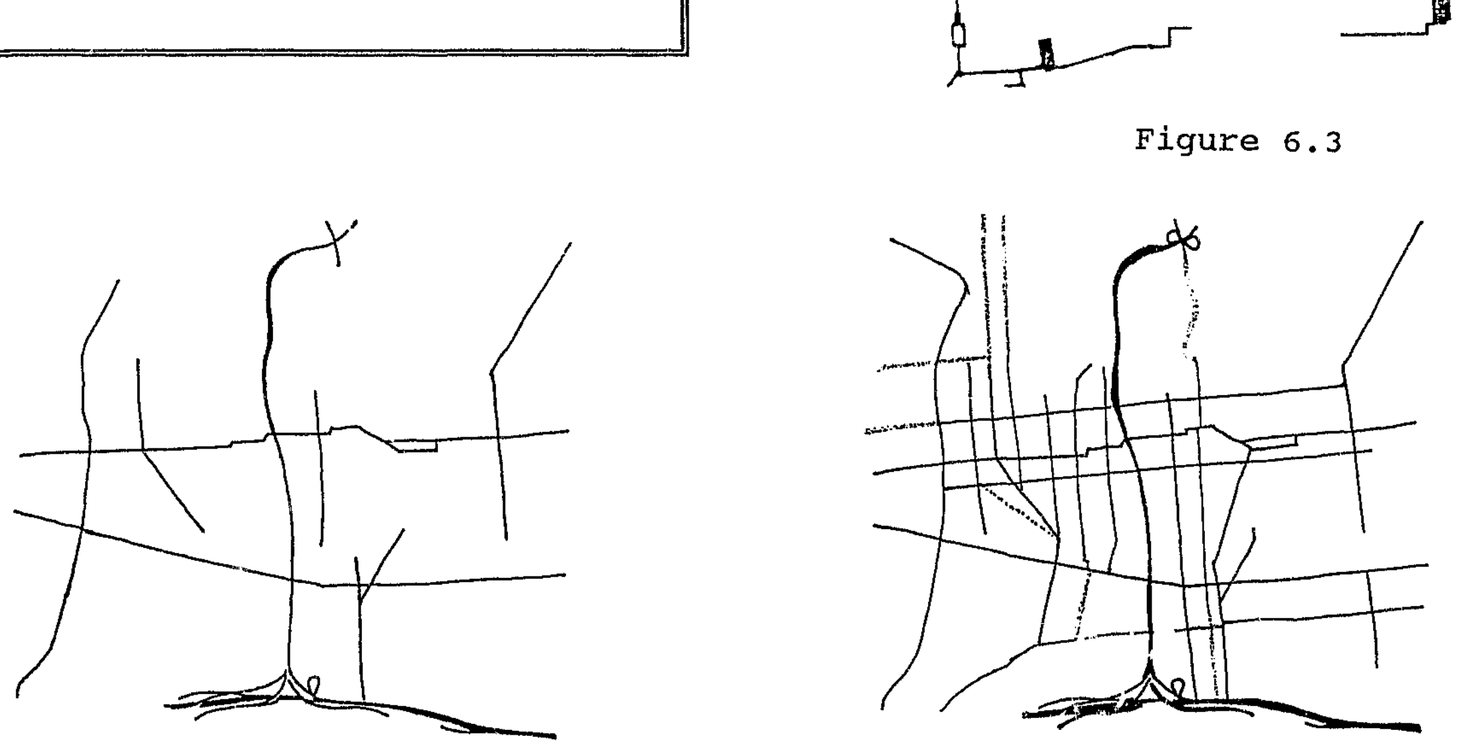


Figure 6.4

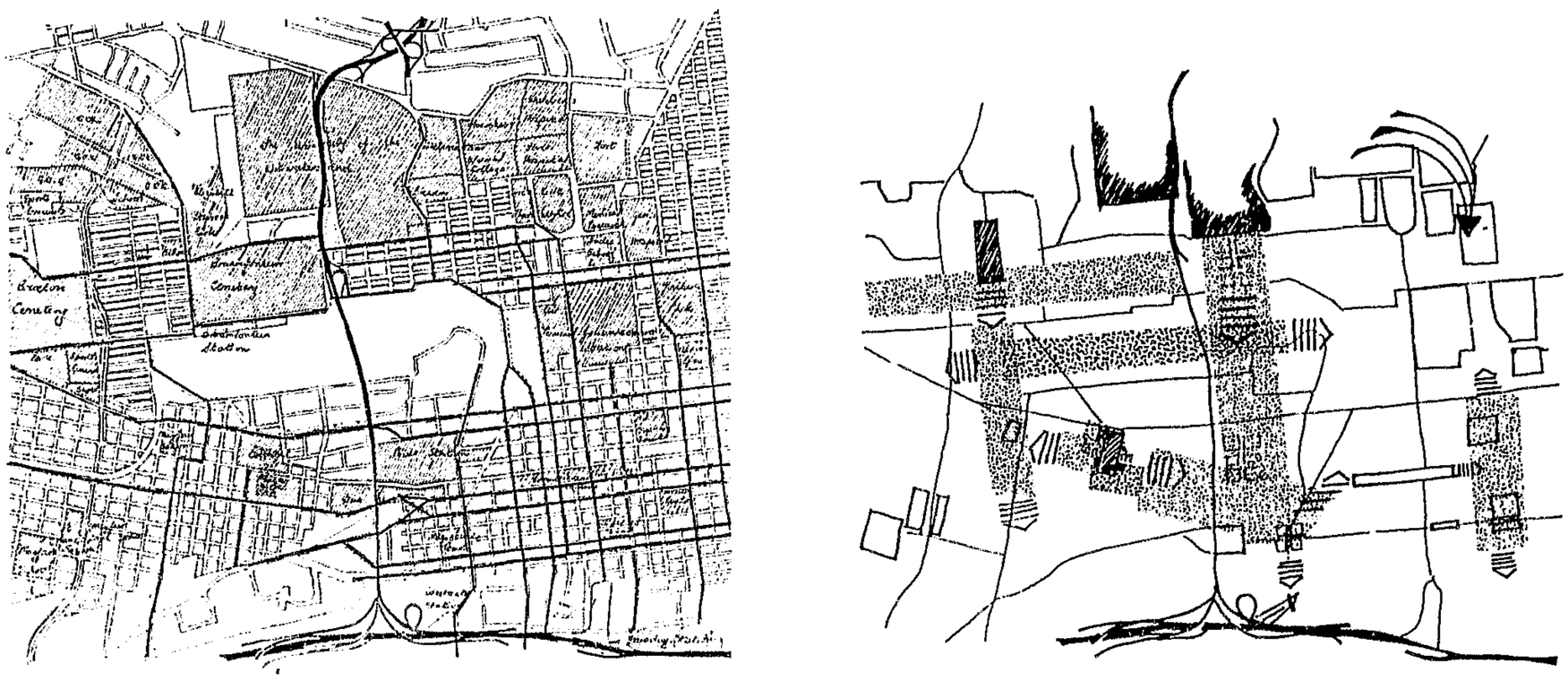
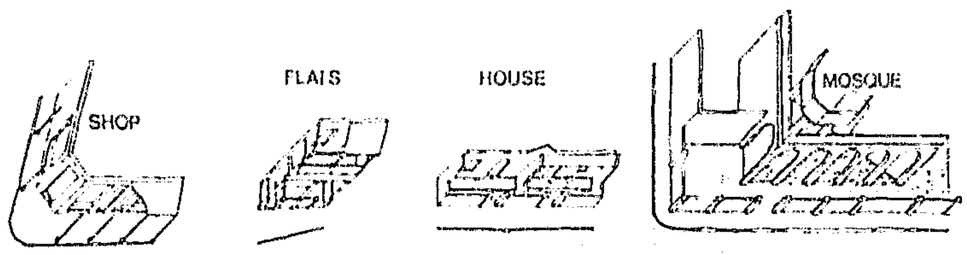


Figure 6.5

Multifunctionality is a significant factor contributing towards high performance urban environments, particularly relevant amongst the lower income category. "The activities of man in any living area are complex and by definition cannot be compartmentalized into simple spatial parcels. Thus socializing does not only occur in 'social facilities' but in the street, in shops, at work and the like; 'living' does not only occur in the house - it is integral to all man's activities." (Dewar and Uytenbogaardt, 1977, Cape Town)



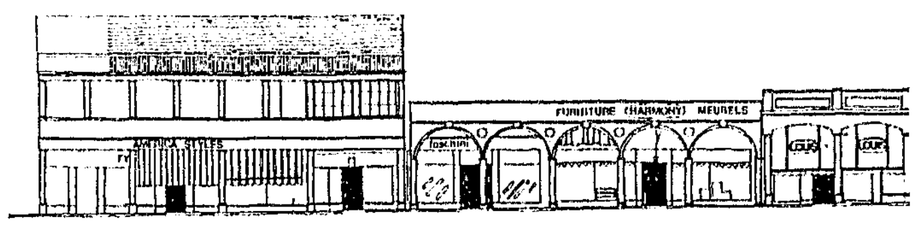


Figure 6.6

"Hawker/Pavements: an experimental modification to one of the main streets. They proposed a line of platforms two metres wide with water taps at thirty metre intervals. On these the hawkers would set up shop thus freeing the pavements for pedestrians and providing a barrier between vehicles and pedestrians. At night the platform would be washed down for sleeping." (Charles Correa, 1989)

In order for the street to perform effectively it should not only be perceived as a movement channel, but as place where people can interact. Numerous opportunities exist for redirecting the street into the public dimension (within the city context) whereby the street becomes a coherent space with a rich quality.

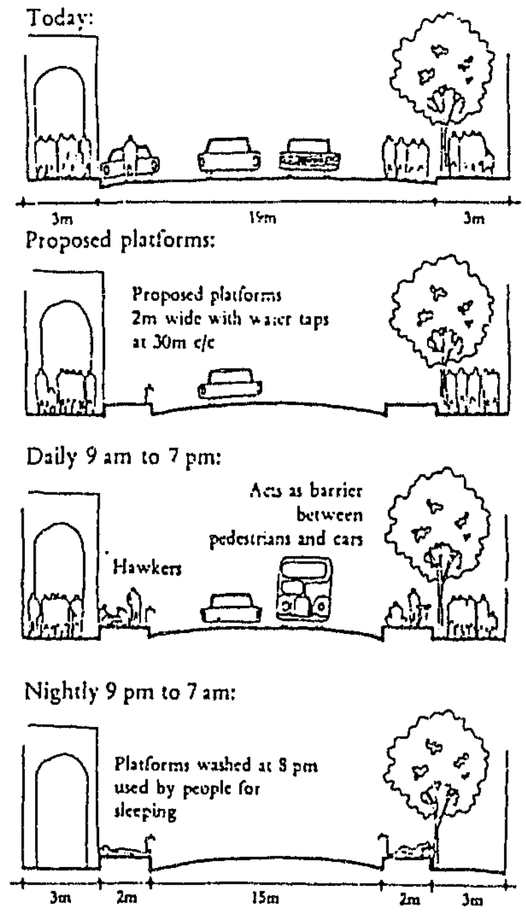


Figure 6.7

Multifunctionality promotes a high degree of mutual support between uses and activities through their location with respect to the key installations and channels of movement.

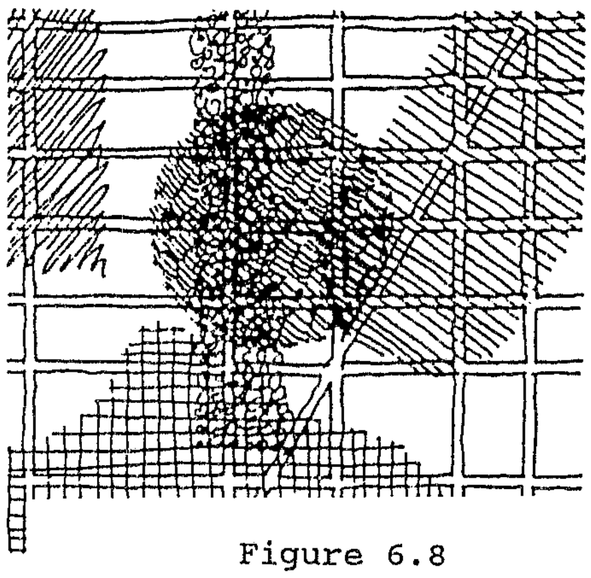


Figure 6.8

The adjacent engraving of Venice reveals the complex interrelationships of church towers and spires which suggest and recall the Campanile of Saint Mark's, however, they never dominant this major campanile.

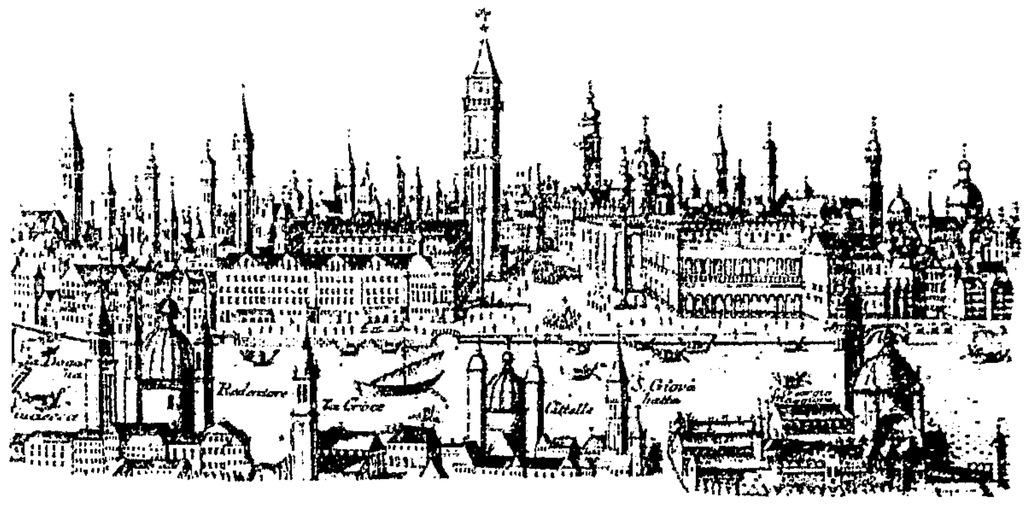
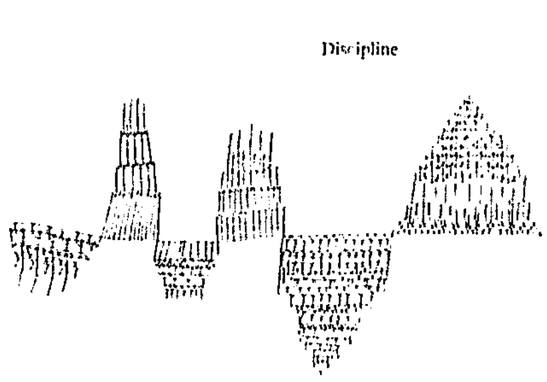
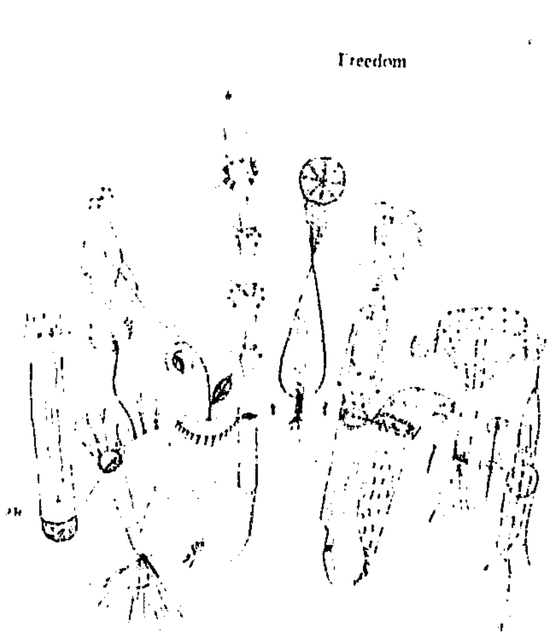


Figure 6.9



Paul Klee diagrams from the *Thinking Eye*

Figure 6.10



Source : Bacon, E. Op. cit, p.86-87.

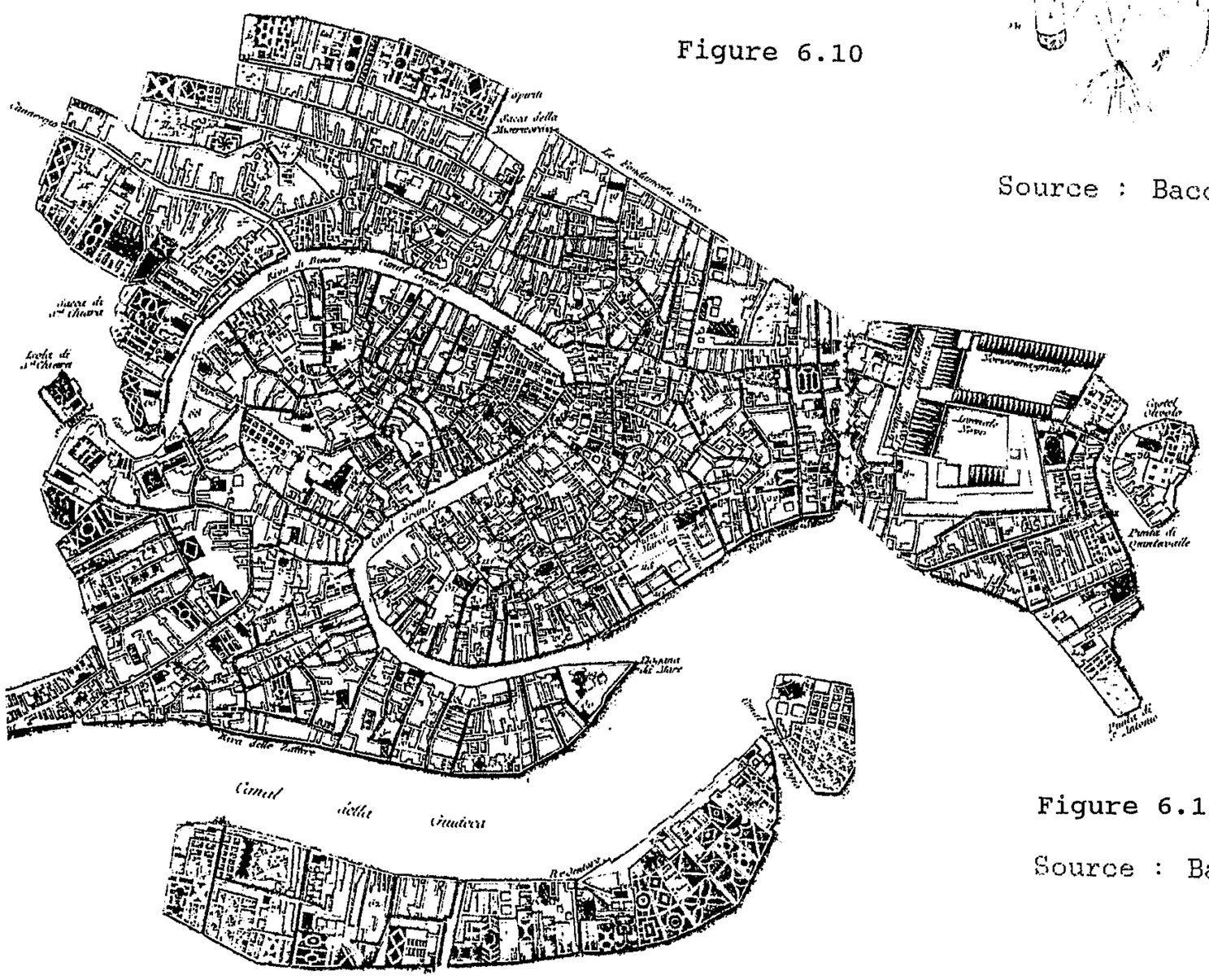


Figure 6.11

Source : Bacon E. Op. cit, p.241

The sketch of Venice above reveals he complexities inherent within the city arranged around the Grand Canal which encourages the citizens to feel the pride of belonging whilst being capable of identifying with the concept of the common life of the city as a whole. Complexity within the city structure promotes democracy through the opportunity to fulfil and satisfy the needs of a heterogeneous society. This principle is particularly relevant within the South African context due to the heterogeneous nature of the population (especially within a city environment, due to the agglomerations of need).

Bacon (1967) explicates the dynamic nature inherent in form with time. According to Paul Klee, the line moves and produces the plane: the plane moves and the body comes into beirg." This process demonstrates the principles of dynamism, when one compares the point which becomes a line to the resultant forms of the city building processes which produce shafts of energy into space.	The urban designer needs to take cognizance of the interrelationship between the city building forms and the type of energies which these forms generate. In context with the thesis, the urban designer should redirect these energies into the public dimension.

Figure 6.12

Figure (6.13): Baghdad (Iraq) : the geometric 8th century ground plan which became a thriving community by the 9th century. Caliph's palace can be perceived as the initiator of the forces of dynamism and growth. In addition to this the principles of complexity and legibility are also inherent within the city's form.

Source: Kostof, S. (1991) The City Shaped, London: Thames and Hudson Ltd, pg. 13.

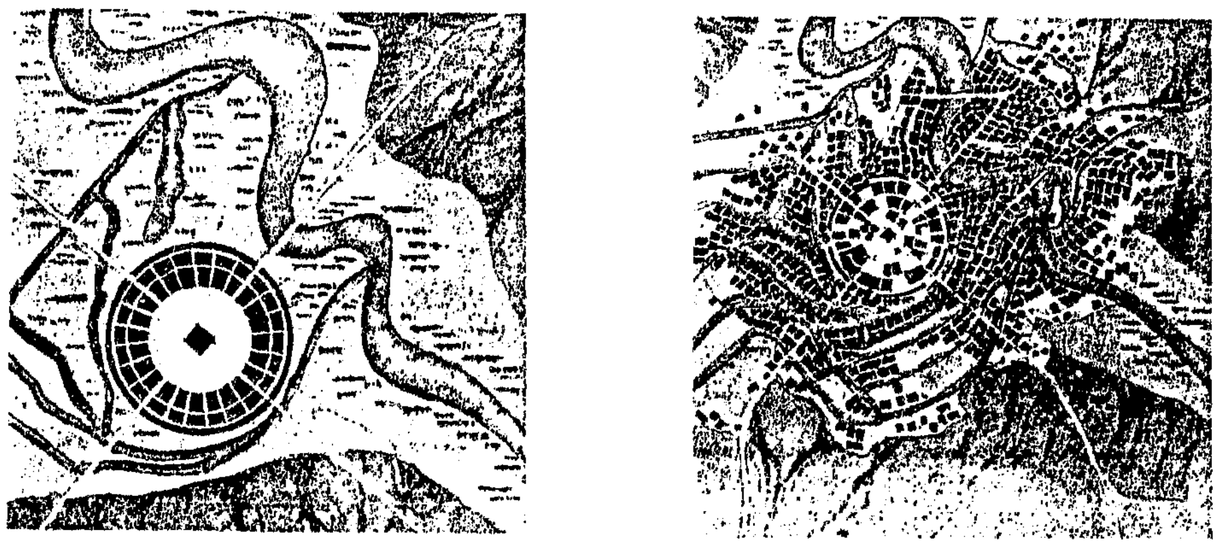


Figure 6.13

Figures (6.14-15): reveal the changing dynamics with the city of Johannesburg from 1897 to 1992. It is interesting to observe how a large portion of the original city grid has been maintained and survived the dynamics of time.

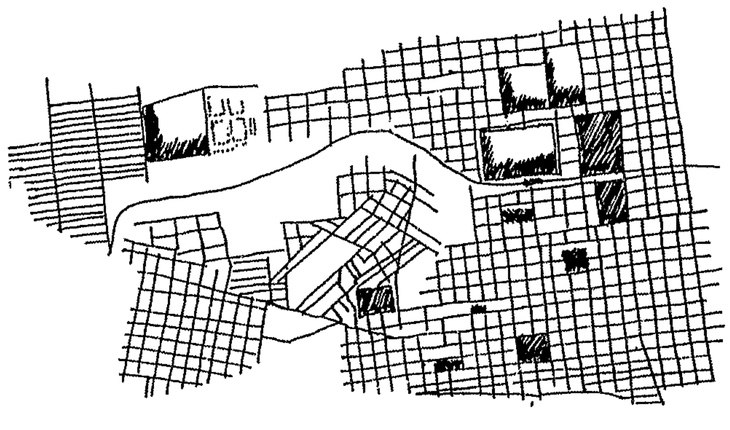


Figure 6.14

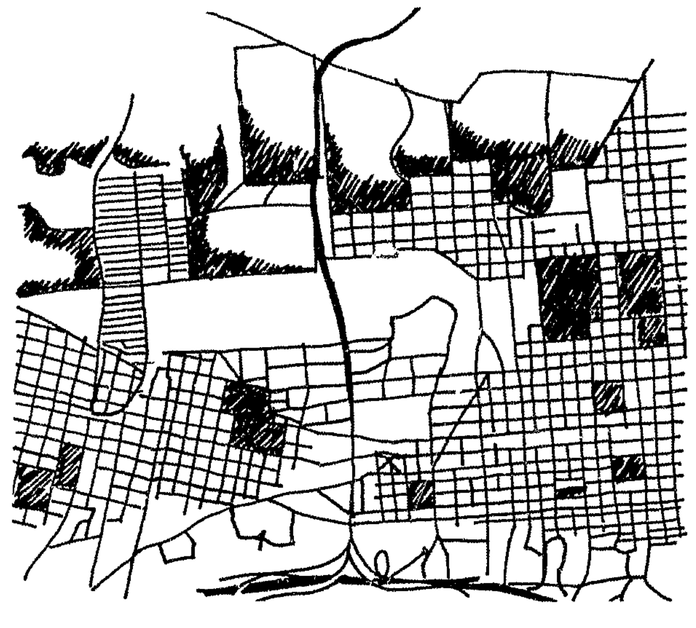


Figure 6.15

Figures (6.16-17): The integratory devices of movement channels have a significant influence in the promotion of dynamism. Articulate movement channels present significant clues as to the direction which the city building processes may assume.

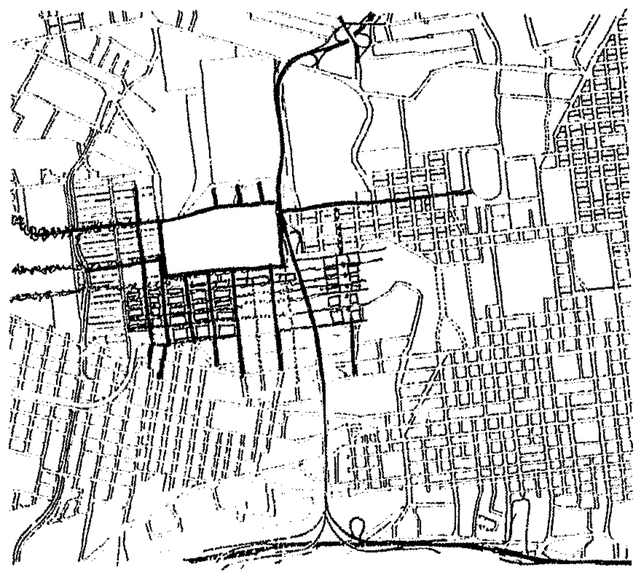


Figure 6.17

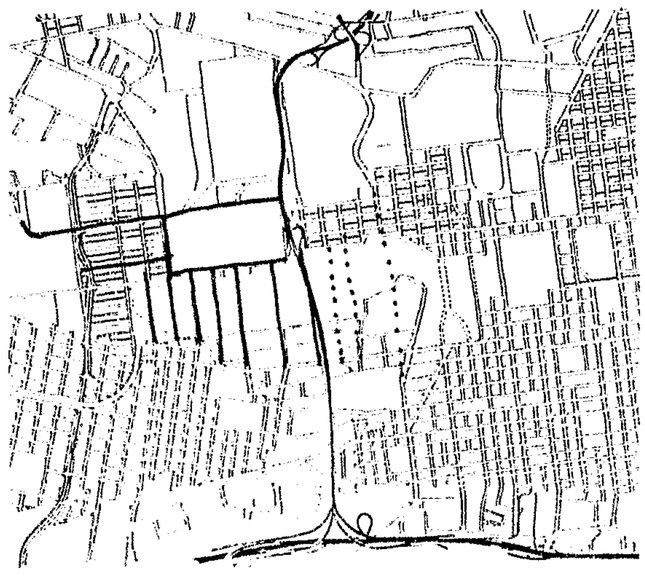
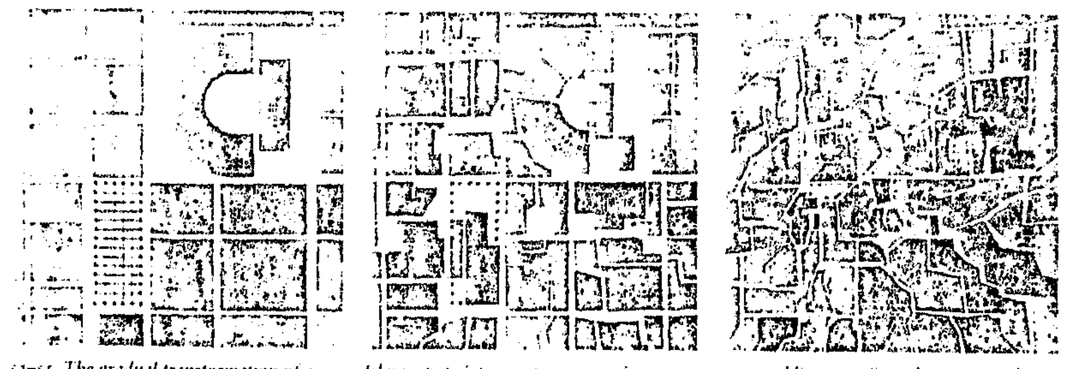
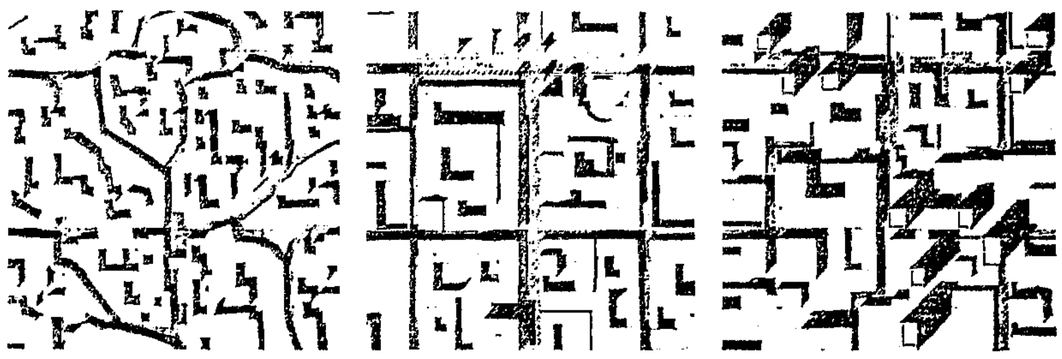


Figure 6.16



51–55 The gradual transformation of a gridded Roman colony into an Islamic city. Left: The soundly framed Roman grid is punctuated by an open-air market and an amphitheater. Center: The city's new Islamic population appropriates these public monuments for private use, and mid-block pathways begin to violate the orthogonal street pattern. Right: The transformed city is one with a minimum of open public space. Straight passages along the winding system of narrow lanes offer the merest suggestion of the original layout.

Figure 6.18



56–58 Islamic and feudal Italian adaptations of pre-existing Roman towns are marked by characteristic differences in form and social context. Center: A gridded plan typical of the colonial settlements planted by the Roman Empire throughout the Mediterranean. Left: In its reconfiguration by an Islamic population, streets are replaced by a web of alleys that organize residential quarters common to a single tribal or ethnic group. Right: A modification of the same town plan in medieval Italy would see city blocks fused together to form fortified feudal enclaves crowned by defensive towers.

Figure 6.19

In order to fulfil and satisfy the heterogeneous needs of the low income sector flexibility is important. The urban designer should also incorporate flexibility in order to cater for the dynamic forces concurrent within the city.

A certain amount of constraint is necessary within the city in order to ensure that the city building processes are directed in the public dimension based on the public realm. If principle of constraint is ignored the private dimension will become more dominant than the public dimension, resulting in the junking of the public realm. Constraint is a significant controlling device in the urban environment, in directing decision making investments which could ultimately result in the embellishment of the public realm.

Figure 6.20



A legible and viable public transportation system is particularly important when catering for the needs of the low income sector of society, through the promotion of "equitable" access to opportunities inherent within the city as a result of the agglomerations of scale. Ultimately, the promotion of "equitable" access to opportunities would serve to reinforce democratic ideals.

Stimulatory environments are necessary for the fulfilment of the sensory needs of society. Stimulatory qualities are essential for the achievement of legible, positive urban environments. It is important for stimulatory environment to generate and attract large numbers of people to promote congregation in order to ensure that the city continues to nurture civilization. Stimulatory environments contribute towards and enhance the educational function which cities possess. The urban designer could attempt to introduce opportunities for the utilization of all the senses, such smell, sound, sight, taste and touch. Participation within the environment is important in context of stimulation. However, environments initially need to be stimulatory in order to encourage participation.



Figure 6.21: The Ira Keller Fountain, Oregon

Source : Webb, M. Op. cit. p.210



Figure 6.22: Paley Park

Source : Trancik, R, Op. cit. p.85

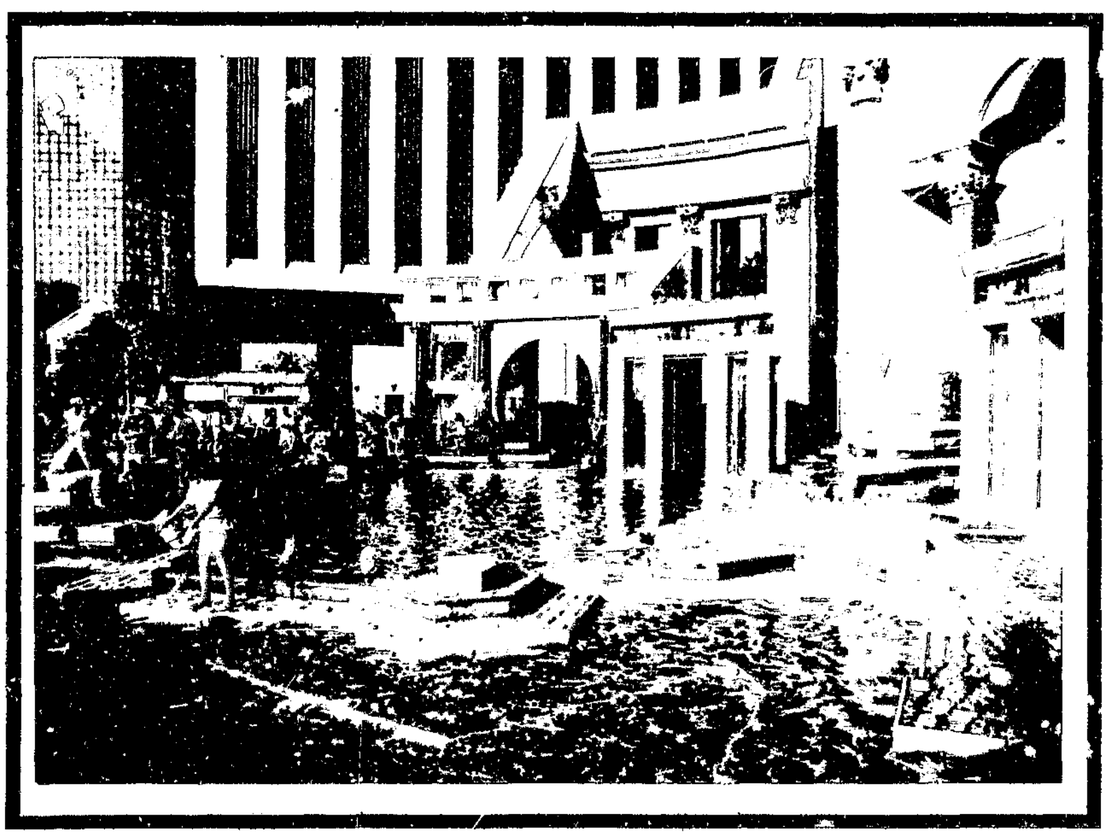
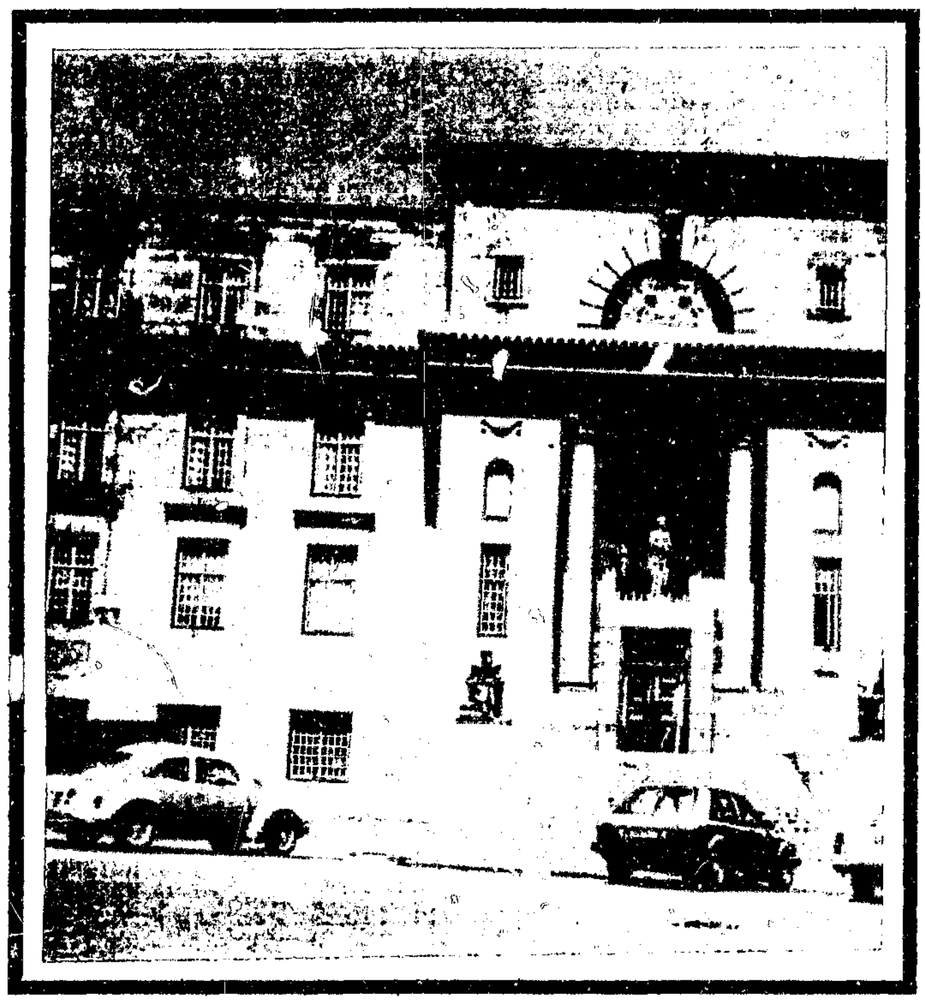


Figure 6.23 : The Piazza d' Italia, New Orleans

Source : Webb, M. Op. cit. (back cover)



As explicated in figure (6.24) it is obvious that the character, rhythm and form of the Magistrate's Court provides a particularly dominant memory of this part of the city. However, the Magistrate's Court tends to concentrate on the private dimension, being rather exclusionary of the public realm. The urban designer should attempt to redirect the urban logic of the Magistrate's Court into the public dimension, through the encouragement of this built form as a participatory element of the public realm. In the design, the Magistrate's Court adopts its' original function as

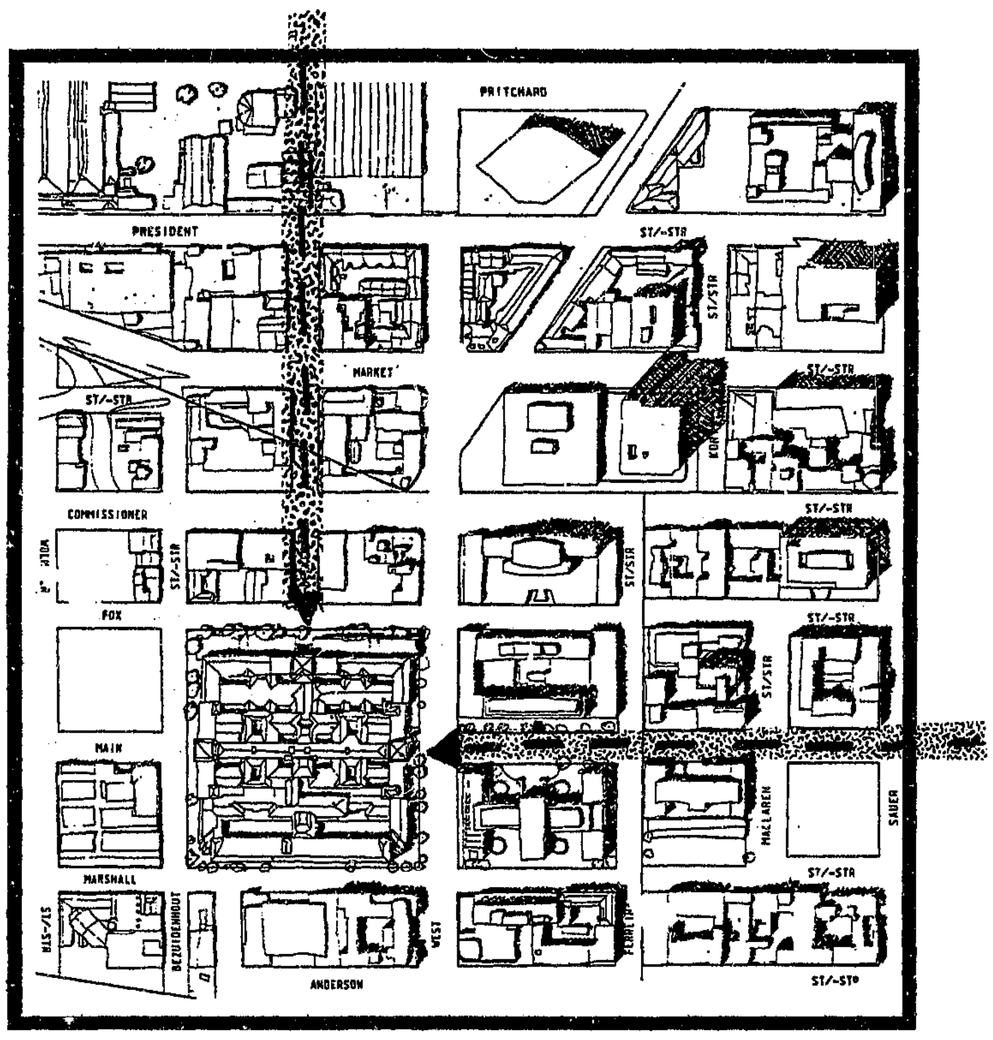




Figure 6.24:

a market which is significant due to the generative capacities inherent in the market economy, which is further enhanced through accessibility to the multimodal transportation node (Westgate Station area).

However, due to the established civic content of this part of the site, the Magistrate's Court will be relocated in close proximity to its' original position. The addition of a law faculty adjacent to the Courts would serve to enhance the civic content of the area as an administrative precinct, whilst extending the dynamics of the university.

CHAPTER 7

THE EVOLUTION OF THE URBAN DESIGN FRAMEWORK

THE GOLDEN THREAD

The City must continue to nurture civilization.

⇩

HOW DOES THE URBAN DESIGNER TAKE COGNIZANCE OF THIS ?

Through focusing on the urban elements of the public realm.

⇩

WHERE SHOULD THE URBAN DESIGNER BEGIN ?

With a chronological overview of city building processes concentrating on the urban elements of the public realm.

⇩

WHAT CAN THE URBAN DESIGNER LEARN FROM HISTORY ?

That the elements of the public realm have been delivered in accordance with the needs and desires best served by the power elites.

⇩

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Through the establishment of fundamental urban design criticalities which redirect the public dimension based on the pubilc realm.

⇩

HOW DOES THE URBAN DESIGNER APPLY THESE URBAN DESIGN CRITICALITIES ?

Through redirecting the city's form in the public dimension based on the public realm as demonstrated in the urban design framework.

⇩

HOW DOES THE URBAN DESIGN FRAMEWORK BECOME TANGIBLE?

Through substantial government investments as a "gift to the city", together with cross subsidization and embellishment opportunities and incentives.

THE EVOLUTION OF THE URBAN DESIGN FRAMEWORK

(directed through the public dimension based on the public realm of the city)

1) ATTRACTION

This stage draws out the reasoning and logic of the site in context with the underlying themes of the thesis. The existence of numerous key installations which can be directed in the public dimension based on the public realm (namely, the Magistrate's Court, the University and adjacent educational facilities, the Cemeteries, parks, Newtown, Westgate Station, Park Station and other transportation nodes, van der Bijl Square, the Civic Spine, Smal Street Mall, the Oriental Plaza and the retail component, the residential component, theatres, etc) is particularly significant in terms of the thesis content.

In taking cognizance of the needs of the chosen user group (namely the low income sector) the city offers numerous opportunities for the fulfilment and satisfaction of needs and aspirations of this sector of society.

The presence of private individuals and corporations provide opportunities for later embellishments within the public realm.

(**Note** : the first and second stages of the urban design process are complementary).

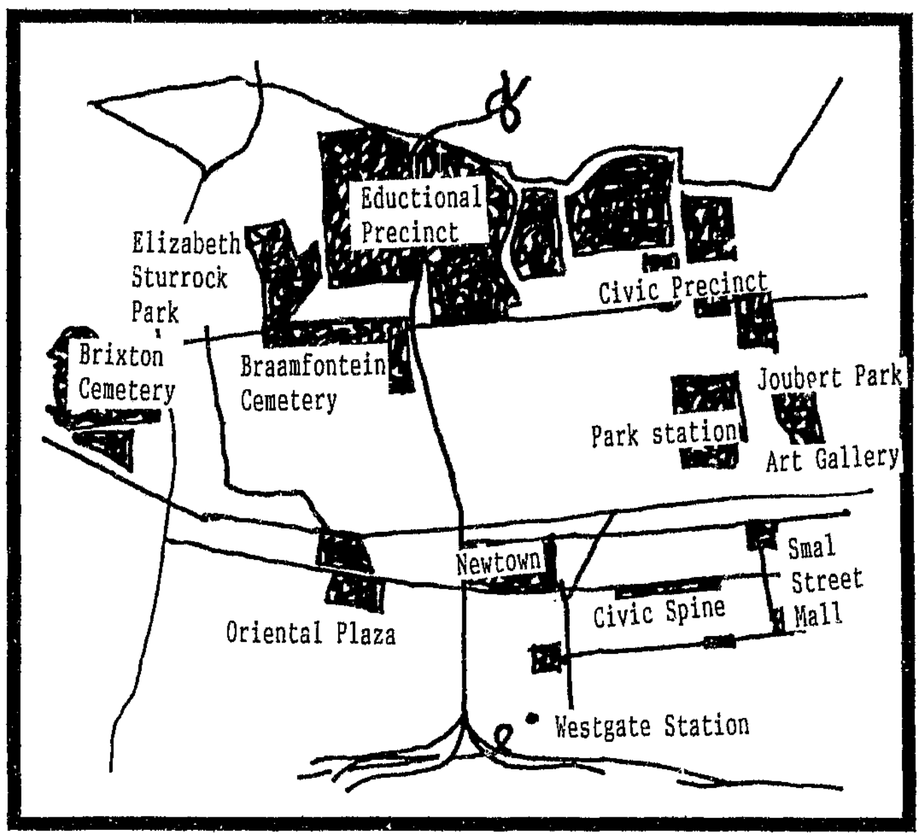


Figure 7.1

Key installations which can be directed in the public dimension based on the public realm

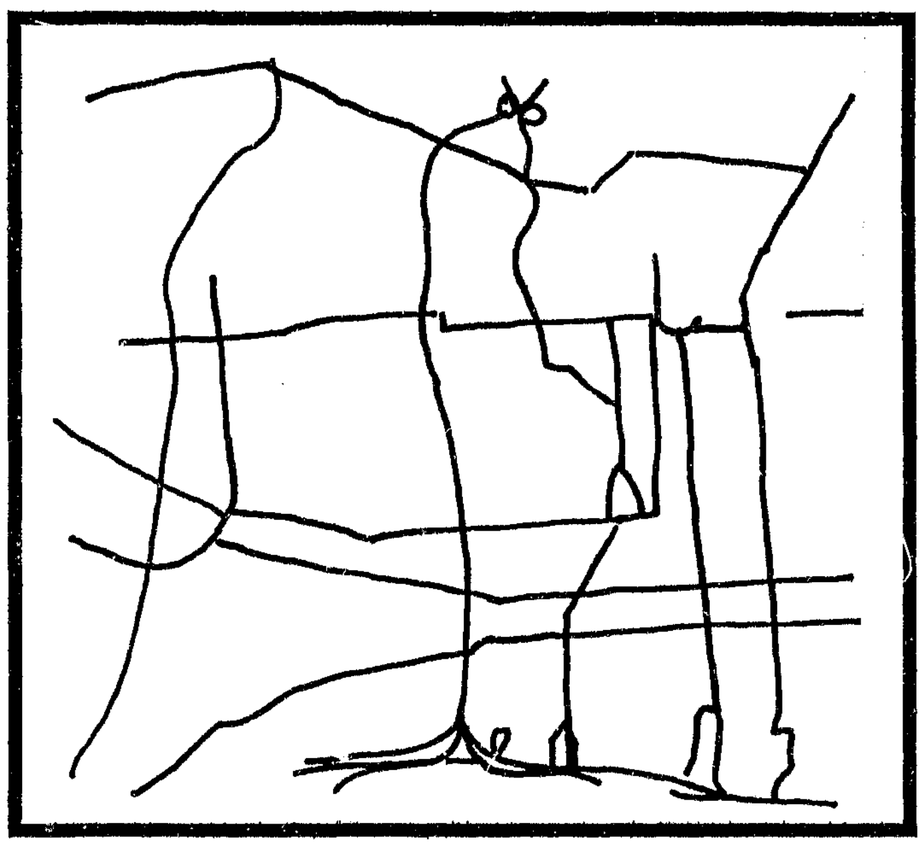


Figure 7.2

Strategic links and their destinations

NOTE: See the base plan and the figure ground analysis at a scale of 1:5000 in the back pocket at the end of the thesis.

2) EXPLORATION

The initial stage of the urban design framework is an analytical phase which takes cognizance of existing problems, opportunities and constraints in context of the underlying theoretical base, with an emphasis being placed on the public dimension based on the public realm.

PROBLEMS

- A lack on integration and legibility within the urban context.
- The resultant city building processes have tended to ignorantly exclude the pedestrian.
- Numerous development vacuums are existent within the city environment, such as the marshalling yards and the noman's land adjacent to the motorway.
- The conflicting grids need to be reconciled in promoting legibility.

OPPORTUNITIES

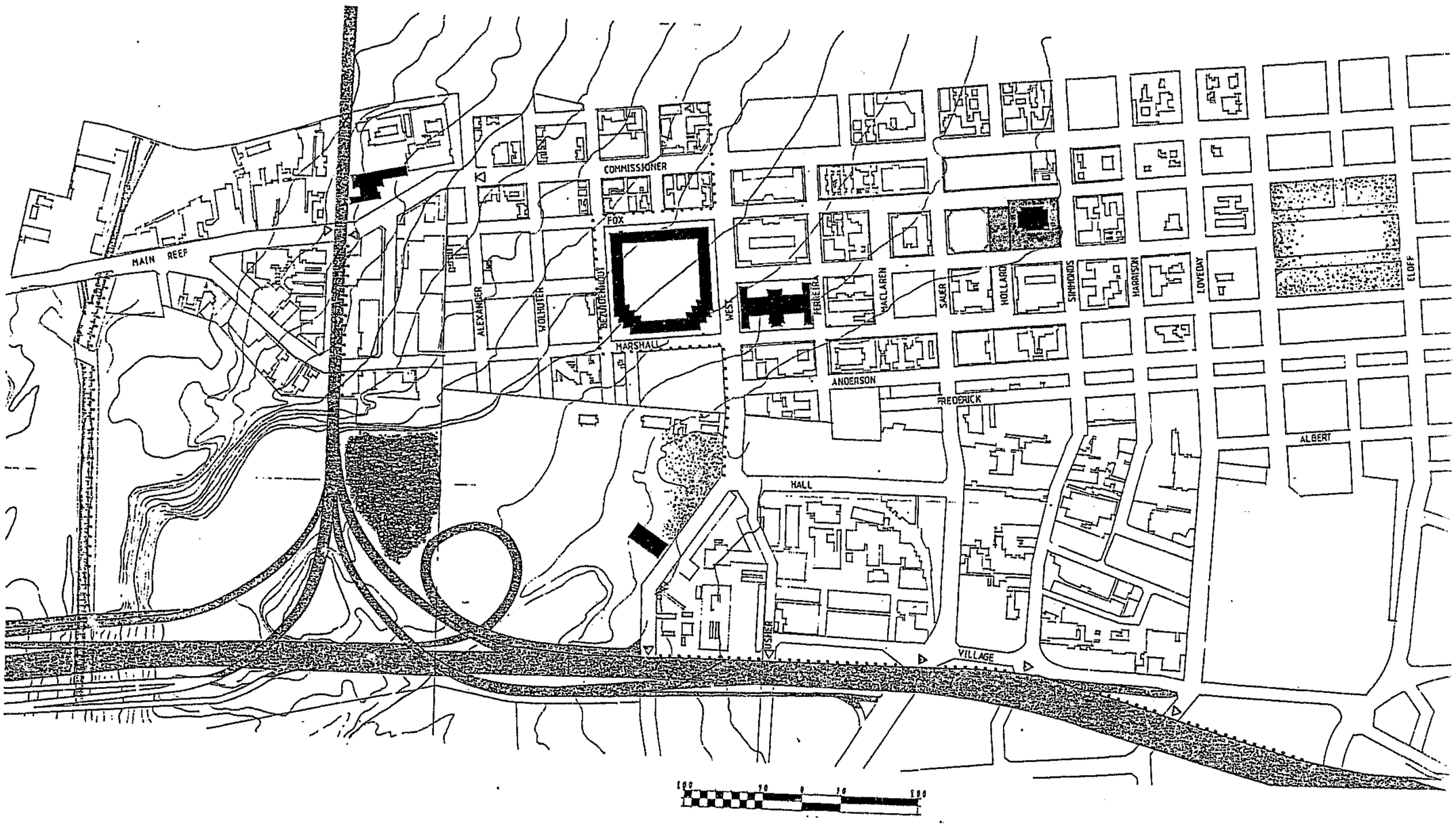
- Opportunities exist for the densification and compaction of the city in order to enhance legibility and integration.
- To relocate the marshalling yards to a more viable location.
- The multifunctionality of use.
- The reinforcement of legible precincts through the incorporation of civic and cultural contents.
- To creatively integrate the motorway (see figure 7.3) into this context and utilize the noman's land efficiently in order to promote a positive urban environment. (c.f. the Pontevecchio or the Pantheniac way in Athens).
- Urban designers should incorporate opportunities which enhance the relationship between the public realm and the buildings which dominate this domain.

Figure 7.3



CONSTRAINTS

- The motorway acts as both a barrier and seam as explicated in the following diagram.



LEGEND

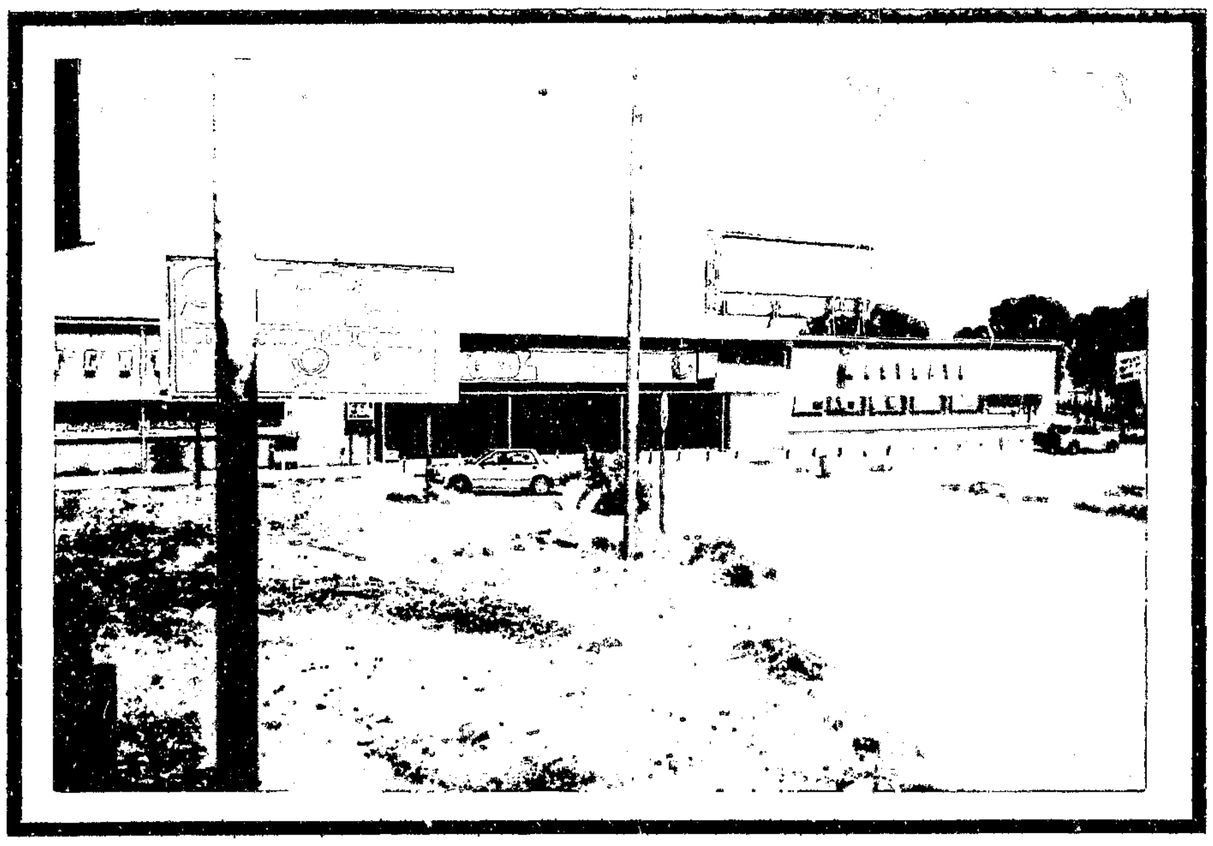
Path-Highway : Visually & physically permeable : Edge -seam/barrier : Node - activity concentration : District : Landmark

Landmark - minedump : View : View obstructed : Formal open space :

N

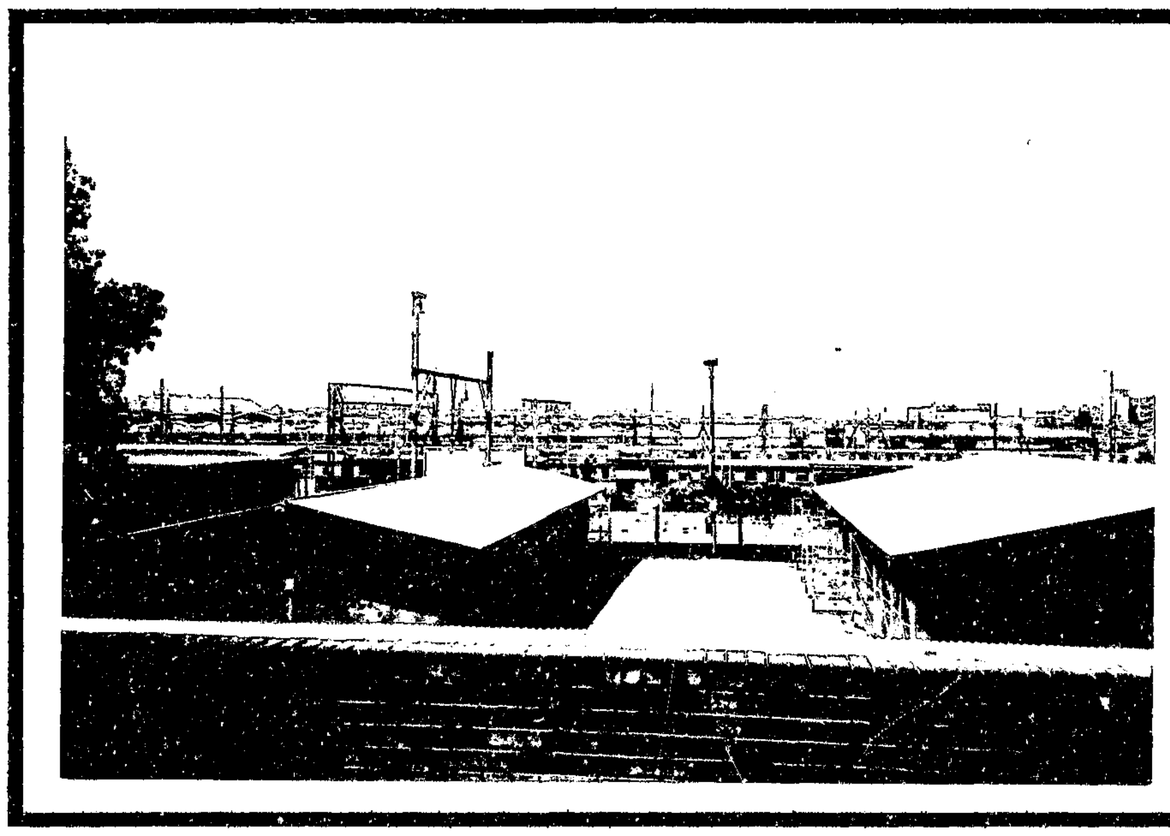
Scale 1:10 000

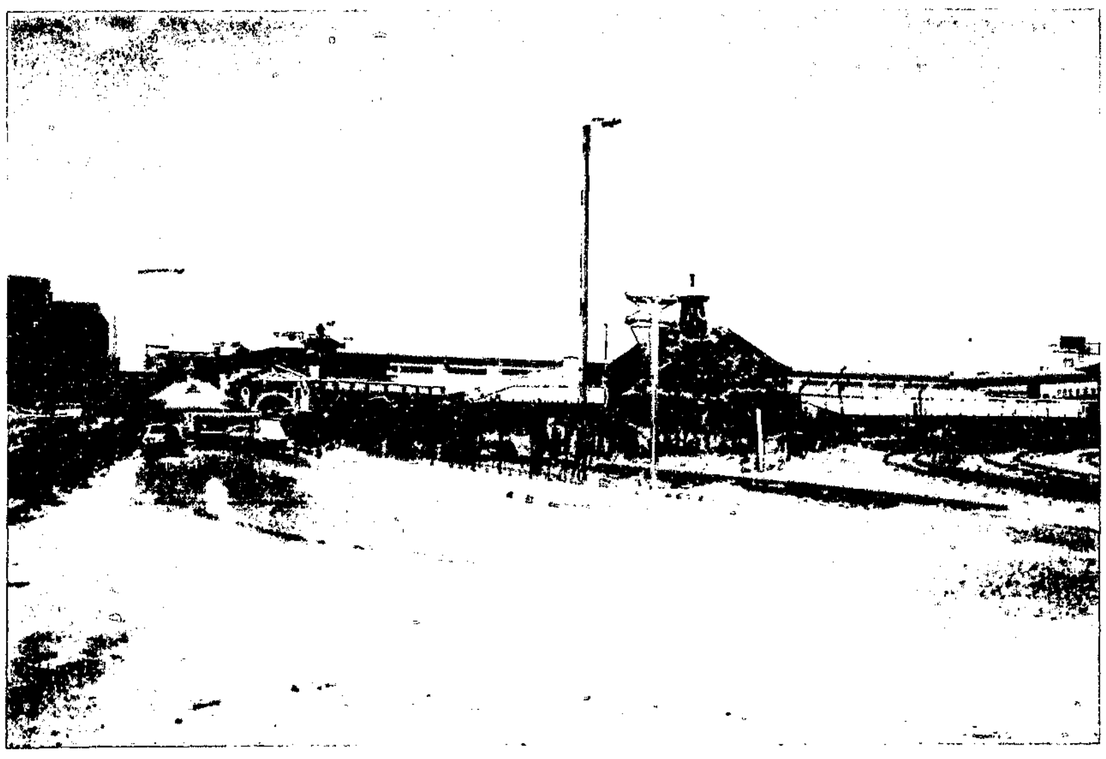
WESTGATE STATION & MAGISTRATE'S COURT



Westgate station - numerous opportunities are inherent (multi-modal transport opportunity) in the station for redirecting this element into the public realm, together with the promotion of access to opportunities and the enhancement of legibility within the city. (Figure 7.4)

The Marshalling yards can be perceived as a wasted opportunity, due to the unfeasible location in terms of economics and proximity to the city. Relocation of the marshalling yards would open up this opportunity within the urban design arena. (Figure 7.5)





Numerous opportunities are present within Newtown which can become the cultural precinct of the city.

The urban design framework must take cognizance of Newtown as an important integratory device between the development vacuum and the Magistrate's Court Area. (Figure 7.6)



Opportunities for connectivity with Ameshof Street are evident, through the extendability of the University, with the residential component. (thereby reinforcing multifunctionality).

Figure 7.7 : East Campus (University of the Witwatersrand) taken from Jan Smuts Avenue.

Opportunities for the extension of the educational facility across the Marshalling Yard, enhancing legibility, multifunctionality, integration and connectivity.

Figure 7.8 : Senate House. (University of the Witwatersrand)





Opportunities for connectivity and integration with the Braamfontein cemetry, together with the extendability of the educational component.

Figure 7.9 : West Campus (University of the Witwatersrand).

ORIENTAL PLAZA (Retail Opportunities)



Figure 7.10



Figure 7.11

The bridge is an important device in encouraging continuity within the urban fabric.

The existing integratory routes as explicated in Figure 7.12 need to be extended in order for the energies inherent in these activity spines to penetrate this retail component, which is presently rather isolated. These integratory routes (activity spines) direct the urban design framework within this precinct.

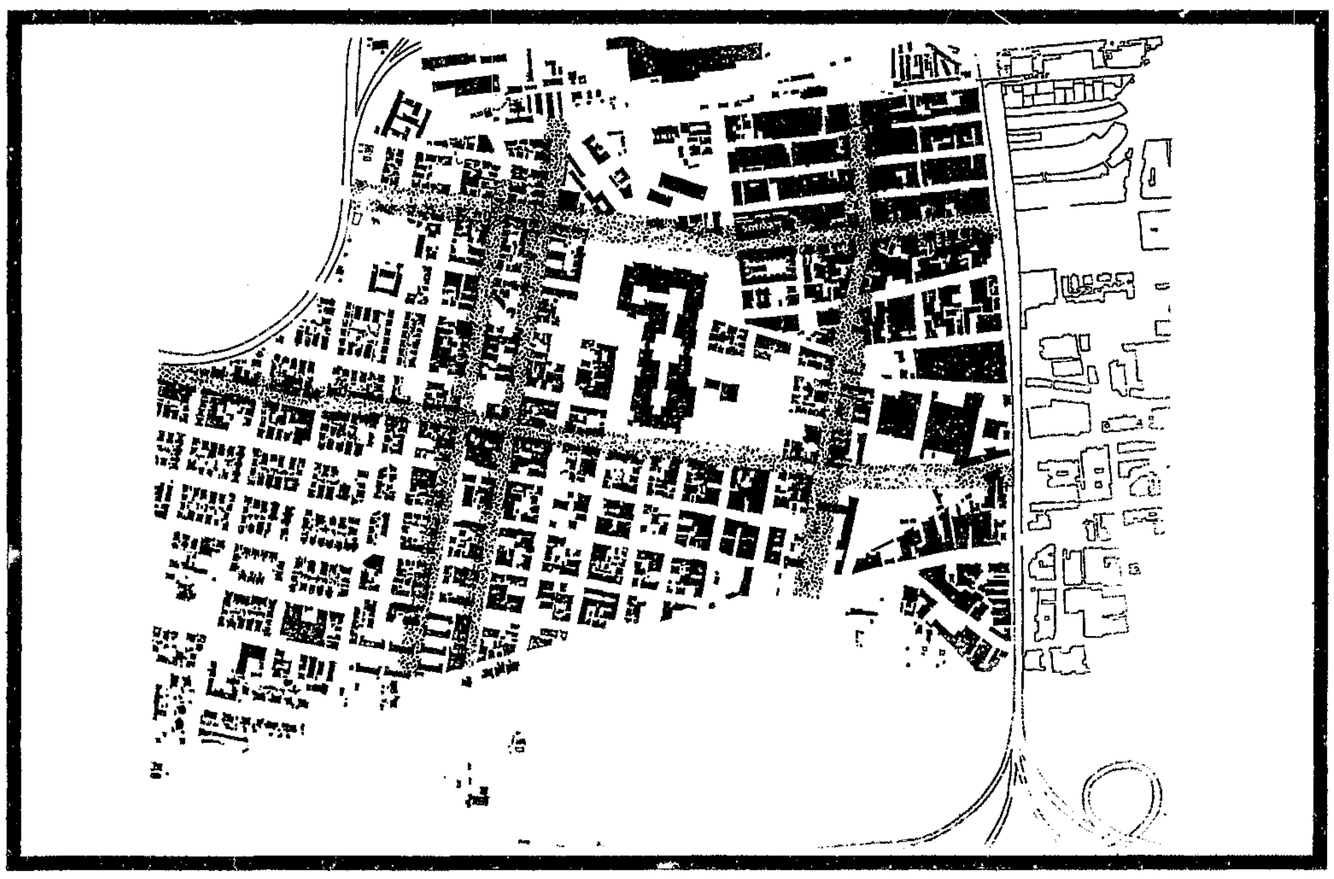


Figure 7.12

Source : Glen Mills, (1992) Fordsburg : Spatial Analysis, Johannesburg : University of the Witwatersrand.

CEMETERY (Green Opportunities)



Figure 7.13 : Braamfontein Cemetery

Due to the severe lack of nature within the city, the cemetery presents an underutilized opportunity for "green" integration and connectivity, contributing towards the public dimension based on the public realm.



Figure 7.14 : Braamfontein Crematorium

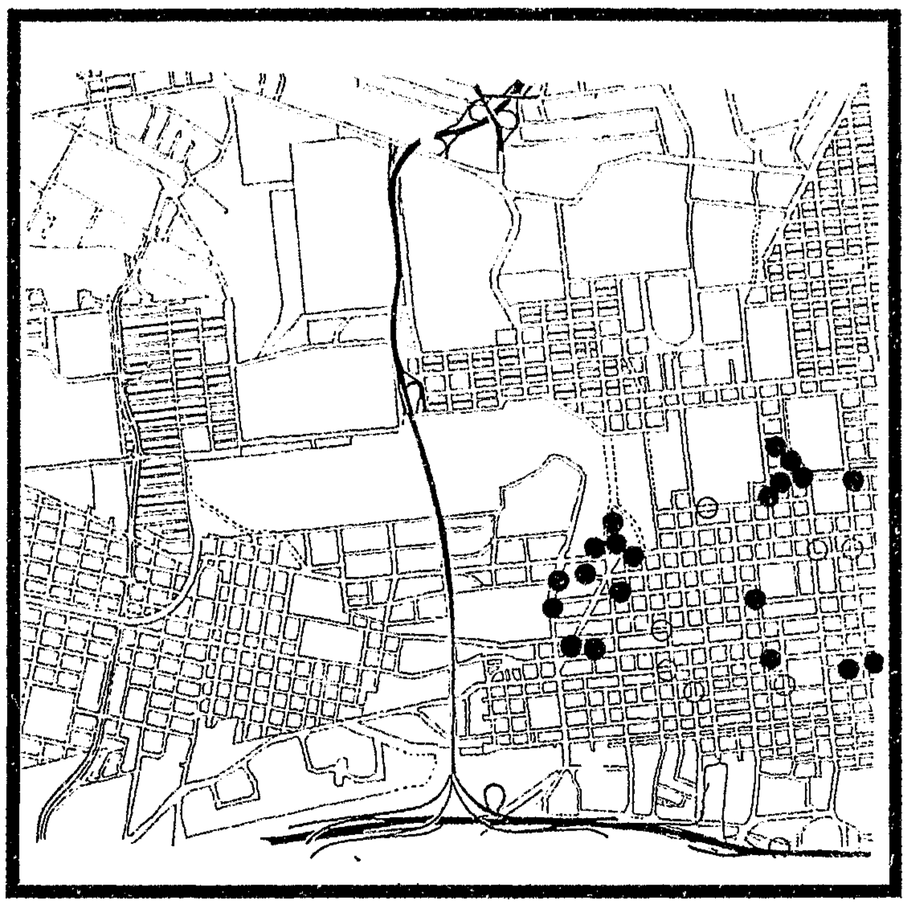


Figure 7.15 : • Minibus Ranks • Taxi Ranks

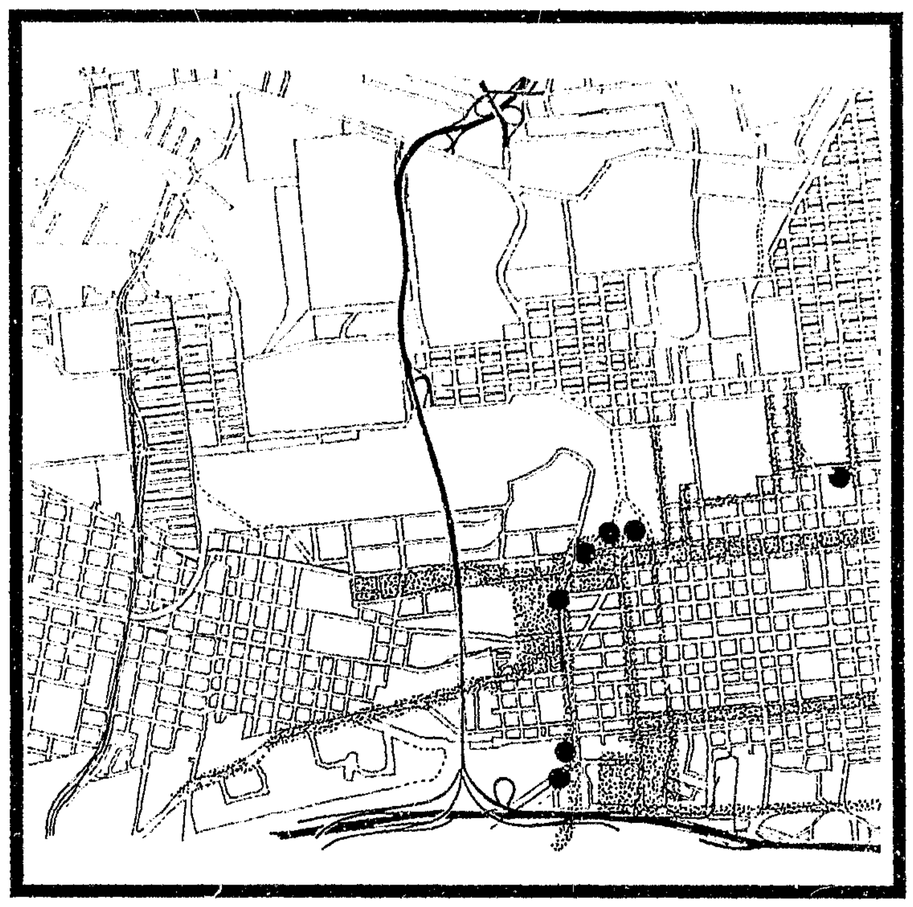


Figure 7.16 Putco Bus Routes : Inbound Peak Hour Trips

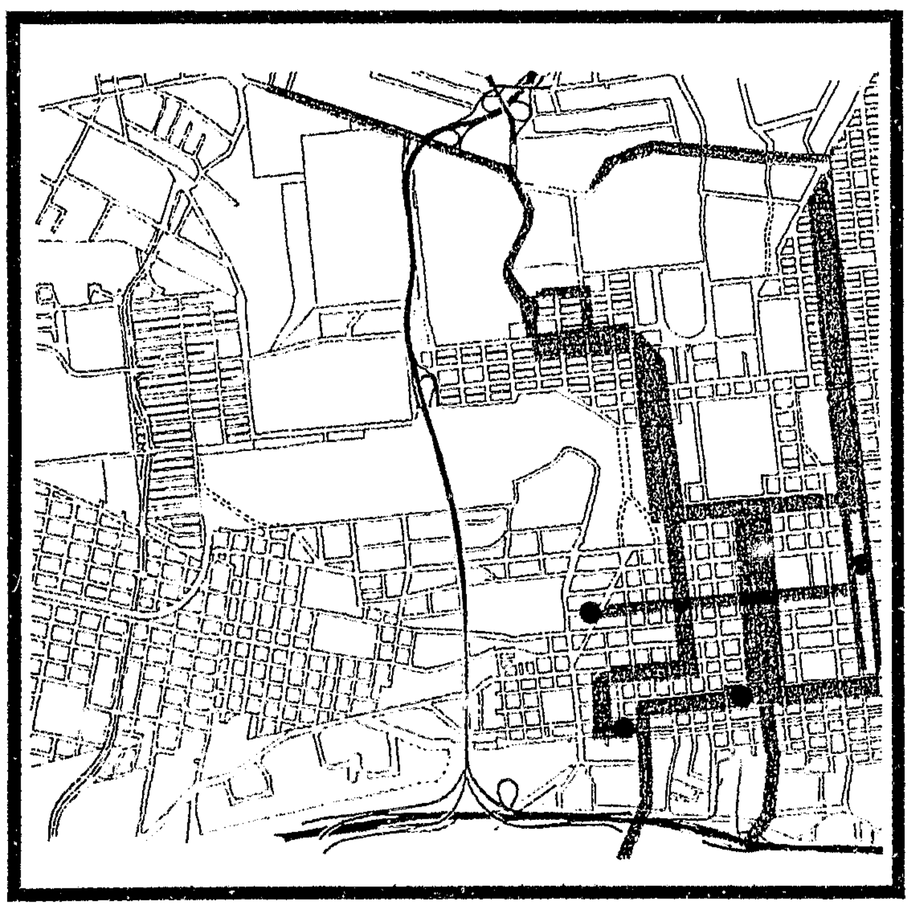


Figure 7.17 : Johannesburg Transport Department Bus Routes : Inbound Peak Hour Trips.

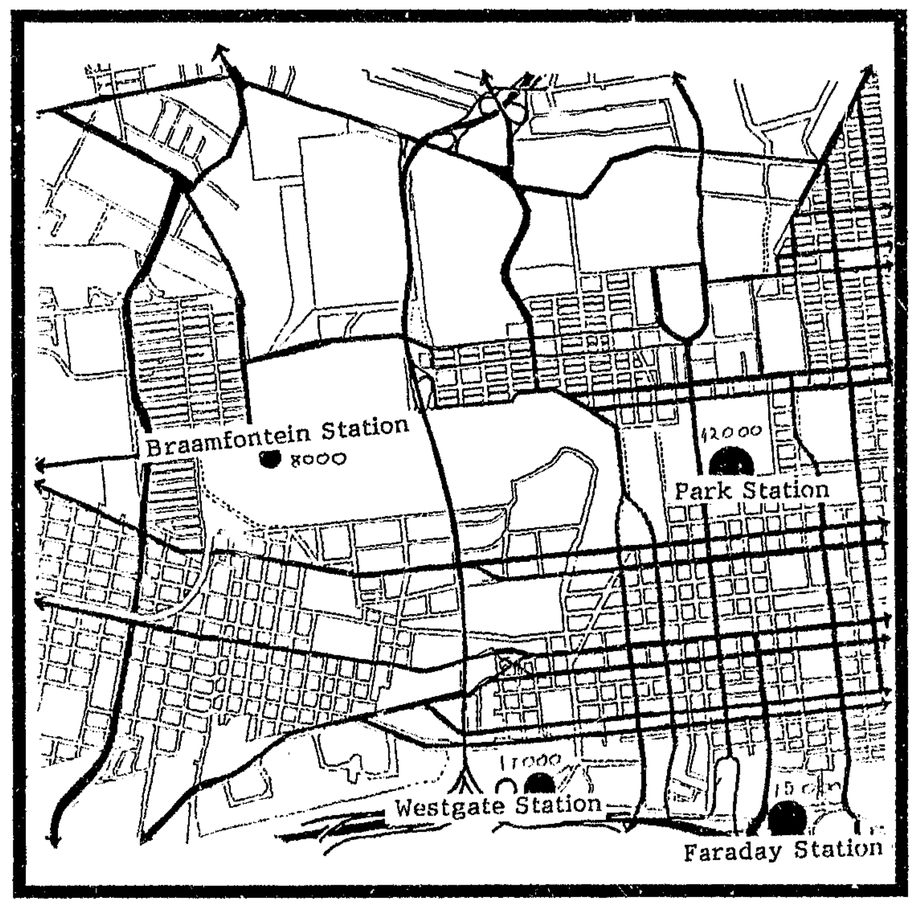


Figure 7.18 : Major roads and rail.

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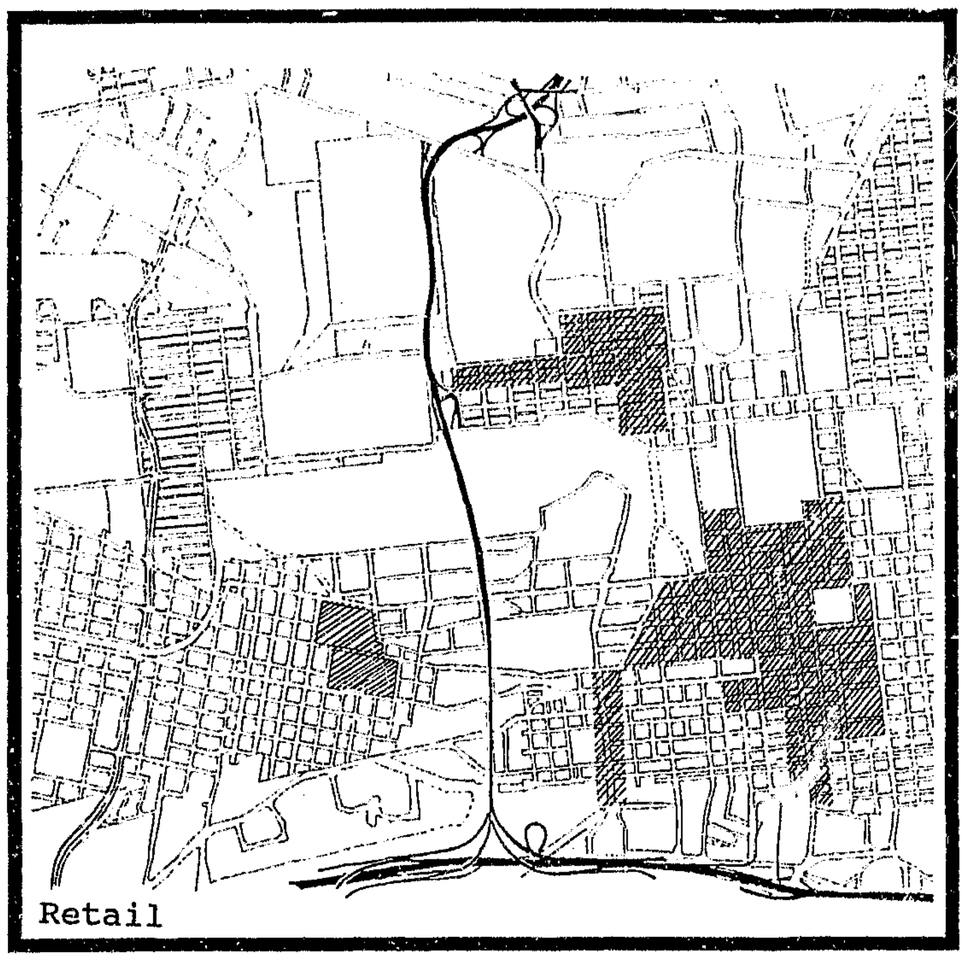


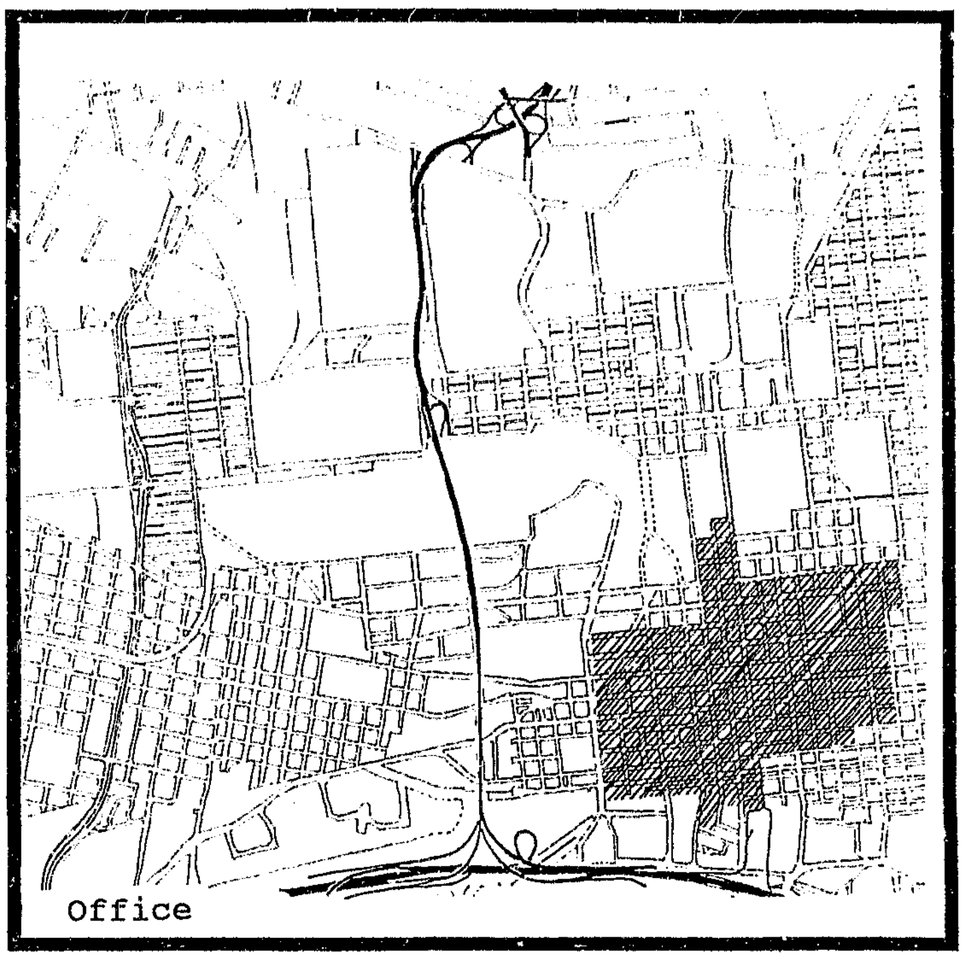


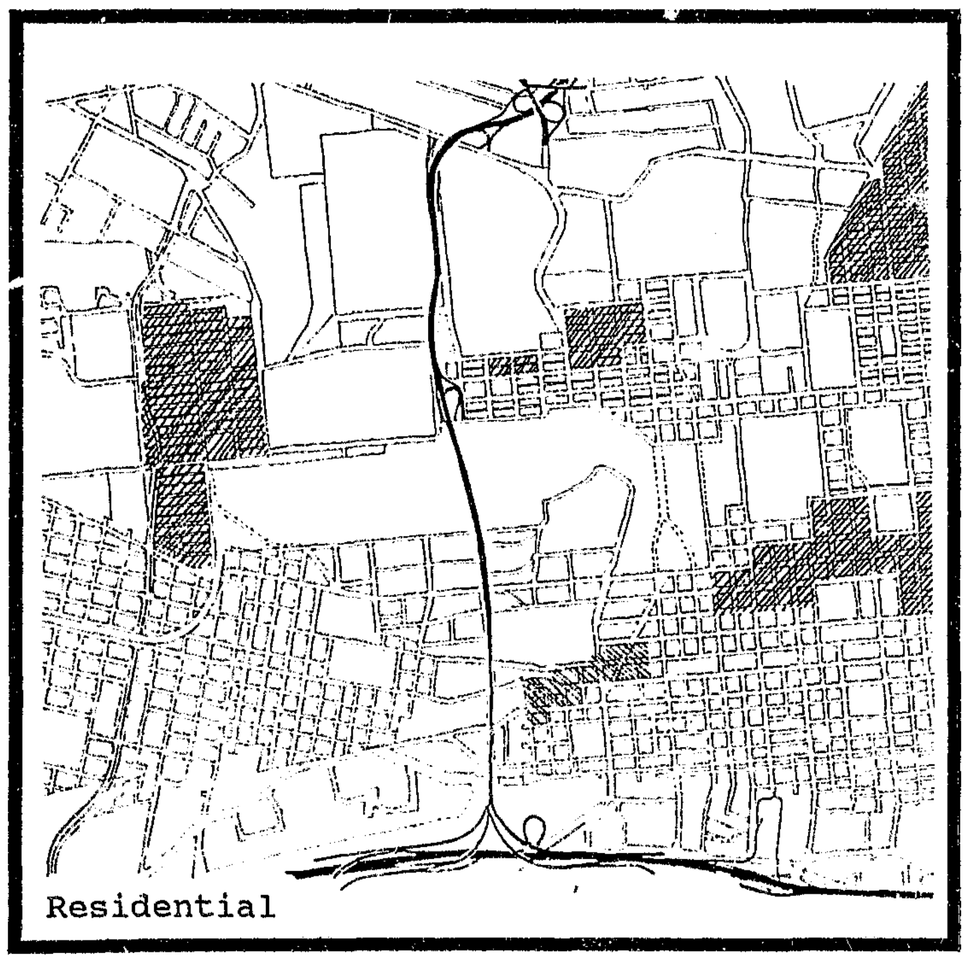
Figure 7.19 : Need to encourage and facilitate informal retail activity. Establish links between the retail components, which promote accessibility to the retail opportunities.

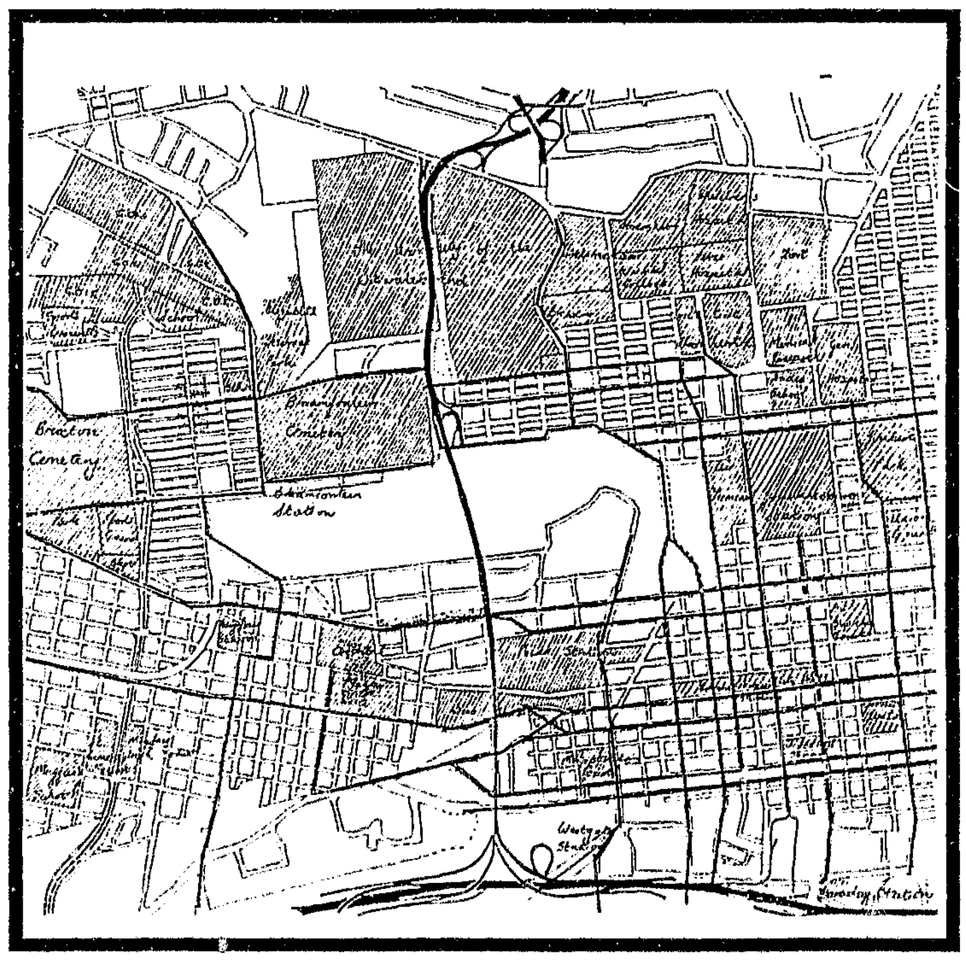
Figure 7.20 : The office component is characterized by high rise buildings which are directed in the private dimension, contributing minimally towards the public realm.

Figure 7.21 : In order to cater for the needs of the low income secctor (i.e. living and employment in close proximity to one another) the urban designer should encourage the residential component (densification and multifunctionality should also be incorporated).

Public Elements.

Figure 7.22 : Numerous opportunities (i.e. the various public elements) for the redirection of the city's form into public dimensions are inherent within the city.





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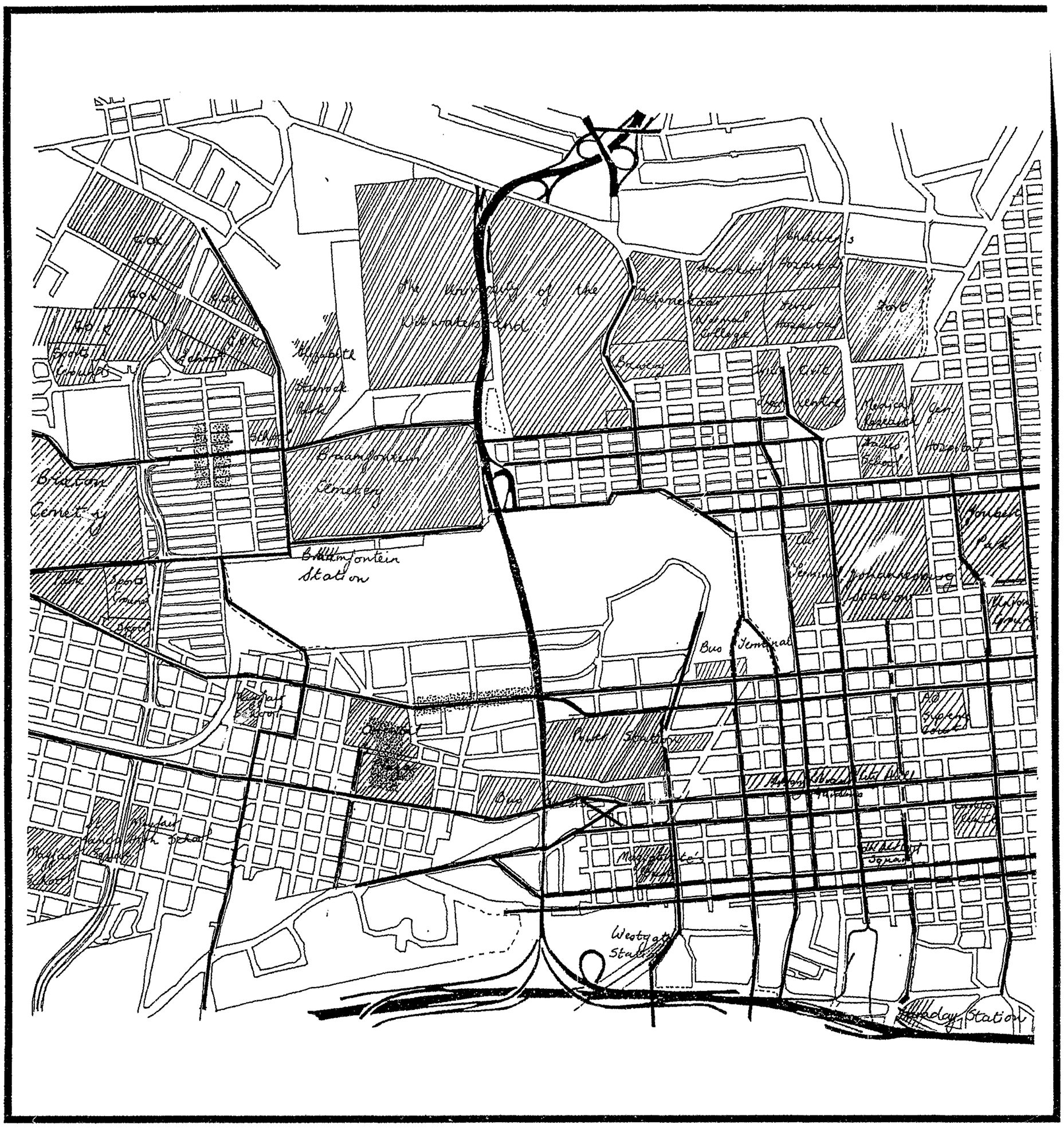

Figure 7.23

KEY INSTALLATIONS	LINKAGES	PEDESTRIAN ROUTES
RETAIL OPPORTUNITIES	KEY INSTALLATION which are appropriate for redirection into the public dimension based on the public realm.	

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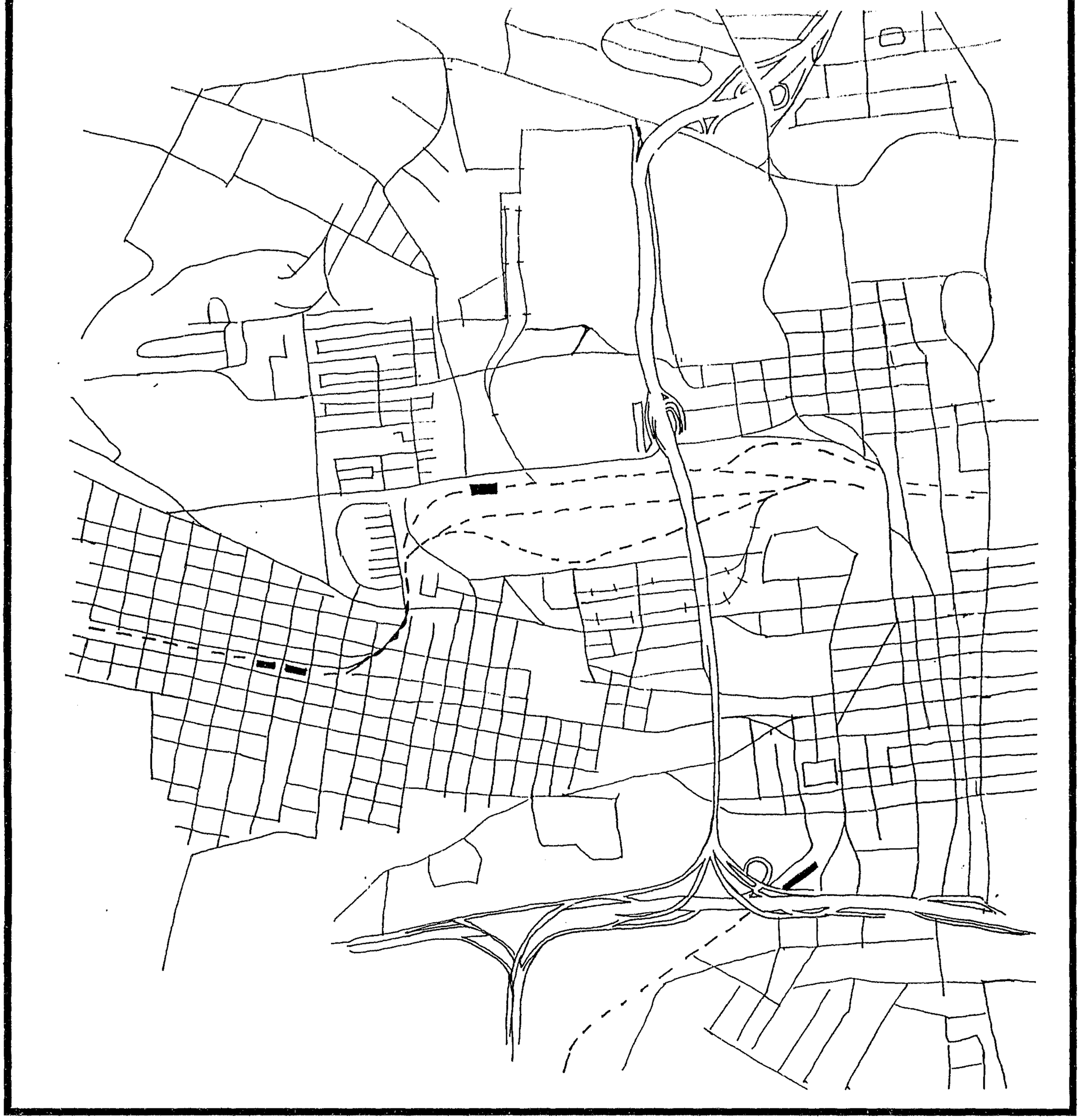

Figure 7.24 : Linkages

The irregularity of the grid layout contributes towards the illegibility of the city. The urban designer should attempt to reconcile the conflicting grids.

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3) **PUNCTUATION**

This step involves piercing of the harsh city bubble in order to unleash the energies inherent in the city. These development vacuums, particularly the marshalling yards and the area of noman's land adjacent to the motorway, should initially be punctured.

4) **PENETRATION**

Penetration involves a more intricate puncturing procedure, whereby the strategic linkages penetrate the development vacuums together with the incorporation of highly imageable nodes.

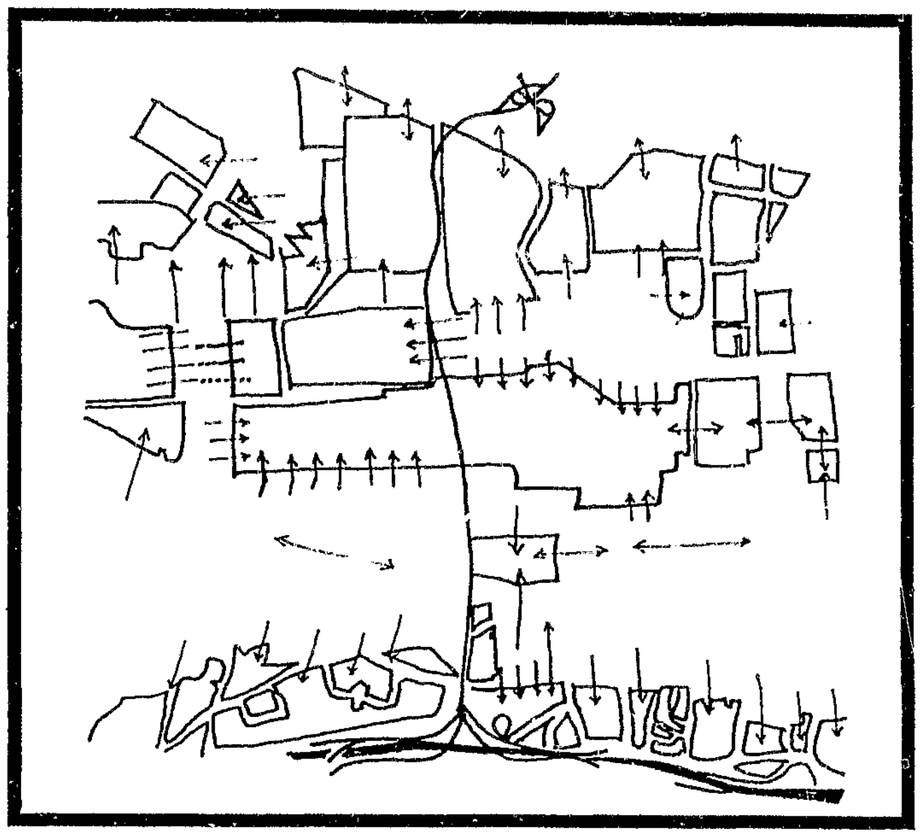


Figure 7.25

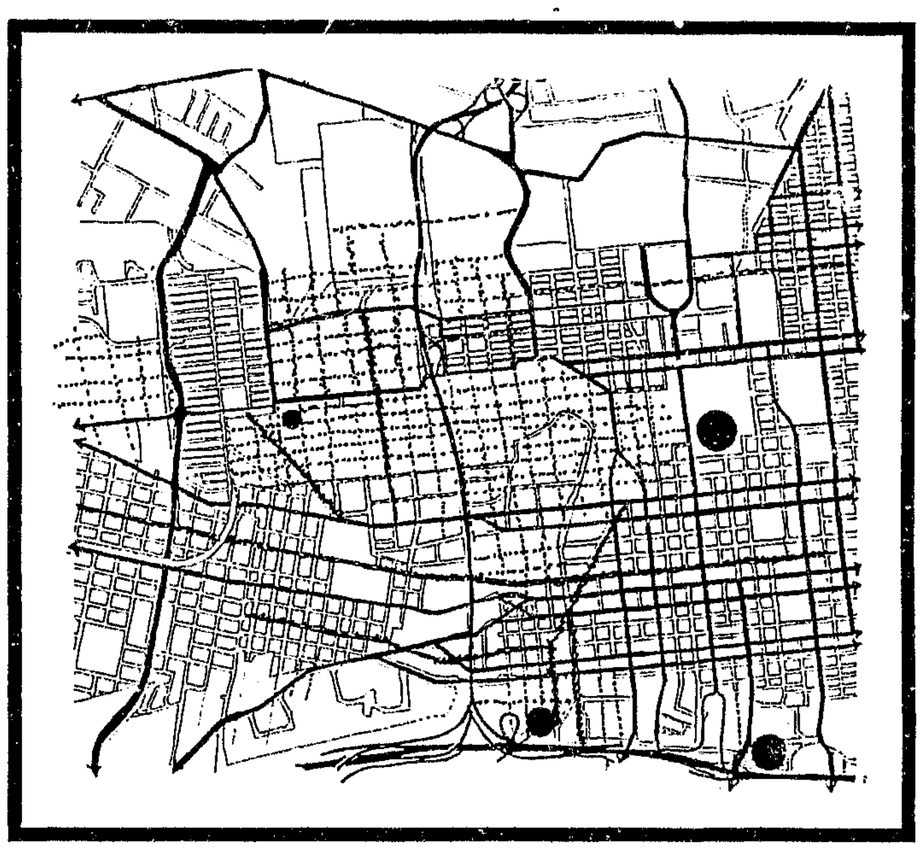


Figure 7.26



Figure 7.27 : Highly imageable nodes

5) **INTEGRATION**

Within this step movement channels are utilized as structuring devices, which correspond to the utilization of function and use as integratory elements. The movement channels can be perceived as the "glue" which integrates the city as an entity, whilst the public realm (function and use) determines how the glue flows. The elements of movement, function and use should interact cohesively forming a symbiotic and mutually generative relationship within the urban design framework in order to promote integration. In attempting to integrate this urban context the resultant city form tends to be that of activity spines which maximizes the generative capabilities inherent in this contextual setting. West Street is an obvious spine along which development axes will emerge. The principles of strong linearity will be applied together with the inclusion of nodes and foci. The movement structuring devices link the key installations together forming various development axes, increasing legibility within the overall movement system and visual linkages, whilst promoting a greater degree of integration.

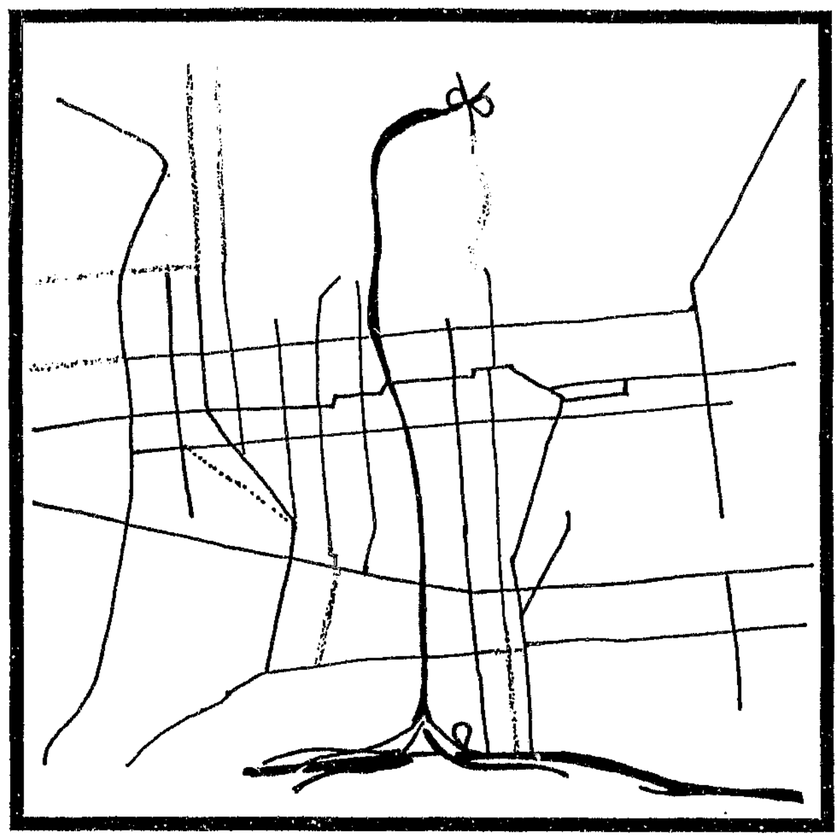


Figure 7.28 : Integration through movement channels as a structuring device (i.e. the "glue")

Figure 7.29 : Integration through use and function (i.e. how the "glue" flows) through the public dimension.

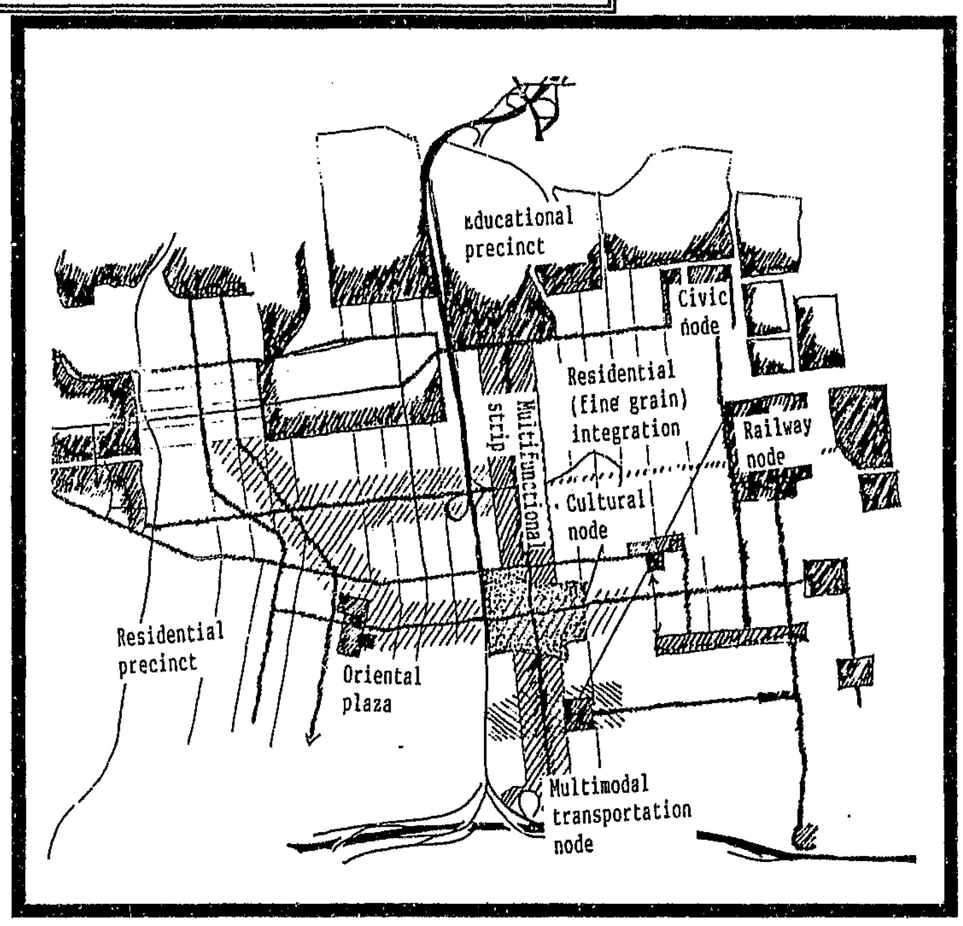
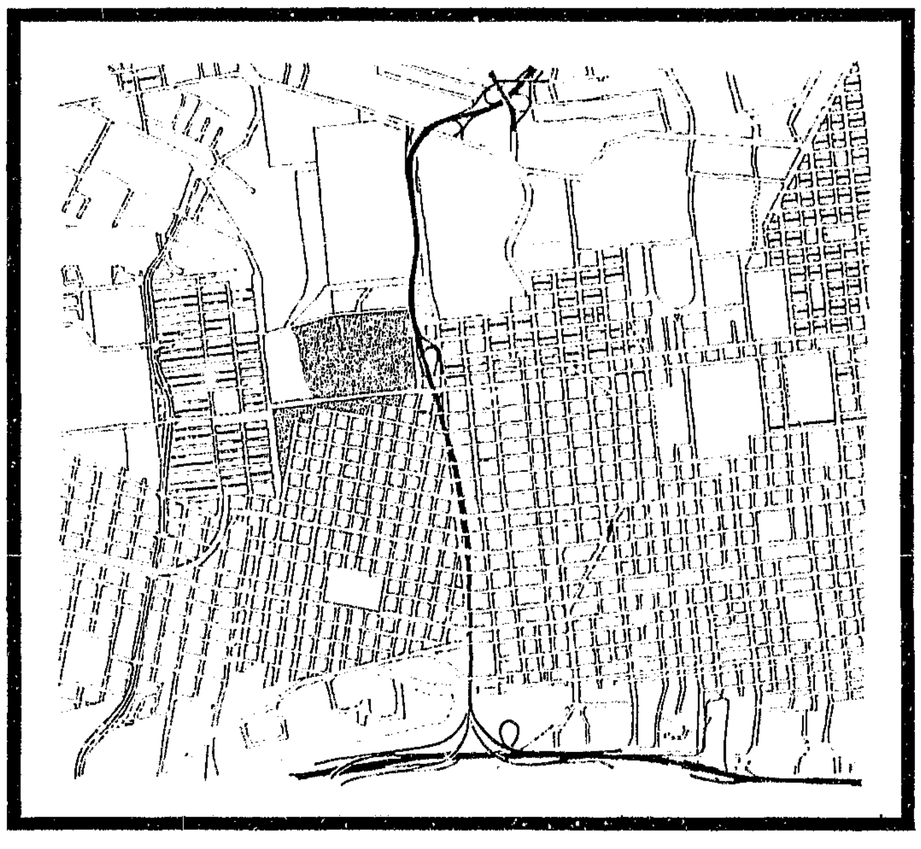


Figure 7.30 : Integration through the reconciliation of the grid.
In order to promote accessibility to opportunities the urban designer should initially concenttrate on movement & linkage channels. Histor'cally, the grid has been an important structuring device within the context of Johannesburg. The grid contributes towards the creation of continuous, direct public transportation channels acorss the city, thereby increasing accessibility. These channels have an intergratory role, thus maximizing consumer choice and mobilizing the particular characteristics of different modes to the greates effect. These chanels should be reinforced by multifunctionality, compactness, legibility, etc.



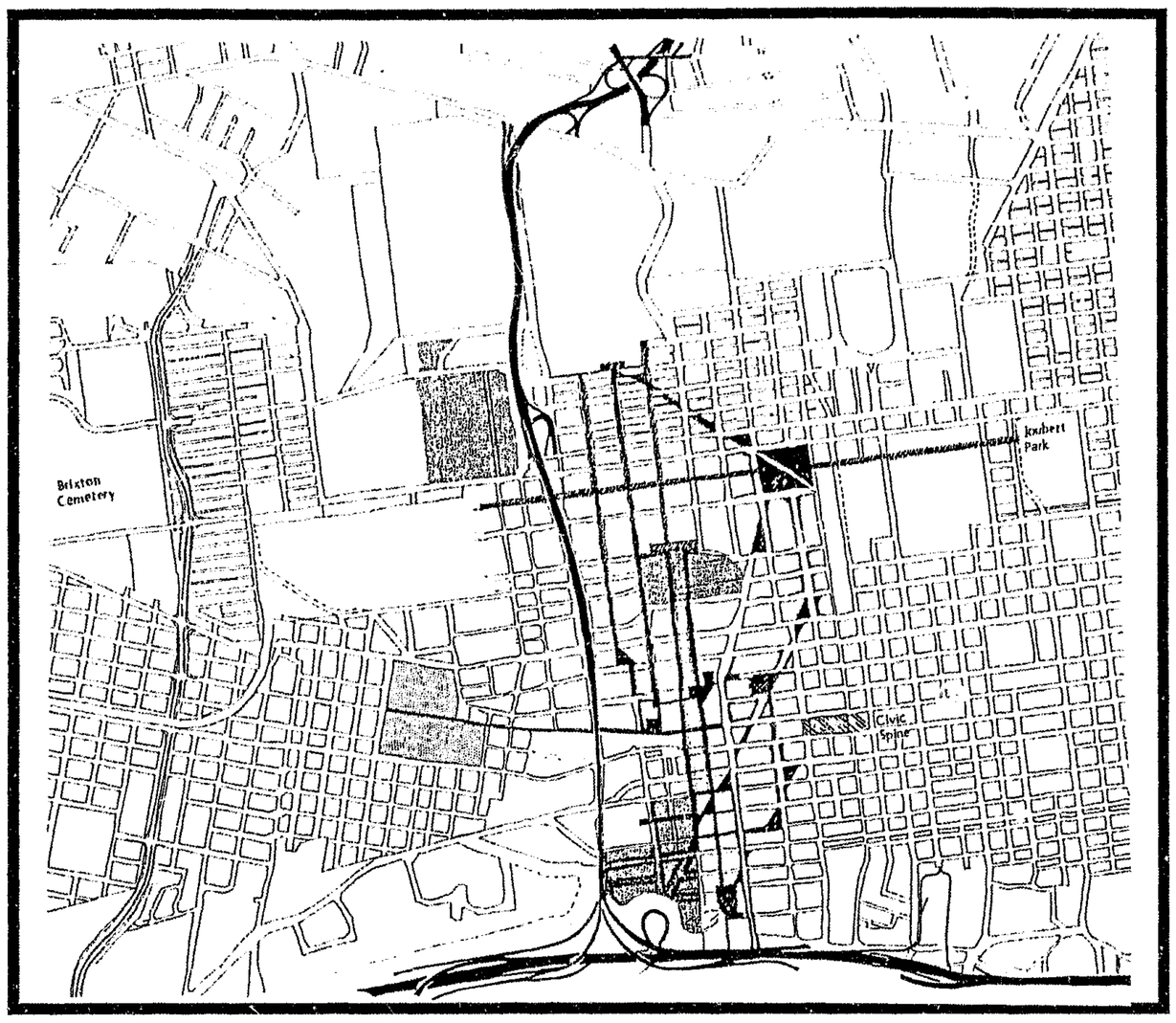


Figure 7.31

Explorations in the utilization of strategic linkages and key installations as integratory devices.

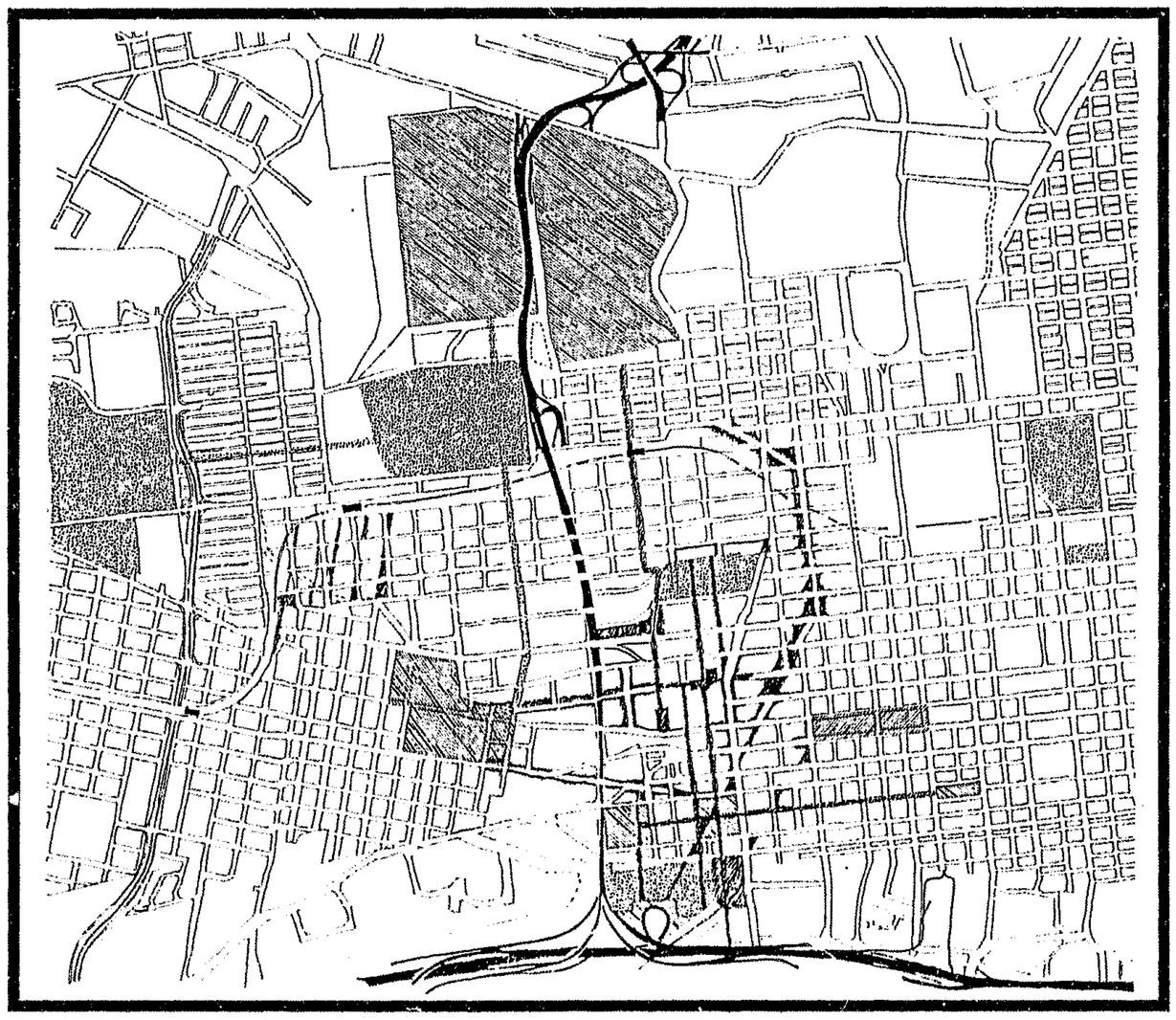


Figure 7.32

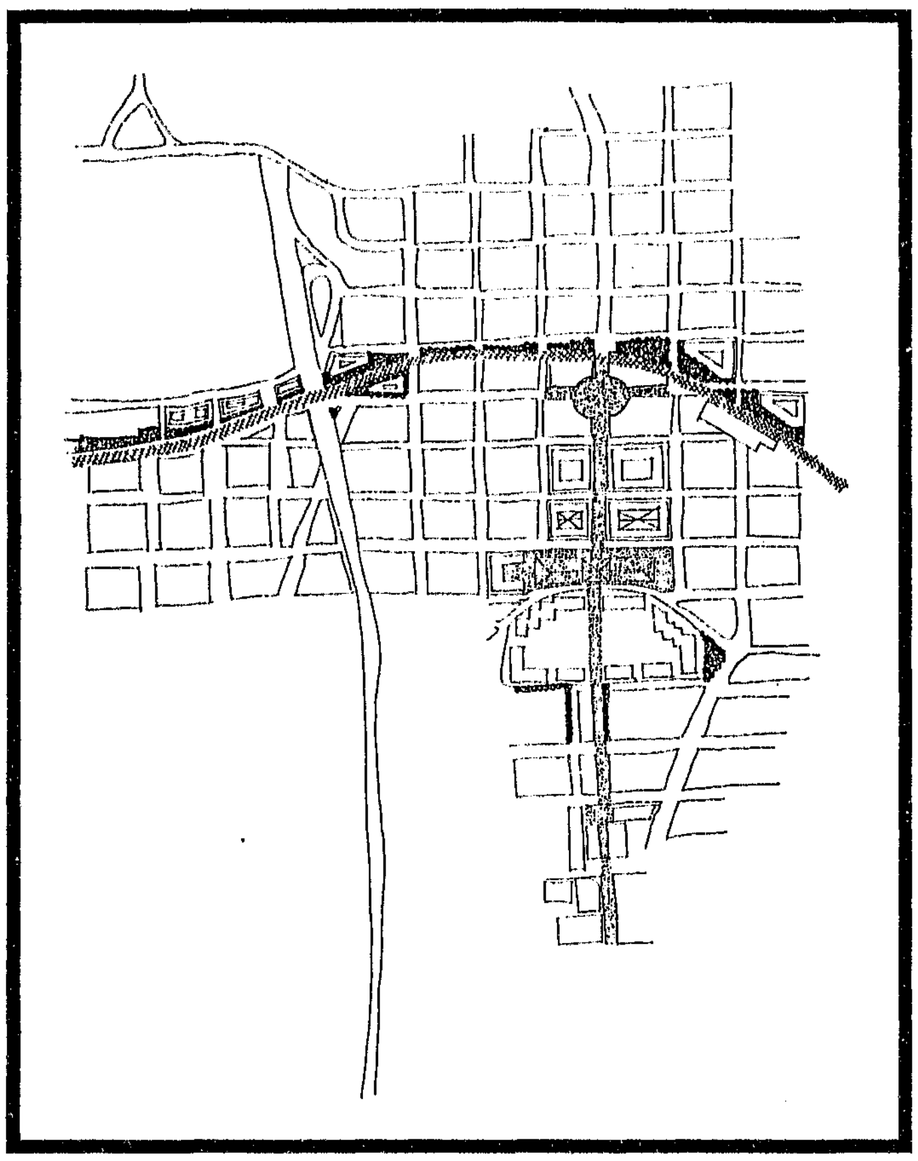


Figure 7.33

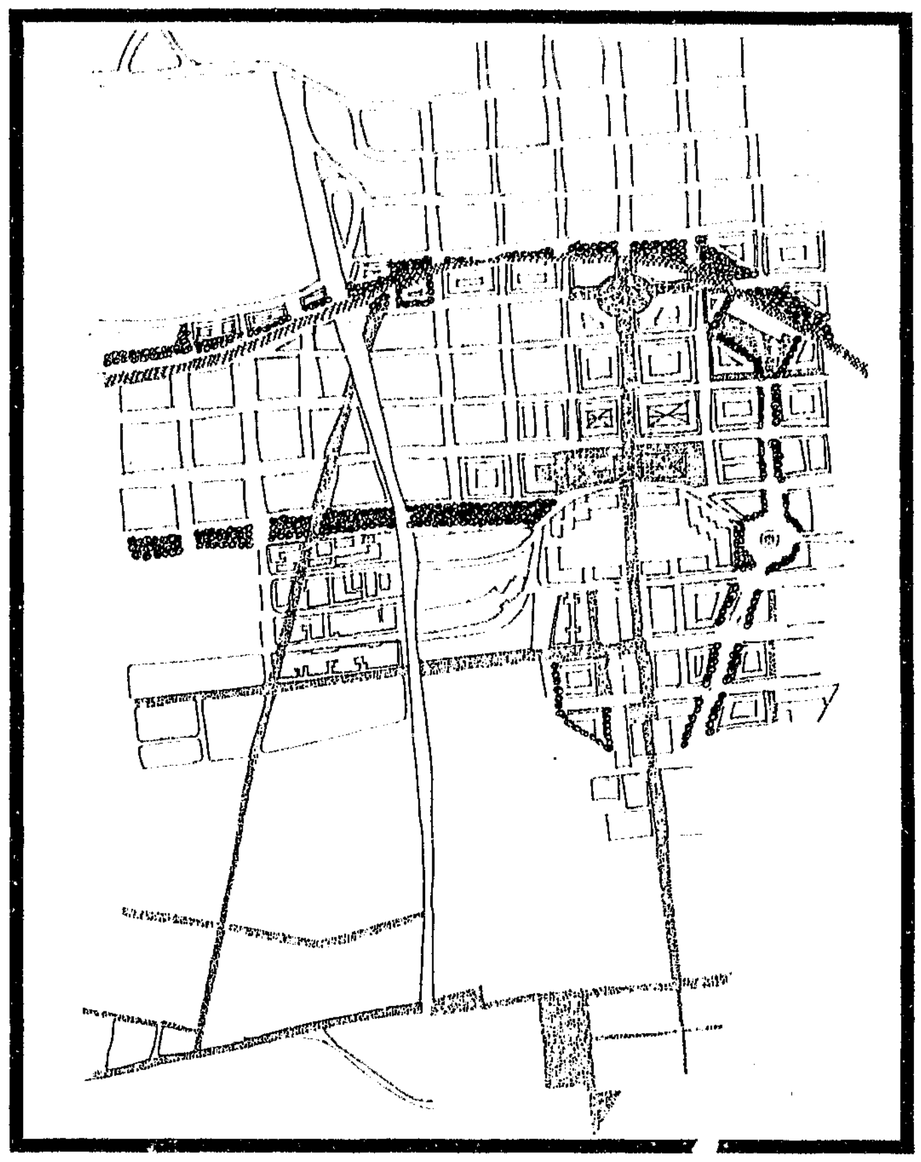


Figure 7.34

Integration between the cultural node and the educational precinct.

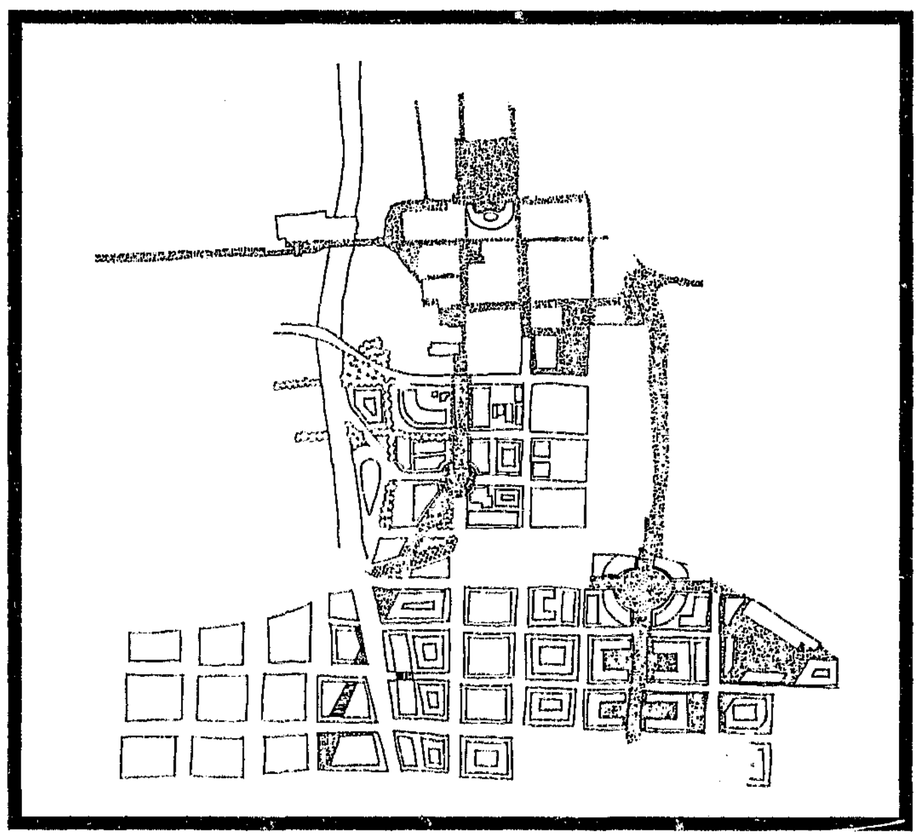


Figure 7.35

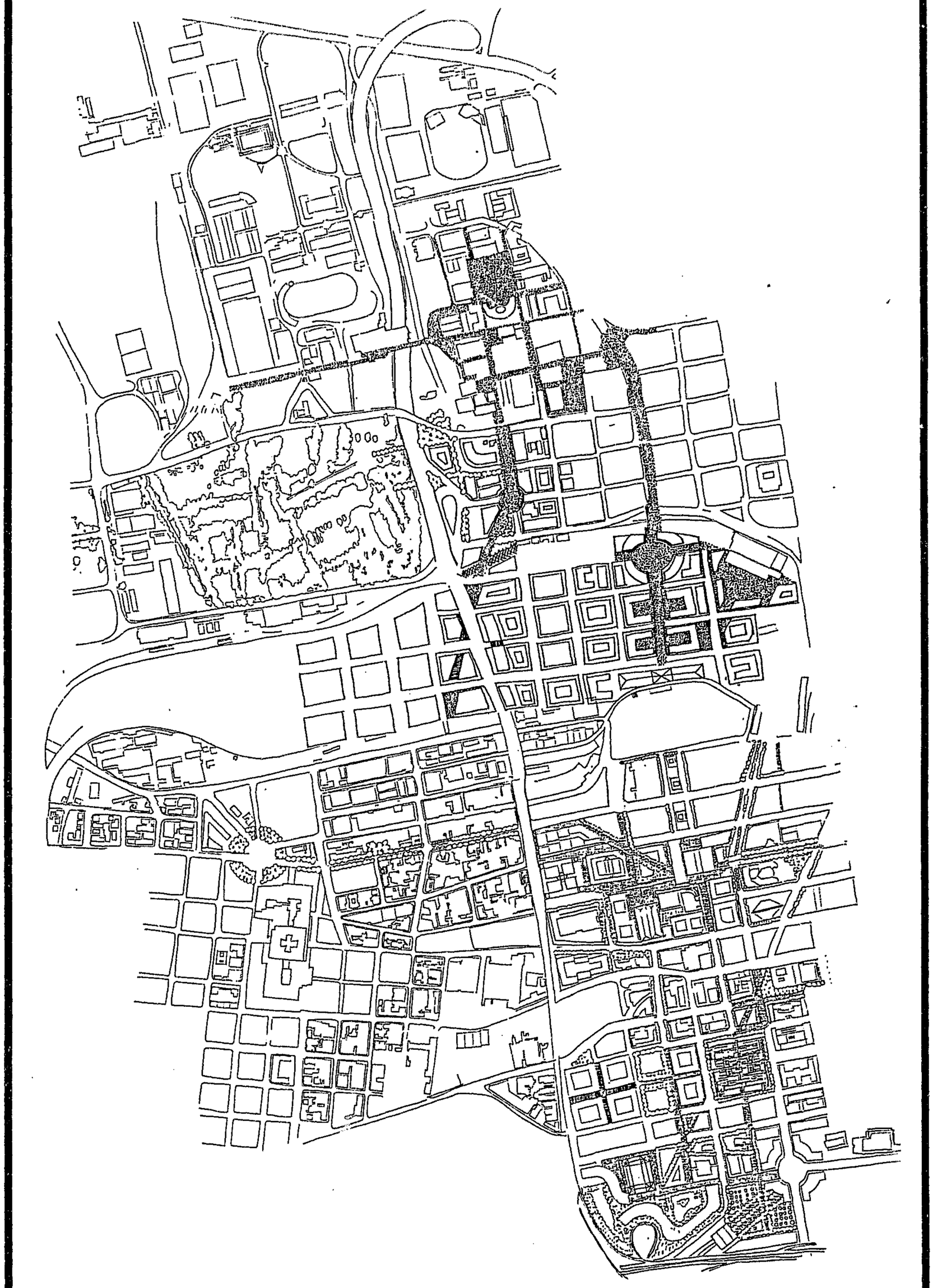


Figure 7.36 : In context with the city

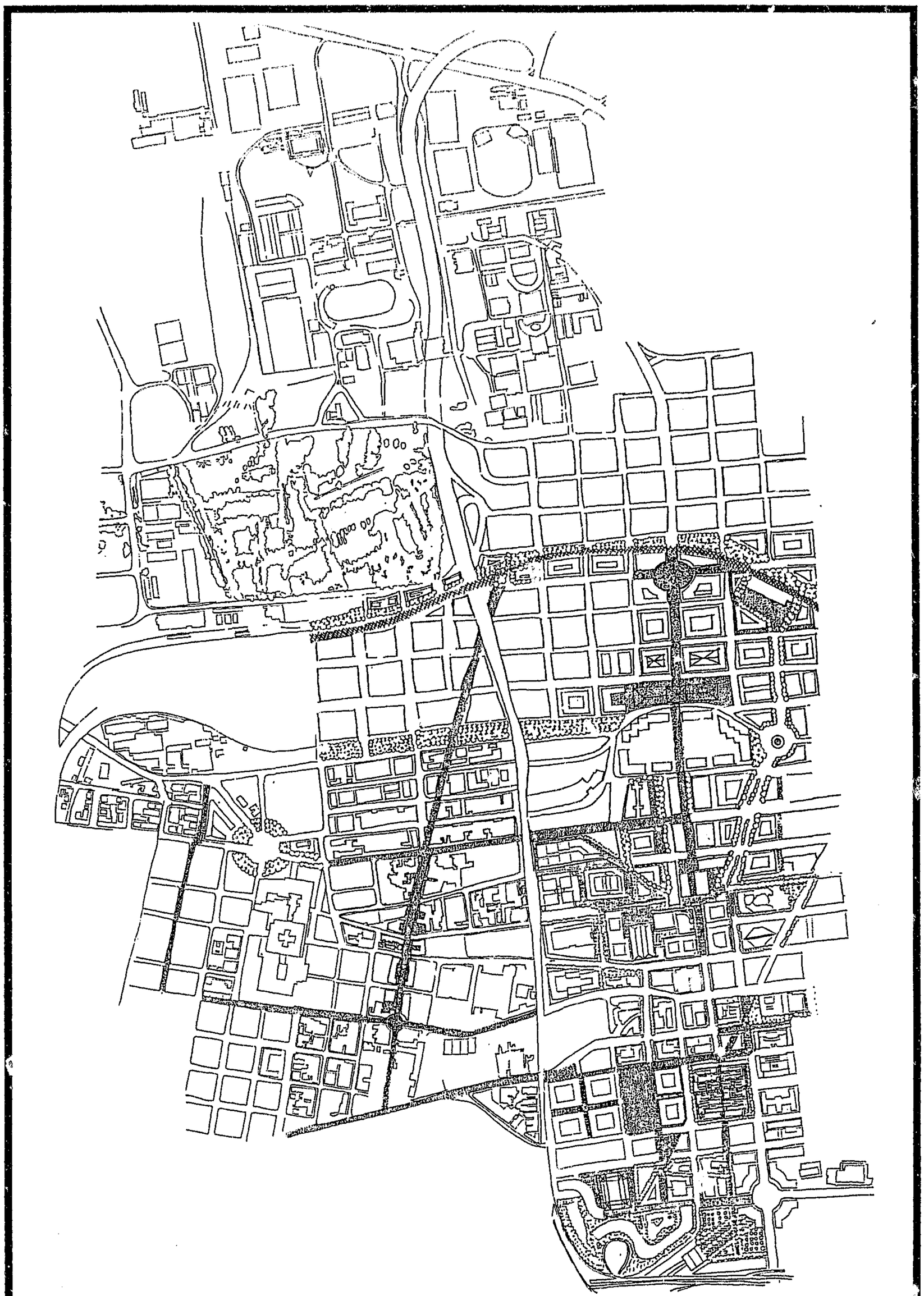
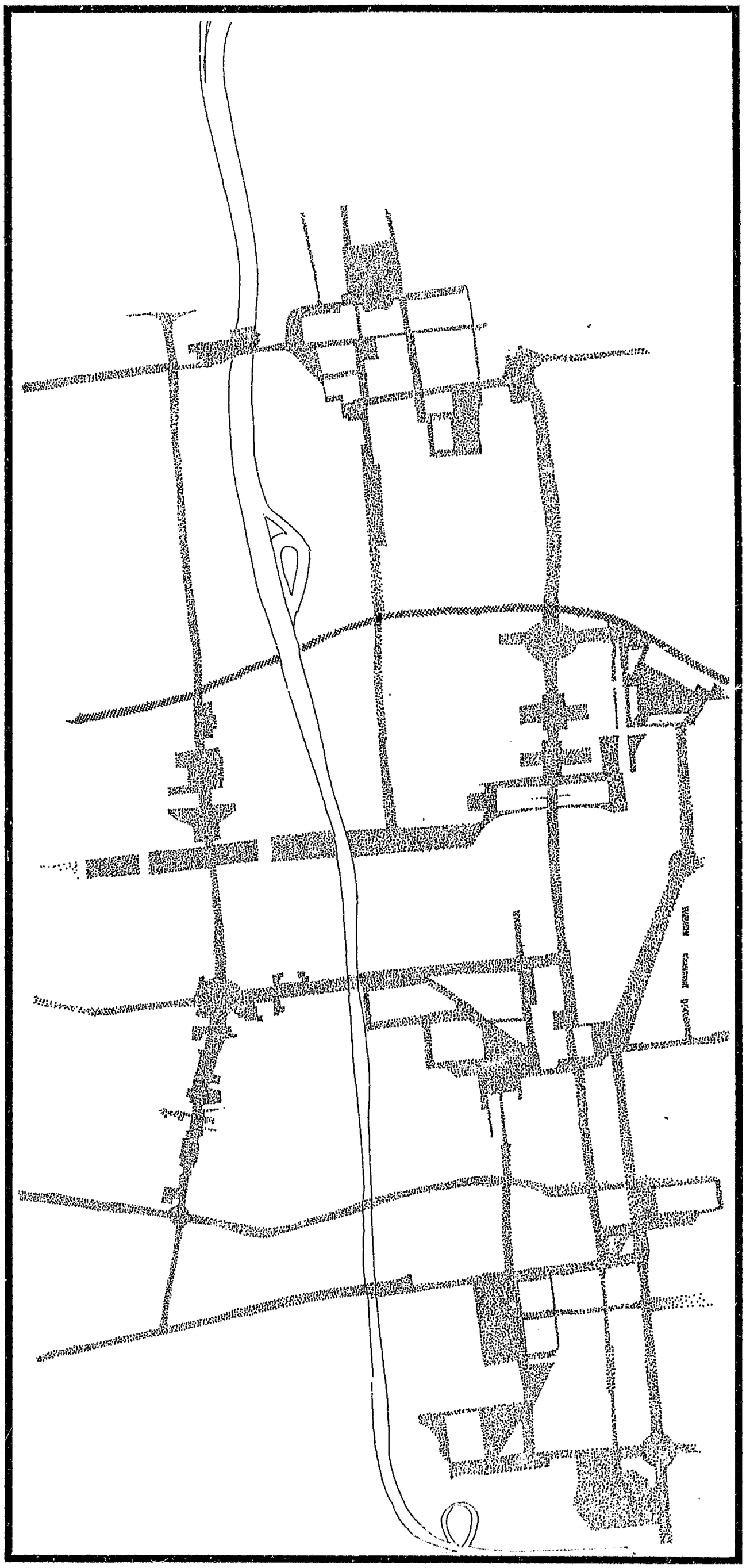


Figure 7.37 : In context with the city

Figure 7.38

ACTIVITY SPINES

Activity spines develop as a result of the mutually-generative relationships which flows between the various elements of the public realm (as explicated in figure). The city's form should respond to these activity spines through the public realm. The system of activity spines provides access to the elements of the public realm within the city (ie. enhancing accessibility to opportunities, promoting equity) and greater exposures of these elements. Con nuity of the urban fabric can also be promoted through the incorporation of activity spines. Additionally, the activity spines promote numerous fundamental urban design principles, such as integration, multifunctionality, democracy, dynamism, complexity, etc.



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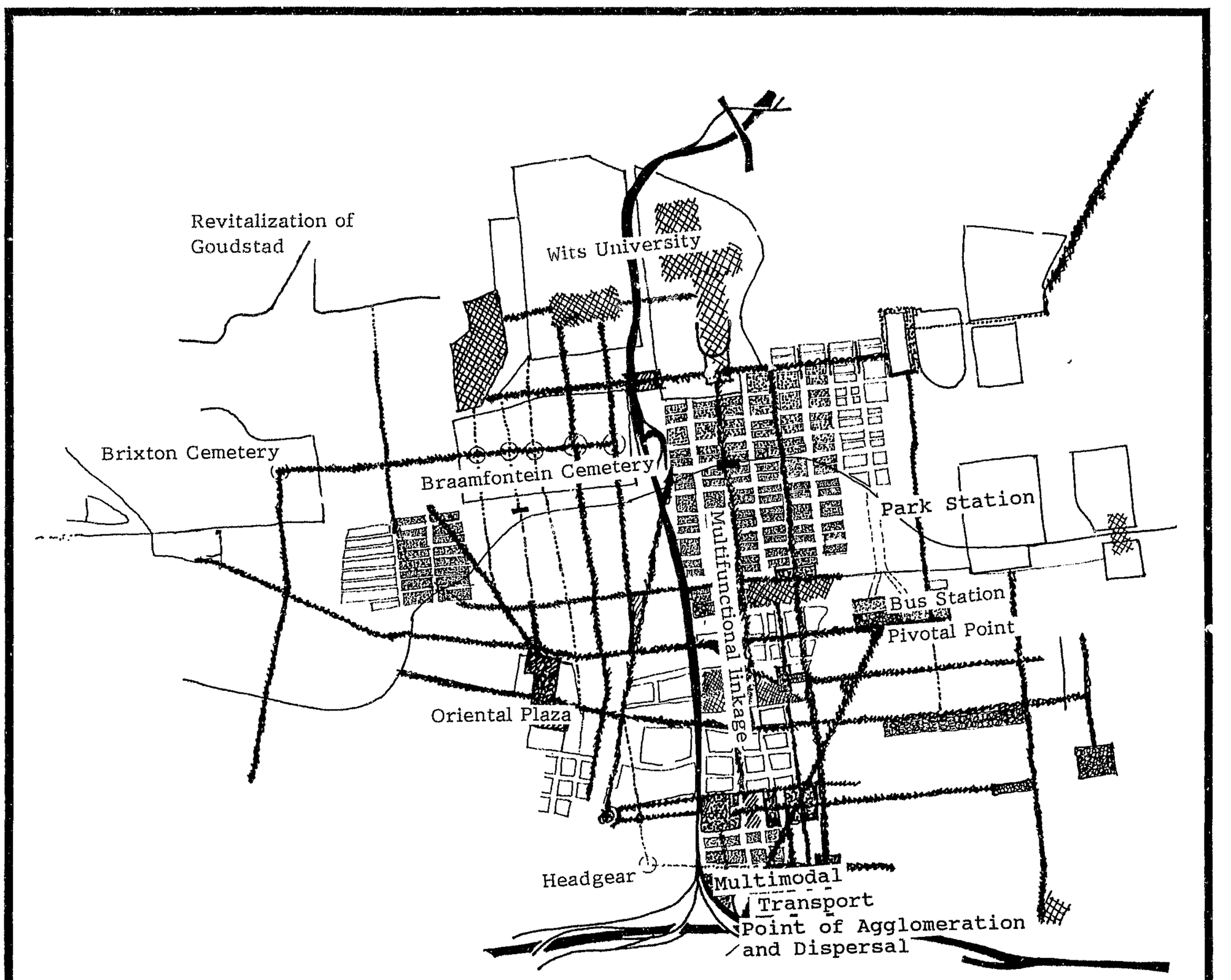


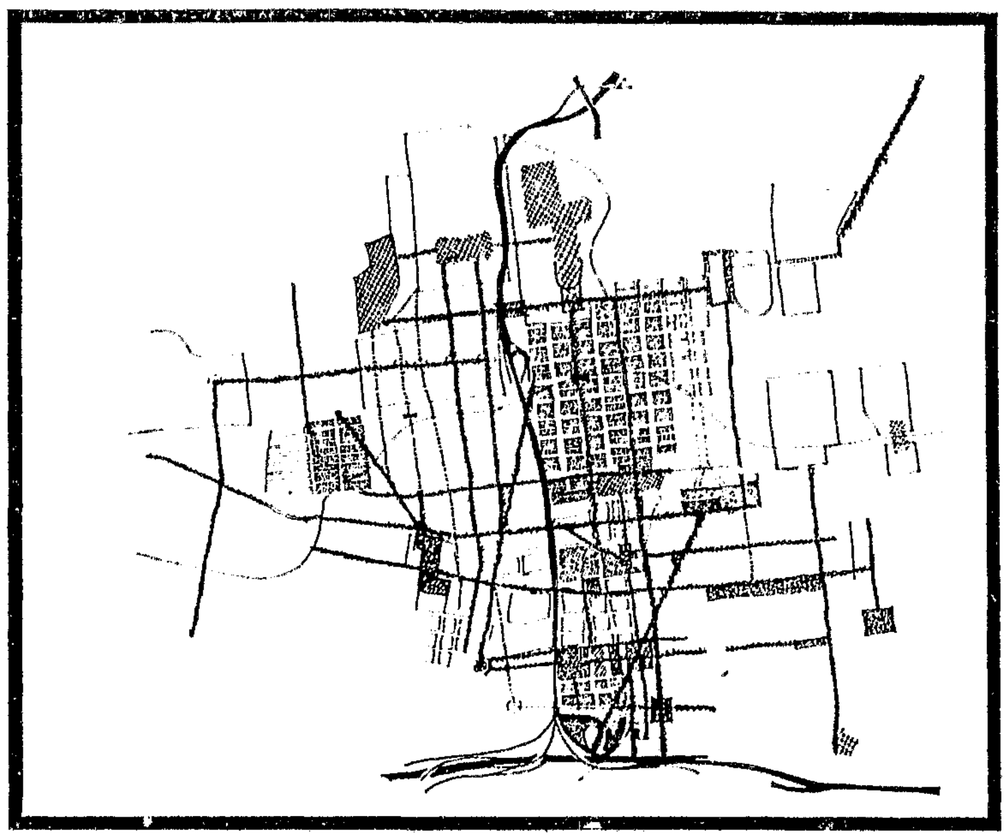
Figure 7.39

6) **GENERATION** (generative elements)

Generally, the key installations are perceived as the initial generative elements. In order to further integration and legibility the creative introduction of additional, generative elements is necessary. The additional generative elements include the re-incorporation of the historical market square through the conversion of the Magistrate's Court, which will be redeveloped on the adjacent site. In order to extend the University of the Witwatersrand (in keeping with the themes of Cambridge and Oxford Universities) a law faculty will be located in close proximity with the Magistrate's Court (an administrative node) whilst a arts faculty will be located adjacent to the cultural node of Newtown. The relocation of the arts and law faculties take pride of place reinforcing the cultural and administrative (civic) contents of the respective areas. A multifunctional residential and retail component will be introduced in an ordered manner becoming an important integratory element with the University and the existing residential component, enhancing legibility and surveillance.

7) TRANSFORMATION

This step involves the transformation of development vacuums and existing elements into the public realm. These elements of the public realm should incorporate the characteristics of urbanity, in order for congregation to continue, which is essential for the nurturing of civilization. Design principles which fulfil the needs and aspirations of society (opportunity generation, access to opportunities, sociability and the satisfaction of individual needs) should be adhered to.



Transformation of Westgate Station and Newtown district.

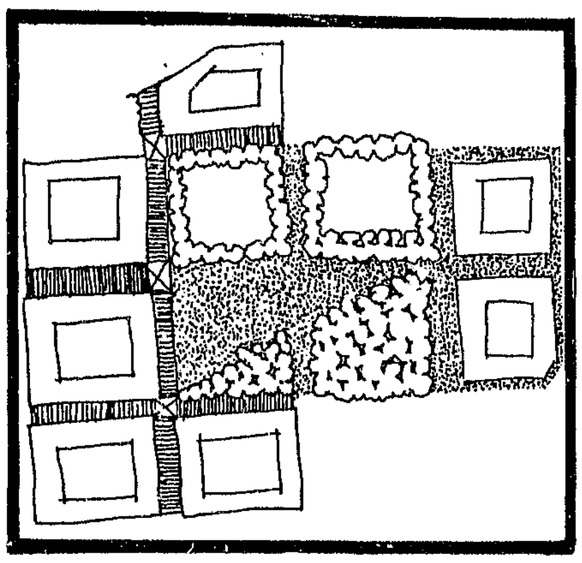


Figure 7.40

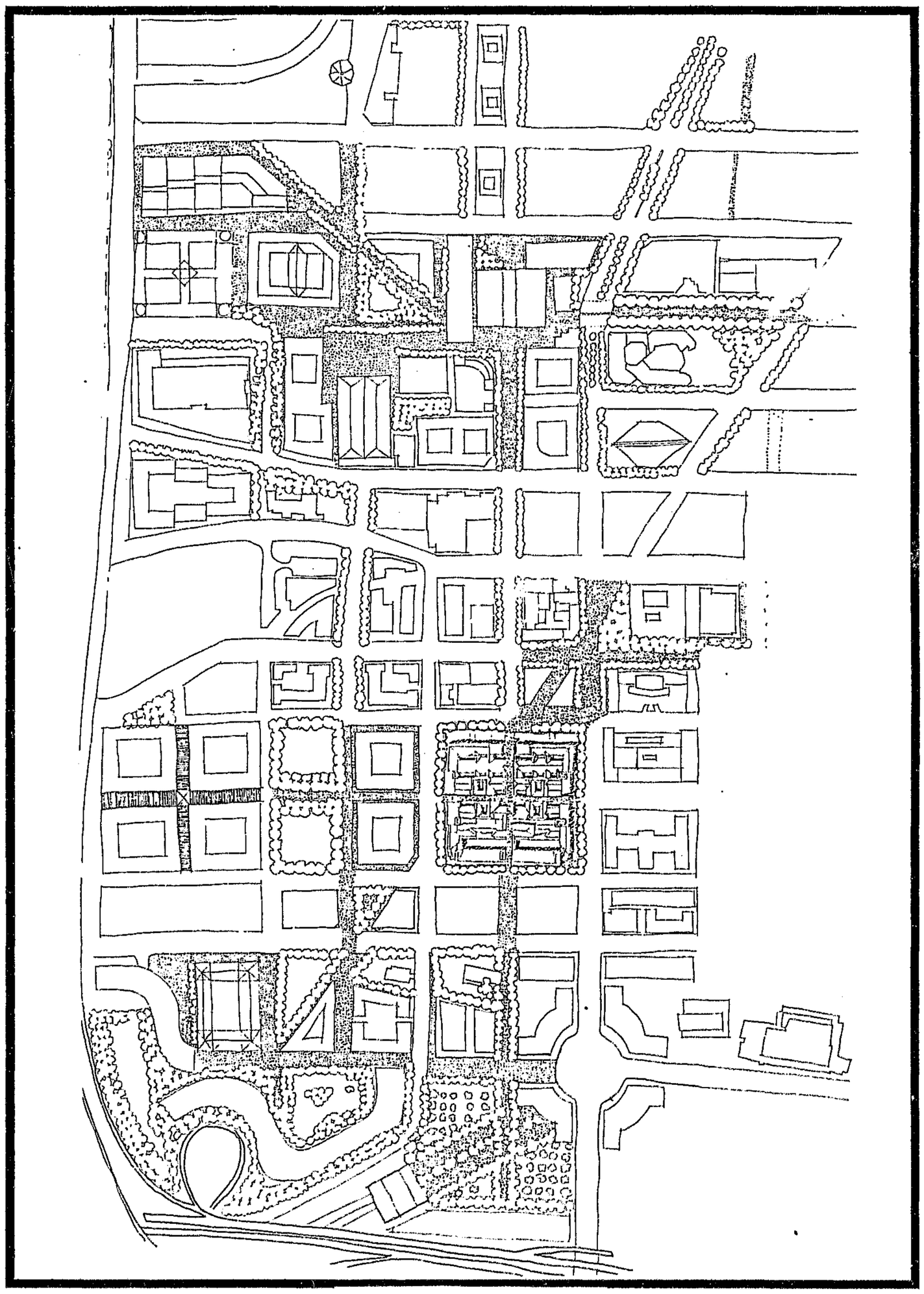


Figure 7.41

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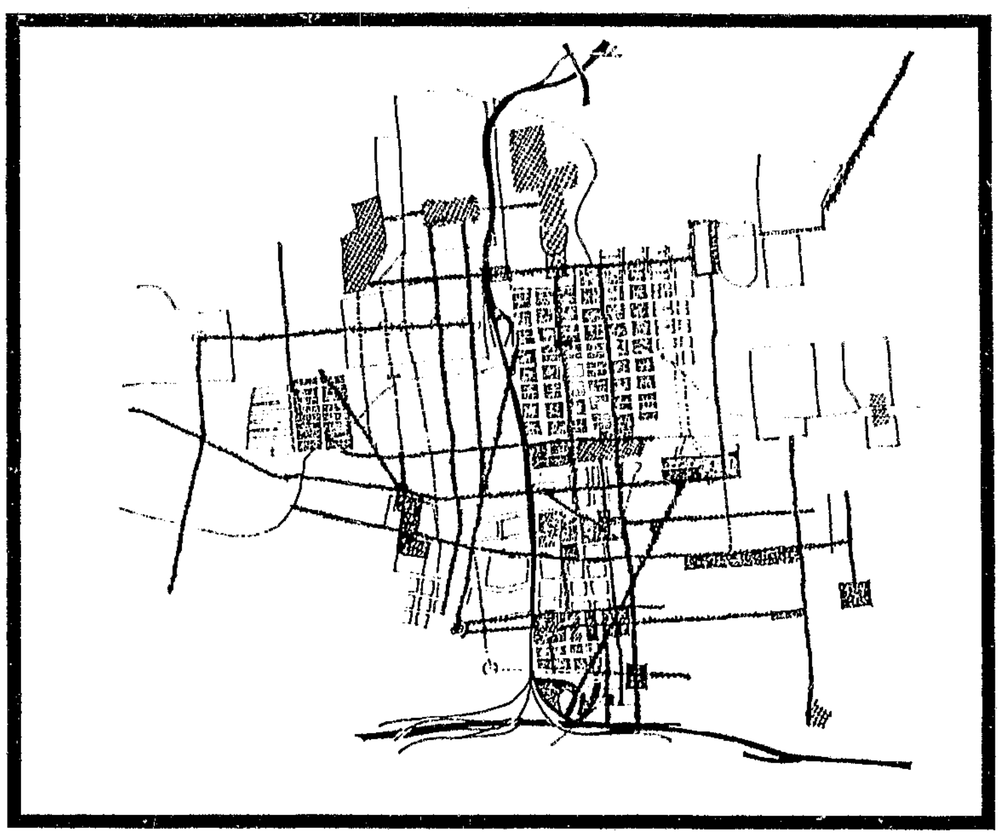
Transformation of the Oriental Plaza area.



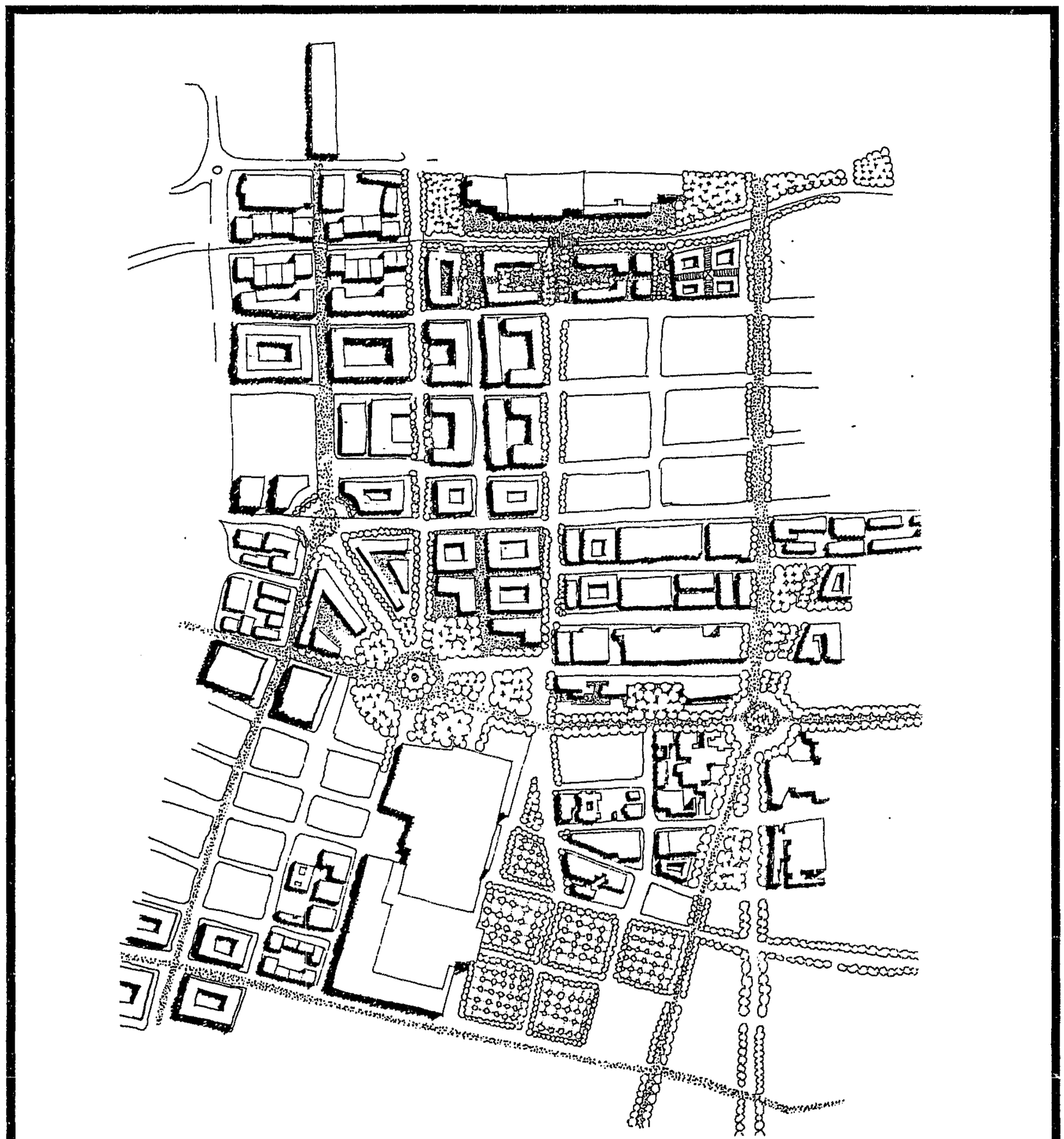


Figure 7.42

Transformation of the University area.

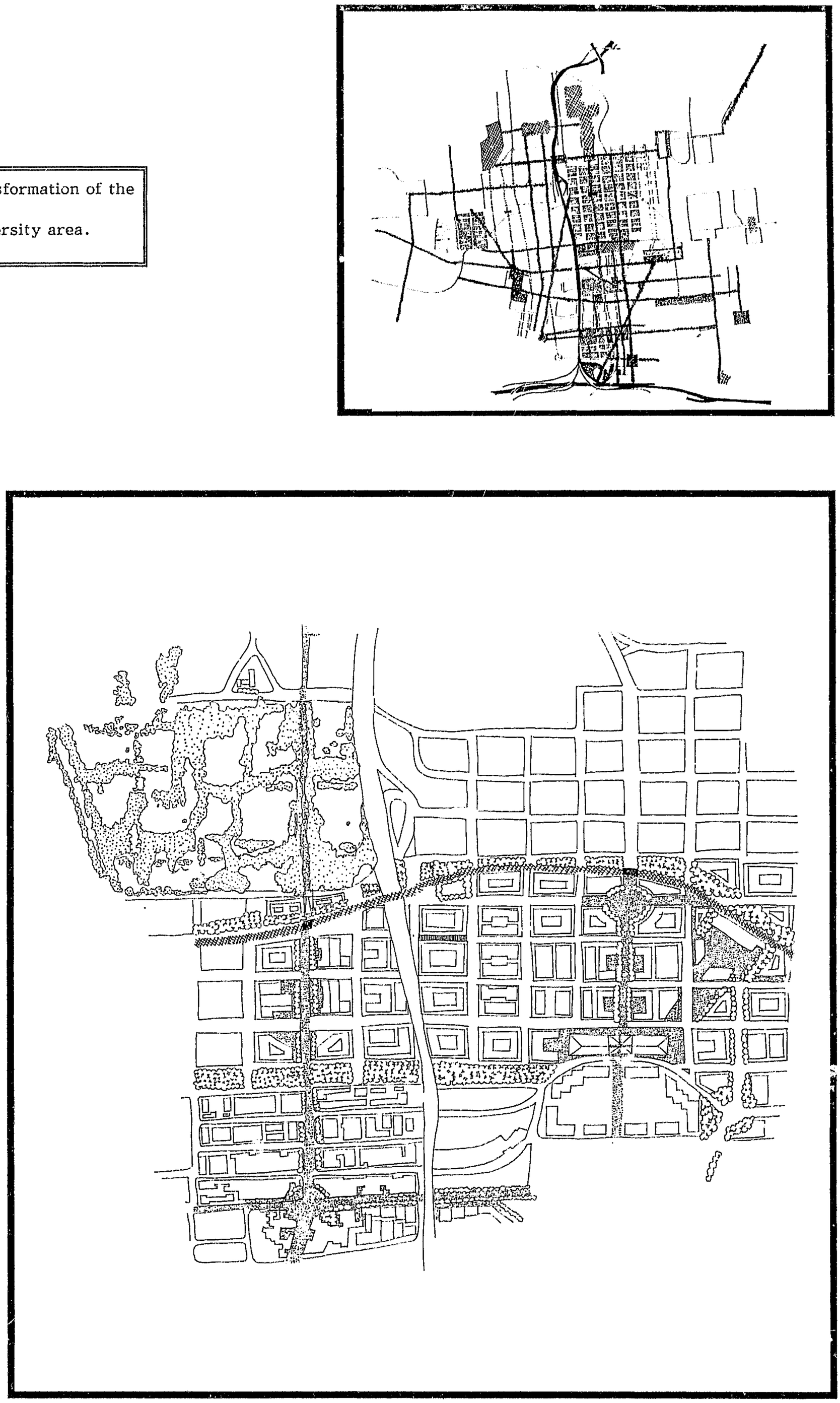


Figure 7.43

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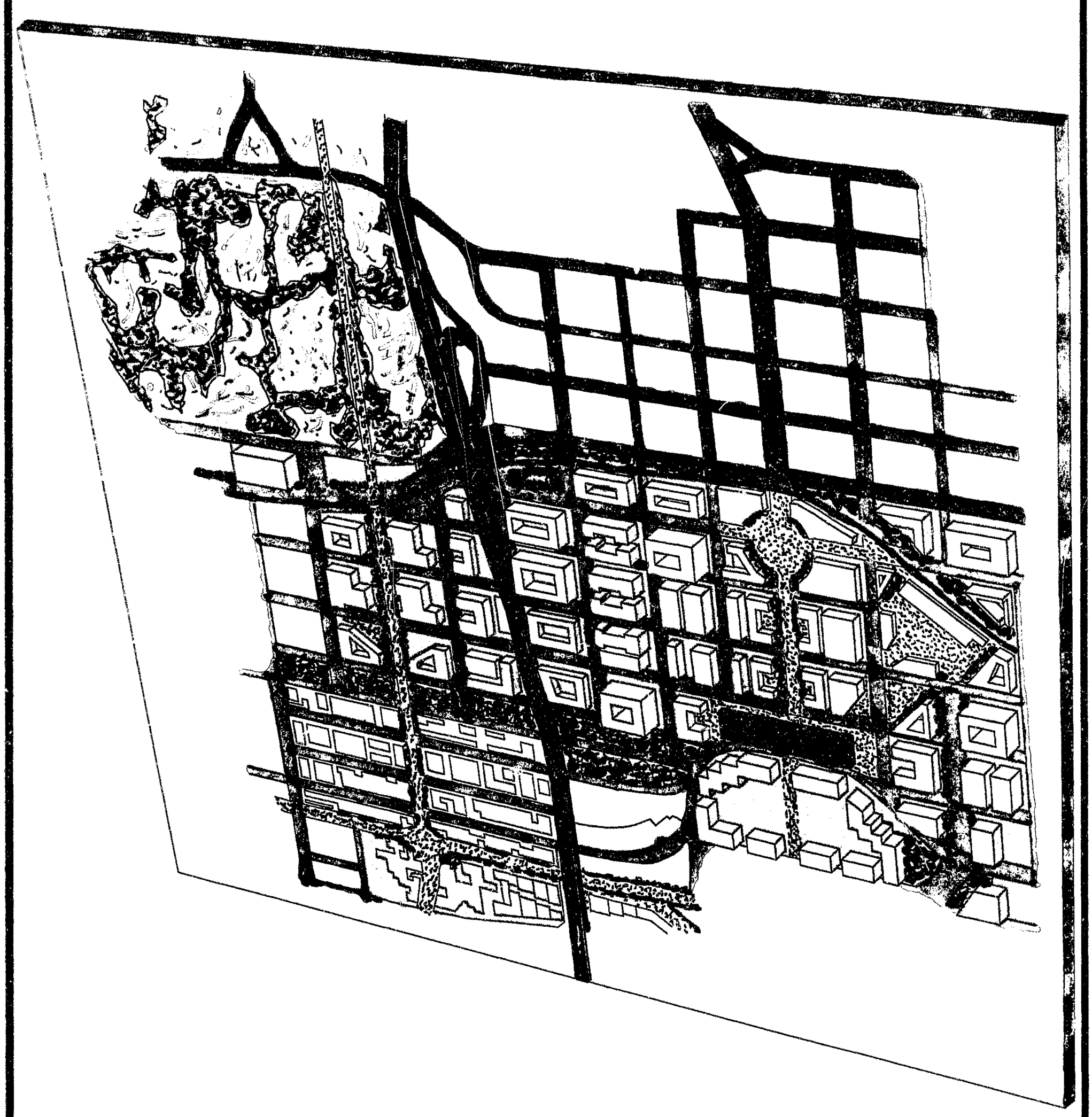
8) **EMBELLISHMENT** (Detailing)

Directives should be incorporated into the urban design framework to provide opportunities for actors involved in the urban design process to respond within the public realm. The urban designer should elicit the minimum possible investment in order to ensure maximum effectiveness.

A three dimensional view of the Magistrate's Courts and Newtown Precinct.



THE CITY AS LIVING ROOM

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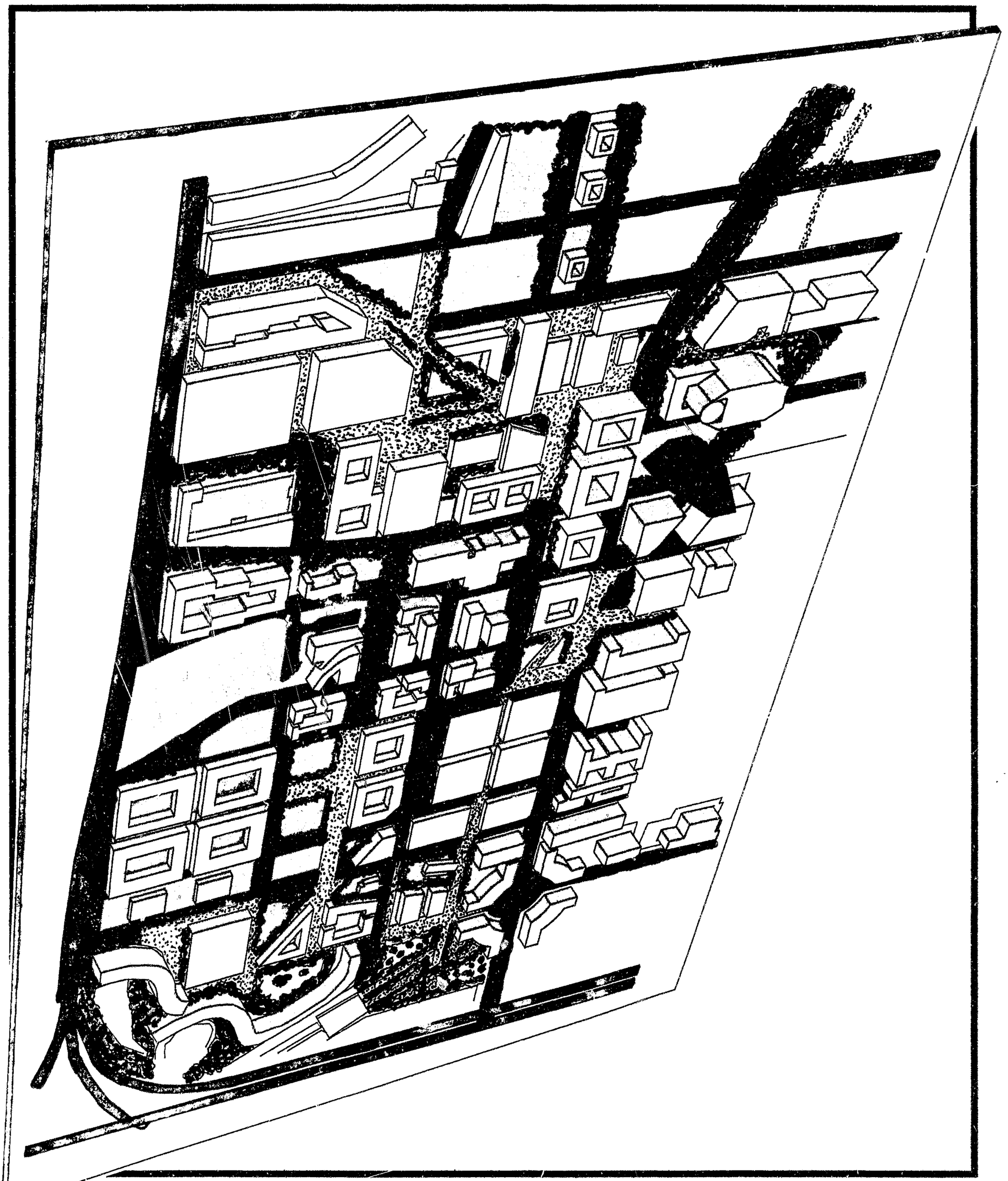
A three dimensional view of the connection across the Marshalling Yards integrating Newtown and the educational precinct.



THE CITY AS LIVING ROOM

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CHAPTER 8

CONCLUSION

CONCLUSION

Through redirecting the city's form in the public dimension based on the public realm the urban designer can ultimately encourage the city to continue to nurture civilization. When accommodating for the heterogeneity of needs inherent within society in the South African context, the public realm has a significant role in fulfilling these needs and ensuring that the processes of congregation continue.

Within the design, the key installations present opportunities for contributing towards the public realm (i.e. the initial generative elements of the public realm). The design of the key installations and integratory movement structures have been dictated in accordance with the needs of the low income sector of society. Accessibility to opportunities in the city is important in promoting the fulfilment of needs. Due to the significance of linkages between opportunities, an emphasis was placed upon public transportation and continual pedestrian movement systems (the pedestrian dominates the street, whilst vehicles can encroach on the space).

The urban designer should attempt to cater for those needs and aspirations which are not adequately fulfilled in the dwelling place. eg. recreation, sociability, etc. In order for the urban environment to operate efficiently and for the facilitation of liveability within cities, these needs have been reinforced and reincorporated in the urban design framework.

Within the development vacuums, the grid dictates the form of movement systems, in order to promote equitable access to opportunity (i.e. enhancing democratic ideals).

The fundamental urban design principles have been applied to the city in order to encourage the redirection of the city's form in the public dimension. These basic urban design principles enhance environments, which ultimately should continue to nurture civilization (contributing towards the positive qualities of the city as experienced by the city users).

The urban design framework caters for the generation of opportunities (eg. the informal sector and accessibility to opportunities through the built form and the movement systems, simultaneously. The concepts of compactability, integration, multifunctionality, democracy, complexity and legibility are all reinforced through the spatial implications of increased accessibility to opportunity. Additionally, the satisfaction of needs reinforces the significance of access to opportunity and choice. The incorporation of the fundamentals of urban design into the design results in an urban environment which is responsive.

The urban design framework allows for the manifestation of the dynamic forces within the city (as the urban system is never a closed entity). Thus, the framework allows for participation within the urban environment (reinforcing the principles of stimulatory environments).

The urban design framework provides an urban logic to which investors respond, which is essential to the process of city buildings. The urban logic also provides opportunities for embellishment of the public realm (directives need to be provided in order to ensure that the city's form continues to be redirected in the public

dimension. It is important for the urban designer to design for the fundamentals of public realm, whereby the minimum input of stimulus has been introduced in order to elicit the maximum response. Embellishment opportunities have an important role in encouraging the maximum response within the public realm.

The urban design framework attempts to encourage and maintain collective relationships of value within the community, through the incorporation of the informal market, the upgrading of Westgate Station (important for the low income sector who are particularly dependant on the public mode of transportation), the reintroduction of the market square (in place of the Magistrate's Court), integration of the educational facilities and the encouragement of multifunctionality.

The dominant pedestrian routes respond with the logicality of the urban system, thereby promoting readability and legibility. Accessibility to opportunities inherent within the public realm, has promoted legibility within the urban design framework. (Westgate Station, the formal and informal markets, the educational facilities, etc) have been redirected in the public dimension contributing towards the success of the public realm. The urban design framework has taken cognizance of both physical layouts (movement and built form) and the activity patterns (both formal and informal).

The urban design framework guides the processes of city building, protecting and creating relationships of values. Within the design substantial government funding will be necessary, perhaps as "a gift to the city". (ie. reinvesting into the city in order to justify for expurgatory or extractory processes implemented by the government (particularly during the apartheid era).

The urban designer should provide opportunities which encourage actors (particularly the private dimension) to embellish the city (incentives, relaxation of bulk and height restrictions, tax rebates, etc), An urban environment which is stimulatory and participatory, encourages city users to contribute towards the public realm. This means of embellishment is particularly important in enhancing the liveability of the city.

Through focusing on the elements of the public realm (thereby promoting continuity of the urban environment, collectivity of urban life and liveability of the city), the underlying theme of the thesis is fulfilled, namely to ensure that the city continues to nurture civilization.

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