WINTERVELD 2
BIBLIOGRAPHY

1. FUMIHKO MAKI : June 1964 : Collective Form Three Paradigm. School of Architecture, Washington University.
15. JIM McCUSKEY : Road Form and Townscape.
20. DEPARTMENT OF CO-OPERATION AND DEVELOPMENT.
21. WINTERVELD TENANTS COMMITTEE.
URBAN DESIGN GUIDELINES FOR SPACE CREATION IN
AN URBAN BLACK RESIDENTIAL ENVIRONMENT.

E.G. JANSE VAN Rensburg.

PART TWO OF A DISCOURSE SUBMITTED TO THE FACULTY OF
ARCHITECTURE, UNIVERSITY OF THE WITWATERSRAND, IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE
MASTER OF ENVIRONMENTAL PLANNING (URBAN DESIGN).

JOHANNESBURG.
In the first document 'A Study of the Space Creating Principles in Self-built Urban Black Residential Environments', the space creating principles representative of the lifestyles of the people living in Winterveld were identified and analysed.

It was found that most of those qualities on which the discipline of Urban Design is supported, are present in the self-built urban environment of Winterveld.

In this document, those unique qualities of the Winterveld environment have been used with the discipline of Urban Design, to create guidelines for space creation in a new extension of the Winterveld area, which will allow a more structured recreation of a true urban environment, representative of the Winterveld people's lifestyles in a technological advanced society.

The guidelines focus more on the study area, Study Area C, as identified in the first document, to illustrate how those principles could be used to create a more liveable residential urban environment. The guidelines can be expanded as and when needed to be applied to the total metropolitan environment. In doing so, it can be expected that detailed variations would occur in different parts of the metropolis, which could require spatial adjustments for similar nodes and strips. The guidelines could thus form a structural framework for identification and character of the total environment.
PRECONDITIONS FOR URBANITY

1. WHAT IS URBANITY?

Urbanity is an integration of a variety of systems and activities in various degrees of intensity, representative of the different lifestyles and activities of the people living in a structured environment created by the resident people. It is a combination of complexity, diversity and density which can accept rapid change over great space time scales.

The environment thus created has a distinct character which is at all times representative of the ever changing lifestyle patterns of the resident population. This environment provide people with identity, self-reliance, control, access to opportunities and activities, freedom, safety, convenience, direct human contact and self expression. The environment therefore should have resilience, generate diversity, respond to uniqueness of place, and provide opportunity for the free exchange of goods and ideas.

2. WHY NEW DEVELOPMENTS LACK URBANITY.

New urban areas lack 'urbanity' since they have become the product of mass construction and regulation, which forms part of the technological approach towards unifying form and process towards singular activities which eliminates richness and diversity of individually created forms and activities, over great time spans.

Technological development emphasises economics of scale and mass production which eliminate the possibilities of robustness towards change and individual expression. It also does not take cognisance of the historical past of people and their cultural inheritance, which eliminates the preconditions for urbanity as stated by many researchers and intellectuals.
### Preconditions for Urbanity

**Universal**

<table>
<thead>
<tr>
<th>Precondition</th>
<th>Identification</th>
<th>Existing Form</th>
<th>Site Specific</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lynch 1. Legibility</strong></td>
<td><strong>Description</strong></td>
<td>A visual quality referring to the ease with which different parts of the city can be recognised and organised into a coherent pattern.</td>
<td><strong>Transportation routes clearly demarcated but nodes not easily perceived as a result of single storey built form.</strong></td>
</tr>
<tr>
<td><strong>Crane Predictability</strong></td>
<td><strong>Application</strong></td>
<td>Major pattern of transportation routes, intersection and activity nodes.</td>
<td><strong>Commuter rail station in isolation connected to constructed roads with no activities connected to them.</strong></td>
</tr>
<tr>
<td><strong>UPRU Readability</strong></td>
<td><strong>Application</strong></td>
<td>Identification with the structure and meaning of the environment by the:</td>
<td><strong>Major movement channel through the area with larger, commercially built grain at the intersections.</strong></td>
</tr>
</tbody>
</table>

**Lynch 2. Image**

| Crane Symbolic Place | **Description** | A common mental image of the city which enables inhabitants to identify with various parts. | **Major central movement channel with more intense commercial activities at intersections.** |

**Maki Continuity**

| Maki Linkage | **Description** | The integration of various parts of the metropolis. | **Central spinal route with a variation of activities connection to the bus terminuses, taxi stops and intersecting roads.** |

**UPRU Integration**

<p>| <strong>Description</strong> | Major transportation routes with intensity of activities and variation in functions forming a clear pattern. | <strong>Modes of movement:</strong> Bus, taxi, mini-bus, donkey carts, people riding animals, pedestrians, cattle. <strong>Activities:</strong> Supermarkets, garages, workshops, clinics, market places, sports fields, undeveloped CBD. | <strong>Principles: Future Development</strong> |
| <strong>Application</strong> | The mixture of space, intensive commercial and manufacturing activities along major transportation routes and flanking residential areas with reinforcing forms of accessibility like railway stations, bus terminuses, connecting roads, etc. | | 1. Identify hierarchy of linear public spaces. 2. Determine locational principles for activities and uses alongside linear public spaces. 3. Prepare strategy for development of linear public space. |</p>
<table>
<thead>
<tr>
<th>UNIVERSAL</th>
<th>SITE SPECIFIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRECONDITION</td>
<td>IDENTIFICATION</td>
</tr>
</tbody>
</table>
| UPRU 5. UNIQUENESS OF PLACE | DESCRIPTION | Economic forces determine location of activities. | 1. Arrange site sizes to accommodate variety of activities.  
2. Economic forces will determine intensity of development of activities.  
3. Prepare clear structural framework for movement channels. |
| | APPLICATION | 1. Individuals have freedom of choice of landlord.  
2. Landlords identify space for development of individual property. | 1. Eliminate landlords.  
2. Provide variety of site sizes in structural framework.  
3. Provide an abundance of individual sites to choose from. |
| CRANE 6. CHOICE ELECTABILITY | DESCRIPTION | 1. Landlords and policing constrain natural integration of activities. | 1. Provide system of free choice of sites in structural framework. |
| | APPLICATION | 1. Individuals have freedom of choice of landlord.  
2. Landlords identify space for development of individual property. | 1. Eliminate landlords.  
2. Provide variety of site sizes in structural framework.  
3. Provide an abundance of individual sites to choose from. |
| UPRU 7. REINFORCEMENT | DESCRIPTION | 1. Landlords and policing constrain natural integration of activities. | 1. Provide system of free choice of sites in structural framework. |
| | APPLICATION | 1. Landlords and policing constrain natural integration of activities. | 1. Provide system of free choice of sites in structural framework. |
| UPRU 8. SCALE | DESCRIPTION | 1. Landlords and policing constrain natural integration of activities. | 1. Provide system of free choice of sites in structural framework. |
| | APPLICATION | 1. Landlords and policing constrain natural integration of activities. | 1. Provide system of free choice of sites in structural framework. |
| CRANE 9. DYNAMICS | DESCRIPTION | 1. Rapid acceleration of change in city life and structure over great space time scales.  
2. Complexity and multiplicity of functions. | 1. Encourage higher intensity at nodes.  
Prepare principles for:  
1. Location of buildings.  
2. Upgrading of infrastructure.  
3. Allow market forces to determine best location for activities. |
| | APPLICATION | 1. Rapid change in built environment as a result of:  
1. Movement of people  
2. Temporary structures  
3. Intensifying of densities | 1. Encourage higher intensity at nodes.  
Prepare principles for:  
1. Location of buildings.  
2. Upgrading of infrastructure.  
3. Allow market forces to determine best location for activities. |
<table>
<thead>
<tr>
<th><strong>PRECONDITION</strong></th>
<th><strong>IDENTIFICATION</strong></th>
<th><strong>EXISTING FORM</strong></th>
<th><strong>SITE SPECIFIC</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CRANE 10. MALLEABILITY</strong></td>
<td><strong>DESCRIPTION</strong></td>
<td>Nodes, centres and places are at various stages of incompleteness or susceptible to progressive additions and modifications.</td>
<td>Introduction of new technology in built form changes environment. Western values change built form.</td>
</tr>
<tr>
<td><strong>APPLICATION</strong></td>
<td>1. Continual increasing intensity of activities replace built structures over time. 2. Increasing activities in decreasing space leads to multifunctional use of space and complexity in organisation.</td>
<td>Built form invades public space intensify.</td>
<td>Demarcate public space clearly.</td>
</tr>
<tr>
<td><strong>UPRU 11. RESILIENCE</strong></td>
<td><strong>DESCRIPTION</strong></td>
<td>The range and choice of environmental conditions.</td>
<td>Landlords constrain choice of environmental conditions.</td>
</tr>
<tr>
<td><strong>APPLICATION</strong></td>
<td>Clarity and generality of structure facilitates range and choice.</td>
<td></td>
<td>Introduce an open property market where the individual can have freedom of choice within his means.</td>
</tr>
<tr>
<td><strong>UPRU 12. INTENSITY OF USE</strong></td>
<td><strong>DESCRIPTION</strong></td>
<td>The intensity of activities.</td>
<td>Intensity increases as distance to commuter station decreases.</td>
</tr>
<tr>
<td><strong>APPLICATION</strong></td>
<td>Intensity of activities necessitates more complex systems to facilitate convenience of living.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>APPLE- 13. URBANITY IS A COMBINATION OF COMPLEXITY, DIVERSITY AND DENSITY</strong></td>
<td><strong>DESCRIPTION</strong></td>
<td>The city fulfils an educational function and therefore should have a vitality to stimulate the inhabitants.</td>
<td>Vitality derived from people's lifestyles. Variety in the urban built form an expression of basic lifestyle patterns.</td>
</tr>
<tr>
<td><strong>APPLICATION</strong></td>
<td>Creation of: 1. Richness and diversity; 2. Communicability and symbolism; 3. Change and stability.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPLE-1 14. URBAN DESIGN MANIFESTO

DESCRIPTION
7 Goals for urban life:
1. Liveability.
2. Identity and Control.
3. Access to opportunity, imagination and joy.
4. Authenticity and meaning.
5. Community and public life.
7. Environment for all.

APPLICATION
Physical characteristics:
1. Liveable streets and neighbourhoods.
3. Integrate activities — mixed uses.
4. Define public space with built form and other structures.
5. Vary built form and spaces with complex space arrangements.

SITE SPECIFIC

EXISTING FORM
Liveable, controlled and a large degree of community and public life. Little access to opportunities. Large degree of imagination and joy in urban environment.

PRINCIPLES
Connect urban environment to more opportunities.
Delegislative, provide incentives and encourage development of opportunities.
Define and upgrade public environment.

LYNCH 15. THEORY OF GOOD CITY FORM

DESCRIPTION
The performance of the city with regard to the following is measured in terms of efficiency and justice.
1. Vitality.
2. Sense.
3. Fit.
5. Control.

APPLICATION
1. Provide safety, sustenance and contact to people.
2. Provide identity to individual.
3. Match appropriate activities.
4. Easy accessibility.
5. Responsibility of environment.
IMPLEMENTATION

To set the stage for the development of an urban environment which is representative of a variety of people's lifestyles, the following development principles became important:

1. The individual should create his own individual environment, i.e. the house and the immediate public environment or the interface between his individual environment and the public environment.

2. The public sector should provide an overall framework of expertise, finance and assistance to create the public environment, urban infrastructure and public buildings.

3. Overall design guidelines should be available to guide development by individuals, groups and the public sector without imposing conditions.

Thus the need for a self-help centre to fulfill the public sector or managerial role has been identified as the enabling device. This centre will manage:

1. The implementation of the urban design guidelines, prepared by an urban designer.

2. The development of the public environment and urban infrastructure as needed.

3. Implement the participation strategy and provide small and larger short- and long term financial assistance as well as technical advice to individuals and groups.
Process of implementation of Urban Design Framework in a low income environment

1. Establish a self-help centre where the following assistance will be available to the residents.
   
   a. Technical assistance in the choice of neighbourhood, depending on the age, structure and activities of the individual family.
   
   b. Technical assistance in explaining the urban design framework to the individual family.
   
   c. Technical assistance to accommodate the needs of the individual family for housing into the urban design framework.
   
   d. Cost estimates based on the floor area of the house the family can afford as well as basic finishes of materials available at the self-help centre.
   
   e. Assistance to the house builder to:
      
      (i) obtain financial assistance to build his house;
      
      (ii) build his home;
      
      (iii) supply material to the individual to build his house;
      
      (iv) subcontract elements of the construction of the house to smaller contractors;
      
      (v) improve his immediate public environment.
   
2. All documentation and financial statements at the self-help centre should be available and accessible to the inhabitants at all reasonable times.

Self-help Centre

On site facilities which should be available to assist the individual family to build their own house and slot into the overall environmental framework.


2. Computerised cost estimates of houses based on materials available at the centre.
   
   Cost estimates should be based on square meterage as well as individual quantities of materials required.

3. Basic building materials including the following:
   
   (i) Building sand.
   
   (ii) Cement.
   
   (iii) Concrete, sand and stone.
   
   (iv) Plaster sand.
   
   (v) Roof timbers.
   
   (vi) Roof cladding – corrugated iron sheets.
   
   (vii) Door frames.
   
   (viii) Window frames.
   
   (ix) Windows.

4. A building manager who will assist the family to employ those skills they cannot undertake themselves i.e. bricklaying, plastering, carpentry, glazing, roofing, plumbing, electricity, paving, internal finishes, painting, tiling etc.
Functions of the Self-help Centre

1. Marketing of the town and individual erven.
2. Management of savings of individuals to enter urban development scheme.
3. The issuing of bonds up to R10 000 for the construction of a house, depending on family income.
4. Management of bonds issued, as well as repayments.
5. Implementation of urban design framework.
6. Technical assistance to families in decisions on choice of site and design of affordable house plan.
7. Management of building programme for individuals on sites.
8. Construction of "enabling structure" on each site. The cost of the enabling structure is to be added on to the site cost.
10. Upgrading of infrastructure.
11. Upgrading of environment with rollover funds.

Site and service requirements for the self-help centre

1. Electricity to use computer as well as carpentry and welding equipment.
2. Water.
3. Sewerage.
4. Storage space for cement and wood.
5. Under cover working space for:
   (i) Welding.
   (ii) Carpentry.
   (iii) Cabinet-making.
   (iv) Brick and block making.
6. Office space for:
   (i) Financial management.
   (ii) Technical advice to families or individuals.
   (iii) Sales of sites.
   (iv) Building management.
   (v) Centre management.
Financial Management of the Self-help Centre

1. Individuals who intend to live in the town can enter the scheme by:

(i) The payment of a 20 percent deposit on a chosen site to enable bond registration.

(ii) Entering the saving scheme by monthly down payments if they do not have enough savings to choose a site. As soon as they have saved enough to cover 20 percent deposit on a site, the savings can be changed into down payments on a bond registered on the chosen site.

(iii) Payment of the site purchase price in full and registration of a bond to build a house.

2. The self-help centre could do the following to generate funds for upgrading of the environment.

(i) Generate income by the investment of the savings of individuals at a substantially higher rate than interest paid to the individuals.

(ii) Sell commercial and industrial properties at a substantially higher price than residential properties and use profits for upgrading.

(iii) Add a small percentage to monthly urban services and maintenance charges to undertake upgrading.

3. The self-help centre should make annual financial statements of assets and liabilities as well as work completed, available to the people who have entered the urban development scheme, at the end of each financial year.

4. The self-help centre should make annual programmes of work to be undertaken the following year, available for discussion with persons who are part of the scheme.

Personnel requirements for a Self-help Centre to manage the construction of an urban comprising 2,000 houses and more:

1. Centre manager 1.
2. Technical Advisors 1.
3. Construction managers 2.
5. Blockyard foreman 2.
6. Clerk and/or secretarial person 2.
7. Artisans.
IMPLEMENTATION: CAPITAL WEB

1. Capital Budget.

1.1 The following elements should be provided before sites are sold to individual owners.

1. Road access – gravel or tarred road surfaces as indicated in design guidelines.
2. Piped water connections to each site as well as in public spaces as indicated in the design guidelines.
3. Sewerage – water borne sewerage should be provided to 80% of the erven. Biological sewerage with soak away grey water disposal should be provided to 20% of the erven.
4. Electricity – main ring network should be provided as underground cables with connections to each individual site. Owners can connect to electricity as and when they decide to do so.
5. Telephone – spaces for main ring networks should be preserved for underground cables with connections to each individual site.
6. Paving – all sidewalk spaces should be finally paved at the nodes after 40% of the individual owners have commenced with the construction of their homes.
7. Two primary schools and a high school should be constructed during sales of individual sites.
8. The construction of a space for a community hall, clinic, post office, 2 crèches and 5–10 small shops should commence immediately after the completion of infrastructure contract.

1.2 The capital costs for the construction of the above contracts should be borrowed over a period of 30–50 years and recovered from individual bonds over a period of 20–30 years.

1.3 All infrastructure should be accommodated in the public spaces for ease of access and future maintenance.

1.4 Contracts for the construction of infrastructure should be broken up into small units, to be handled by local contractors.

2. Capital Budget.

Costs for the following should be included in the capital budget for the development of the town:

1. All infrastructure available at the time of sale of individual sites.
2. All road and sidewalk surfaces as mentioned under capital web.
3. Construction costs of all schools required, as well as the community hall, clinic, 2 crèches and a communal sport field.
4. The establishment of a nursery with stock to cover planting at the nodes and main boulevards i.e. strips 1, 3 and 5.
5. Salaries and running costs of the self-help centre for 18 months.
6. Material costs for the construction of 600 houses.

3. Selling price of individual erven:

1. Basic fee for professional services rendered which should include the following:
   1.1 Townplanning fees.
   1.2 Urban design fees.
   1.3 Engineering design fees.
   1.4 Land surveying fees.
   1.5 Architectural fees for major buildings.
   1.6 All administration and management fees for the establishment of the town.

2. Infrastructure cost for each site by:
   2.1 Dividing the construction cost for roads, sidewalk paving, electricity, telephone, water network by the total number of erven as part of the selling price.
2.2 Dividing the construction and/or installation cost of the two different types of sewerage by the number of erven respectively as part of each different type of erf.

3. A basic fee for the land of R2.50 per m² of the area of each site should be added to each site.

4. Selling price of a site should cover:

   1. Professional services;
   2. infrastructure cost;
   3. land cost.


   Upon registration of erven in the name of individual owners, a maintenance budget be implemented. The funding of such a budget should be borne by the owners by payment of a monthly maintenance fee of at least 2% of the selling prices of the erven to the self-help centre, who should use the funds to undertake maintenance and upgrading of the environment until such time as an urban management can manage the maintenance and upgrading.

   The planting and paving programme for those public urban spaces not funded from the capital budget, should be funded from the maintenance budget.

5. Incentive Budget.

   Development incentives to construct colonnades and seating spaces in nodes 1, 4, 6 and 7 as well as along strips 3 and 7 should be funded by levying additional monthly fees on those erven developed for business purposes. An annual business duty should be paid by all businesses, calculated on business floor space basis, instead of business licence fees, to fund this budget at the self-help centre. Additional charges on sales of electricity can be added to supplement the business duty fees.

6. All other ad-hoc structures in the urban environment can be funded from accumulated interest on investment of development funds.
DESIGN PRINCIPLES AND GUIDELINES
NODES AND STRIPS

---

- Existing vehicular transportation routes
- Proposed vehicular transportation routes
- Nodes
- Strips

SCALE: METROPOLITAN
METROPOLITAN SCALE
PRECONDITION: LEGIBILITY | PREDICTABILITY | READABILITY

PRINCIPLE: HIGHEST ORDER TRANSPORTATION MODES CONNECT WITH MOST INTENSIVE NODES OF ACTIVITY

PATTERN: MAJOR TRANSPORTATION ROUTES
UNIVERSAL

INTERSECTIONS

NODES

MOVEMENT

ELEMENTS:
1. Mass transportation interchange.
2. Traffic interchange.
3. District and local bus stops.
4. Local bus stops.
5. Private transportation.

SITE SPECIFIC

FUNCTION
1. Primary node CBD
2. High volume traffic interchange.
3. Primary mass transportation interchange.
4. Secondary mass transportation interchange.
5. Private vehicular transportation.

ACTIVITIES
Highest intensity of mixed uses.
High intensity manufacturing traffic oriented uses.
High intensity residential and mixed uses.
Medium intensity residential and mixed uses.
Low intensity suburban residential uses.
METROPOLITAN SCALE
PRECONDITION - IMAGE/SYMBOLIC PLACE

PRINCIPLE: INTERRELATIONSHIP OF ELEMENTS DETERMINE CHARACTER AND MEANING OF ENVIRONMENT

PATTERN - NODES/LANDMARKS/ELEMENT INTERRELATION

ELEMENTS
1. Faint: built grain at intersections of movement spaces.
2. Looser grain further away from intersections.
3. Meaning of space - intersection of high nodes of transport and high intensity use - CBD

1. Higher intensity of use at nodes with intersection of transportation nodes.
2. Lower intensity of use in strips.
3. Meaning of space - central place, commerce, manufacturing, residential etc.
4. Interrelation between activities and mode of transport.
5. Mixture of uses.
6. Intensity of uses and activities.
METROPOLITAN SCALE
PRECONDITION: CONTINUITY, LINKAGE, INTEGRATION

PRINCIPLE:

PATTERN: MAJOR TRANSPORTATION ROUTES
INTENSITY OF ACTIVITY: VARIATION OF FUNCTION

UNIVERSAL

ELEMENTS:

MOVEMENT:
1. Linkage determines function of transportation corridors and thus hierarchy.

FUNCTION:
1. Intensity of nodes and functions are determined by linkage.

ACTIVITIES:
Linkage determines location of functions.

SITE-SPECIFIC

future CBD.
bus route

Commuter rail station
NODES AND STRIPS

HIERARCHY OF NODES AND STRIPS

TRANSPORTATION SYSTEMS

- local bus stop
- district bus stop
- mini bus stop
- taxi stop

MYTIC: air noise and pollution

SCALE: DISTRICT
**DESIGN PRINCIPLES**

### MOVEMENT

- Traffic preference
- Ease of directional change
- Other alternative designs for ease of directional change
- Roundabout
- Diamond interchange

### INFRASTRUCTURE

- Full range including water, piped sewer, electricity, underground cable, telephone, underground cable, tarred roads, paved sidewalks, stormwater.

### ACTIVITIES

- Regional bus stop, taxi rank, mini bus stop, waiting space for passengers, access to transportation and traffic oriented activities, refreshments, change of transportation modes, large and use extensive activities.

### LANDSCAPING

- Shade trees with seating and resting space to protect pedestrians and passengers from harsh summer sun.
LANDSCAPING

- Shade trees with foliage of 2.5 cm diameter when fully grown.
- Height of trees between 5.0 m and 10.0 m when mature.
- Should preferably lose foliage during April-May to allow penetration of winter sun.
- Planting to be managed by the self-help centre in coordination with paving of pedestrian spaces.
- Seating arrangements around trunks to be constructed by self-help centre directly after planting programme to protect young trees.
- 3m colonnade
- build to line
- erf boundary
- 3-5 m entrance setback
DESIGN PRINCIPLES

MOVEMENT
- pedestrian preferential space with high incidence of vehicular movement.
- change of transportation models.
- directional change of transportation - passengers.

INFRASTRUCTURE
- main ring networks should be accommodated for the following:
  - sewer - piped.
  - water - piped.
  - stormwater.
  - electricity - underground cabling.
  - telecommunications - underground cables.

ACTIVITIES
- extensive activities such as supermarket, chemist, garage, sport complex, market, entertainment centre, furniture stores, hospital, large educational centres, motor car sales, etc.

LANSCAPING
- lanes of trees should reinforce the built form, enrich public space and protect pedestrians; use landscape elements to slow down traffic.

NODE 3

protect pedestrians against natural elements with the use of lanes of trees and built canopies.

provide meeting and conglomeration space at the entrances to activities. Step up at entrance space to facilitate edge between movement space and entrance space.

enlarge protected space for pedestrians where bus stops coincide with entrances to activities.

line up trees with collars to provide continuity in pedestrian movement space.
• Shade trees on center islands with foliage diameter of 5-7m when fully grown.
• Street trees on pedestrian movement space with foliage diameter of 3-5m when fully grown.
• Shade trees should have ground clearance space of 3.0m and more when fully grown to allow for large vehicular movement.
• Planting to be managed by the self-help centre and coordinated with the paving programme.
• Seating arrangements around trunks of street trees at bus stops to be constructed to protect young trees at an early stage.
SPATIAL ELEMENTS AND PRINCIPLES

**Vehicle Movement Space**
- Protect pedestrians from vehicular movement

**Pedestrian Movement Space**
- Provide durable hard surface in pedestrian movement space for walking and play

**Semi-Public Space**
- Provide protected seating space for privacy and shade

**Garden Space**
- Provide clear transition from public to more private domains

**Semi-Private Space**
- Connect private garden spaces to public space with clearly defined gateways

**Covered Enclosed Private Space**
- Protect privacy of properties with a light element
enabling structure

- construction of wall, seating space and flower bed; sidewalk paving and vehicular space paving should be undertaken by the self-help centre
- detail construction of low wall, entrance to site, street number
- new gate should be to the design of each individual owner.
- cost should be added to the purchase price of the site
  and recovered over the four loan periods.

- the following cost distribution is recommended:
  - the cost of the wall and seating spaces should be recovered in the selling price of the even on which it is built
  - the cost of the tarred road, gravelled sidewalks and trees should be recovered in the selling price of all the even in the town.
- all cost of infrastructure available at the time of first sales of even should be recovered in the selling price of the even in the town.
Spatial Elements and Principles

- Tarmacked road surface
- Paved over kerb
- Vehicular Movement Space
- Edge
- Seating Space
- Edge
- Pedestrian Movement Space
- Edge
- Informal Trading Space
- Edge
- Formal Trading Space

- Protect pedestrians from vehicular movement
- Protect resting people from the sun
- Protect informal traders from natural elements
development process

private trading space
covered indoor trading space
high wall with doormay
covered outdoor informal/trading space
colomade with step
paved space
lane of trees
seating space under trees
im leg space with roll over kerb
tarred vehicular space.

movement space


customer service
covered pedestrian surface
paved space
with seating space

structuring of activities

vehicle space
parking space
parking space
car park space
park space

landscaping
two single lines of shading trees.

enabling structure.

- construction of tarred road surface, paved pedestrian movement space and seating spaces around tree trunks should be undertaken by the self-help centre
- planting and maintenance of shading trees to be undertaken by the self-help centre
- costs for the above should be added to the first sales price of all the sites with direct access from this public space
- the total cost of infrastructure available at the time of first sales should be recovered in the selling price of the sites.
### Neighbourhood Scale: Precondition for Urbanity Identification

<table>
<thead>
<tr>
<th>UPRU</th>
<th>Description</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Reinforcement</strong></td>
<td>The exposure of local inhabitants to a wide range of higher order facilities, activities and influences.</td>
<td>Major transportation routes release reinforcing qualities of urbanity on activities dependent on passing trade.</td>
</tr>
<tr>
<td><strong>2. Convenience</strong></td>
<td>Ease of access to higher order activities and facilities.</td>
<td>The location of higher order activities along major transportation routes to intercept support from passing traffic as well as local residents.</td>
</tr>
<tr>
<td><strong>3. Protection</strong></td>
<td>Neighbourhoods frame heavy traffic and high intensity activities.</td>
<td>Heavy traffic gravitate to major transportation routes and release pressure on parts of the urban fabric.</td>
</tr>
<tr>
<td><strong>4. Integration</strong></td>
<td>Neighbourhoods with surrounding fabric and major transportation routes.</td>
<td>Activities located along major transportation routes become natural focus for people living in the environment thus roads serve to integrate environment rather than bisect.</td>
</tr>
<tr>
<td><strong>5. Resilience</strong></td>
<td>Range and choice of qualities of environments in the neighbourhood.</td>
<td>Facilitate freedom of choice in location of activities.</td>
</tr>
</tbody>
</table>

### Existing Form

| | Legalities and politics prevent the location of higher order activities and facilities along major transportation routes. |
| | Delegislate, de-regulate and apply free-market forces. |
| | Provide a clear communication system with clear pattern of movement and activities. |
| | Tarred central spinal route provides a clear hierarchical arrangement for transportation gravitation. |
| | Facilitate a clear hierarchical order in road spaces and transportation connections. |
| | Integration of small businesses into residential fabric along main spinal road. |
| | Use site sub-divisions and block depths as natural ordering devices for activities. |
| | Freedom of choice within framework of individual landlords. |
| | Facilitate total freedom of choice by the creation of a property market based on economic principles. |
### Neighbourhood Scale:

<table>
<thead>
<tr>
<th>Precondition for Urbanity</th>
<th>Identification</th>
<th>Existing Form</th>
<th>Principles: Future Development</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UPRU 6. Freedom of Expression</strong></td>
<td>Description: The involvement of many people in the making of a place.</td>
<td>Present constraints are:</td>
<td>Self-building of the individual home environment within an overall development framework.</td>
</tr>
<tr>
<td><strong>Victor 7. Human Freedom</strong></td>
<td>Application: Using the enabling constraint which allows individual freedom while it protects the public good. Could be 1. Structural constraint. 2. Technological constraint. 3. Locational constraint.</td>
<td>Freedom in choice of landlord and location of his plot.</td>
<td>Provide freedom in choice of an affordable individual site or property.</td>
</tr>
</tbody>
</table>

#### Description

- **Structural Constraint:**
  - Cadastral grid;
  - Landlords;
  - Lifestyle: built form.

- **Technological Constraint:**
  - Level of education;
  - Availability of building materials;
  - Built structure accepted.

- **Locational Constraint:**
  - Built structure accepted.

#### Application

1. Safe sidewalks.
2. Sidewalk place of contact.
3. Use of sidewalks.
4. Use of neighbourhood parks.
5. Local government at three levels, i.e. street/district/city as a whole.

Provide:

1. Clear distinction between public and private space.
2. Eyes on the street in design of housing.
3. Places to play on sidewalks and in neighbourhood parks.
4. Management of the street, district and the city as a whole.
JANE 9  GENERATION OF DIVERSITY

DESCRIPTION
The need for:
1. Mixed primary uses.
2. Small blocks.
3. Aged buildings.
4. Concentration.

APPLICATION
1. Mix uses in the neighbourhood environment.
2. Design small city blocks.
3. Retain old buildings.
4. Concentrate development.

SITE SPECIFIC

EXISTING FORM
Natural mix of uses, block sizes and densities.

PRINCIPLES: FUTURE DEVELOPMENT
Allow free market principles to determine location of activities within a broad framework of transportation network and sizes of subdivisions.
1. Regional functions and activities
- Garage / market / cinema / supermarket / hospital / technikon / sport complex / civic functions / bus terminus

2. Social
- Filling station / informal market / community hall / clinic / high school / sport field / pharmacy / doctor / ambulance / library / bus stop / taxi

3. Neighbourhood
- Church / creche / community hall / corner shop / delicatessen / milk shop / butchers / fresh produce / primary school / pharmacy / doctor / library

Site specific
- Supermarkets / pharmacy / sport complex / garage / take-away / bus terminus
- Sangoma / school / herbalist / clinic / informal market / soccers / coal merchant
- Water shop / shebeen / basket weavers / gospel preacher / church / child minder / boarding house / tipps / fresh produce sellers / hawkers / soup kitchens
NEIGHBOURHOOD SCALE:
PRECONDITION: PROTECTION INTEGRATION

PRINCIPLE: CLEAR HIERARCHICAL STRUCTURE OF MOVEMENT STOPS AND MODES OF TRANSPORT

Pattern

- Slow moving mixed traffic, local pedestrian, parking vehicles, frequent stop start movement.
- Fast moving predominantly vehicular traffic with regular stops.
- Medium speed mixed local traffic and pedestrians with regular stops.
- Slowmoving mixed local and regional traffic with regular stops.
EXPECTED INTENSITY OF ACTIVITIES

SCALE: LOCAL AREA.

higher intensity of activities
medium intensity of activities
low intensity of activities

traffic and transportation orientated activities:
- monthly consumer goods such as:
  - supermarkets
  - live stock sales
  - garages
  - hardware
  - farming equipment
  - furniture, material, clothing
  - roadhouse
- other activities:
  - sport centres
  - adult educational centres
  - service industries
  - regional health centres

pedestrian orientated activities:
- weekly and daily consumer goods such as:
  - general dealer, grocery store,
  - green grocer
  - butcher
  - dairy product outlet
  - bakery
  - bottle store
  - clothing shops, haberdashery, material
- other activities:
  - personal services and repairs,
  - child education
### LOCAL AREA SCALE:

<table>
<thead>
<tr>
<th>PRECONDITION</th>
<th>DESCRIPTION</th>
<th>EXISTING FORM</th>
<th>PRINCIPLES : FUTURE DEVELOPMENT</th>
</tr>
</thead>
</table>
| **UPRU 1. RESPONSE TO UNIQUENESS OF PLACE** | **DESCRIPTION**
Recognition of positive potentials inherent in particular locations in the making of places and buildings. | 1. Orientation of houses to face public space. 2. Closing off of streets with houses. 3. Greater distances between houses at intersecting public spaces. | 1. Interaction between buildings and public space. 2. Accessibility at nodes and linear. 3. Built to line principle. |
| | **APPLICATION**
Application of design ingenuity to release potential. | Unrestrained location of minor activities in the structured framework. | 1. Development principles to guide the individual in his response to the environment. |
| **UPRU 2. FREEDOM OF EXPRESSION** | **DESCRIPTION**
The creation of uniqueness by the ingeneous response of the individual to the structure of the environment. | 1. Progression of spaces between public space and private spaces. 2. Distance between private dwelling units. | 1. Principles to guide interface development between:  (a) Public space and private space.  (b) Side space between individual developments.  (c) Rear space between individual dwelling units. |
| | **APPLICATION**
The creation of opportunities and constraints as structural keys to which the individual can respond. | | |
| **UPRU 3. ANONYMITY** | **DESCRIPTION**
That part which totally private sections of the dwelling unit forms in the total environment. | | |
| | **APPLICATION**
Interdependence between private and public sections of the environment affects the quality and usage of the other - performance of social space. | | |
| **UPRU 4. INTERFACE** | **DESCRIPTION**
Degree to which public activities impose on private space. | | |
| | **APPLICATION**
1. Clarity of definition between public activity and private living. 2. Way in which the interface is made to provide:  (a) Sense of Scale.  (b) Enclosure.  (c) Continuity.  (d) Protection. | | |
<table>
<thead>
<tr>
<th>UPRI 5. CONTINUITY</th>
<th>DESCRIPTION</th>
<th>EXISTING FORM</th>
<th>PRINCIPLES: FUTURE DEVELOPMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Similar building materials and principles of built form give continuity in urban environment.</td>
<td>1. Arrange spatial progression from public to private spaces in a design framework.</td>
<td></td>
</tr>
<tr>
<td>Application</td>
<td>Lay down those essential constraining structures which the individual cannot create, to release freedom of choice which moulds and maintains the quality of the whole.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UPRI 6. COHERENCE</th>
<th>DESCRIPTION</th>
<th>EXISTING FORM</th>
<th>PRINCIPLES: FUTURE DEVELOPMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>No enabling elements exist in the environment. Only landlords who facilitate leases.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application</td>
<td>Create freedom of, and opportunity for choice by providing essential constraints which become enabling elements.</td>
<td>Provide enabling structures to facilitate the development of necessary elements in the public environment eg. seating space, lighting, planting, protecting of pedestrians.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UPRI 7. TIMELESSNESS</th>
<th>DESCRIPTION</th>
<th>EXISTING FORM</th>
<th>PRINCIPLES: FUTURE DEVELOPMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Place the responsibility to create the individual environment in the hands of the inhabitants.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application</td>
<td>Measure environmental performance in terms of how well it accommodates and enables life and its qualities by:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Understanding the complexity of man's life processes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Recognising what is truly significant to man in his environment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Establishing a rapport between man and his environment.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UPRI 8. PARTICIPATION</th>
<th>DESCRIPTION</th>
<th>EXISTING FORM</th>
<th>PRINCIPLES: FUTURE DEVELOPMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Exchange of goods and ideas limited by legislation and lack of finance.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APPLICATION</td>
<td>Provide necessary social infrastructure at an early stage in the urban environment.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GRUEN  FREE EXCHANGE OF GOODS AND IDEAS</th>
<th>DESCRIPTION</th>
<th>EXISTING FORM</th>
<th>PRINCIPLES: FUTURE DEVELOPMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Provide necessary social infrastructure at an early stage in the urban environment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APPLICATION</td>
<td>Exchange of goods and ideas limited by legislation and lack of finance.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Interface between public and private spaces should be made as a positive element.  
2. Necessary social functions should consciously be accommodated in the public spaces.
<table>
<thead>
<tr>
<th>PRECONDITION</th>
<th>DESCRIPTION</th>
<th>EXISTING FORM</th>
<th>PRINCIPLES: FUTURE DEVELOPMENT</th>
</tr>
</thead>
</table>
| UPRU 9. SAFETY | **DESCRIPTION**  
The public respect for privacy and vice versa. | **APPLICATION**  
1. Clearly define the interface between public and private space.  
2. Provide continuity of the interface.  
3. Allow total change to the individual unit behind the interface. | **EXISTING FORM**  
Safety limited since no street lights are provided and public and private spaces not clearly defined.  
**PRINCIPLES:**  
Provide an overall design framework with clearly defined public spaces, edge conditions and freedom of expression in the individual environment. |
| GREN 10. DIRECT HUMAN CONTACT | **DESCRIPTION**  
Opportunity should be provided in the urban realm for continual direct human contact and communication. | **APPLICATION**  
The connection between activities and communication channels should be clearly defined. | **EXISTING FORM**  
Connection between private spaces and public spaces follow clear definition of interfaces of spaces.  
**PRINCIPLES:**  
Determine spatial progression from private to public space as connection. |
LOCAL AREA SCALE
PRECONDITION: SYMBOLIC PLACE
PRINCIPLE:

ELEMENTS

MOVEMENT
1. Multiplicity of interchange modes of transportation attracts high intensity of activity. 
   creates CBD.
2. High intensity interchange of regional transportational modes creates market place.
3. Interchange of modes of transport creates meeting place.

FUNCTION
1. Multiplicity of functions connect to high order of interchange of various modes of transportation.
2. High intensity and regional com­munity functions locate at inter­change of high order transportation systems.
3. Meeting and waiting space develops at interchange of modes of trans­port.

ACTIVITIES
1. Formal market/all retail/commerce/ 
   bus terminus/rail station/taxi ranks/ 
   mini buses/private vehicles/pedes­trians/waiting area/park/church services/commerce/manufacturing etc.
2. Informal market/railway garage — fill­ing station/bus stop/taxi stop/mini 
   buses/refreshments/private vehicles/ 
   waiting/supermarkets.
3. Informal market / refreshments / 
   shopping / waiting / bus stop / taxi 
   stop/pickup area/daily commuter re-xs.
LOCAL AREA SCALE
PRECONNECTION / ANONYMITY

PRINCIPLE: CHOICE OF PRECINCT PROVIDES DEGREES OF PRIVACY, ANONYMITY OR COMMUNITY TO THE INDIVIDUAL

1. Road surface demarcates public space — vehicles.
2. Sidewalk demarcates public space — pedestrians.
3. Trees protect pedestrians and give privacy to semi-public space.
4. Low wall demarcates change from public to semi-public space.
5. Low wall and roofed area space demarcates semi-private and semi-public space.
6. High walls and pitch roof demarcates private space.

FUTURE
1. As density increases buildings will develop closer to the public space.
2. Trees could provide greater privacy.
3. Wall could provide greater privacy.
PRECONDITION: INTENSITY OF USE

PRINCIPLE: SITE SIZE, INTENSITY OF MOVEMENT, AND ECONOMICS DETERMINE INTENSITY OF USE

**Gross density** - 35 du/ha
- height: 1 storey
- built form: semi-detached on one side boundary
- du size: 7 - 80 m²
- expansion: double storey - 50 families/ha
- block size: 50 x 145 - 165 m (mid street to mid street)

**Gross density** - 27 du/ha
- height: 1 storey
- built form: semi-detached or free standing on one side boundary
- du size: 70 - 80 m²
- expansion: ground level - 35 du/ha
- double storey - 52 du/ha
- block size: 62 x 177 - 232 m (mid street to mid street)

**Gross density** - 18 du/ha
- height: 1 storey
- built form: free standing
- du size: 70 - 80 m² or larger
- expansion: ground level 30 du/ha
- double storey - 55 du/ha
- block size: 45 x 240 - 300 m (mid street to mid street)

**Gross density** - 10 du/ha
- height: 1 storey
- built form: free standing
- expansion: ground level - 35 du/ha
- double storey - 60 du/ha
- three storeys - 70 du/ha
- block size: 75 x 315 - 415 m (mid street to mid street)

**Gross density** - 10 du/ha
- height: 1 storey
- built form: free standing
- expansion: ground level - 35 du/ha
- double storey - 60 du/ha
- three storeys - 70 du/ha
- block size: 75 x 315 - 415 m (mid street to mid street)

Mixed uses, commerce, and industry

**F.A.R.**
- 0.5 — one storey
- 0.8 — two storeys
- ideally: block should not be longer than 300 mm in commercial and retail areas.

**F.A.R.**
- 0.6 one storey
- 1.0 two storeys

block size: 100 x 315 - 415 m
PRINCIPLE: ENCLOSE PUBLIC SPACE/ORIENTATE OPEN LIVING SPACE ON TO PUBLIC SPACE/PRIVACY

1. Houses are located towards the rear of the site – distance gives privacy.
2. No backyard situation – communication towards public street.
3. Subdivisions of individual sites should not be opposite – should be staggered.
4. Future pedestrian streets will develop on side boundaries.
5. Sites are more square than rectangular in shape.
6. Dimensions vary from 15 x 15 m to 15 x 20 to 20 x 20.
NODES AND STRIPS

SCALE: NEIGHBOURHOOD.
**Design Principles**

**Movement**
- Strong mass transportation movement through pedestrian preferential space.
- Exchange between all model of mass transportation.

**Activities**
- Spatial qualities of space should accommodate large congregation and interaction of people.
- Space should act as a communal outdoor living space where district and local people can meet and interact.
- Activities in the space: meeting space, resting space, eating, shopping, exchange of goods and ideas.

**Landscaping**
- Mainly shade trees to protect pedestrians from natural elements and serve as extended space to covered built form.
PAVING AND LANDSCAPING

1. Shade trees with 5.25m foliage diameter should be planted in pedestrianised space.
2. Self-help centre should manage trees and maintain planting programme as well as undertake and coordinate cleaning of pedestrianised space.
3. Construction of vehicular space to be undertaken by self-help centre on tender basis with private contractors.
4. Costs of vehicular and pedestrian space construction should be recovered in total or all users in town.
5. Design of covered colonnade and informal trading spaces should be undertaken by self-help centre.

- Future enclosure of public space by wall form would limit entry and activities.
- Construction cost of colonnade and covering should be borne by the self-help centre as initiative to develop the public space as envisaged.
- Built structures could cover public space from second story and higher in future as additional incentives to develop in providing amenities as required than in the public space.
- Construction cost of public facilities should be included in cost of paving, planting and provision of covered colonnade by the self-help centre.
**Design Principles**

**Movement**
- Pedestrian dominated space connects to district fast moving vehicular movement dominated space.

**Infrastructure**
- Major ring networks of water as well as sewer systems.
  - If level of infrastructure is still underdeveloped, soak-aways can be constructed under pedestrianized spaces.

**Activities**
- Connecting activities will be mainly of a residential nature.
  - Public space should provide for:
    - Seating and resting space
    - Play space
    - Pick-up space for transportation
    - Refreshment - water.

**Landscaping**
- Trees providing shade and protection as well as soak-up water from soak-aways should be planted in pedestrianized spaces.
  - Boulevards of trees to muffle traffic noise and protect pedestrians should be planted in vehicular dominated space.
LANDSCAPING AND INFRASTRUCTURE

French drain or sewer
Point away
Future sewer pipeline
Piped water

Water point.

Basic infrastructure in pedestrian dominated space

Landscaping
SPATIAL DEVELOPMENT AND PAVING

EXAMPLE OF A PARTICULAR APPLICATION

PAVING.

- gravel or brick paving
- roll-over kerb
- framed surface
SPATIAL ELEMENTS AND PRINCIPLES

- protected seating space
- edge
- gateway between spaces
- edge
- pedestrian pick-up space for taxis and mini-buses
- edge

- protect pedestrians from fast moving vehicles and natural elements.
- reduce the detrimental effects of traffic i.e. noise and air pollution.
- provide protection to seated persons for privacy and comfort.
- provide a gateway between pedestrianised play space and space with fast moving vehicles.
- facilitate easy pick-up by taxis with as little disturbance of moving traffic as possible.
MOVEMENT

East-west mass transportation movement meets north-south pedestrian movement turning movement of private vehicles, minis-busses and taxis.

ACTIVITIES.

Activities connecting to the space will include the following:
- Daily and weekly consumer retailers, food and lodging, eating houses, entertainment, retail clothing, shoes and furniture.
- Repairs of household goods,
- The following activities should be provided for in the space:
  - Pedestrians, shoppers, informal and formal traders, display of goods, resting space, meeting space, exchange of goods and ideas, entertainment, transportation, etc.

LANDSCAPING

Deciduous trees with high trunks should be planted along routes with mass transportation.

Deciduous trees with wide foliage should be planted in pedestrian dominated space.
MOVEMENT
Vehicular transport comprising private vehicles, taxis, mini-buses will increase north of the node. East-west traffic will be more even. Pedestrian movement can be expected to increase north of node towards bus stops and pick-up points.

INFRASTRUCTURE:
Lower order grey water disposal in soak-away system; piped water, biological sewer and gravel and paved public space surfaces.

ACTIVITIES:
Activities connecting to the space could be corner shop, hairdresser, gospel preacher, sangoma, child mender, school, church, basket weaver, bead-worker etc. Activities in the space: play space, washing space, meeting, talking, resting, public facilities, refreshments etc.

LANDSCAPING
Shade trees to soak up water from soak-away system and protect pedestrians from sun.
Author: Janse van Rensburg E G
Name of thesis: Urban design guidelines for space creation in an urban Black residential environment	1985

PUBLISHER:
University of the Witwatersrand, Johannesburg
©2013

LEGAL NOTICES:

Copyright Notice: All materials on the University of the Witwatersrand, Johannesburg Library website are protected by South African copyright law and may not be distributed, transmitted, displayed, or otherwise published in any format, without the prior written permission of the copyright owner.

Disclaimer and Terms of Use: Provided that you maintain all copyright and other notices contained therein, you may download material (one machine readable copy and one print copy per page) for your personal and/or educational non-commercial use only.

The University of the Witwatersrand, Johannesburg, is not responsible for any errors or omissions and excludes any and all liability for any errors in or omissions from the information on the Library website.