

3. THE REALISATION OF THE RISE: HOUSING AFRICAN FAMILIES

60



NOW, LET US BUILD THIS CITY
Now, Let us build this city
For we are well able
Let us build it on the
foundations of love
Let us embrace the needs of
the people
Let us build this city
For we have many experts;
Them architects, Them
engineers, Them surveyors
Let us build a city
Let us train our experts to
be servant leaders
Let us build this city
For we have multiple clients
Yes! A city with open-ended
programs
Let us make it a city of the
progressive
Let us build this city
For we have discretion
Let us be generalists
Let us be relevant
When we build this city of
Africa.
This is the land of your
ancestors
Build cities great and
prosperous
Houses full of all sorts of
good things
Water cisterns dug out
Vineyards and olive trees
Then eat to your fill-in
this city of love
Let us build this city
together
-Author [2008] & Hamdi
[2008]

60. Adventurous photographer,
Guyana.

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²⁰Social development should be the motive of sustainable development. It is the denominator of both environmental and economical development. Through architecture this may be achieved.

The doctrine of sustainability emphasises the need to conserve and preserve the environment. This approach propels the ideals of scarcity. However, there is need to approach sustainability with the mentality of multiplicity rather than scarcity.



SUSTAINABLE HOUSING SYSTEMS

"Life is right and the architect is wrong"

-Le Corbusier [toward the end of his life]

"...Be fruitful, multiply, fill the earth and subdue it..."

-[Stern 1998,pp. 2]

Sustainable development²⁰ must be born from social relationship building [61]. The following mathematical expression may be used as an analogue for this statement;

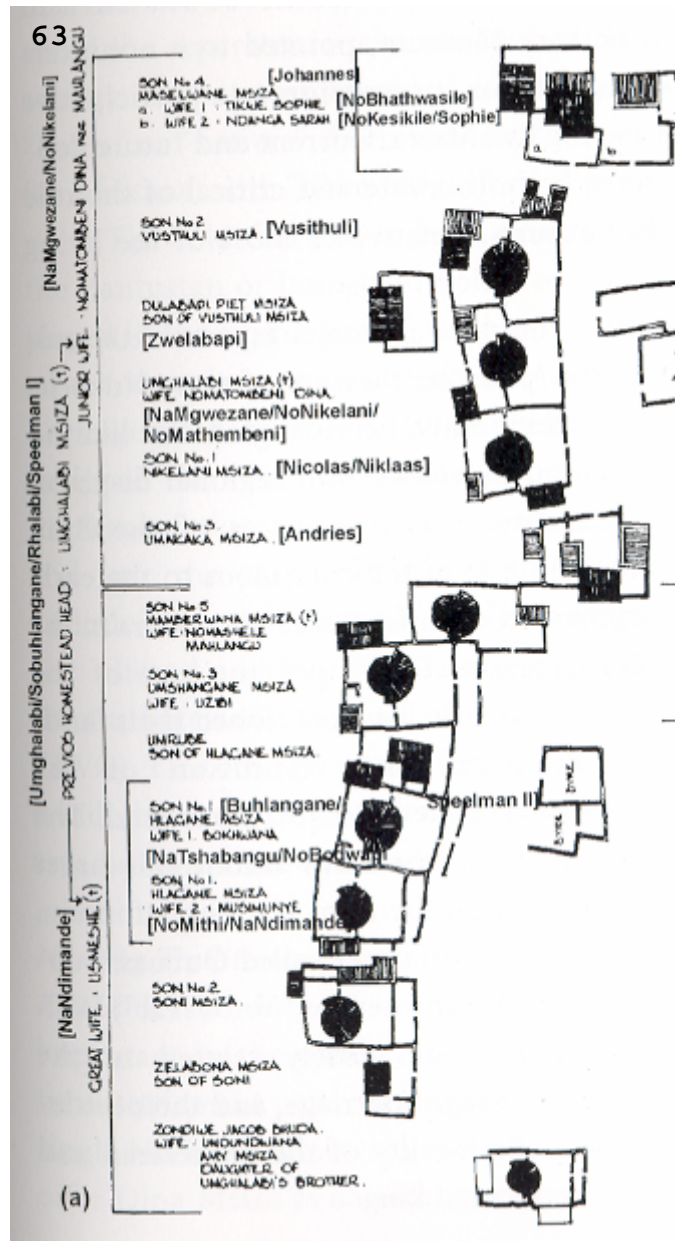
$$\text{Sustainability} = \frac{\text{Environment+Economy}}{\text{Social Structures}}$$

61.The Msiza village: indented settlement on the farm at Hartebeestfontein in 1953.

62.Vineyards, France.



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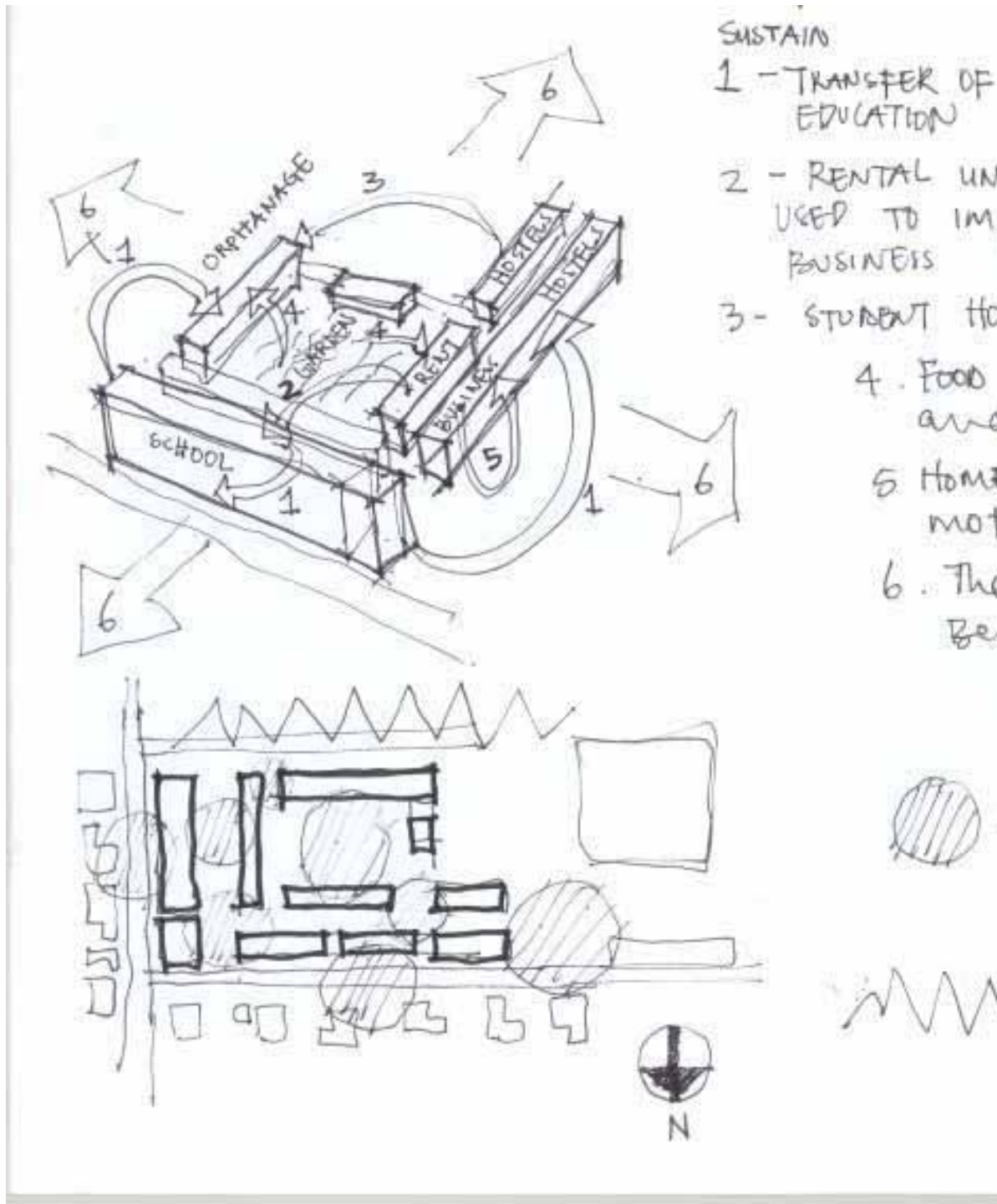


A sustainable housing system²¹ is one that multiplies and keeps on multiplying [63]. Therefore, sustainability is defined as "... a characteristic of a process or state that can be maintained at a certain level indefinitely. The term, in its environmental usage, refers to the potential longevity of vital human ecological support systems, such as the planet's climatic system, systems of agriculture, industry, forestry, and fisheries, and human communities in general and the various systems on which they depend." [Wikipedia/Sustainability].

²¹There is need for developing a fruitful, multiplying, replenishing housing system, followed by leading and managing people to operate the system. Man-made systems normally have purpose, objectives. They are "designed to work as a coherent entity" [Wikipedia/System].

We may refer to a human body as a system because it consists of different organs which interact with one another to produce an organism (functional whole). A sustainable housing system is similar to a living organism because it grows, adapts, and replicates.

63. Inhabitants of the Msiza village at Hartebeestfontein (new names overlaid by Bakker on plan by Frescura [1983]).



PROJECT AIMS

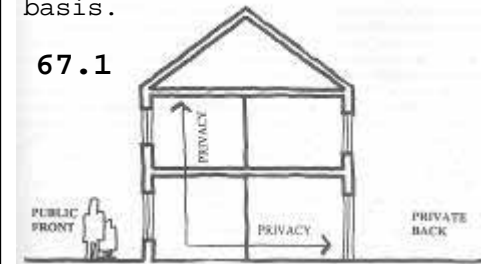
1. Transfer of skills and education.
2. Rental units produce income used to improve business school.
3. Student hostels produce income used to operate orphanage.
4. Food gardens supply food to orphanage and residences.
5. Home-based businesses support single mothers.
6. The rest of the community benefits from the scheme educational, economical, and other ways.

- Links that create and connect places as learnt from Ndebele settlement [63].

- Link to park and public space.

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²²Stern [1998, pp.2] mentions that "Adonai,...took the person and put him in the garden of Eden to cultivate and care for it..." The garden of Eden could be considered as the built environment that functions as a system. Then, the purpose and objective of human management in this system is to establish skills and profitable relationships in a continual basis.



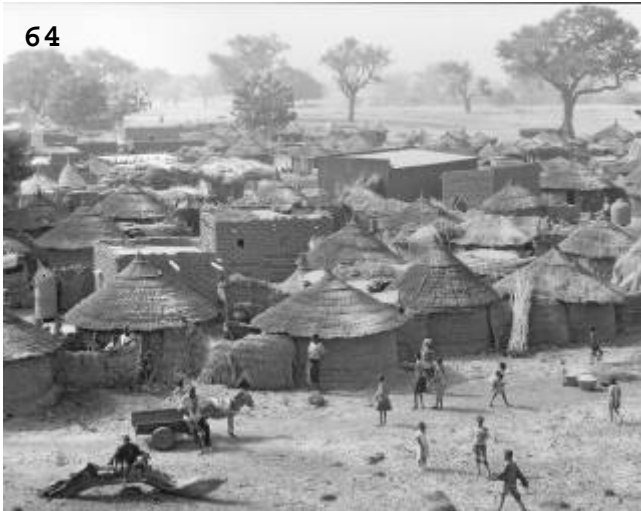
64.African village, Burkina Faso.

65.Mzimhlope station is one of the busiest stations.

66.An estimated over one million commuters use the taxi rank opposite Chris Hani-Baragwanath Hospital every day.

67.Families get together to collect water, Congo.

67.1. Positive privacy gradients maintain and respect the public/privacy distinction.

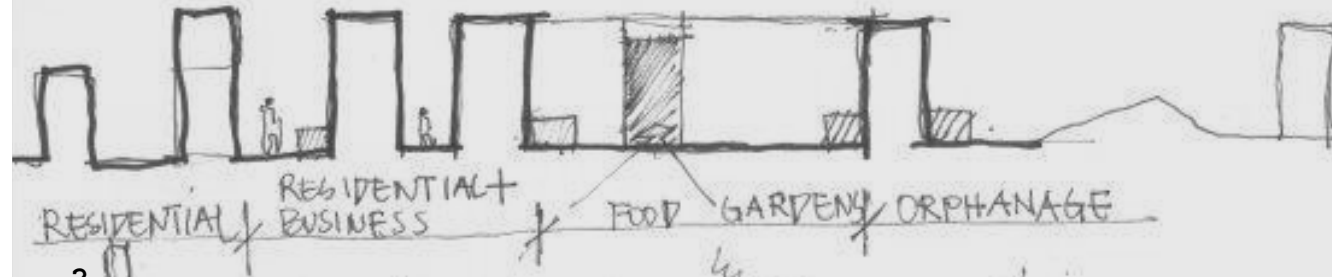


A sustainable housing system is facilitated by a compact urban form, income generating housing, and seed time and harvest paradigm . All these components related and intergrated together form a system²².



Compact urban form

1



▨ = THRESHOLDS.

HIGH DENSITY SUSTAIN
MANY African villages
(64). (118.1)

2



3



1.Thresholds and high density help sustain many African villages [64,118.1].

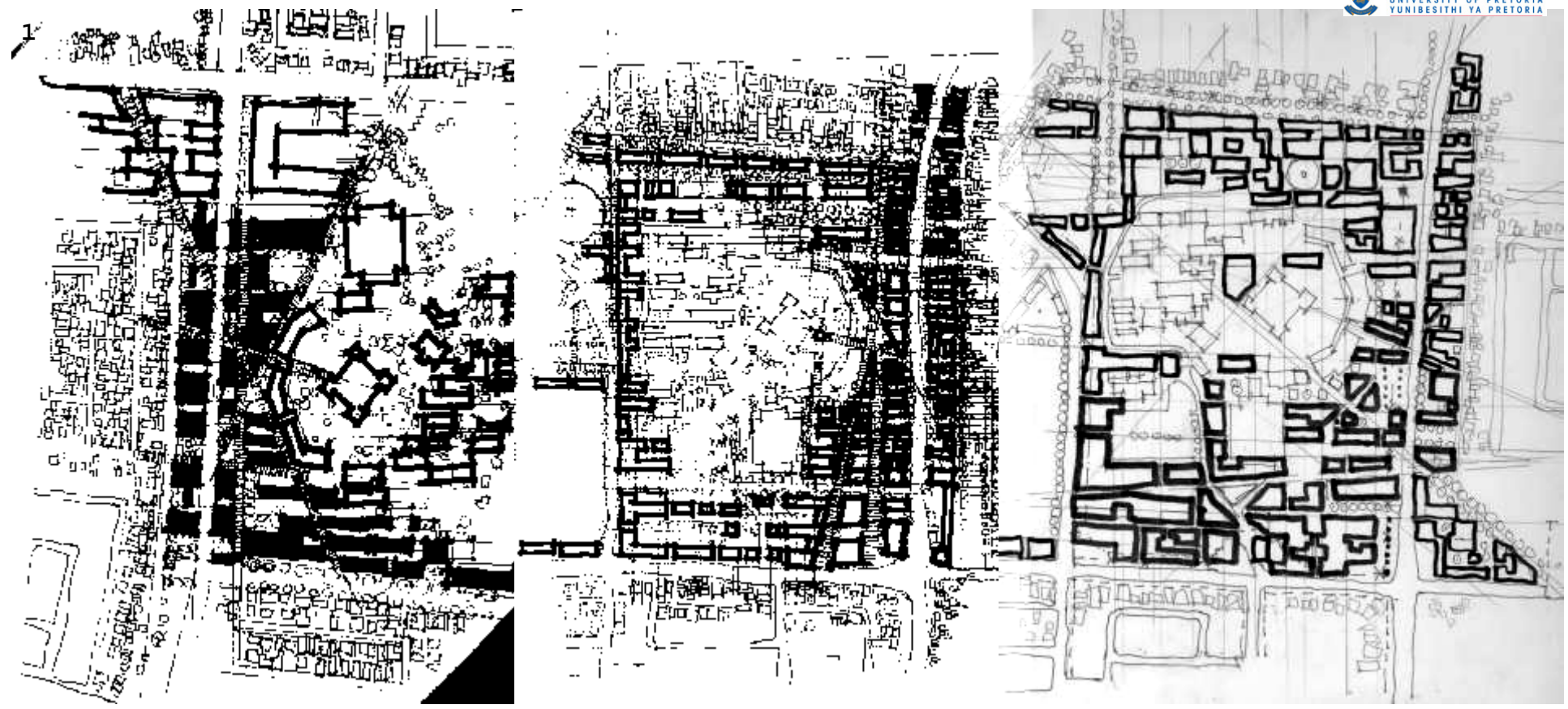
2.Meeting place: fountain [67].

3.Business street [65-66].

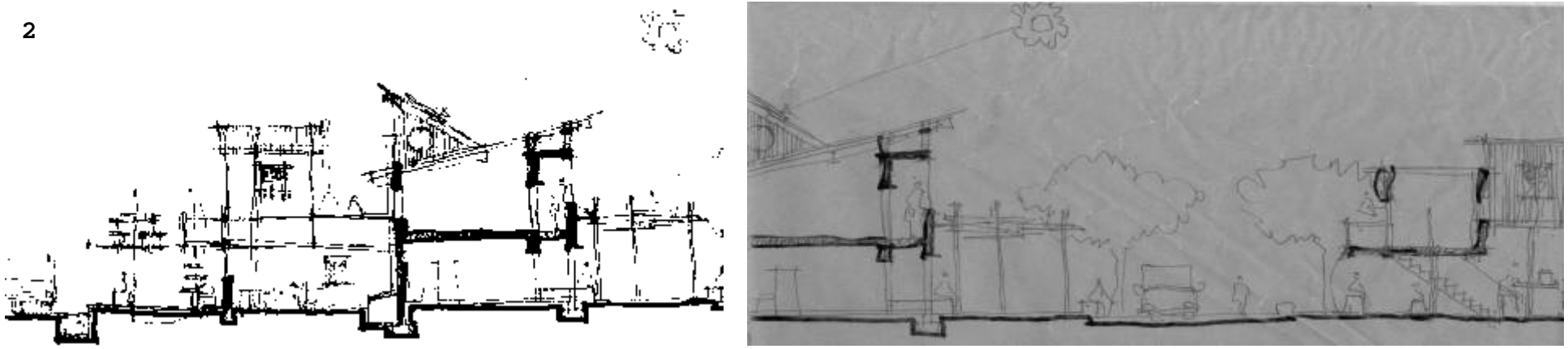


1. Passive surveillance is one of the cheaper ways to fight crime [103-104].

2. Horizontal density should be balanced with vertical density [120].

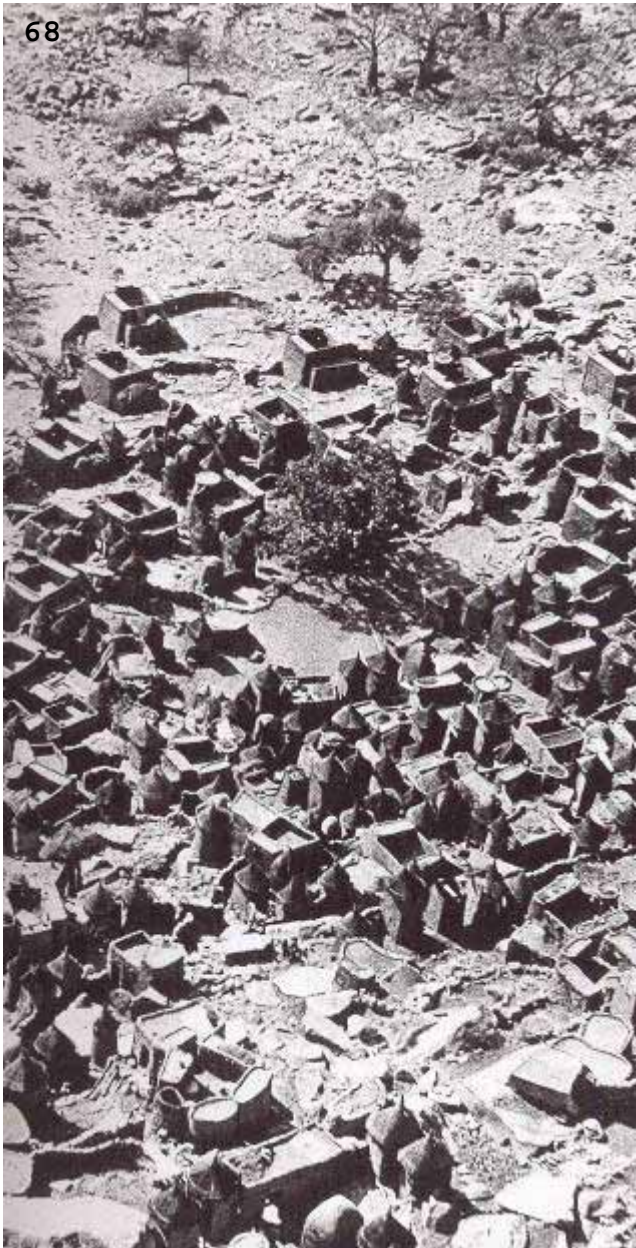


2



1. A response to density: series of density plans around the campus [103-104]
2. Quality of space in a densified scheme depends on street design [120]

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COMPACT URBAN FORM

"Yerushalayim, built as a city fostering friendship and unity"

-[Stern 1998, pp. 921]

High density is of highest importance when developing a sustainable housing system [68]. Therefore, housing is planned for at urban scale down to individual dwelling²³. This structures the public space such that it can be easily used as meeting place, market place, and traffic space where pedestrian and vehicle traffic coexisting in balance [Gehl & Gemzøe 2003, pp.10]. A compact urban form fosters friendship and unity by providing these functions.

²³A sustainable housing system possesses a hierarchy of spaces, from the public space, then the semi-public, and finally the private space. Richard Rogers says, "At the heart of our urban strategy lies the concept that cities are for the meeting of friends and strangers in civilized public spaces surrounded by beautiful buildings".

Sustainable housing systems use pedestrianised central zones to create a hierarchy of public spaces linked by a network of green pedestrian routes [Powell 2006, pp.369].

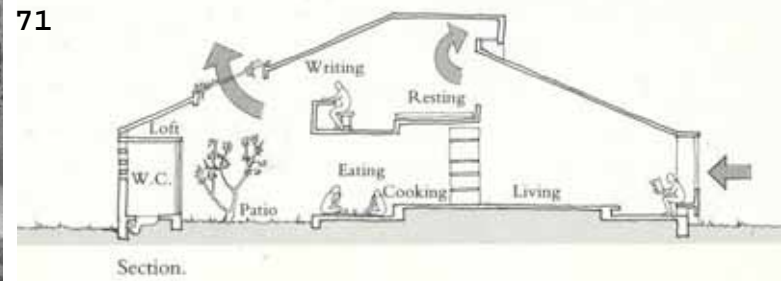
68. Clustered Dogon compounds in one of the many such villages seen from the top of the Bandiagara escarpment, Mali.

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Semi-public space is a threshold of a sustainable housing system [70]. This semi-public space is explored in the context of orientation and energy efficiency²⁴. Compact-building plan around a courtyard could play a vital role in creating comfortable outdoor environment for city dwellers (Dean 2003). It is a place of separation from the busy world. A place where families enjoy the elements without disturbance [69].

71

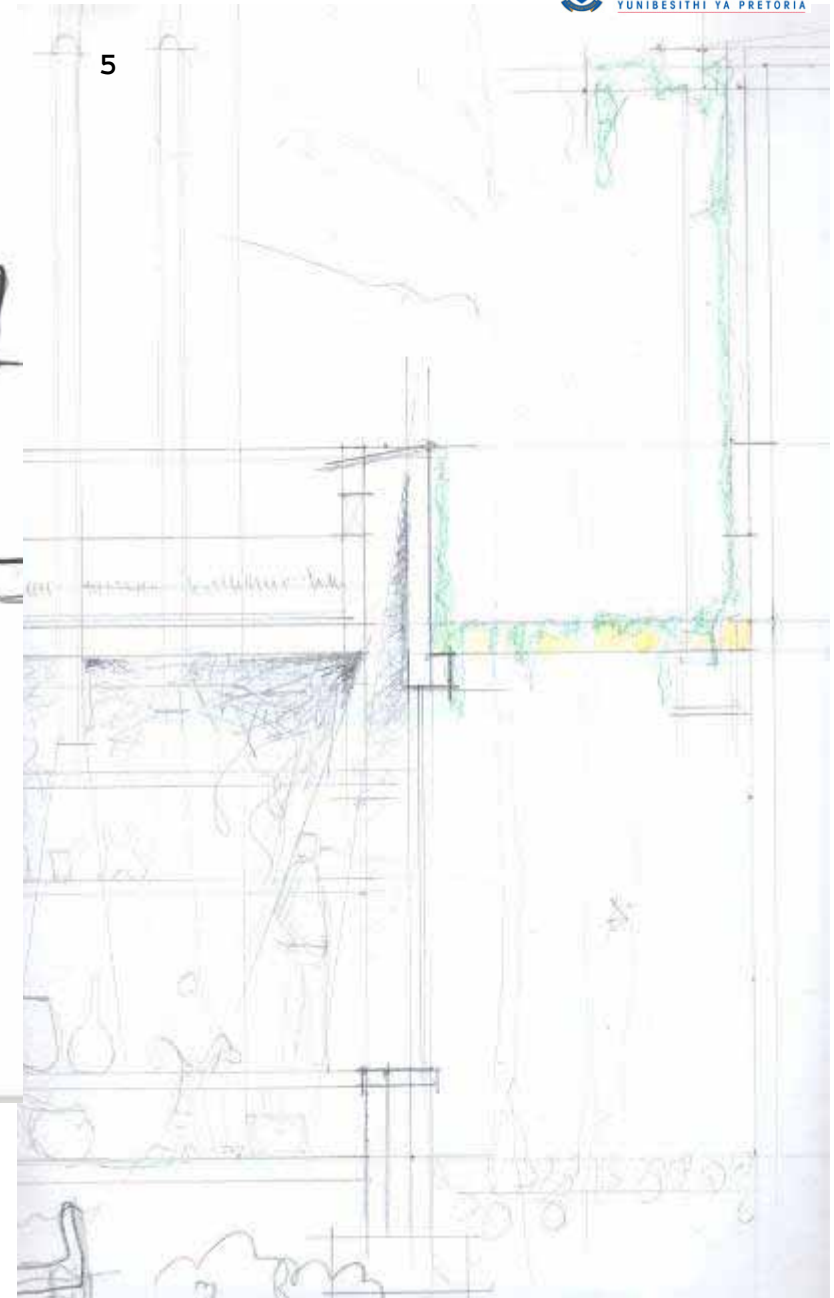
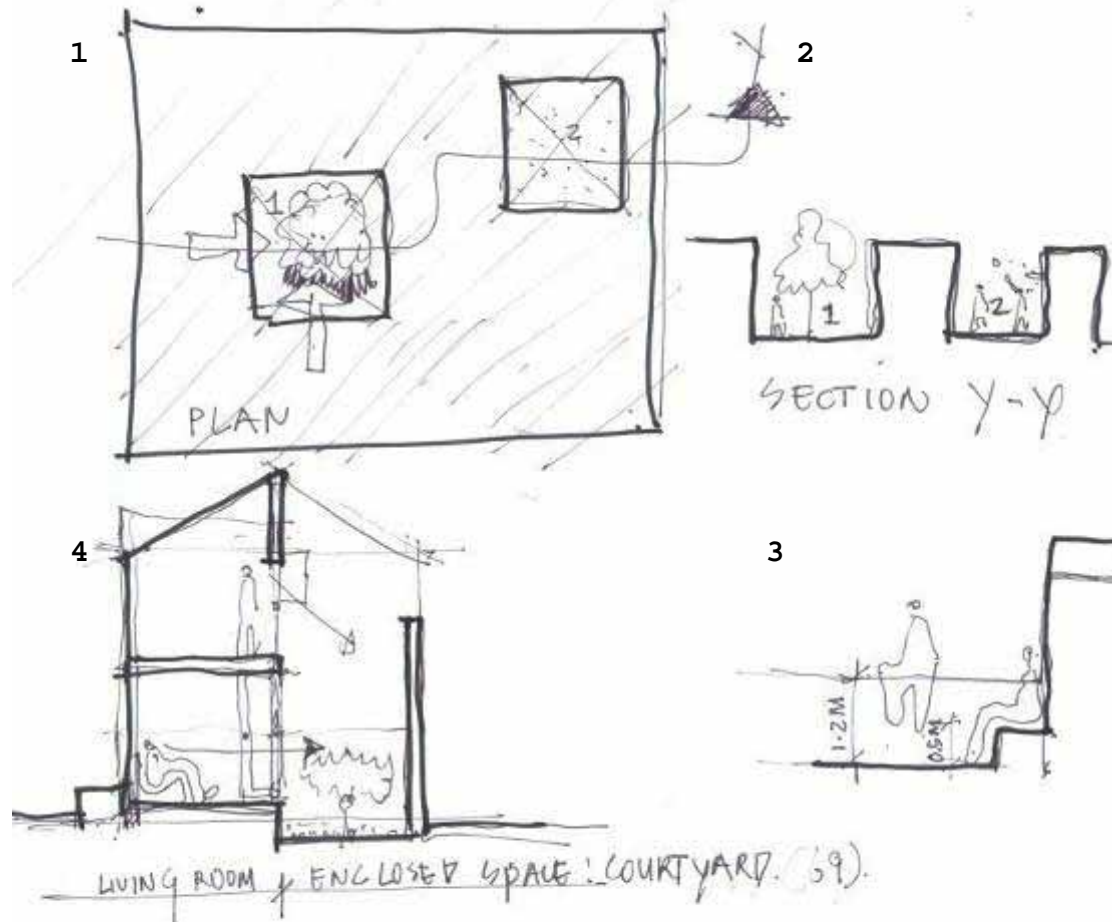


²⁴According to Gonzalo & Habermann (2006,pp.90) "Narrow, long rooms are better for the energy balance of a building." Charles Correa's TUBE HOUSING [71] serves as good example in this case." The section..." of the TUBE HOUSING "...is shaped so that the hot air rises and escapes from the top, setting up a convection of natural ventilation." (Charles Correa Associates October 2007). Therefore Correa's scheme proves the fact that low-cost housing can provide both spaces of meaningful quality and energy-efficient environments.

69.Patio with bench adjacent to central sitting room, Architect's house, Colombo by Geoffrey Bawa, 1968.

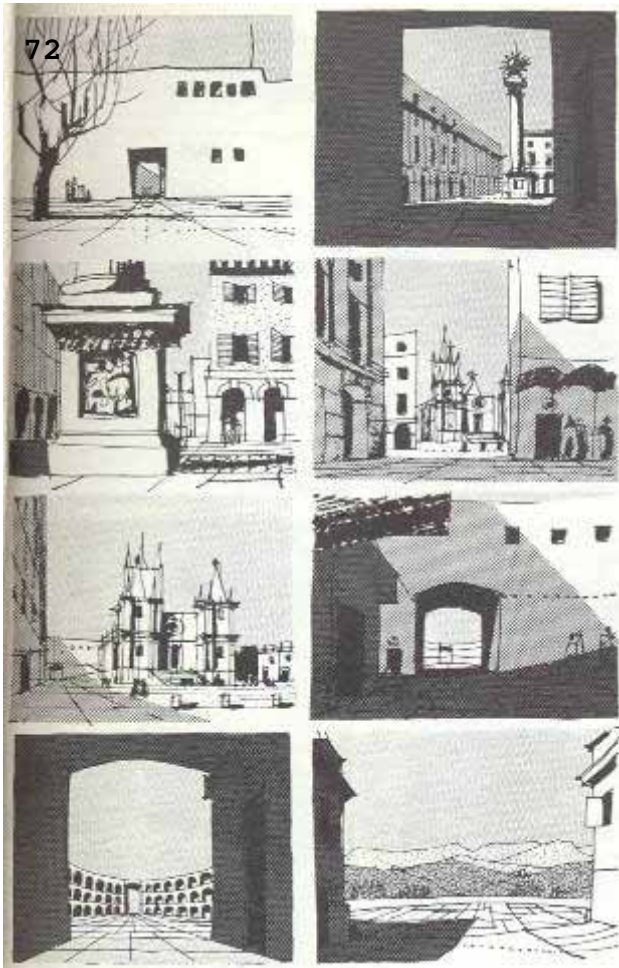
70.Courtyard, thresholds, terraces, and dwellings in a African village, Burkina Faso.

71.Section of Charles Correa's TUBE HOUSE, India.

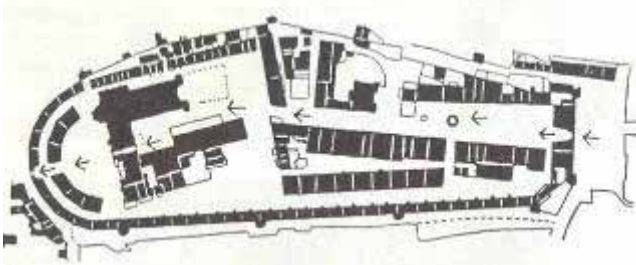


1. In dense developments there must be breathing spaces with trees [124,127].
2. In dense developments there must be open spaces for multiple functions [68].
3. Low walls and seats at comfortable heights for people to sit [70-71].
4. Courtyard space provides privacy while enjoying the elements: light, wind, and greenery [69].
5. Section through exhibition/gallery.

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Each form is arranged such that the housing system is characterized by; high density²⁵, hierarchy of spaces, enabling pathways [74], penetrable edges, legible gateways, economically viable nodes, and prominent landmarks to provide orientation [72]. These elements ensure legibility and orientation. Spaces are given character such that places are created.

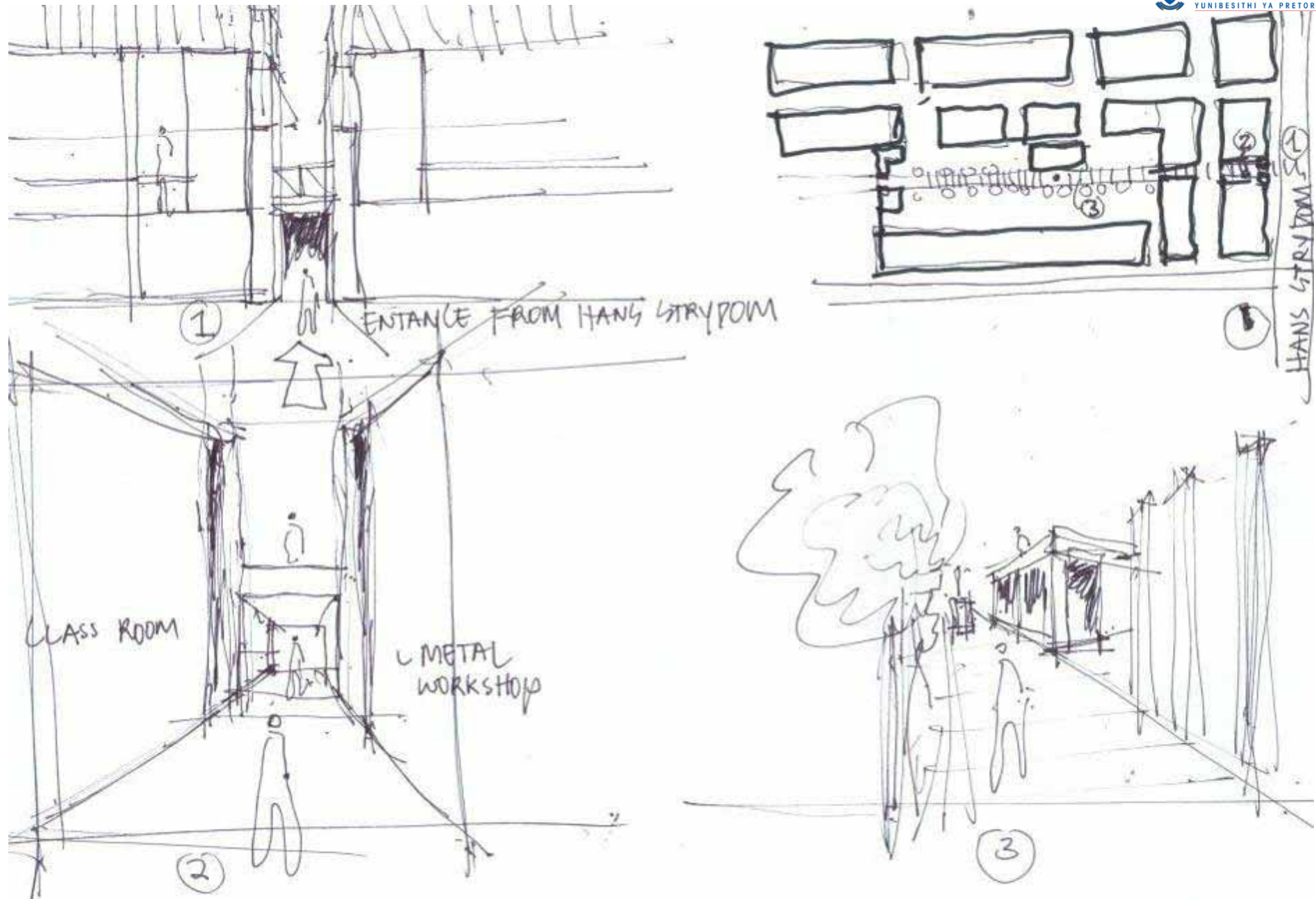


²⁵“Yet another thing I observed under the sun is that races aren’t won by the swift or battles by the strong and that food doesn’t go to the wise or wealth to the intelligent or favour to the experts; rather, time and chance rule them all.” [Stern 1998, pp. 1084-5]. High density developments create chances or opportunities for many things to occur [73] at a given time compared to low density areas. Many small businesses thrive better in high density developments than low density ones. This is because high density increases the chances of people buying from them at a shorter time compared to low density areas.

72.A sequence of revelations and series of sudden contrasts and variations provides legibility and orientation.

73.African market place, Mali.

74.African street, Ethiopia.



Creating places by nurturing orientation and legibility throughout the scheme [72]. 52
1. Entrance from Hans Strydom 2. Courtyard towards Admin. And reception 3. Towards gallery.

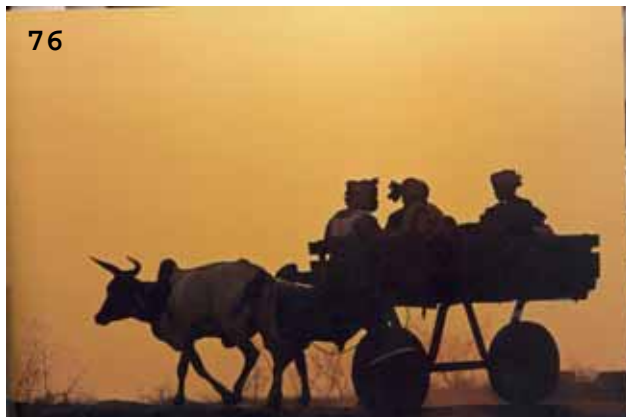
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²⁶Gehl & Gemzøe [2003,pp.13] suggest that in a sustainable housing system the city is "...a thoroughfare providing access to, and connecting the various uses of the city..."

Goods can easily be transported and pedestrians [76] are able to walk where they need to go. Working areas, civic facilities, public buildings, commercial facilities, schools etc are at a comfortable walking distance.

75.Food gardens surrounded by dwellings, Venezia.

76.African sustainable transport, Mali.



INCOME GENERATING DEVELOPMENT

"Prepare your outside work and get things ready for yourself on the land after that build your house."

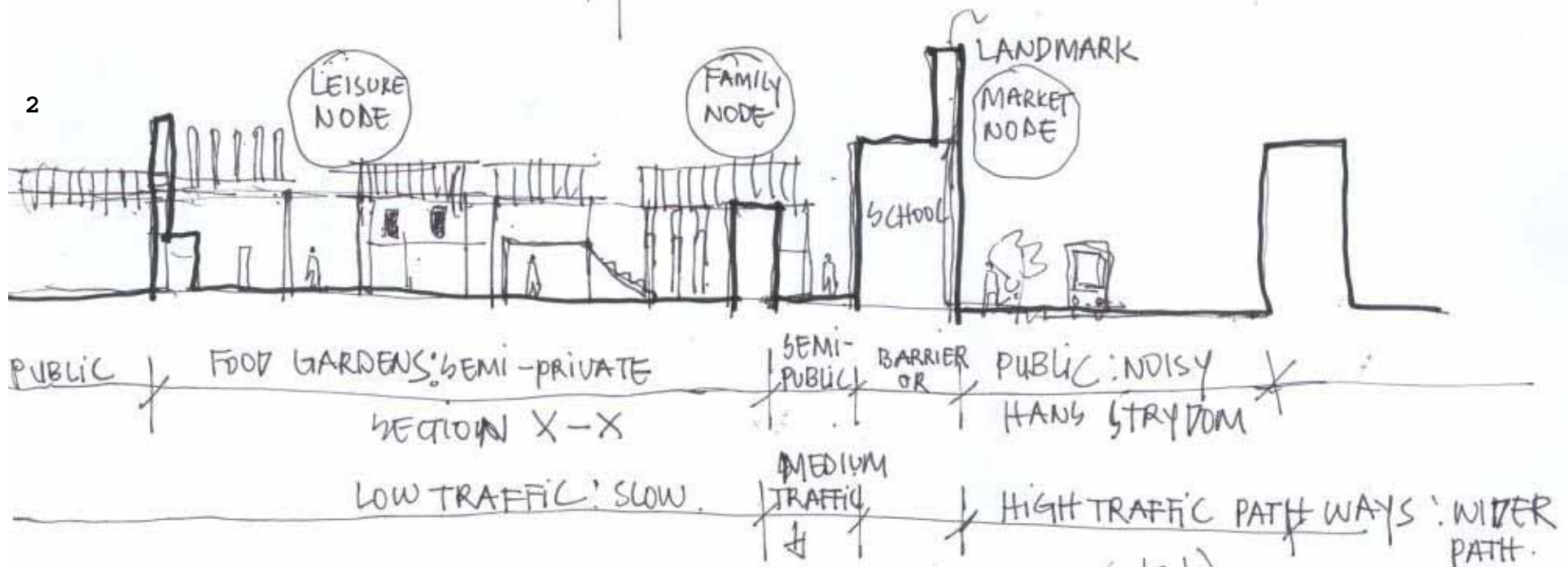
-[Stern 1998,pp. 980]

Primitive African communities used to travel from place to place in search of green pastures for their livestock and fertile soil for a good harvest [75]. Therefore, their dwellings were always preceded by income producing location. This is an attribute of a sustainable housing system²⁶. It is not a live-work scenario but a work-live system.



FOOD GARDENS SURROUNDED BY BUILDINGS
BUT WITH WALKWAYS TO ALLOW FOR
PEDESTRIAN MOVEMENT (75-76)

(44)



1. Food gardens surrounded by buildings but networked with pedestrian walkways [75-76].

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2. Landmarks, nodes, pathways, edges, and gateways can be used to enforce legibility [121].

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SEED TIME AND HARVEST PARADIGM



"So long as the earth exists, sowing time and harvest...will not cease²⁷."

-[Stern 1998, pp. 8]

"In the morning, sow your seed; and don't slack off until evening; for you don't know which sowing will succeed, this, or that, or if both will do well."

-[Stern 1998, pp. 1086]



"THE SIGNIFICANT PROBLEMS WE FACE CANNOT BE SOLVED AT THE SAME LEVEL OF THINKING WHERE WE WERE WHEN WE CREATED THEM."

-Albert Einstein



²⁷ At the core of a sustainable housing system lies the principle of sowing and reaping paradigm. A stewardship responsibility is the driving force for every operation. We can only harvest sustainable results only when we sow sustainable actions.

The following is a check list of sustainable actions we can sow so as to harvest a sustainable housing system;

CONTEXT: the need to adequately respond to established urban design, landscape and architectural context and what is peculiar about the site and its surroundings (contextual).

77.Crop fields, South Africa

78.Sorgum sifting after harvest, Mali.

79. Urban design:A three dimensional drawing, Venezia

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URBAN SPACE: the need to establish a coherent network and hierarchy of urban spaces and visually interesting [80] townscape layout [morphological/visual].

LEGIBILITY: the need to create a legible [81-86], easily navigable environment by landmarks, pathways, nodes, gateways, and edges [perceptual], [Lynch 1984].



80. African urban morphology Dogon, Mali.

81. Public building, urban place, connectivity and nodes, Venezia .

82-85. Public place for public activities, Duisburg Nord, in Emscher Landscape Park Peter Lats + Partner, Landscape Architects.

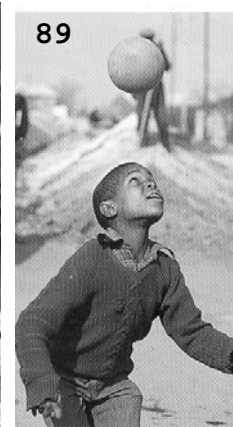
86. Morning sunlight on the Piazza San Marco pavement, Italy.

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87 **SENSE OF PLACE:** the need to establish sense of place in new developments and, where appropriate, in the community [perceptual].

COMMUNITY: the need through design to encourage the creation of community and sense of belonging through the integration of physical and social foci, and well-used public realm [social], [Zetter & Watson 2006].



87 & 91. Public place for public activities, Duisburg Nord, in Emscher Landscape Park Peter Lats + Partner, Landscape Architects.

88. A child and water, Soweto

89. A child and soccer are friends, Soweto.

90. A child, running, and water, Soweto.

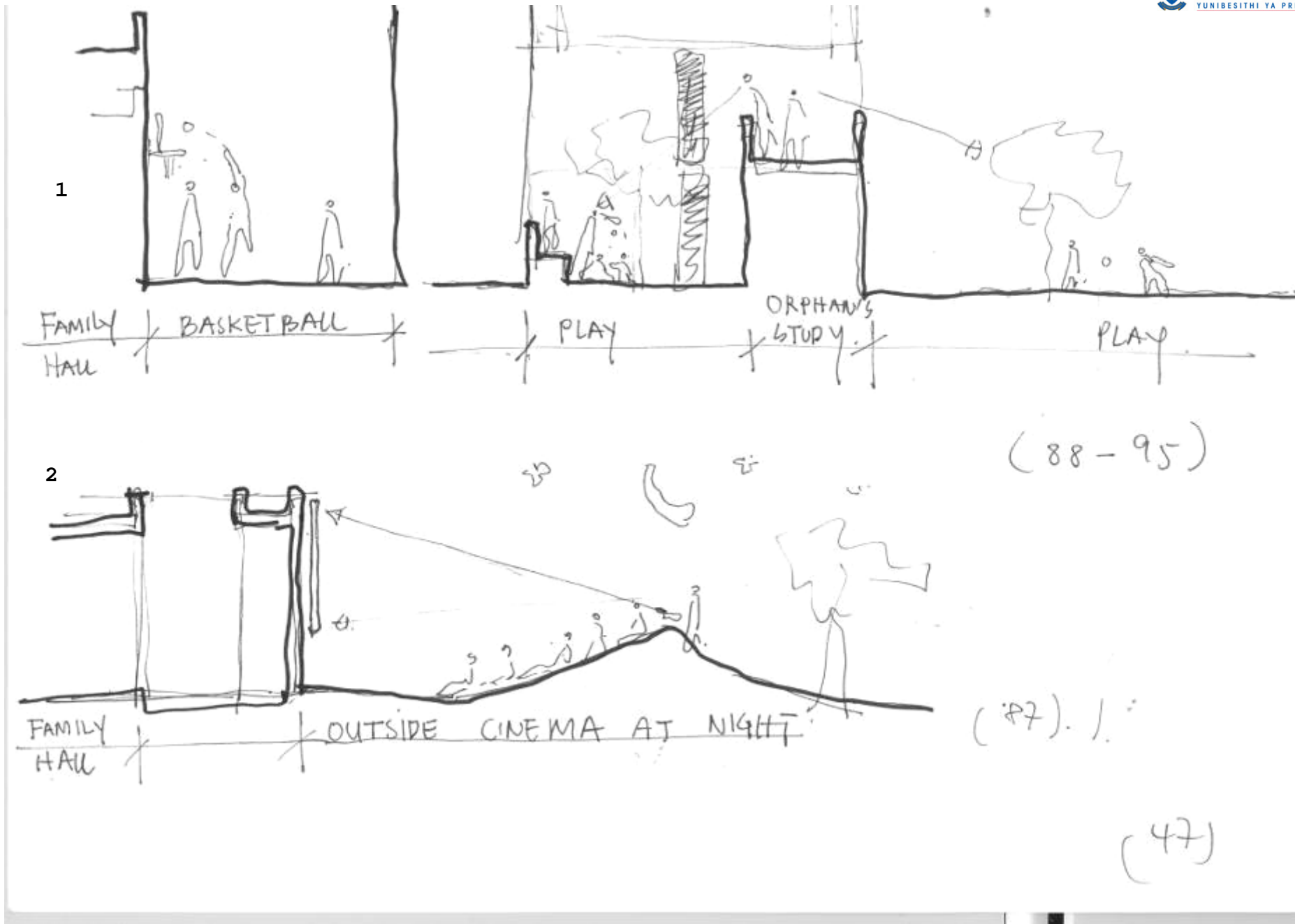
92. A horse racer, Soweto.

93. A child and car tires, Soweto.

94. Jazz in Mamelodi, 1965.

95. Jazz in Mamelodi today.

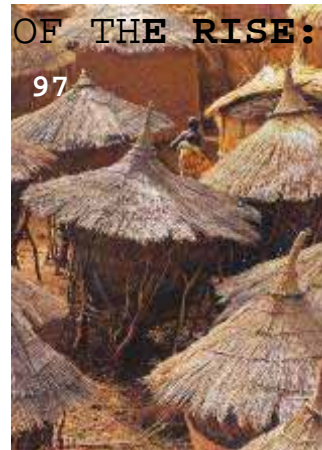




1. Open spaces allow children to play [88-95].

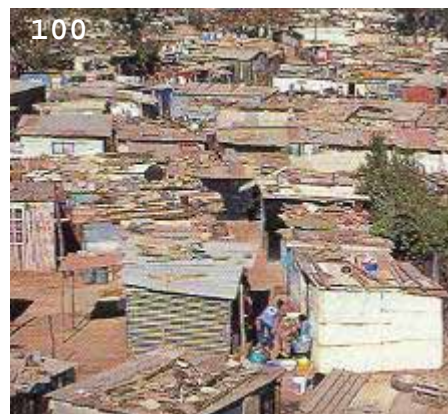
2. Grassy mould allows the audience to watch open air movies [87].

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CONNECTIVITY: the related need to create well-connected permeable layouts that are fully integrated into their surrounding environment [morphological], [96,97,99,100].

MOVEMENT: the need to create a pedestrian-friendly public realm designed for walking, for child play activities and to encourage social interaction [social],[98].



MOVEMENT: the need to create a pedestrian-friendly public realm designed for walking, for child play activities and to encourage social interaction (social)

96. Urban design, Richard Rogers & Partners.

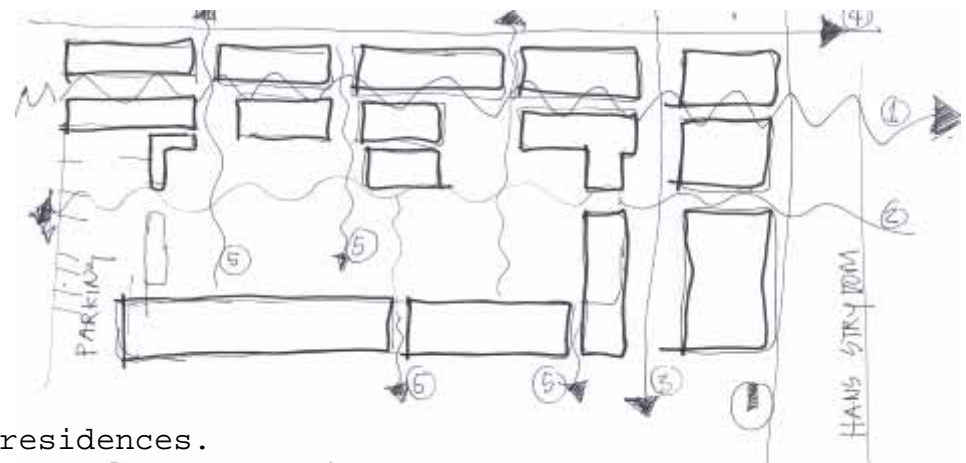
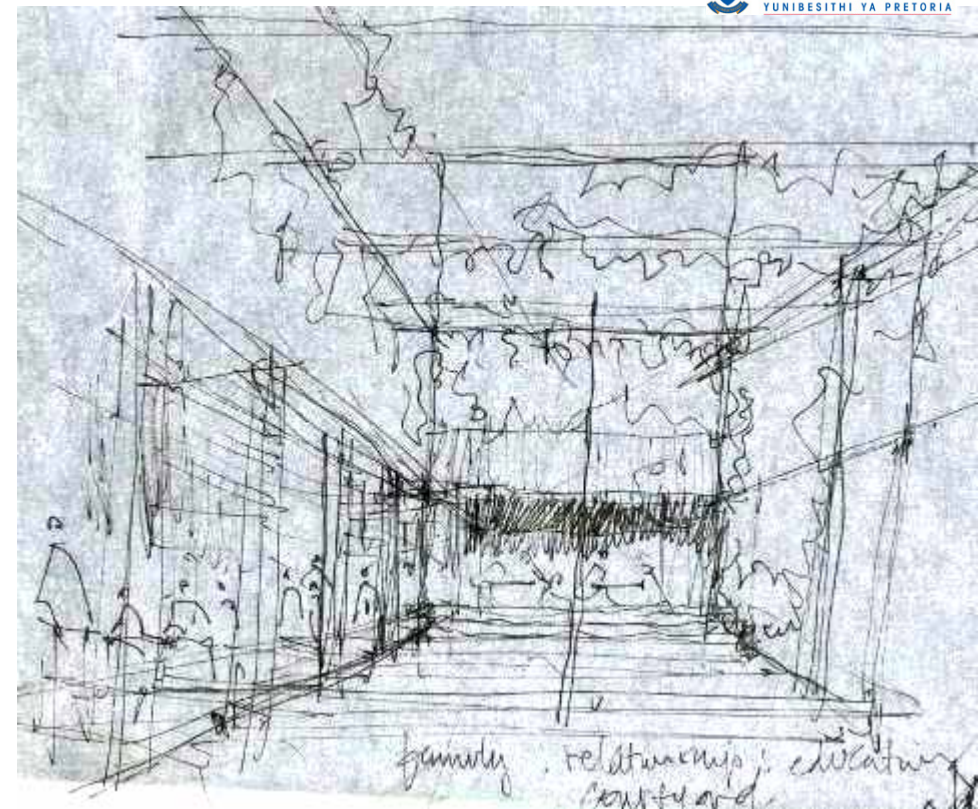
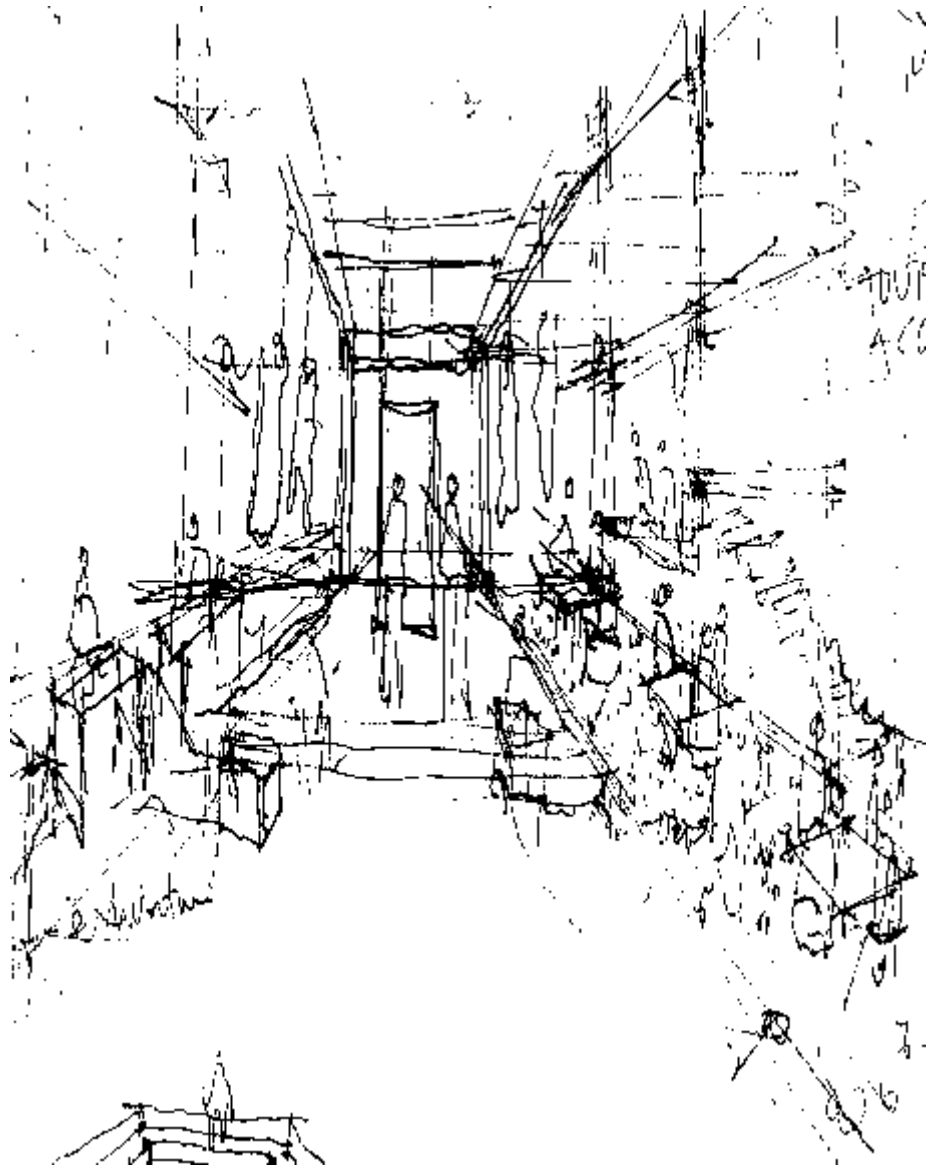
97. Graneries of sorghum, Burkina Faso.

98. Westergasfabriek, by Francine Houben, Mecanoo Architects and Engineers, Amsterdam.

99. Public squares and paths, Venezia .

100. A Black township which was at the centre of the schoolchildren's protest in 1976.

101. Café tables and morning sunlight on the Piazza San Marco pavement, Italy.



1. Movement from residences to shops and school.
2. Movement from school, shops, and taxis back to residences.
3. Service vehicles, delivery vehicles and pedestrian movement
4. Vehicles from residences and pedestrians to shops and taxis.
5. Very slow movement within the development.

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CAR DOMINANCE: the need to cater adequately for vehicular access [102], but reduce the dominance of cars in the design of urban space by designing for reduced vehicle speeds and reduced parking standards [functional]. Developing countries like South Africa use fuel at least twice as industrial countries. This is caused by failure to organise carefully planned public transport [WCED 1987].

SECURITY: the need to create well used, well surveilled streets and spaces [social]. The street need to be designed for social, economical, and environmental activities [103-107].

102.Vehicle parking, Venezia

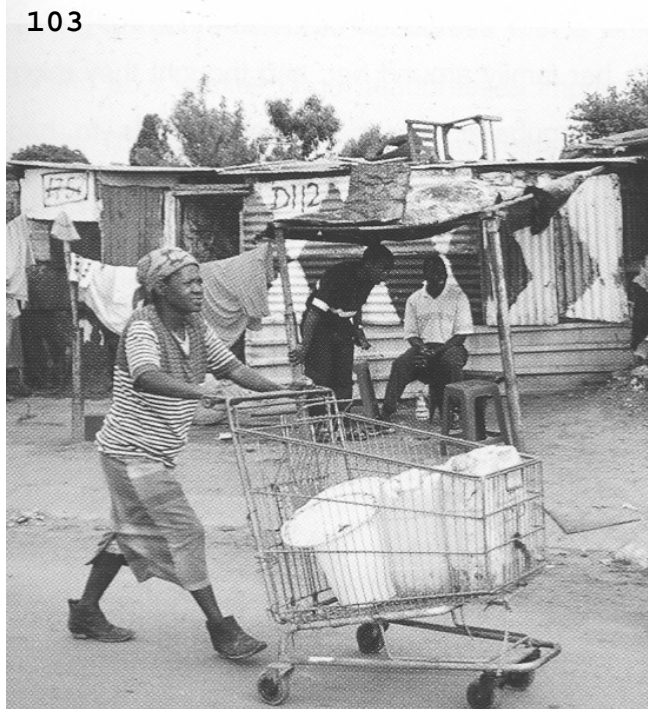
103.Human scale buildings and sociable street edges, squatter camp, Soweto.

104.Street market, Burkina Faso.

105.Street soccer, South Africa.

106.The ritual slaughter of animals at weddings, baptisms and funerals, and to commemorate other events is an important aspect of African tradition. The animal, however, not always willing to co-operate.

107.A young chicken seller at the Freedom square.



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INNOVATION: Innovation in the use of materials and construction details to improve the quality of human life [108-113].

109



110

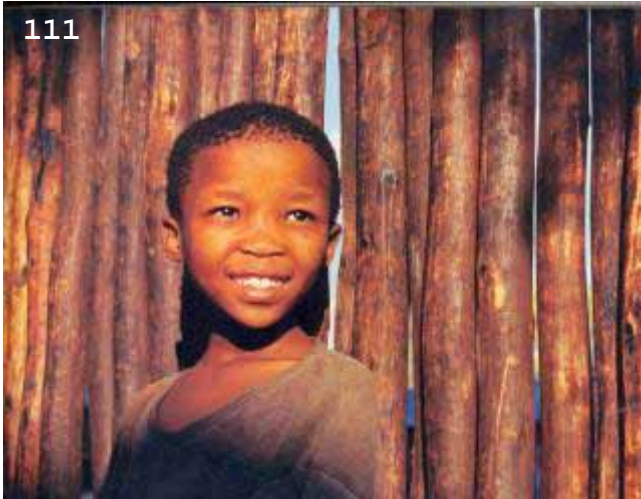


108.A peak of a farmhouse roof peers over a bright yellow field, Sweden

109.The desert tree and desert soil behind, Namibia.

110.Den Hague's ivy-covered red-shuttered cop shop, Netherlands.

111



112



111.Timber used as protection from the desert dune winds, Namibia.

112.Crimson doors and window frames adorn the façade of a barn, Belgium.

113.A African woman, child and wood, Kenya.

113

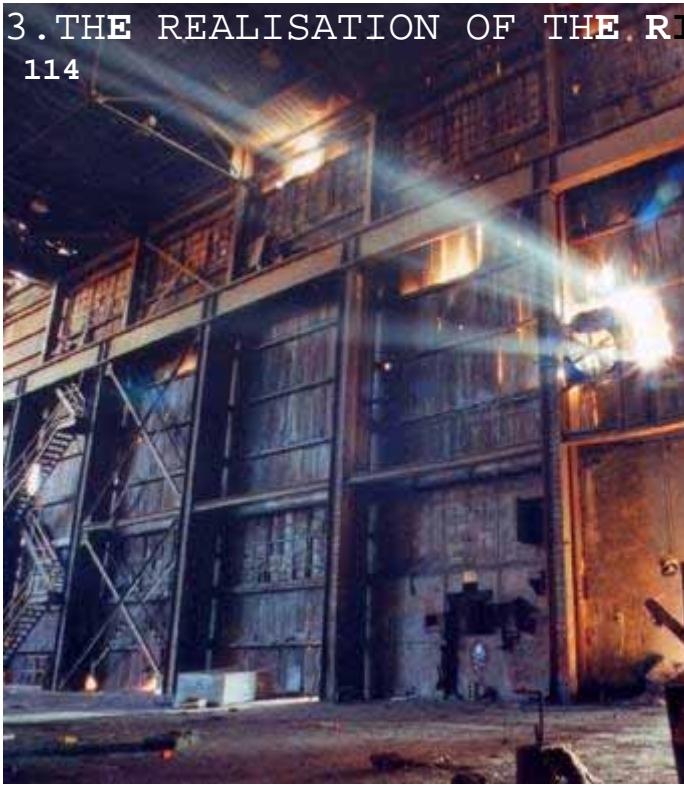




1. Pitched roof allows for geyser placement, storage, and sleeping [108].
2. Layers are created by trees in front of walls [109].
3. Openings can be used to construct a façade that gives identity and character [112].

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MATERIALS: The elements (light, air, water, and greenery) and their effect on materials need to be used to create places.

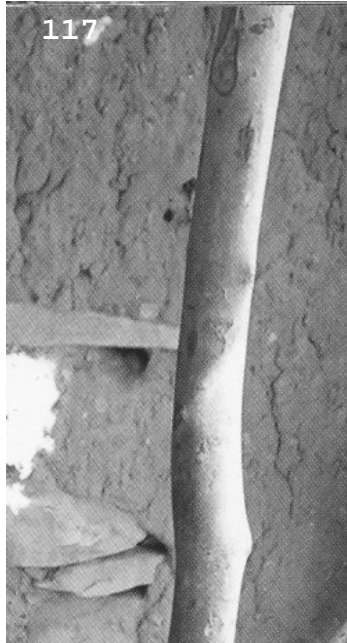
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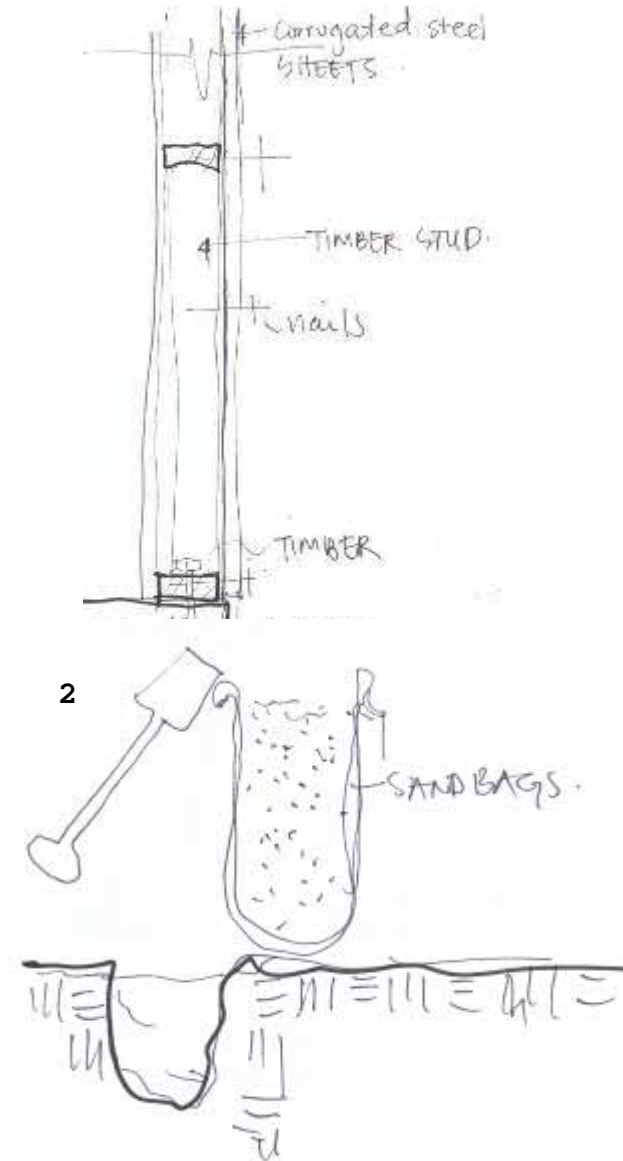
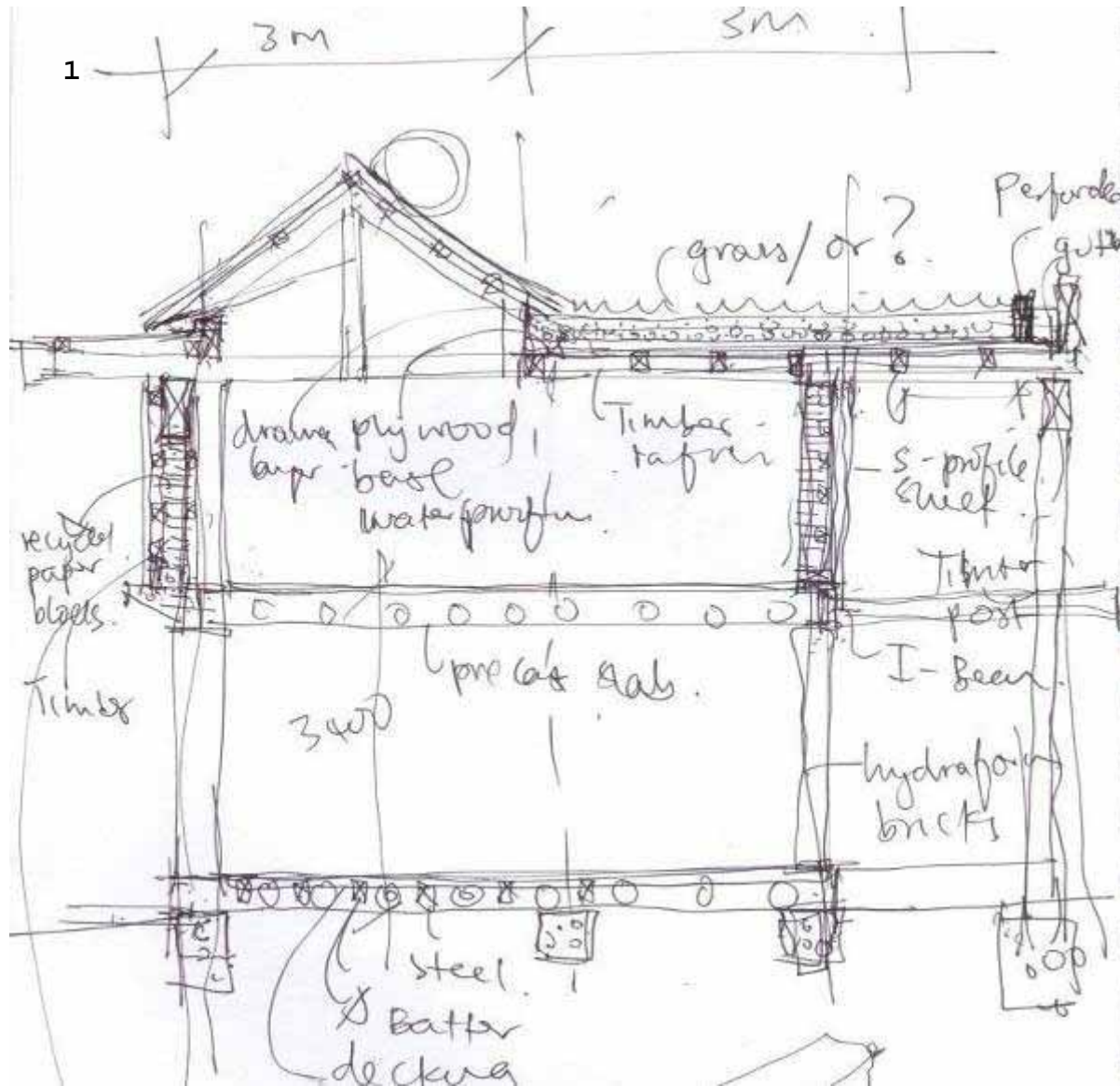
117



114-115. From Atlantic Steel to Atlantic Station, Ruth Dusseault, Artist in residence at the Georgia Tech's College of Architecture.

116. Weaving work, Mali.

117. Timber post, stone and earth wall, and sunlight, Mali.



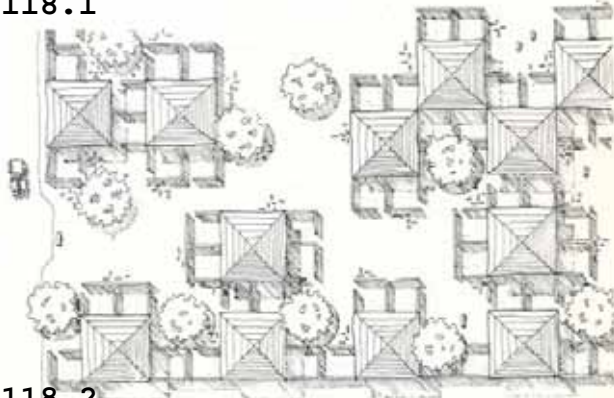
1. Corrugated steel sheets used as cladding allows for easier adaptation of building as its programs change. It is a material widely used for the construction of shacks in the informal settlement located in Mamelodi [114-115].
2. The use of earth to make walls has been practiced for decades in Africa. Today we can fill sandbags with sand so that when buildings are demolished the sand can be re-used [117] .

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FLEXIBILITY: the need to create spaces and buildings that are resilient and adaptable which can be used to accommodate different needs and can be extended if required [sustainable]. Site, structure, skin, services, spaces, and stuff should be composed such that if one is changed, the system can still continue functioning[118-122].

CHOICE: the need to offer variety and choice in building sizes and types [social], [120].

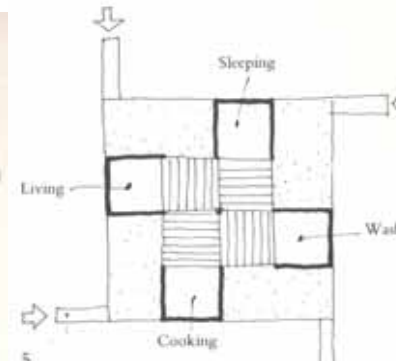
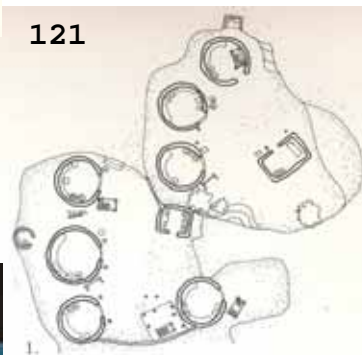
118.1



118.2



121



118.1.Squatter Housing [unbuilt], 1973, Bombay, Charles Correa.

118.2.Tube House flexible for increase in the future, Charles Correa.

119.Pompidou Centre, Paris, Richard Rogers in partnership with Renzo Piano.

120.Low-income Housing, 1971-72, Ahmedabad. There is variety of configurations, varying from incremental housing on small individual sites to two-story walk-ups with open-to-sky terraces.

121.Houses in villages of Rajasthan transformed to flexible and incremental designs, Charles Correa.

122.Welcome Valley in 1968 consisted only of toilet blocks, then houses were latter added.

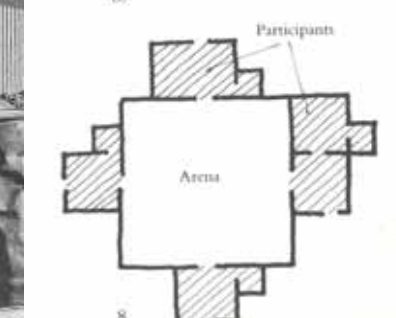
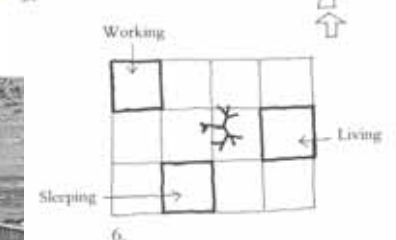
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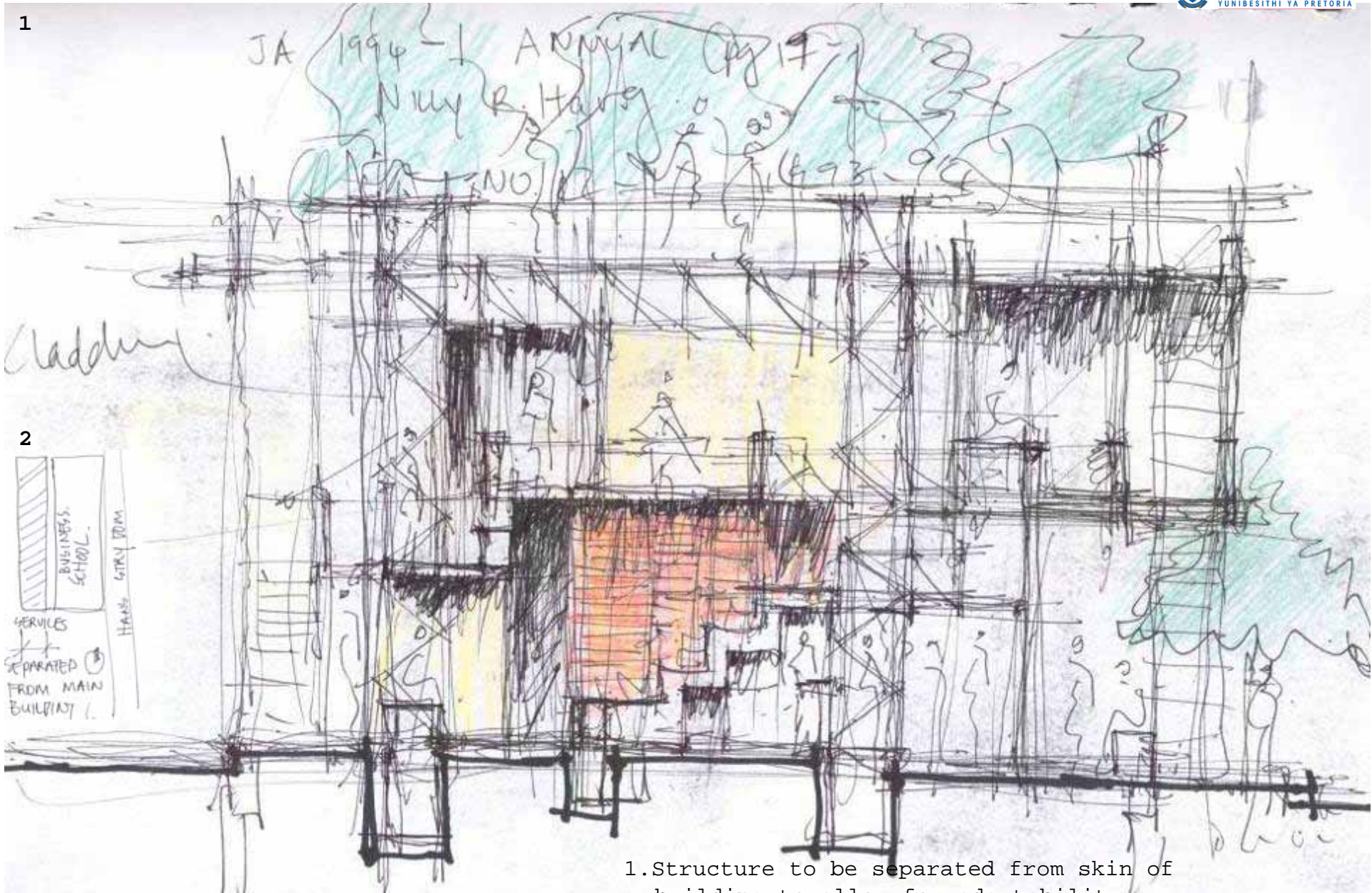


120



122





1. Structure to be separated from skin of building to allow for adaptability.
2. Services should be separated to allow for future adaptation as the functions of the building change [119].



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LANDSCAPE: the need to integrate fully and address positively public open space, to invest in appropriate hard and soft landscaping (including trees) and to provide ample opportunity for private landscape display [spatial/contextual], [123-127].

124



123. Westergasfabriek, 'Changement', by Kathryn Gustafson, Landscape Architect, Amsterdam.

124-126. Duisburg Nord, in Emscher Landscape Park Peter Lats + Partner, Landscape Architects.

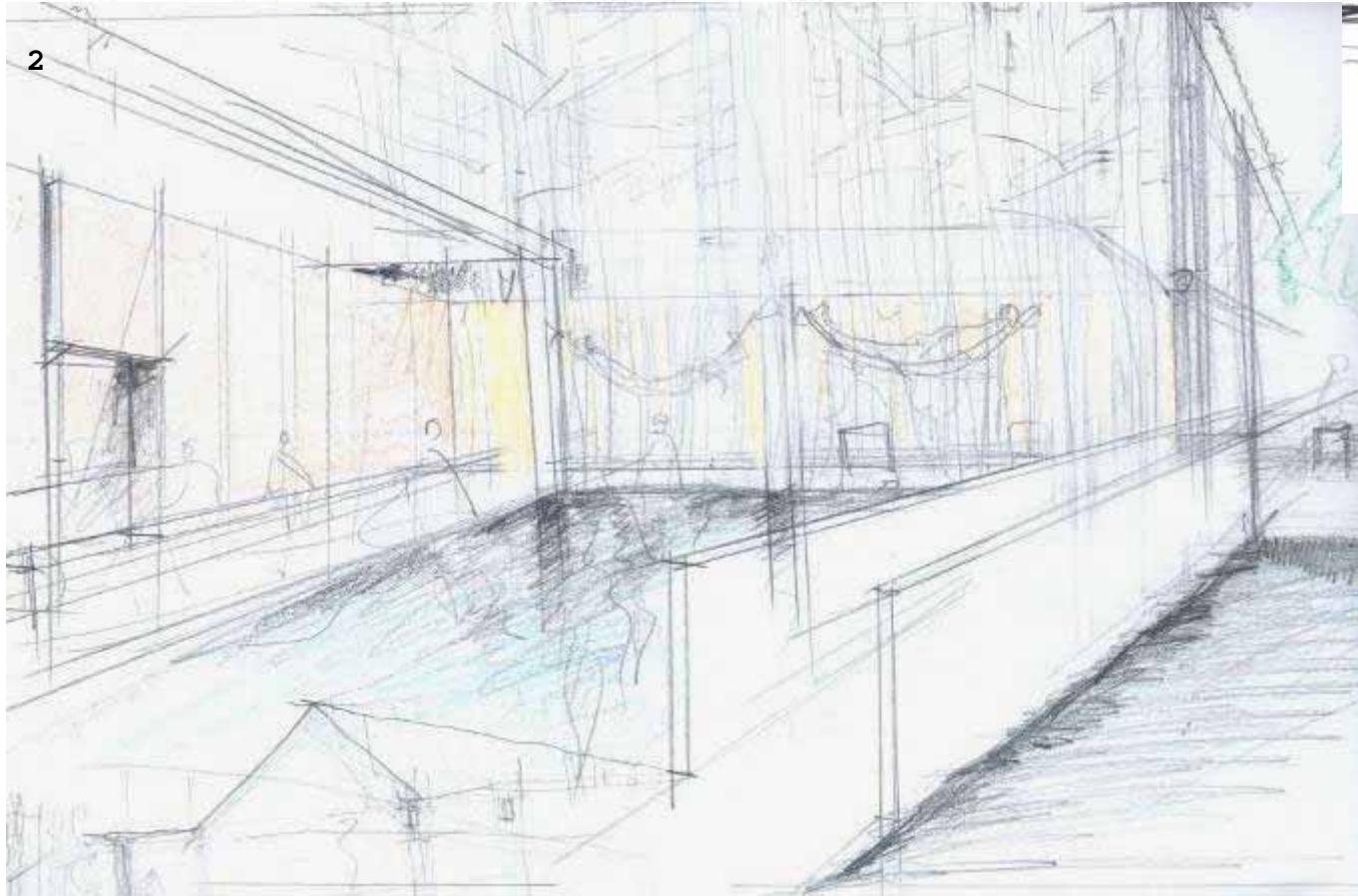
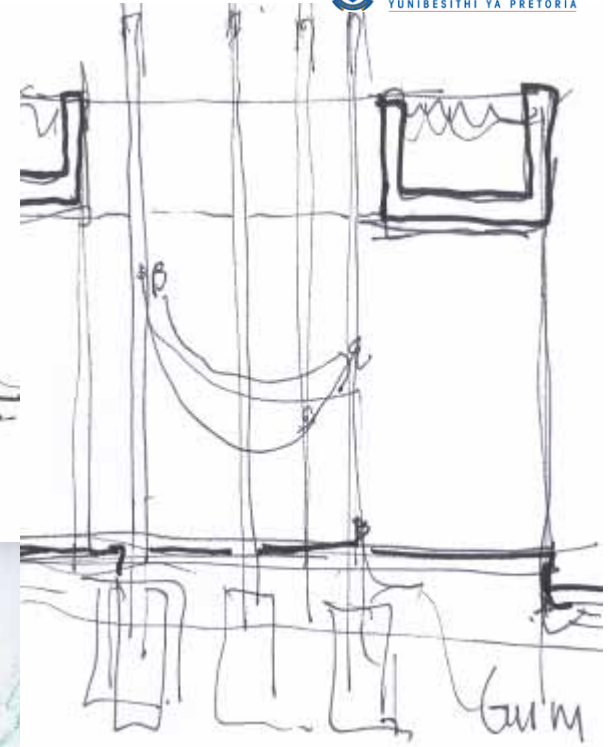
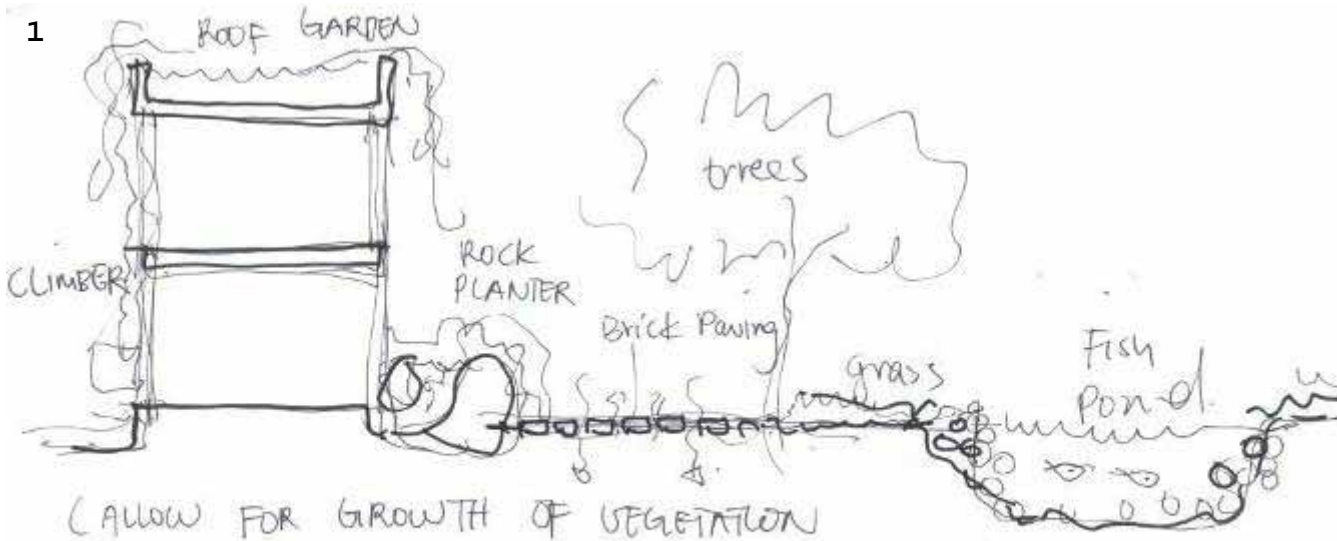
127. The plantation, now "Mthunzini Park" and an original feature of the town using the existing trees around which to plan a social garden.

125



126



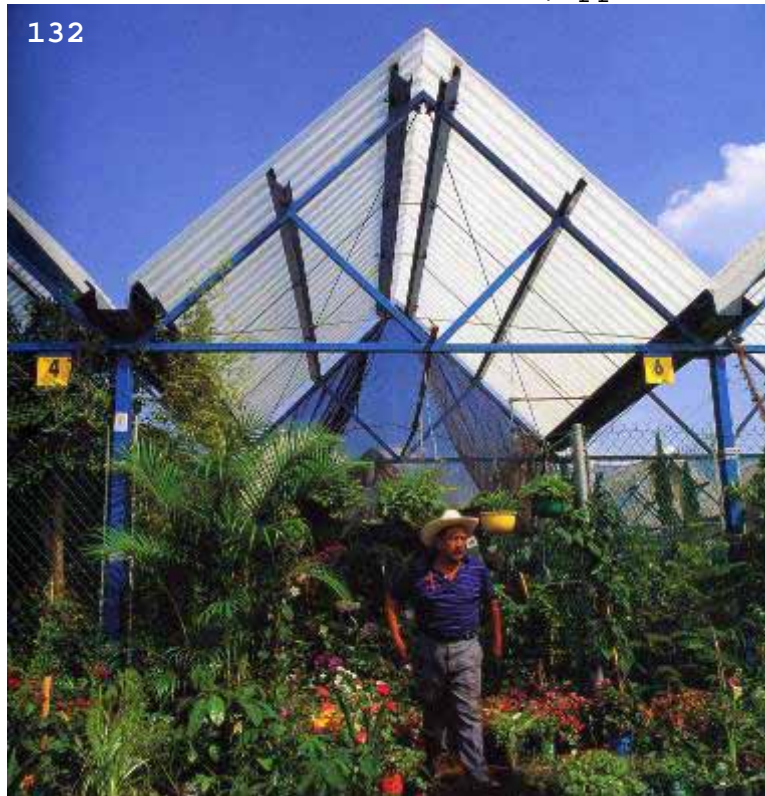


1. The built environment should allow for growth of vegetation so as to support the life of other organisms. Moreover, it is from plants that we obtain oxygen [123-126].
2. The Mthunzini Park located in Mamelodi inspired the use of vertical elements in the design [127].

3.THE REALISATION OF THE RISE: HOUSING AFRICAN FAMILIES



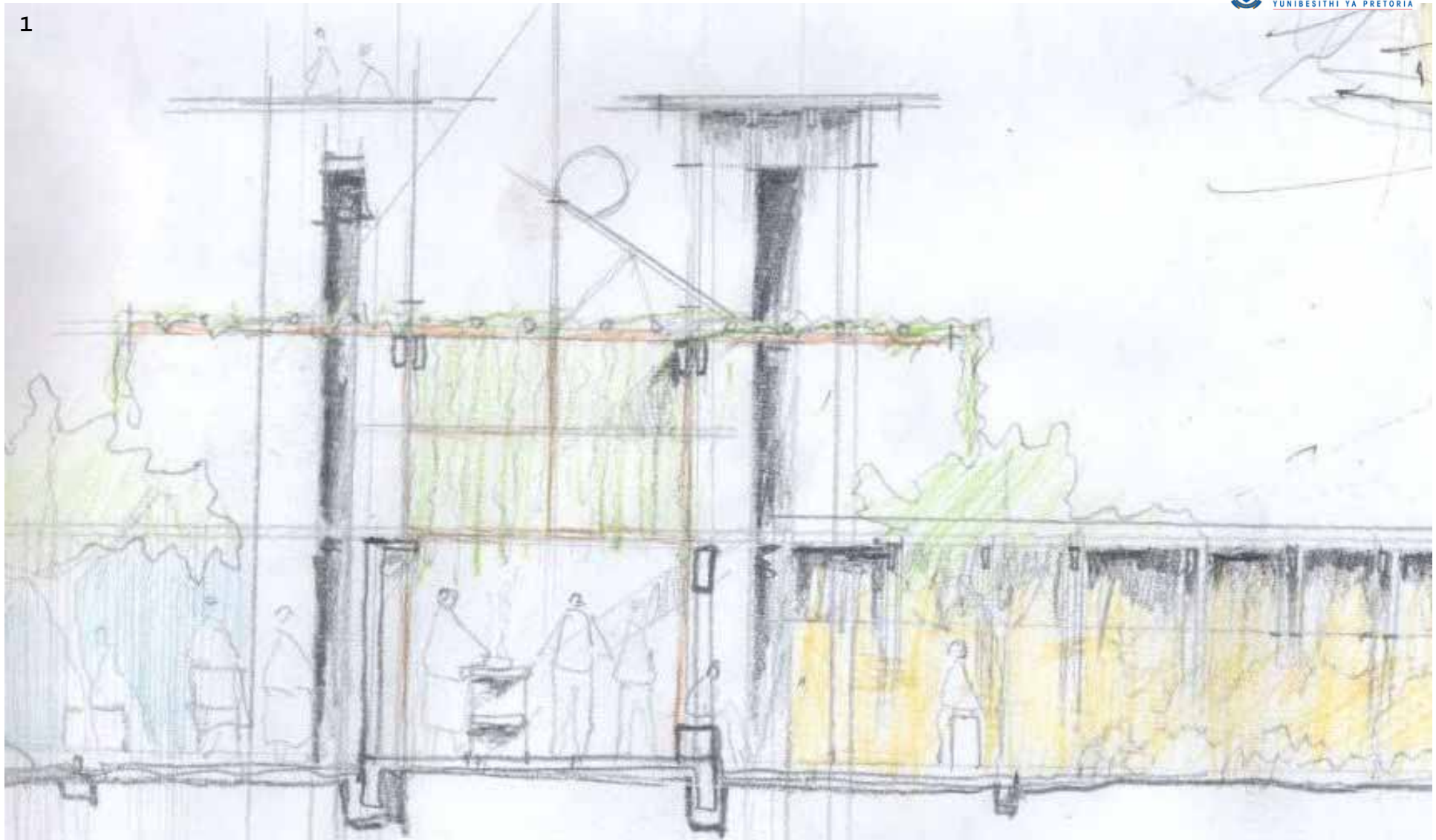
MULTIPLICITY: the need to respond to the sustainability agenda by designing for the multiplication of productive land, animals and other material resources. This can be achieved by; integrating energy-efficient technologies, designing for ecological diversity, for less car travel and greater use of public transport, use of recycled and renewable materials, water catchments system, low maintenance, recycling of buildings, multiplication of the natural environment, solar orientation etc [Wines 2000, pp.65-6].



128-131. Duisburg Nord, in Emscher Landscape Park Peter Lats + Partner, Landscape Architects.

132. Parc Ecologico Xochimilco , Mario Schjetnan, Grupo de Diseño Urbano.

1



1. Integrating the structure with greenery, human activities, and human comfort[133-135]. 71

3. THE REIFICATION OF THE RISE: HOUSING AFRICAN FAMILIES



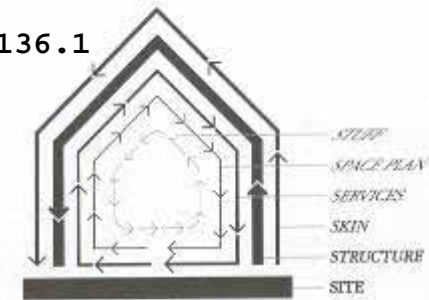
133



134

RECYCLING: "If households trash is made by mixing all our discarded materials together, then clearly the key step to unmaking it is to separate it, or rather to keep it separate, since most of the materials are used separately"-Dr. Paul Connett, cofounder of Work on Waste.

136.1



SHEARING LAYERS OF CHANGE. Because of the different rates of change of its components, a building is always tearing itself apart.



135

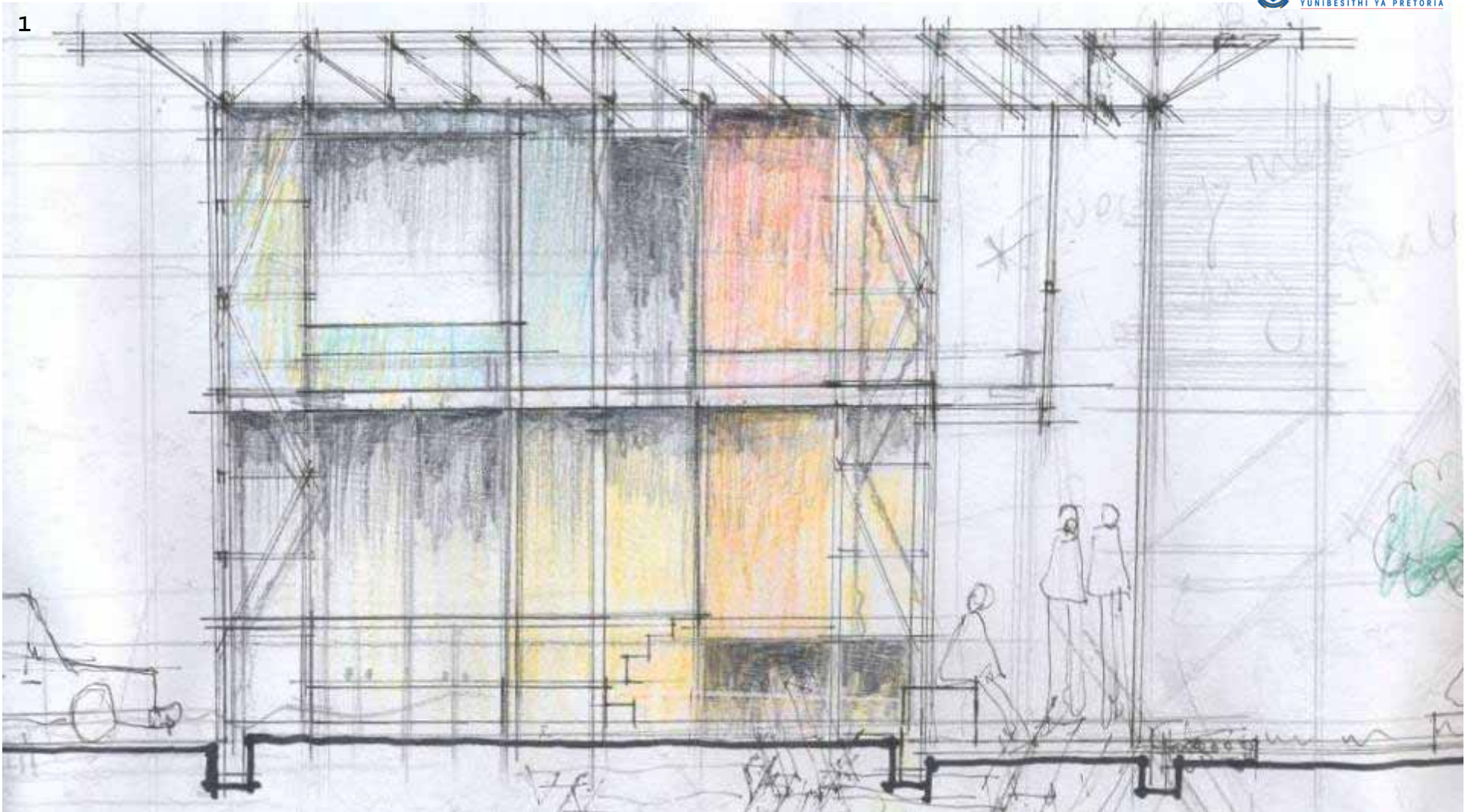


136

Separation of services, stuff [furniture etc], and skin of building from structure allows for re-use and transformation of spaces of the building. A separable structure can be re-used for other purposes on another site. The key is the ability to separate [Brand 1994].

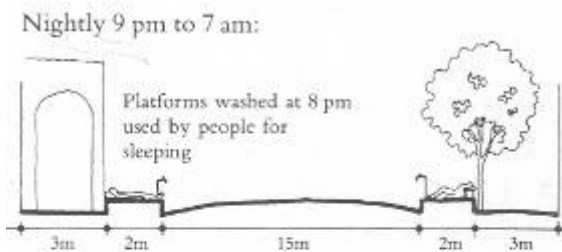
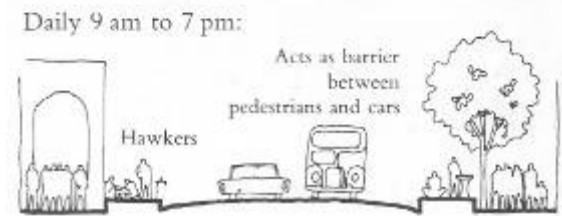
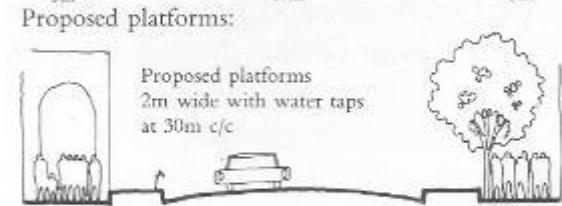
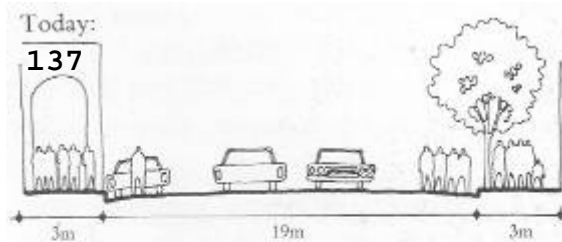
133-135. Duisburg Nord, in Emscher Landscape Park Peter Lats + Partner, Landscape Architects.

136. From Atlantic Steel to Atlantic Station, Ruth Dusseault, Artist in residence at the Georgia Tech's College of Architecture.



1. Roof and structure are separated from the skin of building. The structure can be used as furniture in the interior. Large overhangs protects the interior from rain, unwanted heat gain, and creates a threshold from the outside to the inside.

3.THE REALISATION OF THE RISE: HOUSING AFRICAN FAMILIES



MIXING USES: the need to move beyond strict zoning by designing developments with all appropriate facilities and services, and by mixing housing with other uses when appropriate and feasible [137-138], [sustainable].

AFFORDIBILTY: the extent to which the buildings accommodate the size and produce the income of families from the community [137].



137.Hawkers/Pavement project designing for hawkers during the day and sleepers at night, Charles Correa, India.

138.Decentralised sports area, food gardens, housing and commercial zones, Venezia.