Fig 4-1

4

THEORY TO INFROM THE DESIGN

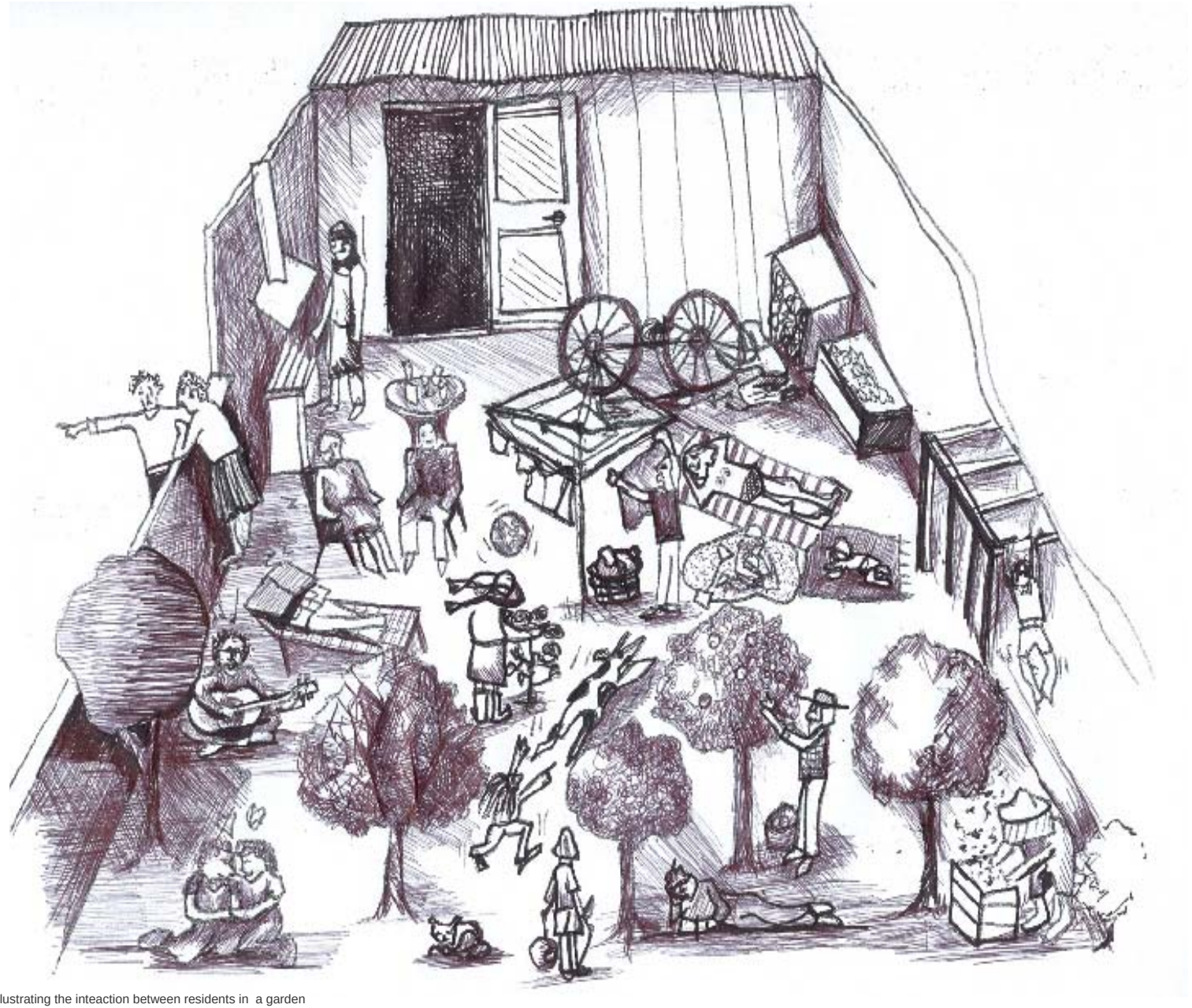


Fig 4-2 Sketch illustrating the inteaction between residents in a garden

4 THEORIES TO INFORM THE DESIGN

4.1THE NEED FOR OPEN SPACE

Open space is an essential element within our cities, for ecological, socio-economic and place-making purposes. Firstly, open space allows ecological systems, without which human beings cannot survive, to function: it purifies water, harbours plant and animal life, cleans the air and regulates the urban climate. This life-giving function of open spaces is the one most threatened by urban development and fragmentation.

Furthermore, human needs with regard to open spaces are fundamental. We need open spaces for our spiritual enhancement and for recreation. We need open space to conserve our natural environment so that we can enjoy clean streams, abundant wildlife, and witness the unfolding spectacle of nature. We need open space to give coherent structure and beauty to our cities as well as to guide metropolitan growth. Open spaces are important for our individual and collective well-being.

There is no doubt that open spaces play a critical role in our quality of life. Nature reserves, parks, sports fields, street trees, and even small spaces such as traffic circles define the areas in which we live. These resources, however, are not just “niceties” but play a central role in the health and economic viability of our community.

Sufficient funding for park maintenance, effective zoning by-laws, and a commitment to the long-term protection of key properties are necessary investments if we are to develop and sustain a healthy community. Besides the multiple benefits of open spaces to human beings, the sustainable development and protection of open spaces is a legal requirement. Various pieces of international, national and provincial commitments and legislation exist in this regard.

Fig 4-3 Resting on a park bench underneath a tree

Fig 4-4 Relaxing and socializing on the grass

Fig 4-5 Gardening

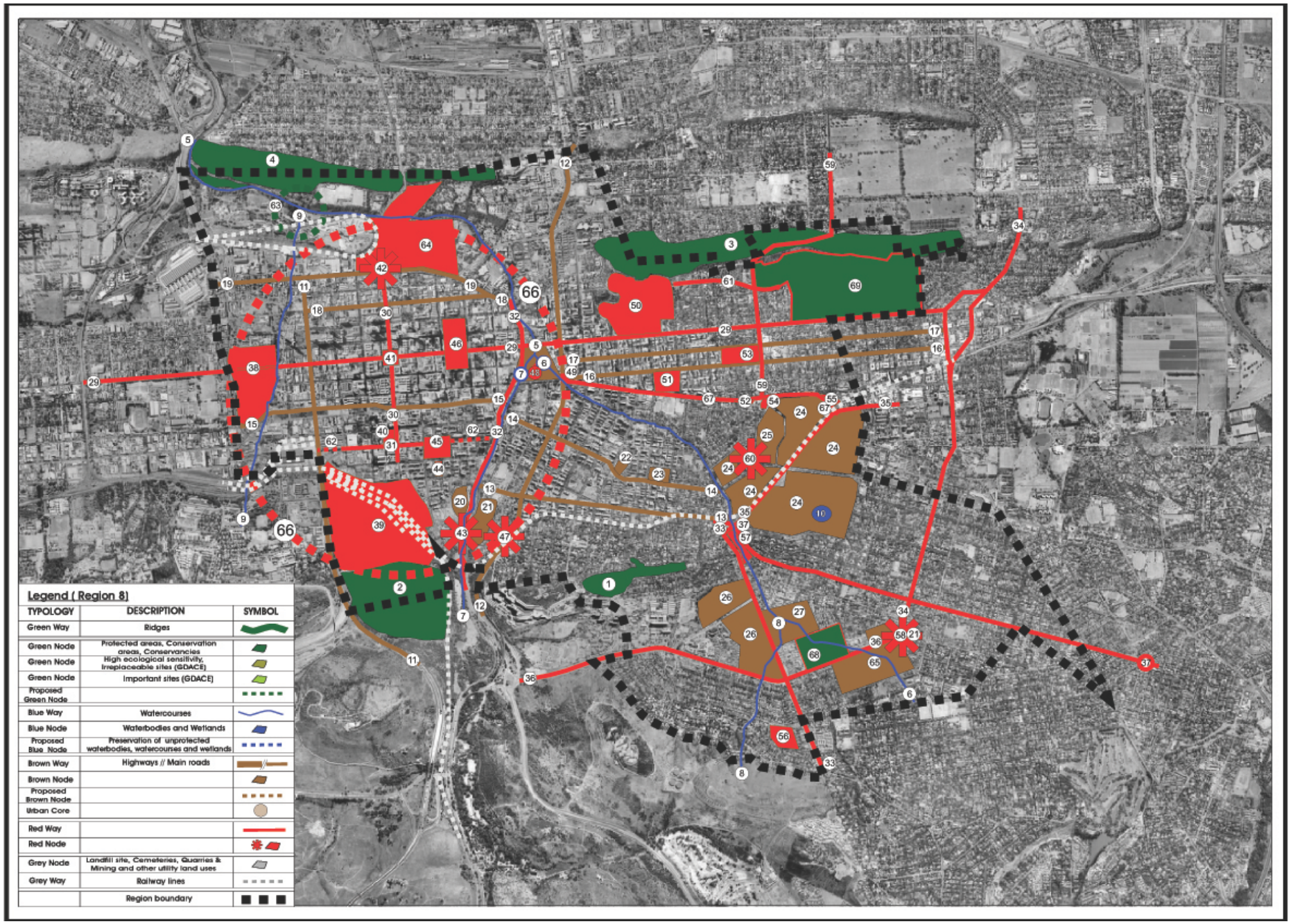


Fig 4-6 Region 8. Tshwane Open Space Framework

4.1.1 OPEN SPACE IN TSHWANE

4.1.1 OPEN SPACE IN TSHWANE

Given the acknowledged need for Open Space, it is therefore necessary to be critical about the way we zone and use Open Spaces within the city of Tshwane. Region 8 of the Tshwane Open Space framework, within which the study area falls, is characterised by the following aspects:

- significant ridge systems such as the Daspoort (4), Meintjieskop (3), Klapperkop, Salvokop (2) and Lukasrand Ridges(1);
- significant watercourse systems throughout, most notably the Apies River (5), Walker Spruit (6), Steenhoven Spruit (9) and Muckleneuk Spruit (8). However the Apies, Walker and Steenhoven watercourses have, for the most part, been transformed by human intervention;
- wetland system at the Pretoria Boys High School Dam (10);
- protected areas at the Austin Roberts Bird Sanctuary (68);
- significant institutional and recreational open spaces in the form of the University of Pretoria (24), Loftus Versfeld Rugby Stadium (25), Caledonia Stadium (6), Nieuw Muckleneuk trim park (27), Sunnyside swimming pool (22) etc.;
- several ornamental parks such as Burgers Park (45), Magnolia Dell(57), Venning Park (53), Berea Park (20);
- public open spaces around the Capital Core, Fountains Circle, Church Street (29), Paul Kruger Street (30); and
- nature reserves at Groenkloof Nature Reserve, Freedom Park and the Salvokop precinct (39),

Refer to an extract from Region 8 of the framework in Appendix i

A beautifully designed space is nevertheless not worth anything if people do not use it.

> *"… public space is viewed and experienced by many as out of control and dangerous. It is bounded by fences, palisades, walls, gates, private security guards, cameras and other defensive security technologies. Public life withdraws into the interiority of the private realm (homes, malls, gated enclaves etc.) and urban space is abandoned to featurelessness and neglect. Building more robust intersections between the two becomes a priority."*
> (Bremner, 2006 p9)

Fig 4-7 View over the skyline of Tshwane

Fig 4-8

Fig 4-9 Signage indicate that the park was intended for use.

Fig 4-10 The lush green area is out of bounds no gate is provided

Fig 4-11 Palisade fencing and barbed wire.

MORELETTA SPRUIT

This green link along the Morelleta Spruit between the affluent eastern suburbs of Pretoria has become a gated danger zone. It is a clear example of the effect of zoning principles that isolate the public green space from the private. The gated suburb and housing developments all turn their back on the green corridor and what could have served the residents as a open park is now perceived as a hazard.

If this is what happens to open space in the high income areas of the city, what will happen to open space in poorer areas?

Fig 4-12 Housing turns its back on valuable open space

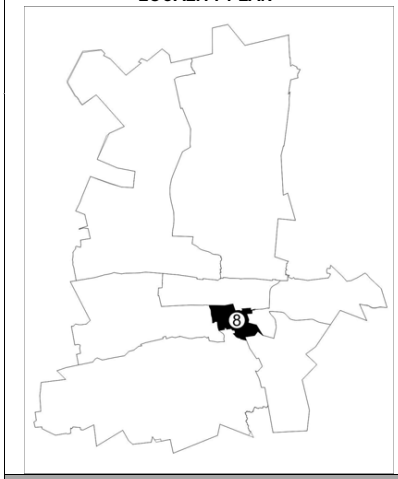
Fig 4-13 palisade fencing around the green strip.

According to the Tshwane Open Space Framework (2005), compiled by the Tshwane City Council and mentioned earlier, the majority of Open Spaces in Tshwane lag far behind international cities in terms of quality. The spaces are especially lacking in the following aspects:

- open spaces predominantly do not conform to the standards of development and comfort, do not offer any protection against the elements (sun, wind, rain) and do not offer opportunities for relaxation or recreation;
- open spaces are not integrated within a network, so as to facilitate movement from one to the other;
- there is no triangulation of Open Space as in the case of Paris, France. Triangulation requires that a variety of facilities and activities overlap to create interest, choice and variety;
- the open spaces in the City of Tshwane are generally mono-functional, thus only attracting a section of the community at certain times;
- hard open spaces, such as streets and activity spines, are mostly dominated by cars;
- civic spaces are non-existent; and
- the majority of Open Spaces are perceived as, and in many cases are, harbouring criminal activity, vagrancy, etc.

REGION 8: CENTRAL SECTION

LOCALITY PLAN



BOUNDARIES

North: Meintjies Ridge, Daspoort Ridge
East: Duncan Street
South: Klapperkop Ridge, Salvokop
West: DF Malan Drive

INCLUDES AREAS

Arcadia, Berea Park, Blackmoore 347 JR, Brooklyn, Bryntirion, Bryntirion 348JR, Central Pretoria Mss, Clydesdale), East Clyffe, Eastwood, Elandspoort 357 JR, Groenkloof, Groenkloof 358JR, Kilberry, Koedoespoort 456JR, Lisdogan Park, Loftus, Lukasrand, Muckleneuk, Bailey's Muckleneuk, Nieuw Muckleneuk, Pretoria, Prinshof 280JR, Prinshof 349JR, RiveRoadale, Salvokop, Skinner Court, Sunnyside, Trevenna.

VITAL STATISTICS

Total Area	Total Population	Gross Density	Vacant Land Ratio
2702	88 097	33p/ha	7ha/1000 population

VACANT LAND

Total Vacant Area: 627.901 ha

Total Developed Area: 2 074.008 ha

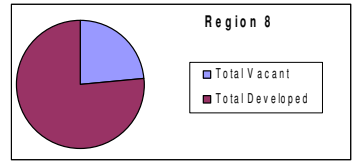


Fig 4-14 Extract from Open Space Framework

Many open spaces are under-funded, neglected, inaccessible, and lacking the necessary infrastructure and amenities. Only 31% of parks are fully developed. The only worthwhile, well developed public spaces are located within the inner city and old established areas. Outside of this zone, public Open Space is overgrown, undeveloped or privatised into shopping malls and private residential estates. Originally, all streets were lined with trees but nowadays this former closed tree structure is being eroded due to street widening and new developments.

Fig 4-15 Steenhoven spruit - open air bathrooom?

Fig 4-16 Streets lined with trees

Fig 4-17 Jacarandas

Fig 4-18

Fig 4-19 Gardens at the Union buildings

Fig 4-20 Kids need Parks to play in

Fig 4-21 Kids need Parks to play in

YEAR	EM BUDGET AS % OF TOTAL BUDGET		TOTAL COUNCIL BUDGET
	Operational budget of EM	IDP Capital budget of EM	Operational and Capital
2000/01	6,7%	-	not available
2001/02	8%	-	R735 731 000
2002/03	7,3%	4,3%	R755 586 000
2003/04	7,1%	4,4%	R1 005 000 000
2004/05	7%	3,1%	R1 224 000 000

Environmental Management Division's budget as a percentage of the total council budget

Table 1

(Source: CTMM, Environmental Management)

Year	Waste	Environmental Planning	Environmental Resource Management	Parks and Horticultural Services	Nature Conservation and Resorts	Cemeteries
	% ALLOCATION AND ACTUAL BUDGET TO SECTIONS					
2000/2001	50% R111 770 000	2% R799 672	0% R0	33% R73 304 000	10% R22 790 000	5% R11 659 000
2001/2002	52% R193 572 000	1% R705 127	5% R18 539 000	30% R112 878 000	8% R29 649 000	4% R16 008 000
2002/2003	53% R201 509 000	1% R542 939	5% R18 558 000	29% R110 786 000	8% R32 418 000	4% R15 886 000
2003/2004	53% R230 538 000	1% R847 000	1% R2 754 000	32% R141 013 000	9% R40 199 000	4% R21 521 000
2004/2005	52% R244 768 000	1% R2 945 000	1% R5 354 000	31% R148 469 000	10% R45 456 000	5% R24 979 000

Environmental Management Division Operational Maintenance Budget

Table 2

(Source: CTMM, Environmental Management)

Year	Waste	Environmental Planning	Environmental Resource Management	Parks and Horticultural Services	Nature Conservation and Resorts	Cemeteries
	% ALLOCATION AND ACTUAL BUDGET TO SECTIONS					
2000/2001	78% R 7 450 000	% R -	% R -	12% R1 158 000	7% R 648 000	3% R 255 000
2001/2002	% R 7 000 000	% R -	% R -	% R -	% R -	% R -
2002/2003	52% R17 300 000	% R -	% R -	14% R4 473 459	24% R8 020 000	10% R 3 360 000
2003/2004	41% R20 000 000	% R -	% R -	7% R3 000 000	17% R7 248 000	29% R12 548 000
2004/2005	27% R10 470 500	% R -	% R -	22% R8 556 000	16% R5 850 000	35% R13 463 000

Environmental Management Division IDP Capital Budget

Table 3

(Source: CTMM, Environmental Management)

34.1.2 BUDGET FOR OPEN SPACES

Apart from technical and legal restrictions on the sufficient provisioning and development of Open Space, the most important threat facing the Tshwane City Environmental Management Division is financial. Monetary limitations prevent the development and maintenance of Open Spaces to international standards. Open Space development and maintenance receive a very small portion of the budget. A political, monetary and fiscal perception exists that Open Space is not a direct income-generating service, nor a basic service delivery imperative. Proof of this lies in the facts that:

- over the past 10 years the Environmental Management Division has developed 70 new parks without being granted any additional human resources or increased maintenance budgets to maintain these parks;
- the Division must maintain parks and nature conservation areas within 13 previous local authorities' jurisdictional areas using a budget and human resource base tailor-made for only 3 previous local authorities; and
- the Division has a staff shortage within the Parks and Horticultural Services Section and Nature Conservation and Resorts Section amounting to 29%. (2005 Tshwane Open Space Framework Volume 1 p 20)

The Environmental Management Division only received 3,9% of the total council capital budget during the period 2002 - 2005 and was only allocated 7,1% of the council's total operating budget during the same period. The operational budget decreased from 8% in 2001/2 to 7% in 2004/5 and the capital budget from 4,3% in 2002/3 to 3.1% in 2004/5, as highlighted in the following tables extracted from the Tshwane Open Space Framework 2005. (Volume 1 p 72)

BURGERS PARK

A well maintained Victorian park south of the Tshwane CBD. The residents of the numerous apartment blocks in the area habitually use the park as an escape from the bustling city.

The Parks maintenance requires 15 fulltime gardeners to ensure that this public s[ace it in such a good condition.

Fig 4-22 Burgers park gate

Fig 4-23 Proud gardners at Burgers Park

Fig 4-24 Proud gardners at Burgers Park

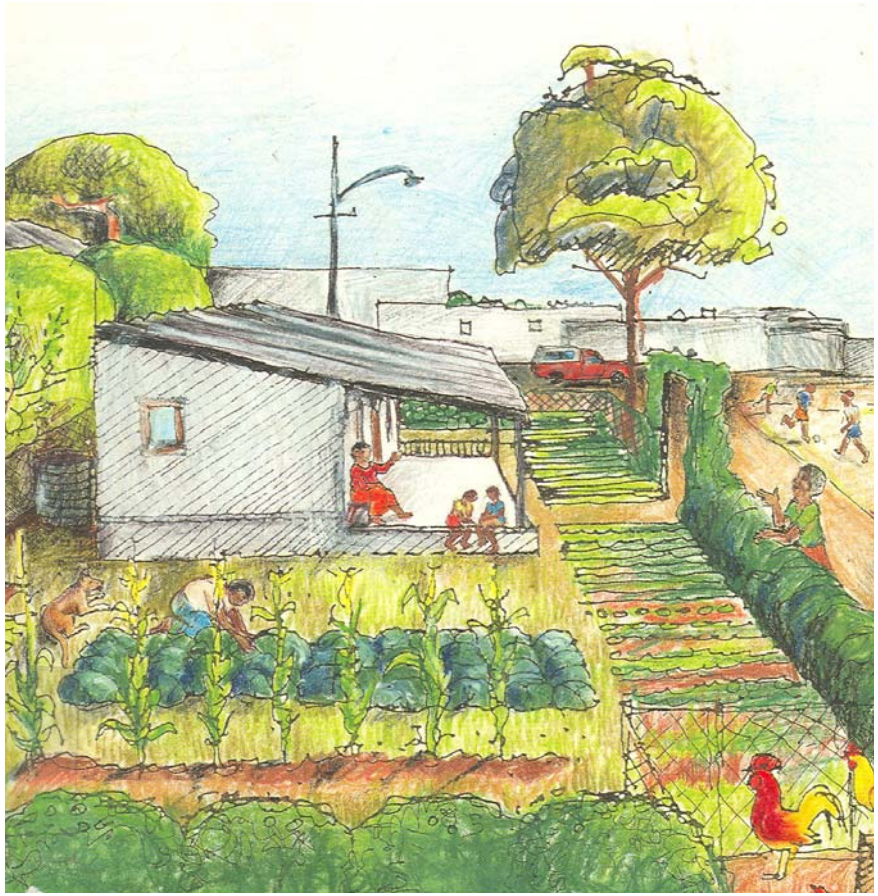


Fig 4-25 Low Cost Housing and Enviromental Issues. (Sowman. 1998)

4.1.3 PRODUCTIVE GREEN SPACE

Defining a new small-scale form of urban agriculture and finding mutuality between productive urban green spaces and architecture forms an important part of this investigation. In the book "*To dwell is to garden" Tshwane Open Space Framework* by Sam Bass Warner, professor of urban studies and planning at the Massachusetts Institute of Technology, the vision rests on the premise that the city is a garden - ".. Despite the dominance of streets, highways, and buildings, the city is an assembly of particular environments in which people favour some things and discourage others. What is special about a city is its product, its staple crop. The crops are not plants and animals but gardeners themselves." (Warner 1987. p 73).

In her examination of the relevance of Urban Agriculture: its role and contribution in structuring open space systems in economically disadvantaged areas of Cape Town, Victoria Crawley (Crawley.2005.p10) explains how community gardens can provide food. "The policy of urban agriculture leads to helping people / residents of an area to organize food cooperatives, farmers markets, playgrounds, health facilities and neighbourhood social and economic activities. It is about social reconstruction: a way to increase the power and efficiency of self-help neighbourhood schemes – so that fewer families will remain helpless in the city metropolis. Neighbourhood redevelopment: especially related to the control of land and housing. Gardens become important elements to be included in design providing the natural and human ecologies of the whole city. The goal is not to sacrifice the natural environment for short term advantages – the community garden is an important element because it demonstrates how people can use land in common for their individual and mutual benefit." (Crawley, 2005. p 40).

As long as poverty, hunger, multi-cultural traditions and land-connected recreational trends continue to influence city life and city form, urban agriculture will increasingly become a necessary urban land use function that should be publicly supported. The need to link land, food production and waste recycling with employment and income is a key factor in developing nations where poverty is a major problem.

One agricultural form that can be utilised is permaculture: “Permanent agriculture”; developed in sub-tropical Australia by Bill Mollison. It comprises a range of techniques which combine common sense and climatic factors to improve yields, especially where space is a scarce commodity, as food can be grown intensively in containers. These techniques are appropriate in warm climates with long daylight hours and sun exposure. Permaculture is a way of looking at the relationships between plants and animals instead of looking at the functioning of each element on its own. A particular method called “stacking” has evolved to take advantage of the favourable climate, thus minimizing the built footprint. (Gibbs; 2001)

By incorporating sustainable and permaculture principles into the design of social housing we can provide for the basic needs of a community: adopting the aspirations of Lynch, author of *Good City Form*: “to become a healthy and safe environment by functioning as an objective system that supports subjective growth, thus a ‘learning ecology’” (Lynch 1981: 115), and agreeing with Iain Low, who is known as a critical thinker on “new” public realms, dwelling and architectural pedagogy, that “poverty is at the centre of our problems and the provision of housing needs to be located within this understanding. It is, however, impossible to launch a campaign against poverty without an economic agenda.

Housing cannot simply be conceived of in quantitative terms, but rather through qualitative dimensions that can bring added value to users as members of families, communities and society at large.” (Low, I. 2005).

Some international examples follow:

--Kenya and Tanzania: two out of three urban households are engaged in food production activities;

--large cities in China produce 90% of their vegetable consumption;

-- Kampala devotes 50% of its land to urban food production;

-- Addis Ababa, Harare and Dar es Salaam are among the many southern cities where urban agriculture comprises a large portion of the urban economy; and

-- East Jakarta: 18% of total food consumption in low-income households was produced within the city proper. This proportion was even found to be as high as 60% in Kampala, and 50% in Nairobi.

Fig 4-26 Urban Agriculture in Tanzania

Fig 4-27 Urban Agriculture Tanzana

4.1.4 OPENSPACE PRODUCE

HIV/ Aids is a harsh reality in the city. Fresh grown products are essential for the infected, but healthy people also benefit from a healthy diet.

Food choices for people living with HIV/ Aids

STARCH: BASIS OF EACH MEAL.

Starchy foods should make up the biggest part of the food intake of people with HIV/AIDS. These foods are relatively cheap and supply lots of energy, which will help to keep the body weight stable.

Bread, pap, porridge, cereals, rice, potatoes, sweet potatoes, samp, millet, mealies, sorghum.

FRUITS AND VEGETABLES

They supply the vitamins and other substances that keep the immune system strong. These foods help in the fight against infections. Include fruits and vegetables of a yellow, orange, red or dark green colour.

Spinach, morogo, pumpkin leaves, green peppers, sweet potato, squash, pumpkin, carrots, yellow peaches, apricots, paw-paws, mangoes, Oranges, naartjies, grapefruit, lemons, and also guavas, tomatoes, maroelas.

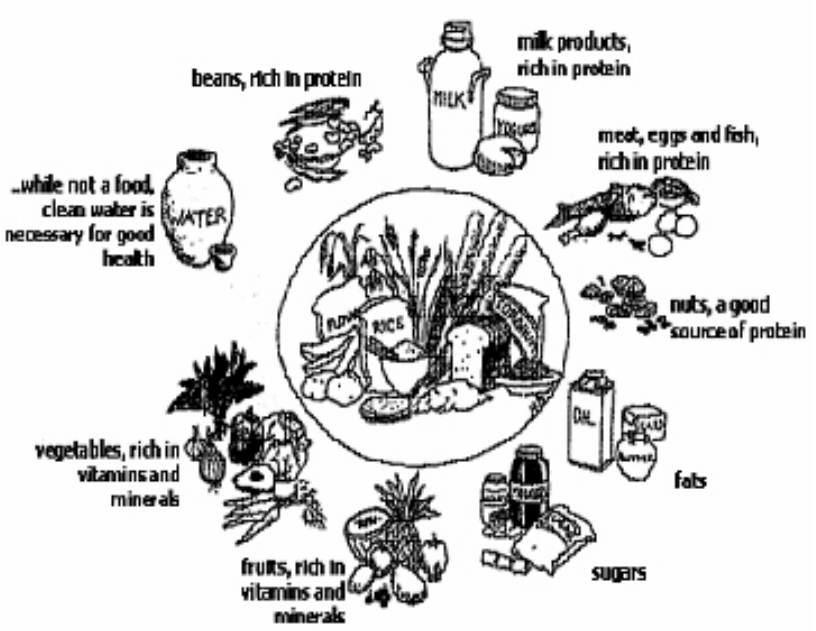


Fig 4-31 Diagram of foods that can possible be produced

Fig 4-28

Fig 4-29

Fig 4-30

4.1.~~4~~5 PUBLIC PARTICIPATION – A POSSIBLE SOLUTION

A community-based planning process allows all the stakeholders -- including residents, city agencies, local leaders and merchants – to define what goes on in a particular place. When ideas emerge from the ground up, not the top down, the events, programmes, recreation, and play areas in a public space are truly connected to the communities that use them. In addition, partnerships among local organisations, businesses, associations, and government agencies act as new sources of ideas for activities and help a public space become a true "community place". Planning for uses and activities in this way promotes sustainability and use, and therefore activity.

Although there is an awareness of the benefit and relevance of productive green spaces within the city, the current urban planning and management system in South Africa is not yet optimally geared to address the global and local challenges facing urban areas, as is apparent from the current experience in the City of Tshwane. The central concept of merging Housing with Open Park Space can create a positive relationship between the housing and the park.


Fig 4-32 Urban Agriculture


Fig 4-33Urban Agriculture


Fig 4-34 Urban Agriculture


Fig 4-35Urban Agriculture


Fig 4-36Urban Agriculture


Fig 4-37 Urban Agriculture


Fig 4-38 Urban Agriculture


Fig 4-39 Urban Agriculture

Fig 4-40 Susan Luthuli

33.1.5 PHILOSOPHY, PSYCHOLOGY and THEOLOGY

To amplify the significance of satisfying the basic needs of an urban society one can draw confirmation from not only the minds of many architects, landscape architects and urban planners but also those of philosophers, psychologists and theologians.

Rudolf Steiner philosophises about gardens and utopian expectations: “Gardens are an effort to replant the root of our existence, to restore a lost vitality. Organic gardens are symbolic of the re-affirmation of the integrity of organic nature. I want to go back to the garden, re-affirm the integrity of organic nature and engage in utopian expectations.”

Carl Jung (1875-1961), the Swiss psychiatrist, is one of the founding fathers of modern in-depth psychology. Jung's most famous concept, the collective unconscious, has exerted a deep influence not only on psychology but also on philosophy, the arts, and architecture. He stated that “Every person needs to have a piece of garden, however small, to keep them in touch with the earth and therefore with something deeper in themselves.” Carl Jung (1875-1961).

Paul Tillich is highly regarded as a theologian who stands at the boundary between liberalism and neo-orthodoxy, idealism and realism, Protestant and Roman Catholic theology. His indebtedness to the Romantic Movement in the 19th century means that his theology may be adequately identified as a philosophical theology. Tillich makes use of the Christian message, obtained from the Word of God, to answer philosophical questions that arise out of the cultural realm. He develops thinking around the “Ecology of being” and states: “This leads to the final aim of social work. In helping all individuals to find the place where they can consider themselves as necessary, you help to fulfil the ultimate aim of human beings and their world, namely, the universal community of all beings in which any individual aim is taken into the universal aim of being itself. Somebody who doesn’t feel necessary at all. Who feels that he or she is a mere burden, is on the edge of total despair.” (Tillich, p 131)

According to Dr Paul Lee, “Not having a job means ceasing to exist”. Lee was known for his proposed economic development plan for Santa Cruz based on the tourist industry – ”*Ecotopia for the ecotourist*”. His ultimate agenda was solving the problem of homelessness in Santa Cruz by setting aside revenues from gross productive urban agricultural proceeds.

According to Lee and Tillich, the proximity of housing to agricultural gardens can stimulate a sense of ownership. Community gardens provide food and also, if the policies of urban agriculture are applied, they lead to helping residents of an area to organise food cooperatives, farmers’ markets, playgrounds, health facilities and neighbourhood social and economic activities. This concerns social reconstruction: a way to increase the power and efficiency of self-help neighbourhood schemes – so that fewer families will become or remain helpless in the metropolis.

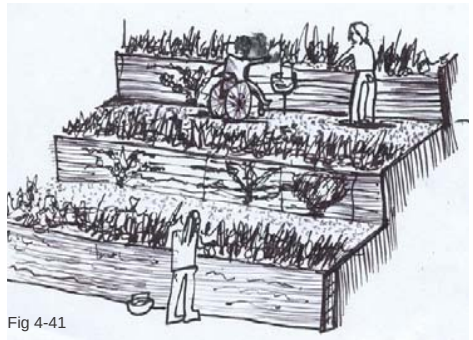


Fig 4-41

Fig 4-42


Fig 4-43


Fig 4-44


Fig 4-45

4.2 THE THEORY OF PARTICIPATORY DESIGN: Nabeel Hamdi.

In his book Housing without Houses – Participation, Flexibility, Enablement. (1991) Nabeel Hamdi essentially do not propose anything new but he unveils what housing is as shelter and what housing environments are as formal expressions of social and political systems. Uncovering the importance of what housing does to improve health, generate income, and provide security. His premise is around the theme of participatory design: that the involvement of users and community clients in design is an important part of decision making and of guaranteeing the efficiency of building in use. “Building lots of houses for people and places one does not know, where money is scarce and statistical information in unreliable, is neither an efficient nor an equitable way of solving housing problems, nor is it good design practice”. (Hamdi, 1991, p.xi) He both promotes and defends the program of enablement. “I do not believe that participation undermines the discipline of architecture or the role of architects, nor need it turn architects into political activists or social workers, as some would have it.” For Hamdi the object is to “describe housing as a multidisciplinary and nonsectorially bound system of activities that are likely to expand the services of architects without losing the specificity of architecture.” (Hamdi, 1991, p.xi)

In the chapter, A tale of two architects, Hamdi analyzes and compares the theories of two fellow architects whose ideas expanded the housing debate beyond ideology and technique and the design, designing and the role of architects firmly and squarely in a social and political arena. To support the theme of participatory design Hamdi makes a very valuable comparison between John Turner’s Housing by People (1976) and John Habraken, Supports: An alternative to mass housing(1972). Its forms an account on how they saw design and the activities of designers as measures that would cultivate a balanced, equitable environment for habitation or restore the balance where it had been upset. Their argument recognizes that professional interventions had to be applied carefully and that the actions of professionals had to be made accountable to the public if the public were to be informed rather than bewildered. Tuner and Habraken argue that housing dominated by public authorities is not an equitable way to solve housing problems, nor is it economical or efficient. Both offers a comprehensive definition of the support paradigm and its three tenets for design: flexibility, participation, and enablement explained in the table below:

Fig 4-46

Fig 4-47

Fig 4-48

Comparison: Table 4

John Turner (1976) Housing by People.	John Habraken (1972) Supports: alternative to mass housing
Concerned with supports for structuring government policy and directing professional interventions	Prime concern is for structuring the physical environment.
Turner's principle of planning for housing through limits.	Habrakens methods are not a substitute for good design or creative inductive thinking. They were never intended to induce good ideas but rather aimed at ordering ideas and building production so that they could be communicated to so inclusive of others.
Turner is driven by a concern for people, politics and global resources	Habraken looked to improve the efficiency of design, designer and building.
Flexibility	
For Turner flexibility has to do with ranges of possible courses of action available to people when organizing financing, planning, building and maintaining buildings and for sorting out tenure and materials. Flexibility is a quality by witch to measure the opportunities available to people to locally manage programs.	For Habraken flexibility is a quality by which to measure the capacity of physical settings to be easily modified, which could undergo a series of incremental transformations in order to ensure good fit through time. It is directly equal at housing management in deciding dwelling sites, dwelling types, and dwelling mix as to families. It is a basis on which to rationalize the production of houses, to reconcile both standardization and variety, on which a healthy industry depends.
Participation – Essential part of repairing the natural relationship between people and place.	
Turner definition is far broader. His search for better participation is directed at " the ways and means by which governments, NGO's and the building industry can enable people to do well as so many do in any case: the planning, building and management of their own houses and neighborhoods at costs both they and society can afford." He put the onus firmly and squarely on government and the professionals to participate in the action of people, not the other way around.	He believes that user participation helps designers better serve their public and that it enables the design and the production of the buildings to be more efficient and more dynamic so that the architecture can be made more relevant.
Enablement	

Defines enablement relative to government policy and relative to the role and services of professionals. Enablement policies and enabler professionals are those that support locally self managed programs. They deliver the money and resources to enable local organizations to build and manage their own housing.	For Habraken the concept is very much akin to cultivation. In contrast to building houses, enablement is a process by which to cultivate physically and gradually the conditions that enable habitation, that enable neighborhoods to grow and change in response to prevailing conditions. Architects must be part of these processes, which go on despite of infertile settings. They have to be able to design for change and incremental growth. They must see the user as an indispensable agent in the process, They must understand their work as part of a living process, In short they must be cultivators of environments, rather than makers of projects.(1983,p9) Habraken is preoccupation is with structure rather than the content of housing. Less interested in deciding the form and more interested in the way changing conditions and functions shape the form. He sees design as a process of enablement, which could change radically not only the process by witch housing is produces, but also the form of housing itself.

In conclusion Hamdi exposes some useful thoughts around flexibility and building and lists a number of important design principles that emerged from the early thinking and practice of flexibility. It gives recognition to the concept of a better fit among people, territory, finishes, and costs – not tailor-made responses to normative projected needs but as variable interpretive opportunities to package programs and interpret standards so finishes, space, and/or cost are variable. For Hamdi the crucial arising question is:

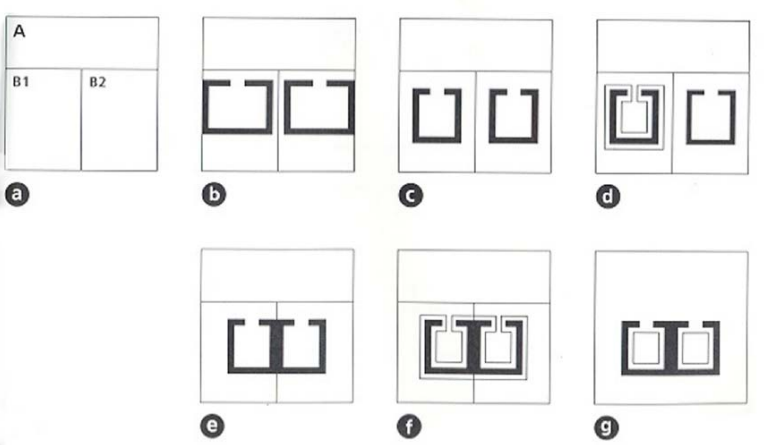
What is flexibility in the context of design that promotes participation?

Nominal Classes	"Wholes" (types)
6 Major arteries	Neighborhood-
5 Roads	Block
4 Building elements	"Built space"
3 Partitioning	"Room"
2 Furniture	"Place"
1 Body and utensils	

Wholes- as experienced in daily life, Wholes combine two levels. (Habraken.1998.p61)

Levels combine to form holes.

Dwelling does not figure among the wholes. Dwellings as a complex holistic notion is not tied to any single level, nor is it always identified with the same levels. Ultimately dwelling denotes action more than form.



Territorial diagram representing varied building and uses.
a initial territory diagram without walls
b atributing houses with blind walls.
c freestanding houses in gardens
d house as in c, when rented by occupant
e houses with common party wall
f houses as in e above, when rented by ocupants
(Habraken.1998.p 173)

4.3 LEVELS OF INTERVENTION IN THE BUILT ENVIROMENT

The principle tool used by those working in an open building way is the organization of the process of designing and building on environmental levels. The idea of environmental levels is not new, but the clear formulation of the principle of levels is rather new, having been framed most recently in The Structure of The Ordinary: Form and Control in the Built Environment (Habraken, MIT Press, 1998).

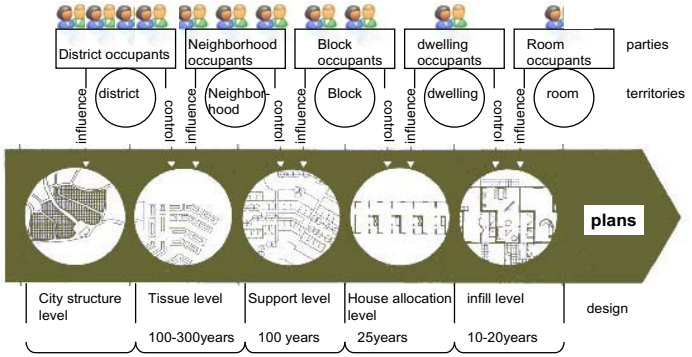


Fig 4-49

A Diagram of the Principle of Environmental Levels (Kendall: 2000.p4)

Each of these levels relates to the one below and above it according to certain rules. For example, an urban street pattern, perhaps centuries old, defines plots of land - territorial claims - of varying sizes on which individual buildings are constructed, demolished and new ones built over a time period during which the street grid remains stable. Often, several lots are acquired by one party. In some places and times, economic forces, methods of construction and changes in social patterns results in intensification of the use of spaces between the streets, while in other situations, the opposite is true, and the blocks become more vacant.

The characteristic here is that the street grid - on a higher "public" level - remains stable, while the lots divide and aggregate and buildings come and go - on a lower level - within the spatial and infrastructure capacity of the street level pattern. Sometimes, the public space on the higher level is invaded by private interests - either by agreement or by force - changing the balance of power and the structure of the levels.

If we look into the level of the individual building, we see the level of intervention we call architecture. Here, a building offers space for occupancy, offering form, services and safe passage for any of a variety of occupancies over time. The building is a stable spatial and technical "offering", making itself available to a variety of individual territorial claims, enabling each occupying power their own decisions within the constraints of the base architecture. The occupants can move in and out, without compromising or disrupting the interests of the entirety.

Sometimes, the entire façade of a building is removed and replaced, revealing yet another technical level, to a certain extent independent of the structure and interior layout. At a still lower level, the furniture in a room, the computers and other equipment, can be changed with some degrees of freedom without forcing the partitions of the room to be altered. These are familiar environmental levels, and there are more of them. It is the formal recognition of these levels that is a key characteristic of the open building approach.

Open building is, according to John Habraken, the term used to indicate a number of different but related ideas about the making of environment. These include:

- the idea of distinct Levels of intervention in the built environment, such as those represented by 'base building*' and 'fit-out*', or by urban design and architecture.
- the idea that users / inhabitants may make design decisions as well as professionals.
- the idea that, more generally, designing is a process with multiple participants also including different kinds of professionals.
- the idea that the interface between technical systems allows the replacement of one system with another performing the same function. (such as different fit-out systems applied in a given base building.)
- the idea that built environment is in constant transformation and change must be recognized and understood.
- the idea that built environment is the product of an ongoing, never ending design process, in which environment transforms part by part.

The Open Building approach seeks to formulate theories about the built environment seen in this dynamic way and to develop methods of design and building construction that are compatible with it.

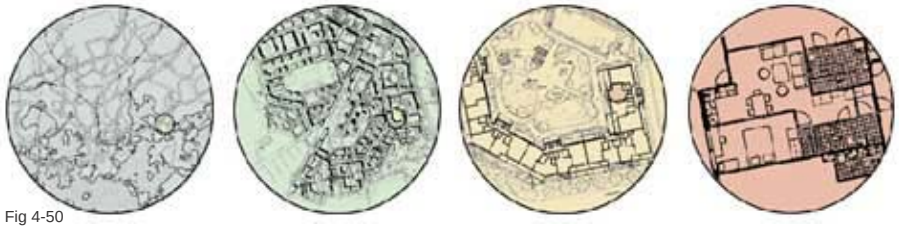


Fig 4-50

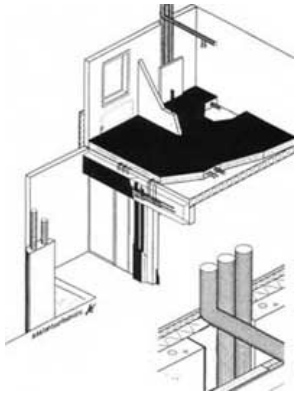


Fig 4-51

Fig 4-52

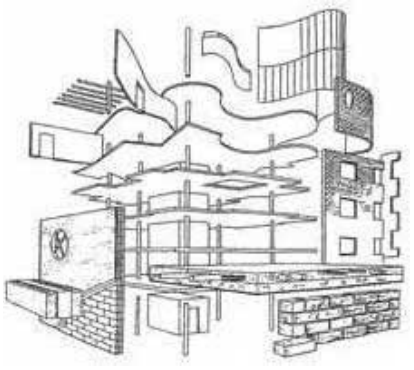


Fig 4-53

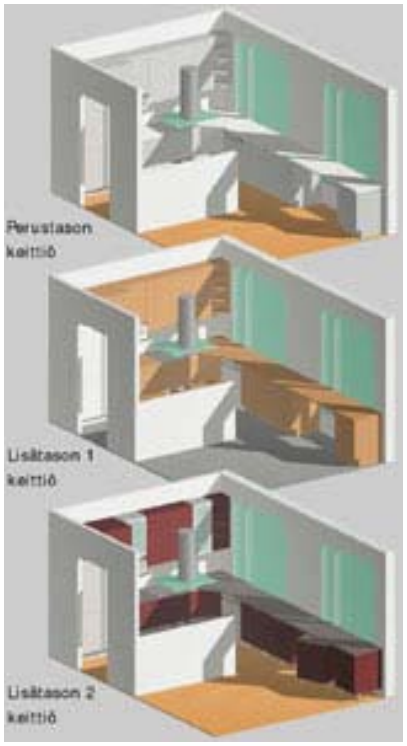


Fig 4-54

Fig 4-55

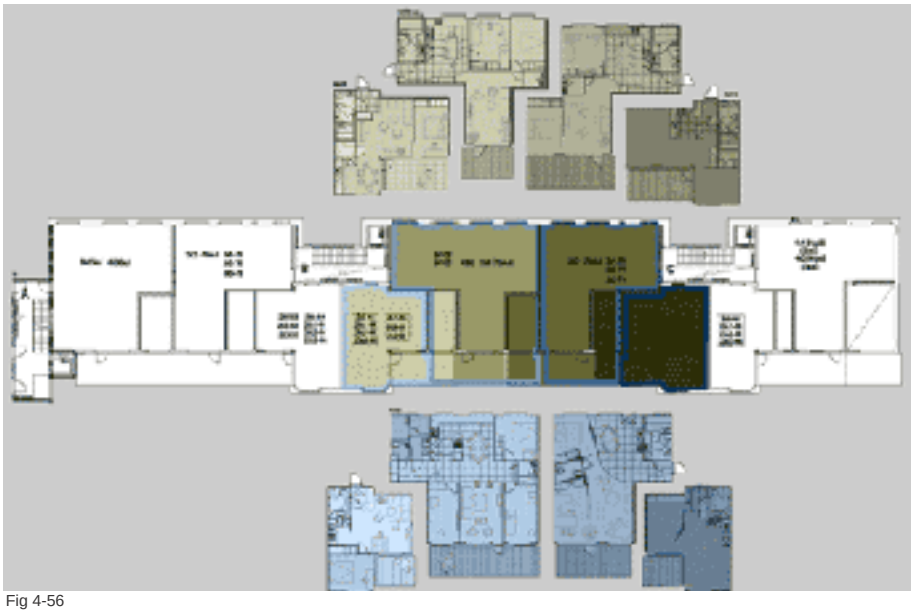


Fig 4-56

Fig 4-57

Fig 4-58

4.4 OPEN BUILDING

Open Building is an approach to the design of buildings that is recognized internationally to represent a new wave in architecture, but a new wave with roots in the way ordinary built environment grows, regenerates and achieves wholeness.

Open building is an organized way of responding to the demands of diversity, adaptability and user involvement in the built environment. In open building the built environment is approached as a constantly changing product engendered by human action, with the central features of the environment resulting from decisions made at various levels. The levels of city structure, urban tissue, support (or base building) and infill (or fit-out) are usually distinguished. Open building entails the idea that the need for change at a lower level, such as the inside of a dwelling, emerges faster than at upper levels, such as the support. Open building acknowledges the residents' rights to participate in the modification of their living environment On the upper levels, the decisions taken are collective and involve many parties, while decisions on the infill level are made by individual households.

4.4.1 OPEN AND LEAN CONSTRUCTION

The concept of Open Building aims to contribute to the quality of the built environment. Design decisions result in construction activities, such as connecting materials, components and products. The Open Building community in the Netherlands as well as Japan have done ground breaking work on co-ordinating dimensions, positions and interfaces of parts, in turn giving the key to controlling gaps and tolerances and clearly defining the domains of disciplines and their tradesmen, their duties and liabilities.

Open and Lean differ, touch and overlap, they can benefit from each other. They both respond to the negative effects of second wave mass production. Open Building advocates mass customization of housing, Lean Construction aims to at a improving the construction process by eliminating ‘waste’, being any activity that does not contribute to the required value of the end product, by improving the ‘flow’ of the construction process.

4.4.2 RESIDENTIAL OPEN BUILDING

Residential Open Building is only doing what already is familiar in other building types. The are several reasons for this lag. Commercial residential projects, in contrast to the commercial office building, usually operate in a sellers market which leaves no incentive for innovation because the product is sure to sell anyway. Non-profit housing organizations have not much incentive either to delegate design responsibility to the occupant. Moreover, the fit out of residential units is more complex compared to retail or office space. Kitchen and bathroom equipment in combination with communication and power supply systems must be integrated in a small volume

The introduction of an infill level to multifamily housing is a way of expanding the decision-making power of the user in new construction as well as in renewal of existing housing. Decisions on the infill level concern those parts of the building, where user requirements vary. The infill of an individual unit is chosen by the user and comprises the parts of the building which determine the lay-out, fixtures, fittings, equipment and finishes of the unit or apartment. Parts of the elevations may also form parts of the infill. The separation between elements belonging to the support level from those of the infill level is project specific. The long term aim is for the infill to be installed as a completely separate stage in the construction process, unit-by-unit, tailored to the household that is going to live there.

Fig 4-59

Fig 4-60

Fig 4-61

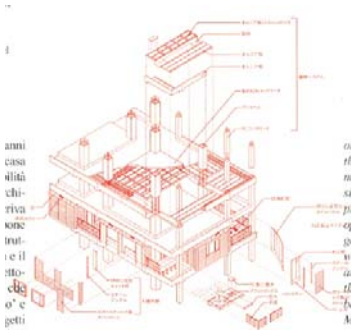


Fig 4-62

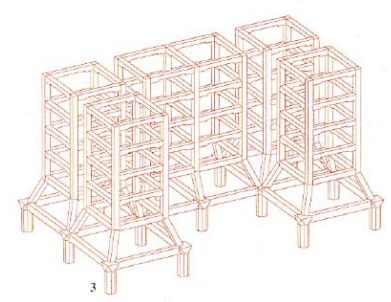


Fig 4-63 Next 21 Project

Fig 4-64 Next 21 Project

Breakdown of features that promote open building in multifamily housing:

4.4.2.1 OPEN SPACIAL STRUCTURE

An open spatial structure offers options for regulating the allocation of units and other facilities in the building, and anticipates a variety of different infill to be accommodated in every unit. Access spaces to the apartments are usually fixed as part of the support. The elements defining the floor plan of the units are ideally on the infill level, thus offering a free configuration of the floor plan. Even parts of the facades can be regulated or chosen by the user as part of the infill.

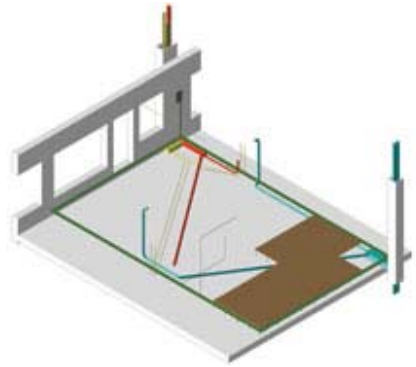


Fig 4-65

4.4.2.2 SEPERATION OF SUPPORT AND INFILL SYSTEMS

Building parts are divided into long lasting fixed support parts and an adaptable infill components inside individual dwelling units. The fixed support parts can be constructed with long life span, while changes in function can be adopted to by altering the shorter-term or reusable infill. Systems with easily changeable components are sought for the implementation of the infill. Building services are divided into systems serving the building and those serving the individual units. Adaptable component based infill systems for partitions, fittings, building services parts and access structures are the prerequisite for accommodating changes during use and help in phasing the construction process so that variation and individual user requirements can be implemented cost effectively.

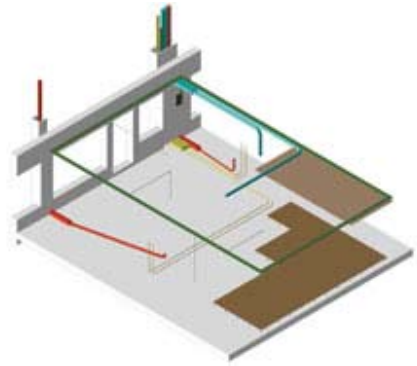


Fig 4-66

4.4.2.3. OPEN BUILDING PROCESS

A central feature in the realization of open building is the phasing of the design and implementation process into separate stages concerning the support and the infill. As infill decisions have no effect on the placing of the elements and building parts on the support level, they can be postponed to a later stage. Methods for immediate calculation of the cost or rent implications of alternative choices is required for decision making on the infill level. Separate procurement and assembly for infill systems is carried out unit by unit.

Fig 4-67


Fig 4-68 Plus home Project


Fig 4-69 Plus home Project


Fig 4-70 Next 21 Project


Fig 4-71 Next 21 Project


Fig 4-72 Next 21Project


Fig 4-73 Next 21 Project

4.4.3 OPEN BUILDING PRECEDENTS

4.4.3.1 PLUSHOME PROJECT

Project Architect ARK Oy Kahri & Co

The new PlusHome concept allows homebuyers to tailor their new home to their own needs and preferences by offering a wide variety of online design options to select from. With SATO PlusHome you can even choose from options regarding the size of your new home as well as the internal layout. This flexibility is made possible by using construction techniques, which eliminate the need for internal structural partitions. SATO PlusHome also allows the buyer to choose from carefully selected options regarding surface finishes and fixtures and fittings. The priced options may be either individually selected by the buyer or chosen as part of one of the architects suggested interior design schemes.

4.4.3.2 THE SOLIDS

The Solids, a project of Het Oosten in Amsterdam, to be developed by Krystal development, designed by Baumschlager and Eberle, architects. This large open building project, to be built in 2007.

4.4.3.3 NEXT21 PROJECT, Osaka, Japan

An experimental building, known as NEXT21, was completed for Osaka Gas Company in 1994 in the city of Osaka. Prof. Yositika Utida, Japan's premier authority on industrial residential construction, was asked to design the apartment building of the future. Not surprisingly, it contains the most advanced technology for the use of energy. Natural gas is chemically decomposed following principles first implemented for space craft. Solar panels are found on the building's roof garden. Waste from inhabitation is entirely processed for re-cycling.

4.4.3.4 MOLENVLIET PROJECT, Frans van der werf Netherlands

Built in the early seventies the project had to follow the strict rules for public housing of the time. But by making the basebuilding / fit-out separation very clear in both technical and architectural terms, van der Werf successfully enabled the users to design their own. The Molenvliet project also can be called three dimensional urban designs. We do not see separate buildings but a continuous 'urban framework' which forms courtyards interconnected by pedestrian alleys and accessible from the public street where cars are parked. Some courtyards are public and give direct access to the units on the ground floor while open public galleries lead to units on the second floor. Other courtyards contain garden space: both individual gardens for ground floor units, as well as collective gardens. Van der Werf allowed only two interviews with each of the user households to help them with their design. This proved sufficient. Because the units were for rent, cooperation of the owner of the estate, a non-profit corporation, was essentiall. Still, today, the management works in close cooperation with the users, and helps them adapt their unit's interior layout and equipment.

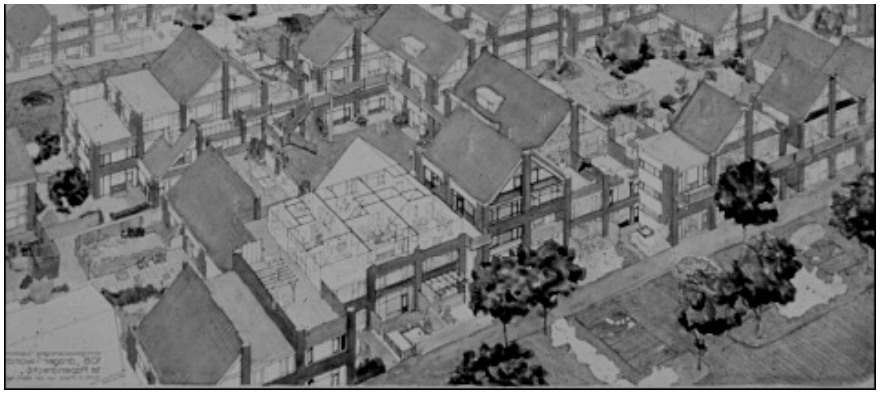


Fig 4-74 Molenvliet Project

Fig 4-75 Molenvliet Project

Fig 4-76 Molenvliet Project

Fig 4-77 Molenvliet Project

Fig 4-78 Molenvliet Project

Fig 4-79 Molenvliet Project

Fig 4-80 Molenvliet Project

Fig 4-81 Affection and belonging

Fig 4-82 Status and Recognition

Fig 4-83 Self actualization

Fig 4-84 Self actualization

Fig 4-85 Fresh produce vendor in front of Schubart Park

Fig 4-86 Healthy fresh produce

Housing: A Green Proprietor in Marabastad

4.5 ACCOMMODATING URBAN NEEDS

"Now my aim is clear: I must show that the house is one of the greatest powers of integration for the thoughts, memories and dreams of mankind."

Bachelard, G. (1964)

Presently, the focus in South Africa is placed on meeting basic needs (i.e. ensuring that all citizens enjoy proper housing, water supply and sanitation, electricity, health care and other services). However, housing should in fact aim to move beyond the provision of basic needs and provide a framework for people to satisfy the more complex needs for themselves. In order to define urban needs apart from basic human needs the following typology for urban needs is drawn up from Faulkner, as summed up in the book by Behrens and Watson: *Making urban places. 'Principles and guidelines for layout planning*. (Behrens & Watson; 1996 p60).

Christopher Alexander, the architect, planner and author of *A Pattern Language* (1977), is of the opinion that "Only people can guide the process of organic growth in a community. They know the most about their own needs" (Alexander, 1977:38) In order to further determine the specific needs of the urban community of Tshwane, part of the research aspect of this work consists of a general survey amongst residents of the housing developments from the 1980's - Schubart Park, and Kruger Park. This survey determined the existing problems in the area and allowed the existing residents to share their thoughts about the future of their neighbourhood.

Table 5: Defining urban needs: A Typology of urban needs – Faulkner (1978.p104)

Needs category	**Description**	**Attributes of the urban environment associated with the satisfaction of needs (examples)**
1. Physiological	Provision of food, shelter and health care.	Retailing / wholesaling systems distributing food, clothing and health supplies. Healthcare clinics and hospitals. Essential services (water, sewerage, power). Dwellings.
2. Safety and security	Protection from physical harm and intruders. Privacy and absence of overcrowding. Protection of property.	Fire and Police protection services. Road safety. Absence of noxious environmental elements (pollutants). Residential areas that ensure privacy.
3. Affection - belonging	Harmonious relationships with other members of the community. Identification with and acceptance of groups within the community.	Facilities for community organizations (meeting places). Physical layout of neighbourhood such that cooperative and harmonious inter-family relationships are fostered. Physical identity of the neighbourhood.
4. Esteem	Status and recognition by others in the community.	Opportunities for home ownership. Prestige of neighbourhood.
5. Self actualization	Role relationship vis a vis others. Realization of one's potential. Creativity / self expression.	Built environment that facilitates creativity and self expression. Employment opportunities and community organizations that enable the use and development of skills.
6. Cognitive/Aesthetic	Provision of educational experiences, as well as intellectual stimulation and experiences. Aesthetically appealing events and phenomena.	Educational and cultural facilities. Recreational facilities. Aesthetically appealing built and natural environment.

From the table we can conclude that a holistic approach towards the provision of housing must be considered in order to formulate a solution that might satisfy the attributes of the urban environment associated with the satisfaction of needs. "What matters in housing is what it does for people rather what it is." (Turner 1976)

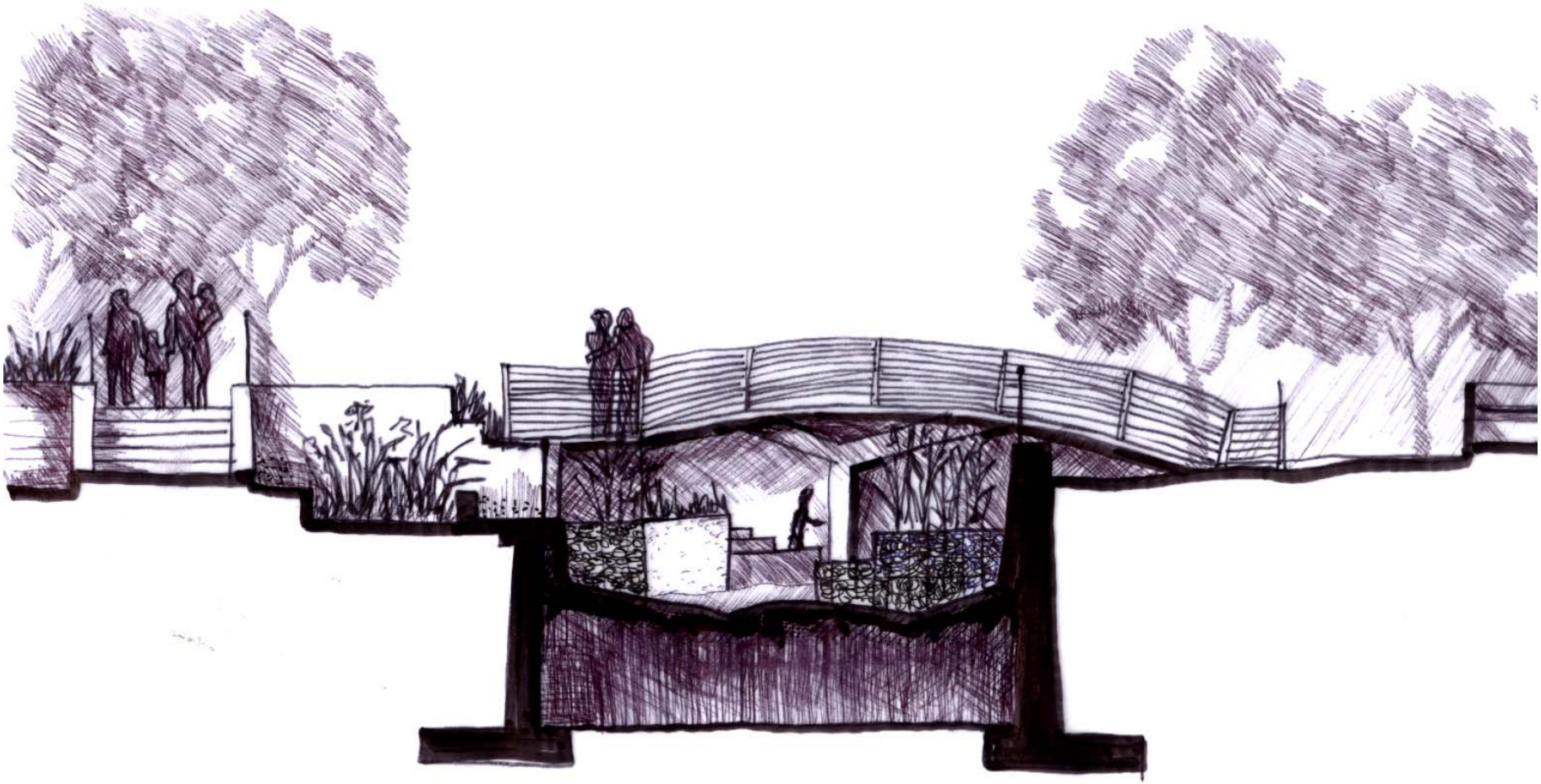


Fig 4-87 Open spaces are important for our individual