OPEN BUILDING PRINCIPLES IN SOUTH AFRICA: AN ACADEMIC EXPLORATION IN SOSHANGUVE, PRETORIA

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KEYWORDS
Open building, social housing, student project, community involvement, innovation

ABSTRACT
The Department of Architecture at the University of Pretoria is working in the South African housing context while gaining knowledge of such issues worldwide. Various innovations are being carried out in terms of housing design and delivery methods in South Africa. Through a methodical approach to design, it is believed that future architects will be able to answer to contextual needs without compromising the high standard of design expected by the Department. One of the aims is to develop methods whereby design alternatives can cater for a range of income levels and lifestyles through the use of different design aiding techniques. It is thus hoped that maximum freedom in spatial layout and installation of parts of the building can be achieved.

This paper evaluates an exercise in open building principles, carried out in October to November 2003, with post-graduate architecture and interior architecture students at the University of Pretoria. The focus was the application of open building principles from the urban design level to that of the building and the residential units. It involved the design of social housing and the upgrading of existing workers' hostels into family units as well as the provision of social amenities. Students were to design various types of housing, showing alternative ways of 'living' and study housing in the area. The project involved close interaction with community representatives, who participated in student presentations and provided feedback and criticism on the student projects.

The area of study was located in Soshanguve, a township with predominantly black inhabitants, situated to the northwest of Pretoria. The previous political dispensation designated specific areas on the outskirts of the city as locations for black migrant workers, known as townships. Subsequently these townships have become cities in themselves, housing a large portion of the total population of Pretoria. It is here that there is a need for urban development and social housing.

It was found that Soshanguve offered an excellent opportunity for learning and the dissemination of good design principles in housing design. A debate on the relevance of open building to South Africa has been initiated. It is concluded that open building systems are an effective tool to achieve diversity and can accommodate for wider sectors of the population.

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1. INTRODUCTION

Housing design innovations are being experimented with in the Department of Architecture, University of Pretoria (UP). The aim is to assess the students on a set of criteria that demands a high standard of design for low-cost design proposals with a realistic focus on affordability. Housing is perceived as the study of sustainable designs that cater for the majority, the unexplored middle ground between high-cost, high-quality options that serve a minority and low-cost, low quality options that serve the majority. Concepts of participation, flexibility and changing attitudes to professionalism and design supportive of this process of exploration are very important.

During Apartheid South African cities were systematically planned to support political ideas of segregation and separate development for different racial groupings. The NE51/9 model, Non-European house designs developed during the 1950's, became the norm and the notorious "matchbox" house became one of the most visible symbols of Apartheid policies. Since the demise of apartheid in 1994, housing has become an important playing card in the political transformation of South Africa. However, much lower income housing provided is still of the inefficient "matchbox" type; isolated units on individual plots set against a barren landscape. In order to encourage more effective and sustainable housing, alternative ways of housing delivery are currently being developed and put into practice. Soshanguve, a township situated to the north west of Pretoria, is one instance where a more people-oriented housing delivery method is being attempted: The People's Housing Process. Townships, for migrant workers, were created to keep cheap 'black' labour close to the 'white' cities (Chipkin, 1998: 157 & 160). Similar to peripheral residential areas in other cities of the world, they are unique in that they never developed viable economic centres or a sense of place and history. They still resemble dormitories for the "temporary" city dwellers, the black labourers. They were never intended to be permanent homes. In Soshanguve there different areas and roads are still known by numbers and letters. There are no street names that give a place identity and the people a sense of belonging. Like other townships, it is now in need of urban development and integration into the existing city structure.

In this state, Soshanguve served as the context for an academic exercise in the application of open building systems, as well as an opportunity for the Department to contribute to the community. The project reported on in this paper was carried out from October to November 2003, with post-graduate students in the architecture and interior architecture programmes at the University of Pretoria. Design at various levels of development, from an urban level to that of buildings and residential units, was the most important consideration. This included a proposed social housing/mixed-use block as well as the conversion of existing workers' hostels into family units. Representatives from the community were involved throughout

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the process; they were consulted at the onset, attended student presentations and gave criticism on the students' design proposals. The implications of this project are investigated in terms of the relevance of open building principles to Soshanguve, the project outcomes, importance for both the architecture and interior architecture programmes and the continuance of such projects.

2. STUDENT PROJECTS ON HOUSING

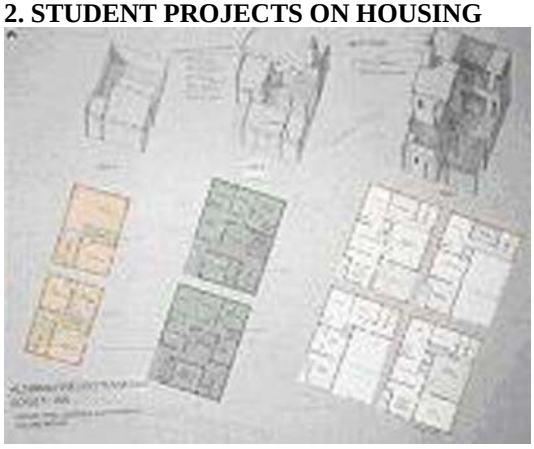


Figure 01: Student project 1999: a unit at different stages of growth and with various options for internal layouts at all the phases of development (Photographs, A. Osman, 1999).

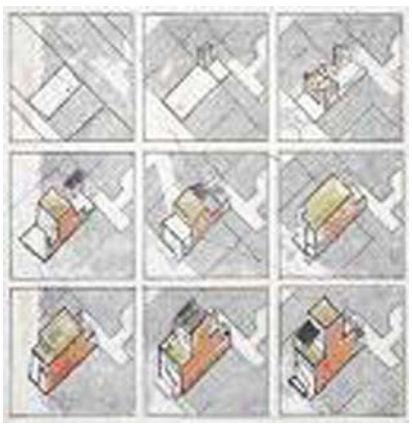


Figure 02: Student project 1999: another example of a residential units anticipated development over time (Photographs, A. Osman, 1999).

Since 1998 there has been an ongoing attempt to gain due recognition for housing in the Department, as it is particularly relevant in a developing country like South Africa. Designers often perceive housing negatively, as an issue only for a few campaigners, and lacking opportunities for good design. However, it is believed that innovative and appropriate educational approaches toward housing can equip future designers with the skills and attitudes that may enable them to address legislative and financial restrictions creatively while maintaining high standards in housing design.

Changes in the curricula were proposed in 2002 (Osman & Lemmer, 2002) and were officially implemented in 2004 (Regulations and Syllabi, 2004: 67-68). The approach achieves specificity to the South African context while also acquiring knowledge of housing issues worldwide. Methods that allow for user participation in design decision-making have been experimented with (Figures 01 & 02). Evolutionary housing design, through the use of generative graphs, allows users a larger degree of participation in the choice of spatial needs, arrangements and sequence of growth (Di Lullo, 1981: 23). This is based on open building concepts developed in the Netherlands (Habraken, 1972). Generative graphs have been integrated with support and infill systems (Osman, 1995: 205) and used in a variety of student projects, where maximum freedom in spatial layout and installation of parts of the building is attempted. Such design-aiding techniques optimise the contribution of role-players in housing through maximum transparency and effective communication. In the light of this, the house is seen as a flexible/adaptable entity, an armature (Macdonald 1996: 56), rather than a fixed final product.

The physical and visual legacies of apartheid are addressed through task-oriented courses as future professionals need the skills to deal with the transformation of township landscapes, upgrading hostel compounds and creating mixed used and nodal developments to connect the isolated 'black' townships to the historically 'white' CBD.

3. COMMUNITY SERVICE AND INVOLVEMENT

The introduction of a new undergraduate module in "Community Based Learning" is being proposed at the University of Pretoria. The module is offered on a project-orientated basis. Aims are the development of interpersonal skills, the ability to communicate effectively with a community, the ability to work in a multidisciplinary environment, and the development of an awareness of personal, social and cultural values of those affected. It will be people-driven and is based on skills transfer and community empowerment. Housing is particularly relevant for such projects (De Villiers, 2004).

Community projects are mutually beneficial, academically and socially. Academically, students learn from the community's situation and obtain their direct input in design proposals. Projects thus allow for housing alternatives, which are informed by actual community needs and financing options. At the same time the community benefits through research into housing delivery and a vision for a more humane living environment, imparted to them as good design principles in housing. Long-term commitment to specific target groups by the Department would ensure continuity and success of joint projects rather than the fragmented and disconnected nature of community liaisons at the moment. Soshanguve has been identified as such.

4. RELEVANCE OF OPEN BUILDING SYSTEMS IN SOUTH AFRICA

Housing landscapes in South Africa, which evolved during the apartheid era, still continue as sterile, regimented and inefficient settlement patterns. There is a need for the development of sustainable housing systems. The premise of this argument is that housing should be adaptable within a stable and robust support structure; this urban support structure gives

an environment its character. The aim is to allow for flexibility while not subtracting from an effectual urban identity. A careful adaptation of open building systems to the South African context may be the means to introduce in this potential for change without disrupting the stability and quality of the environment.

To the housing practitioner involved in housing on a daily basis, issues of quality may be lost among the more pressing reality of the need to house large numbers of people very quickly. Yet, some reflection will reveal that the present approach is unsustainable and some projects may soon become inappropriate or altogether redundant. It could be argued that existing policy frameworks do not encourage innovative approaches and designs. Legislation and the subsidy system are restrictive, and they need to be challenged. It is important to note that the more diversity is accommodated in housing schemes, the more this diversity will become visually and spatially evident.

Township communities also have a role in limiting experimentation in housing forms and building materials. New houses built in townships are restricted to the typology: one-house per plot. The most popular design, it seems, is what is termed 'the 4-roomed house'. This rectangular unit resembles the NE51/9 model of the Apartheid era. Preferred and prevalent materials of construction are brick, mortar and corrugated sheets (Mokwena, 2003). A rectangular unit using these conventional materials is a status symbol. Many people do not want to stand out as living in experimental homes.

Design principles that need to be taken into consideration in any housing project, if a positive urban environment is to be created, are densification, route definition and spatial hierarchies. These need to be integrated with strategically placed functional and visual nodes, orienting one within an area. Dewar and Uytenbogaardt (1991) believe that a positive environment can be achieved regardless of the quality of the individual buildings: it is not intended to undermine the importance of providing good quality individual houses to families, but rather to emphasize the importance of the individual house in contributing to the surrounding spaces, the quality of the streets and the potential of an area to be passively monitored by the community without the need for physical enclosures. Many of these factors can be achieved through site shape and size, positioning of a unit within a plot and the relation of house units to each other. The idea of urban design as an inseparable component of housing is reinforced. Hopefully some of these principles can be shared with communities through more collaboration with designers.

4.1. Levels and agents of control in the built environment: democratic processes

Open building acknowledges the large number of participants in the development of the built environment, thus creating a richer, layered, sustainable environment rather than a sterile, repetitive, monotonous one. It empowers people in that it involves them in the decision-making process as well as in implementation. Habraken (1998: 28) states that the built environment may be described solely in terms of live configurations operating on different levels. In so doing, it is described as a dynamic form controlled by people, fully taking into account that built environment is a product of people acting. Dewar and Uytenbogaardt (1991: 35) refer to a process of 'negotiated reactions' whereby continuous transformation is achieved within a stable environment. This is perceived as a common characteristic of successful urban places.

4.2. Open building systems as a tool to achieve diversity

According to Dekker (1998: 312) the aim of open building is to find principles of ordering and combining housing subsystems to give optimal freedom for design layout and installation. This allows for efficient building and makes possible the redesign of a subsystem or its replacement, allowing for alteration over time and higher possibility for user choice (Dekker, 1998: 311). It can be used at all levels of development and enables both stability and transformation in the environment. Parts of buildings constructed according to local building style and regulations can remain constant within an open building framework, while the building interiors change more rapidly (Habraken 1998: 7). Variety in the quality of infill/fit-out level can thus be achieved. The infill/fit-out level refers to equipment, non-load bearing partitions, pipes, cables and ducts. This maintains the building level/support as the essential provision of space and shelter (Dekker 1998: 312, Habraken 1998: 72). The building becomes sustainable, able to undergo interior alteration, so as to remain useful. In this way base buildings can be designed, having optimum capacity for diversity and efficiency at the fit-out level.

4.3. Industrialised systems and relevance to developing contexts

A systems approach to building includes modular and dimensional co-ordination, user-oriented design and construction, computational support of design, construction and manufacturing, industrialisation, rehabilitation of existing buildings and development of the principles of sustainable design (Dietz and Cutler, 1971: 112). Open systems have been promoted by those who have pointed to the incapability of traditional building processes to cope with sophisticated production (Westra, 2002: 1667). Using modular systems may facilitate quicker construction and save costs (Martin 2001: 32). This is a concern because South Africa is a developing country, which does not have the technology nor the money to support a system, which appears to depend on just that. A response may be to devise processes that adapt open building to the South African context and link up existing industries, such as combining indigenous knowledge and modular building systems as a means of providing low-income housing as experimented by Brewis (2003:14). Modular systems are affordable, adaptable and their quality can be assured through manufacture under controlled conditions (Brewis, 2003: 17).

Houses have been adapted to inhabitants' changing needs in many contexts (Habraken, 1998: 7). Changes may mean the inclusion of income-generating activities, subdivision or extension. The more diversity is accommodated in a housing

scheme, the more this diversity will become evident visually and spatially, and the more solutions will address longer-term needs, thus rendering these approaches sustainable (Osman and Gibberd, 2000: 6).

4.4. Relevance of open building to South Africa and different tenure forms

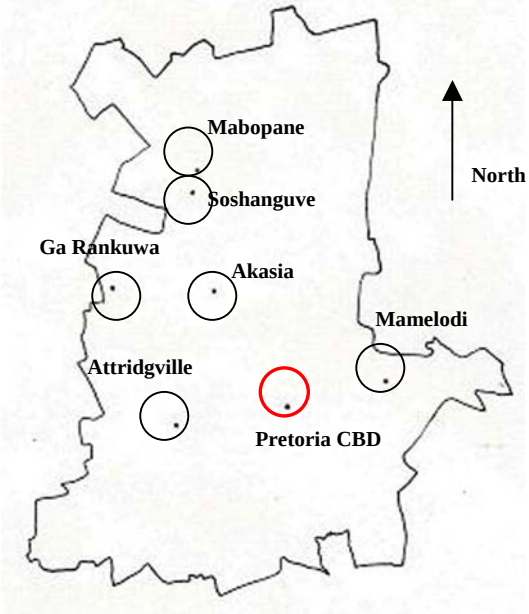
There are special considerations in the South African context that may support the implementation of open building. Osman and Gibberd (2000: 6) estimated the percentage of the population in South Africa most likely to be experiencing problems with the built environment, including their own homes, at 44%. This was based on statistics concerning the disabled, the elderly, children and HIV+ people (Statistics South Africa, 1999). Environments need to be designed in such a way as to allow maximum accessibility and transformation to accommodate for all sectors of the population.

When addressing issues of housing quality, such as accessibility and appropriateness, affordability is argued to be a constraint. It must be emphasised that there is no one solution to cost efficiency, that is, it needs to be addressed in more creative ways with a long-term vision. An open building system approach, as a design tool in housing for South Africa still needs further investigation. In rental housing, a unit houses different people through its lifetime, with different needs. Open building strategies, combined with a flexible rent policy, have been used in the Netherlands to improve quality of the neighbourhood, building and dwelling interior scales. Rather than having a standard quality of infill for all the tenants, a consumer-oriented rent policy is implemented to offer a flexible response to clients' needs in terms of infill quality, while maintaining a high standard of support quality (Dekker, 1998: 311). As social housing in South Africa is mostly rental stock, this approach should not be easily dismissed.

5. SOSHANGUVE

The area of study is located in Soshanguve, a black township situated to the northwest of Pretoria (Figures 03 and 04). Soshanguve, previously designated for migrant workers, has become a city in itself, housing a large portion of the total population of Pretoria. It has the typical features of townships all over South Africa. It is home to a multilingual and ethnically diverse population. And is mainly residential, having no significant central business core and is poorly serviced (http://www.jwstrydom.batcave.net/disadvantaged%20communities.html). It is the location of the Technikon Northern Gauteng and a Technical College and borders on Rosslyn, an industrial area, which provides employment opportunities. The Tswaing Crater to the north, part of a nature reserve, establishes the potential for tourism.

The Benevolence Trust, a non-profit organisation in the area, was established to assist in development projects with a focus on housing. Its influence has been extended to government's approach to housing at a national, provincial and local level (Mokwena, 2004: interview). The community is open to experimentation in building materials and methods on the condition that perceived durability, safety and aesthetic standards are met (Brewis, 2003: 18-22). Due to these aspects, and the expertise and positive role of the Benevolence Trust, it is an exceptional learning context for UP students and an excellent opportunity to disseminate design principles believed to be vital in the creation of positive urban contexts.



Figures 03: Schematic map of Pretoria and surrounding townships (Sketch by A. Osman, 2004).

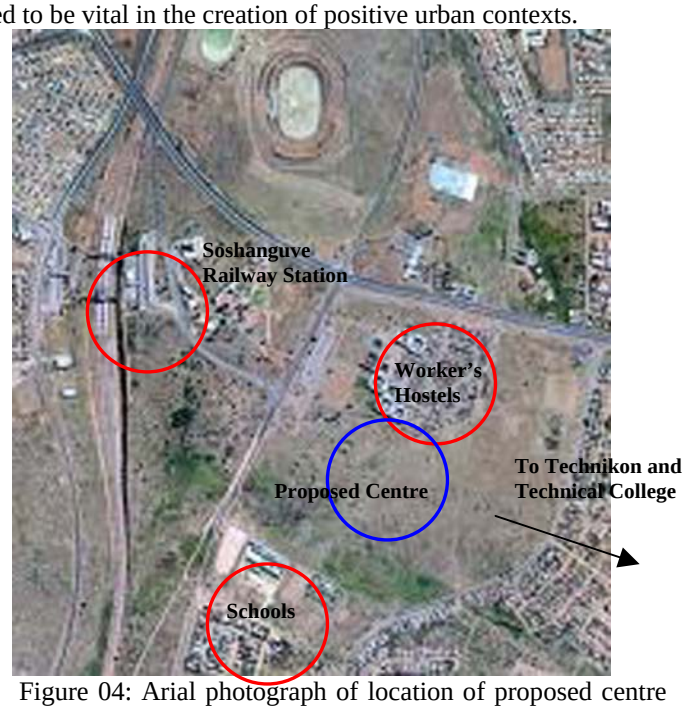


Figure 04: Arial photograph of location of proposed centre in Soshanguve (Barry, 2003).

6. STUDENT ASSIGNMENT, OPEN BUILDING PRINCIPLES IN SOSHANGUVE

Seven post-graduate students in the architecture and interior architecture programmes of the Department of Architecture completed a design assignment in Soshanguve at the end of 2003. The focus was the application of open building principles from the urban design level to that of the building and the residential units. It involved the design of social

housing and the upgrading of existing workers' hostels into family units as well as the provision of social amenities. The project worked alongside the community, who participated in student presentations and provided feedback and criticism on the student projects.

The aim of the project was to equip students with skills and knowledge of housing design. A deeper understanding of housing issues was developed through the study of international precedents and alternative approaches to housing provision. Housing design was explored at a variety of levels. The theoretical component covered a number of themes such as housing policies, economics, management and design. Practitioners, policy makers, housing associations were invited to present talks that focussed on their personal experiences, their projects and approaches. The opportunities and difficulties of actual implementation were debated.

The design project required that students "re-invent the everyday" and create a dynamic urban context through phasing, privacy, variety and integration. The design also called for the creation of a visually dynamic context. The needs of all sectors of the target population needed to be catered for through inclusive design principles. Students were to design efficient living units in optimal space, linking well with outdoor spaces. Finally, open building was to be used as their design tool in achieving the above. Assessment was done by lecturers and through peer-evaluation.

7. OUTCOMES: THEORY AND PROJECTS

7.1. Theoretical component

The students presented their intentions to the Benevolence Trust and they identified the following focus points:

- To provide alternative housing approaches to address the needs of selected government subsidy beneficiaries.
- To design a 'heart' for Soshanguve. The 'heart' will be an interactive social centre incorporating mixed-use spaces.
- To design housing around transport nodes and educational institutes, as these become prime triggers for formal and informal activities: health services, commercial, industrial, training and income generation for students, and agriculture. Student housing becomes a vital component of any development in the area.

Their stated vision for the area was to create a sense of community up-liftment, self-empowerment and self-employment. In their project reports, they defined a theoretical approach to housing in the area, as well as the possible applications of open building principles to Soshanguve. They were encouraged to focus on several aspects:

- **The environmental, social and economic benefits of high densities.** Dewar and Uytenbogaart (1991) explain how, in positive urban environments, the urban fabric at the smallest scale is fine-scaled and complex. It is at this scale that most impact is made on the daily lives of people. The layering of an environment where small businesses thrive was aimed for. A tradition of high-density living is already established in the hostels and this was taken into account in the urban design proposal.
- **Tensions created between transport nodes.** These nodes are perceived as "catalytic nodes" (Van Gelder, 2003). A process is visualised, where small informal businesses will be the first to trade on the street front. As the need for accommodation grows, small businesses will be replaced by multi-use buildings, offering residences above or next to shops (Snyman, 2003). This will happen along the road, high-density units will follow, layered away from the road in a spherical effect creating a node (Snyman, 2003).
- **Creatively approaching the issue of affordability.** Identification of the various, distinct levels of intervention within the urban fabric and dealing with them as separate entities allows different qualities to be achieved within an abiding, permanent support system (Van Gelder, 2003). The initial cost of such an approach was assessed in terms of the long-term benefits. Changing market demands would have to be catered for, if rental housing is to be profitable over a long period of time. The relationship between Social Housing Associations (independent implementation and management bodies) and individual tenants is investigated where tenants change through the life of the project. The degree of permanence and change needs to be specific to any development (Barry, 2003). Cross-subsidization through mixed tenancy, rental and ownership options, in the same development are seen as another opportunity to achieve affordability (Van Gelder, 2003).
- **Control and decision-making at various levels of development.** Plot sizes, the location of buildings within the plots and the resultant character of the streets were perceived as aspects over which the designer had to maintain a high degree of control, while other aspects of the development, within this supporting structure, were seen to evolve over time. Users have a choice in manipulating and changing spaces, materials and building components without disrupting the identifying features of the context. The environment will thus achieve a harmonious balance between stability and change: urban structures remain intact, constant, while buildings are ever changing, accommodating the needs of the community (Barry, 2003). The study of the interface between different technical systems becomes paramount to the success of such a project (Van Gelder, 2003). Freedom of choice and the degree of contact with his/her surroundings a resident requires is important. An aspect referred to as "cautious collectivity" (Vandevyyere & Neuckemans, 2002), also explained as "… flexibly [choosing] your distance from the surroundings and the neighbours." (Chibu, Sakamoto & Kitayama, 2003: 6-7).
- **Creating an urban identity for Soshanguve.** Allowing people to intervene in their environment can achieve a sense of pride and belonging and ownership. "…people will view Soshanguve as a home, rather than a 'waiting room' until they can afford to move elsewhere." (Barry, 2003).

7. 2. Project proposals

7.2.1. Group work: urban design

The students initiated the project by identifying a centre for Soshanguve. The proposed centre creates a link between the Soshanguve station on the west and the educational institutes clustered on the east (Figure 04). It also facilitates a link with the primary and secondary schools located to the south. It contains an exiting residential area with workers' hostels, currently being upgraded to family units. Thus, existing connections are identified and strengthened to provide the main roads through the area (Grove, 2003). Secondary nodes are proposed at main intersections and this hierarchy is combined with a hierarchy of spaces and routes. Thus, in this project a compact system was encouraged where a greater range of services could be experienced, and thus supported on foot.

Road hierarchies are broken down into fixed and flexible elements by one of the students (Grove, 2003). Grove also explores the possibility of disentangling service systems so that repair and change to one, for example drainage channels, does not necessarily obstruct the other; roads. Many of these ideas were tentative and experimental. Open spaces were identified in terms of a required character and fitted into an overall hierarchy of networks. This provided a framework into which individual developments had to be inserted.

7.2.2. Mixed-use building



Figures 05, 06 & 07: Mixed-use building within the proposed urban design framework (Vosloo, 2003)

Optimum design was explored, as well as disentanglement of the various building systems. Special considerations for circulation space, to allow vertical and horizontal extension, were taken into account. The impact of placement of a building on a site was seen to offer opportunities or limitations in extension. A building placed on the border of a site, with service lines on the street edge, allows for extensions to the back, without interfering with the service system (Grove, 2003). This is an approach used by Jo Noero in the Red Location project in Port Elizabeth, South Africa. Examples such as Riken Yamamoto's Ban Building were referred to, where bathrooms and kitchens are placed along the window in the front of the building, freeing up the inside space (Japan Architect, 2003: 94-95). Optimum design in terms of the width of the building, the spatial module and the location of the service cores were attempted to achieve maximum flexibility in layout options. Functions were prioritised in terms of which needed more flexibility and were more likely to change over time.

7.2.3. Hostel upgrade

The brief for this project consisted of upgrading the existing hostels (Figure 08). Workers hostels were originally built to house single men and no provision was made for family units. They were designed with strict control, limited access, in mind to serve the intentions of the apartheid authorities to exclude the black labour force from the 'white' city. Creating permeability and integration with the surroundings becomes a basic design principle. Typical of hostel design, the existing buildings stand out with their massive scale that does not relate to the finer residential fabric. Their design reinforces the concept of total control, in terms of limited access. Small units, and the mild climate, mean that many daily activities take place in the surrounding spaces and streets (Figure 09). The design of these and their relationship to the individual units was a basic tenet in the process. It was attempted to design outdoor space with enclosure and intimacy in mind to maximize people's sense of safety and privacy (Barry, 2003).

Figure 08: Existing façade of hostel (All images, Barry 2003)

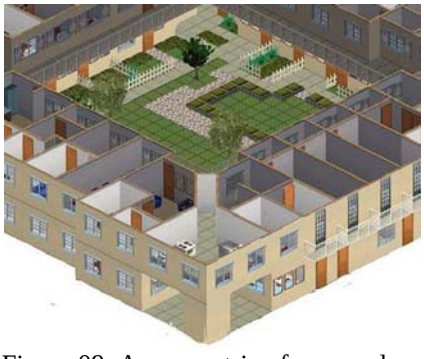


Figure 09: Axonometric of proposal, showing internal courtyard

Figure 10: Axonometric of adjoining and units, showing wet core partitioning

In one project (Figure 10), partitioning walls were proposed, and units were pre-designed, but as services are placed in a core in the center wall, and partitioning walls are non-load bearing, assuming the owner (housing association) may choose to change the building in the future (Barry, 2003). Another student first strips the hostels to their basic structure, she then identifies which walls are needed in the final design and which can be removed, thus, creating the basic structure, "base building", for her design (Van Gelder, 2003).

Yet, another student focuses on the manipulation of the partitioning and furniture levels (Figure 11). A partitioning system of dry walls, sliding doors and sliding panels is proposed. Sliding doors and panels address privacy issues in the units; by day all panels can be moved away to create a spacious environment, and by night the panels can create private bedrooms. Theses systems not only allow for easy interior alteration on a daily basis, family units may also be transformed into communal living facilities (Kruger, 2003). This is important considering the need to combine households where AIDS has orphaned the children, for example.

It is acknowledged that the manipulation of the furniture level requires the full involvement of the tenants to obtain their specific needs within their financial limits. A furniture-making workshop is established to educate people to make these using inexpensive materials like chipboard. Effective storage options are investigated where storage components also serve as room dividers (Kruger, 2003).

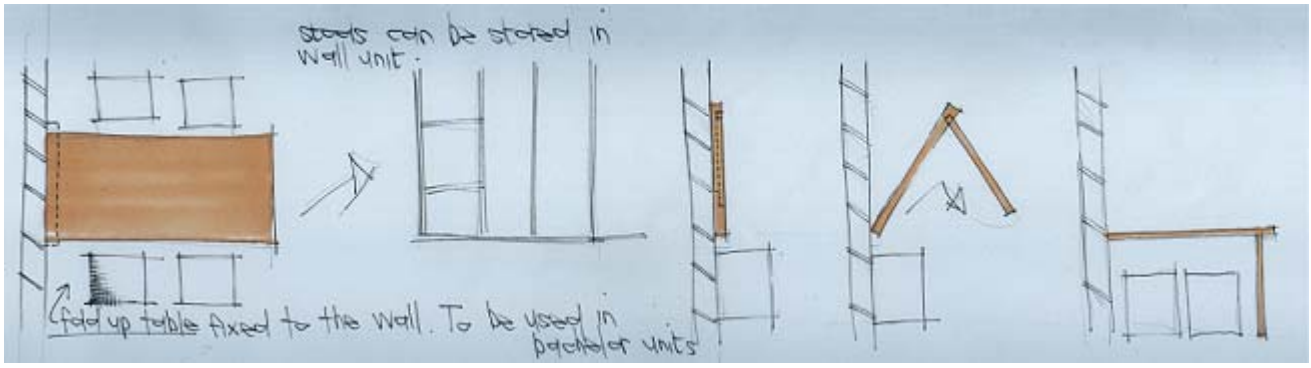


Figure 11: Concept sketches of flexible furniture (Kruger 2003)

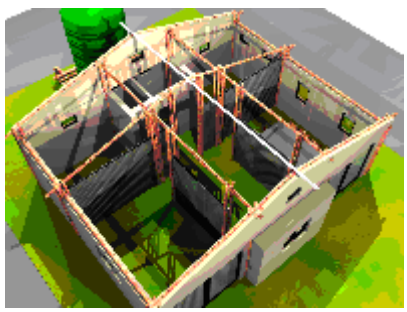
7.2.4. Single beneficiary houses

Beneficiaries are people who earn below R3500 (approximately $500) a month and, thus, qualify for a government subsidy. The intention was to carry out a workshop with a number of selected beneficiaries. Although the community members showed up for the workshop, their immediate area representative was not available. The students were treated with some suspicion and the workshop had to be cancelled. Political hierarchies, that strongly determined the community's contact with outsiders, became apparent. It was speculated that this strict organization was a result of the recent political history of the country.

The needs of one particular beneficiary were used to generate a house deign on an individual plot. The house is divided into wet core, supports and infill. It was seen as important that the house be changeable without affecting bathrooms and kitchens, so these were incorporated as a part of the support structure. The placement of service lines in and out of the house is taken into consideration, in terms of the shortest possible route, and also the fact that future extensions must not interrupt the initial layout (Grove, 2003).

The standard practice of constructing cellular rooms out of load bearing masonry is challenged and it is proposed that it should be made easy for the layman to distinguish between load-bearing and non load-bearing walls if alterations are to done (Grove, 2003). The structural system may be of cast concrete or masonry. In this case timber pole construction is proposed, as they are commonly used, thus expertise exists in the community (Figures 13 and 14). This can be harnessed and developed into a formal building method (Grove, 2003).


Figure 12: Shack of a subsidy beneficiary on a legal plot



Figures 13 & 14: Family house proposal for the interviewed beneficiary (Vosloo, 2003).

8. DISCUSSION AND RECOMMENDATIONS

Soshanguve, as the context for this academic exercise, offered an excellent opportunity for learning and the dissemination of good design principles in housing design. The exploration of concepts such as the application of open building systems in residential architecture can only be fruitful through more interaction with housing practitioners, policy-makers and community representatives. This paper has served as an initiation of debate in an approach that is believed to present immense potential if the special needs of the South African population are taken into consideration. Open building systems can cater for the unique social and economic characteristics of the country. Interaction with community representatives, who had expertise in leadership, training and a hands-on approach to dealing with housing and development issues, was invaluable.

Through the working with open building principles, it has been discovered that it holds potential for design and research collaborations between architecture and interior architecture, at the Department. The two programmes were amalgamated in 2000 and are still pursuing more academic integration. Recently, May 2004, a similar project; re-using the same hostels at Soshanguve for social housing, was run successfully with third year interior architecture students. They were able to work through all levels, from urban scale down to detail design of partitioning systems and multi-purpose furniture.

The concept of participation, as an accepted paradigm in development, is explored through methods that allow for user participation in design decision-making. Such design-aiding techniques optimise the contribution of role-players in housing through maximum transparency and effective communication. Housing is perceived as the study of options, giving people variety and choice, rather than the previous tradition of design where architects worked in isolation and the end product was fixed and unchanging based on a rigid aesthetic ideal.

Open building systems are perceived as a tool to achieve diversity. Liaison with existing industries in townships is believed to offer opportunities for relevance and flexibility in design as well as support local entrepreneurship. The relevance of open building in different tenure forms is acknowledged, with the suggestion that aspects of the built environment be prioritised in terms of which required more flexibility and were more likely to change over time.

Finally, the importance of academic connection with housing practitioners and becoming involved in real housing projects themselves cannot be undermined. It is acknowledged that the construction industry is very conservative, especially in South Africa, but the importance of new approaches needs to be fully investigated and tested in real life.

9. CONCLUSION

The student project at Soshanguve has proved to be significant for a number of reasons. It brought the Department and its students in contact with a very real issue in South Africa. There is a need for the development of sustainable housing systems relevant to the context. This paper shows, through students work, that housing can be adaptable within a stable and robust support structure. Diversity can be achieved through implementation of open building systems that have been specifically adapted to our context. It has also been seen through this paper that the continuance, and now in conjunction with the 'Community Based Learning' module, of housing innovations is important for both architecture and interior architecture and move towards further integration of the two disciplines.

The basic principles of Residential Open Building, such as modular coordination, can be utilised in low-cost contexts through liasing with existing industries. Job opportunities would thus be created. Designing for change is seen to be important in any context, but particularly in South Africa due to specific issues such as AIDS orphans who are left to fend for themselves and separate households many times have to be merged.

Separating building levels also assists in generating more options for affordability through the use of different qualities of infill/fit-out without compromising a high quality support structure. Finally, with a well designed support structure, the designer can achieve a high level of control over the spatial quality of an urban environment.

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