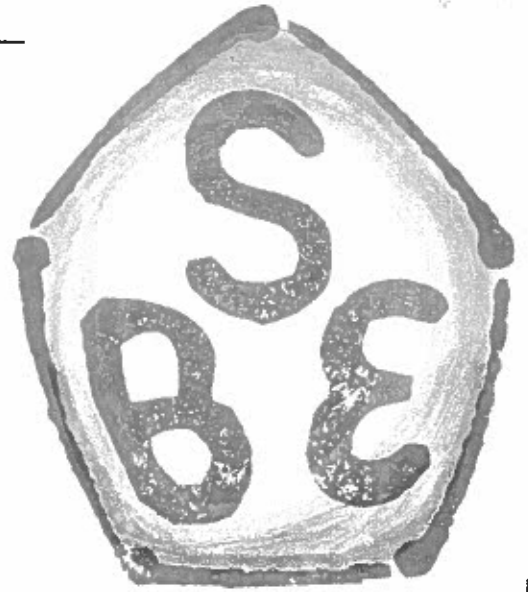


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GREEN PLANNING PROCESSES AND PRODUCTS FOR THE BUILT ENVIRONMENT

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ABSTRACT

Notions of sustainability and unsustainability, including the five-capital model of sustainability, are presented to provide a planning context for sustainable, green building and development.

Proposals for green planning processes are analysed for their applicability to the South African context. Precedent, such as green architecture and Curitiba, is considered to inform strategies for green planning processes and products.

In conclusion, the need to create a greater awareness of green urban planning processes and outcomes; to integrate green planning legislation as well as the need for multi-disciplinary research is underlined.

PROLOGUE – 2006

Tourists arriving at Cape Town airport are handed a small blue 'passport' to the 'Western Cape Energy-Efficient Zone', duly date-stamped with the date of their arrival. (Eskom, 2006) The purpose of this 'passport' is to provide energy-saving tips to tourists while they are in the Western Cape. These tips are sensible, e.g. "Switch off unnecessary lights..; Don't fill up the kettle if you only need hot water for one cup..; Take a shower instead of a bath.." etc.

When staying with family or friends "Gather round a cozy fireplace instead of a heater..; Surprise your hosts with a braai, saving them the effort of slaving away in front of a hot stove..."

The seriousness of these Western Cape power outages cannot be played down in the 'passport'. Tourists are given practical advice about how to prepare for power outages. They should keep the batteries of their cell phones fully charged, keep the petrol tanks of their vehicles full, and keep some cash handy should ATMs become inoperable. Finally, keep a stock of fresh batteries to operate a torch. Whilst attempting to remain upbeat, the 'passport' portends an urban environment without land-line telecommunication systems; no public or private transport (no fuel for taxis, buses, cars), and no cash to buy food.

Paperback and movie scriptwriters have used a combination of these individual 'inconveniences' to create dramatic, apocalyptic scenarios. This is not far-fetched. A 'cocktail' of these disruptions, as would be concentrated in densely populated urban areas, such as the Cape, brings home the unsustainability of urban environments that are over-reliant on a non-renewable, single source of energy. The need for green urban planning, as well as the need for green contingency plans, is urgent.

INTRODUCTION

South Africa is a developing country, rich in many resources, especially minerals, but poor in others, the foremost of which is water. More thought and innovation are needed to plan for sustainable development. Green planning processes and products are required to ensure a 'better life for all' in the urban and regional areas of South Africa.

Proposals towards green planning processes will be analysed for their applicability to the South African context. Precedents, such as green architecture and Curitiba, are considered to inform strategies for green planning processes and products. Other case studies of 'how not to' are presented to point in the greener 'how to' direction.

NOTIONS OF SUSTAINABILITY AND UNSUSTAINABILITY

Sustainable or green development has been defined as "... a process which enables all people to realize their potential and improve their quality of life in ways that simultaneously protect and enhance the Earth's life-support systems." (Parkin, 2000: 4) The context within which architects and planners aim to achieve sustainable building and development has been conceptualised in a 'five-capital model of sustainability'. Parkin (2000: 7) defines the five interlinked 'capitals' - Natural, Human, Social, Manufactured and Financial - as follows:

"**Natural Capital**, also referred to as ecological or environmental capital¹, falls into two categories:

a) *Resources*, some of which are renewable, such as trees, vegetation, fish and water); and some which are non-renewable, such as fossil fuels and minerals.

b) *Services*, such as climate regulation and the powerful waste processing cycles.

Human capital is "... the health, knowledge, skills, motivation and spiritual ease of people.

Social capital is all the different cooperative systems and organizational frameworks people use to live and work together, such as families, communities, governments, businesses, schools, trade unions, voluntary groups.

Manufactured capital comprises all of the human fabricated 'infrastructure' that is already in existence: the tools, machines, roads, buildings in which we live and work ... in some cases manufactured capital may be viewed as a source of materials (e.g.

building waste used as aggregate for road building or repair). **Financial capital** has, strictly speaking, no intrinsic value; whether in shares, bonds or banknotes, its value is purely representative of natural, human, social, or manufactured capital. Financial capital is nevertheless very important, as it reflects the productive power of the other types of capital, and enables them to be owned or traded."

Architects tend to focus primarily on manufactured and human capital. Working on a broader canvas, urban and regional planners need to take a holistic view by considering inter-relationships between these five capitals to achieve sustainable development.

In contrast Caird (2001: 30) prefers to refer to unsustainability rather than sustainability:

"Unsustainability is not new. If human activity was ever truly sustainable, it stopped being so with the Industrial Revolution and the start of colonialism. It is not credible, therefore, to regard

¹ "Market prices ... for ecologically significant goods and services do not reflect the size of the corresponding natural capital stocks; whether there are critical minimum levels below which stocks can no longer replenish themselves - which is the real measure of bio-physical scarcity; the functional roles of such stocks in relevant ecosystems or their ultimate value in sustaining life. When market prices fail to convey vital information they lose any legitimacy to the claim that they foster economically efficient decisions." (Allen, (1995) quoting Prof W Rees, an ecological economist at the School of Community and Regional Planning, University of British Columbia.)

sustainability as some form of balance between man (sic) and the rest of nature that can be perpetuated. Sustainability is about lessening unsustainability.”

Britton (1996:9) maintains that the dilemma of sustainability and the challenge that needs to be addressed is “...that an apparently unbridgeable gap exists between the basic sustainability objectives ...and our actual conduct and choices in daily life.” Caird (2001: 31) agrees: “..unsustainability is about people’s behaviour, as individuals, which only cumulatively has adverse effects. ..This means that sustainability must be about influencing people’s behaviour and must, therefore, be about markets. The ability of market pressures to affect sustainability issues will have various constraints:

- People are generally conservative; they will not espouse radical change quickly.
- Markets for new ways of living are, however, ripe for exploitation.
- In a free society, the government is unlikely to have much direct impact on sustainability. It cannot regulate people’s freedom of movement and residence. It can merely manipulate the market by fiscal and regulatory means to try to influence the way people behave.
- What is on offer will have to appear to be good value for money as well as offering sustainability.”

The market referred to above might work well for the employed earning salaries, but the unemployed and poor are in most cases excluded from its (increasingly more consumerist and materialistic) benefits: “Environmental issues are a low priority among people whose survival is in question. They will become concerned about and invest in ecological conservation only once a certain level of income is attained.” (Naidu (1999) quoting van Zyl)

LEARNING LESSONS FROM GREEN ARCHITECTURE

A growing consciousness of green architecture is evident globally as well as in South Africa. Lessons may be learnt from this related discipline, as the links between architecture and urban planning have long been established: “...in about 1452, Alberti wrote that a palace is a small city, whereas a city is a large palace. Around 1960, Aldo van Eyck came back to this thought when he said: “A house must be like a small city, or it is not a proper house; and a city must be like a large house, or it is not a proper city.” (my emphasis) (Von Moos, 1987: 60) Seen against this background, green urban planners can learn numerous lessons from planning for ‘green’ houses.

A Green Building in Germany – the ‘Passivhaus’

Monbiot (2006: 6) maintains that a passive solar design house² in Germany, the ‘Passivhaus’ “...is a house without radiators, fan heaters, stoves, air conditioners or any other kind of heating or cooling device. The only heat it requires is produced by sunlight coming through the windows and by the bodies of the people who live there. ...they have a mean indoor temperature of 21,4°C ..All that distinguishes these from other houses is that they are built properly. They are airtight (the air that enters the house comes through a heat-exchange system) and have no “thermal bridges” – material that can conduct heat from the inside of the house to the outside. ...A development of 20 houses in Freiburg, with a measured energy saving of 79% cost only 7% more than a typical building of the same kind.”

Monbiot (2006) somewhat ingenuously states that he fails “..to see why the Passivhaus cannot become a universal standard.” Whilst lessons may be learned from the German Passivhaus, it obviously cannot be applied as is elsewhere because of differing socio-economic and

² “Passive solar design means achieving indoor comfort by designing with nature, using sunshine, wind and night cooling together with the building materials. Energy flows naturally while the building responds passively, needing a minimum of imported energy.” (Holm & Viljoen, 1996: 8)

environmental circumstances, such as the availability of local construction skills, materials and water; the climate, topography, soil conditions and indigenous vegetation.

Recent Green Building Projects in South Africa

Energy-efficient building design, such as attempted in the Passivhaus, has numerous advantages that have been recognised by local architects. Holm & Viljoen (1996:1) list some of these advantages:

- for the building occupants it provides indoor comfort; improves quality of lighting and saves running costs
- for the nation it delays the need for further power generation plants and reduces pollution, thereby increasing the health welfare of the population.
- for the environment it reduces impacts; reduces amount of pollutants and further minimizes the depletion of non-renewable energy resources.

A review of three randomly selected projects that received awards for the 'Sustainable Building Best Practice Awards (Africa Region) 2004' (Leading Architecture, Nov/Dec 2004, pp 36-46) indicates that sustainable buildings need to meet environmental performance criteria, such as:

Social

- Community participation
- Job creation in the local community - unskilled and skilled labour sourced locally
- Training and skills transfer

Economic

- Building costs lower than the local norm
- Operating or running costs lower because of savings in electrical energy (e.g. as a result of solar water heating; photo-voltaic panels; energy efficient lighting units) and municipal water supply (e.g. as a result of composting toilets; water efficient fittings; grey water recycling; rainwater collection from the roof and/or from site run-off)

Environmental

- Reduction in use of embodied energy.³
- Correct orientation to optimise natural light and ventilation.
- Garden used as a source of food and/or indigenous medicinal plants.

Green urban planning requires similar performance criteria. The five capitals and the above criteria could provide a starting point for the formulation of criteria that would be relevant to the local urban centre and its periphery.

Legislating Green Buildings in South Africa

In South Africa the process of legislating energy-efficient building regulations is underway.⁴ Laing (2006: 6) reports that an energy sub-committee of the South African Bureau of Standards (SABS) is tasked with finalising South African National Standards (SANS) for energy-efficient buildings. H Harris is the interim chairperson of the SANS 204 (artificial environments) committee. According to Harris (as quoted by Laing): "SANS 204 will cover the energy efficiency of buildings that are not

³ "Energy required in the construction of buildings is referred to as embodied energy. It is a measure of the energy needed to produce and manufacture a building material or component and to install it within the construction process." (Holm & Viljoen, 1996: 3)

⁴ Holm and Viljoen (1996) state that "It is known that South Africa is a very energy inefficient country, we spend 15% of our Gross National Product on energy. ...Most other nations have an energy intensity of 5% to 10%. This implies that an easily attainable energy saving of 10% would produce an immediate national financial growth of 1,6% in the South African economy. Houses represent about 22% of our total national energy consumption. (Basson, 1994) The poor spend up to 42% of their disposable income on space heating during winter. (Hoets, 1990)"

passively environmental. It will impose energy usage standards for commercial and retail establishments which are air-conditioned and artificially heated. All energy usage in the building will be designed to be energy efficient.”

Sans 283 will deal with passively environmental buildings. The Department of Trade and Industry will be requested to amend the national building regulations to include the recommendations contained in Sans 204 and Sans 283 once finalised. The time frame for this is not clear.

GREEN URBAN PLANNING PROCESSES AND PRODUCTS -- Embracing “an enriching variety of ideas”⁵

The planning process and planning product, or substance, are both alluded to in Hague’s (2000: 6) view of colonialist town planning: “So (colonialist) town planning was essentially local, physical and restrictive, rooted in an engineering tradition, though also influenced (as in the UK) by architecture. It was reactive and practised sporadically, when or where the need arose and/or the people were there with the necessary skills.”

South Africa was not only subject to colonialist town planning, but was also subjected to apartheid’s segregationist policies that left a legacy of spatial separation and fragmentation. For example Johannesburg, the economic powerhouse of South Africa, “...was at the centre of struggles for, and against, the apartheid policies of influx control, residential segregation and job reservation.” (Beall et al, 2002) This greatly inefficient spatial legacy of apartheid presents an opportunity for urban and regional planners in South Africa not only to address fragmentation and dislocation, but also to do so in ways that are more sustainable than the existing dysfunctional built environments. Some varied and not necessarily integrated procedural and substantive ideas in support of green urban planning are presented for further consideration.

Towards Green Planning Processes

Hewitt & Hagan (2001: VII) subscribe to continuous, dynamic planning processes, rather than static planning products: “There is no final product, only process, or rather processes, because the interventions necessary for one city to become more environmentally and/or socially sustainable will differ from those necessary for another city, with other historical, physical and social conditions.”

Prior to and during the World Planners Congress held in Vancouver from 17 to 20 June 2006, a group of planners (Hague et al, 2006) prepared a position paper that develops themes from the Draft Vancouver Declaration for debate. The group puts forward a concept of ‘New Urban Planning’, which they state is “...central to a new paradigm for governance of human settlements...New Urban Planning means being proactive, focused on sustainability, and making the connections between people, economic opportunity and the environment.” Accordingly Hague et al (2006: 3-6) formulated ‘Ten Principles of New Urban Planning’, which are summarised below. The principles are mainly process-oriented and are informative when existing planning processes in South Africa are re-considered in order for them to become more sustainable:

1. *Sustainability* ...integrating social, economic and environmental considerations in human settlements development.
2. *Integrated Planning*. ...deliver efficiency and effectiveness by adding value through policies that support, rather than undercut, each other.
3. *Integrated with Budgets*. ...mechanisms that ensure effective linkages to private and public budgetary processes.

⁵ “The symposium (‘Energy and Urban Strategies’, Austria, July 1999) was a microcosm of a still-emerging macrocosm, in which nothing is entirely fixed, mapped or agreed upon. This is both the strength and weakness of ‘sustainability’ in general and the ‘sustainable city’ in particular; the looseness of parameters that allows it to embrace **an enriching variety of ideas** also means it appears to contain too many internal contradictions. ...not even the essentials are agreed upon.” (my emphasis) (Hewitt M & Hagan S, 2001: VII)

4. *Planning with Partners.* *New Urban Planning* is a means of negotiating where and how development happens. It is about planning with all sectors of the community with a stake in the place – not only governments, but also private sector organisations, voluntary agencies and civil society.
5. *Subsidiarity.* ...deciding where roles and responsibilities are lodged in *New Urban Planning*. ...there needs to be decentralization, with local governments playing a leading role, and empowerment of community-based organisations on matters that can be determined at neighbourhood level.
6. *Market Responsiveness.* *New Urban Planning* understands market demand, particularly in land and property markets, and is aware of the dynamics and potential of the informal sectors.
7. *Access to Land* Plans must recognize the reality of existing slums and informal settlements, and the rights of their residents, and foster strategies that facilitate upgrading.
8. *Appropriate Tools.* Thoroughgoing land use control is probably only affordable in wealthy economies with highly developed legal systems and a plentiful supply of trained professionals. *New Urban Planning* recognizes that rigid urban containment is not a feasible, equitable or affordable policy in conditions of rapid urbanization. Land use controls should never be used as a pretext for forced evictions of the urban poor in long-established communities.
9. *Pro-poor and Inclusive.* Particular attention needs to be given to those whose voice has often not been heard in conventional public policy-making – e.g. the old, children, those with disabilities, women, ethnic minorities, the homeless, those with low incomes etc.
10. *Cultural Variation.* *New Urban Planning* allows for a variety of outcomes according to cultural priorities and preferences: this contrasts with the uniformity imposed by the old master planning model.

On various levels these principles resonate with South African planning and policies. For example, with regard to '7. *Access to Land*', Minister Sisulu (2006) stated in the budget speech for the Department: Housing, that: "Land is an important component in government's ability to provide the envisaged human settlements and, in collaboration with the Department of Land Affairs, the Department has developed a Special Purpose Vehicle for the acquisition of land...Such land will be acquired from diverse sources including State Owned Enterprises as agreed by Cabinet." Some local authorities have placed a moratorium on the sale of their land to keep it for the Department: Housing's possible future needs.

Pithouse (2006) elaborates on shack dwellers' preferred locality for housing land: 'At the core of their (shack dwellers) struggle is a demand to be able to live close to the city where there are opportunities for work and decent education.' However, the market value of more centrally located land is comparatively high. The book value of state land is usually much lower than the market value, and the use of the book value rather than the market value of state land should be considered to improve the feasibility of housing projects.

With regard to paying particular attention to "...those whose voice has often not been heard" (as referred to in '9. *Pro-poor and Inclusive*' above), Naidu (1999) suggests that economic policy should be aimed at stimulating economic growth to bolster employment opportunities. It should focus on three goals: "a scale of resource use consistent with ecological regenerative capacities to prevent ecological disasters; a fair distribution of resources to promote greater social justice and an efficient allocation of resources."

Implementing green planning processes

According to Britton (1996: 12) certain criteria need to be met in order to successfully implement green planning processes and to bring about compound change. These criteria include:

- “Agreement among all involved parties on sustainability goals through a committed action based on communication and coordination. For example, agencies with different but ultimately related functions must co-operatively plan, streamline, and participate in targeted projects.
- Use of a consistent approach and a comprehensive plan of action for achieving these goals in a timely manner and assessing reasonable options, focusing on result-based goals, and meeting deadlines for each step along the way.
- Making research and development projects fully multidisciplinary. For example, many R&D projects should not be restricted to separate fields and disciplines, but should be conducted in an interdisciplinary effort and environment.”

Towards Green Urban Outcomes

It is often alleged that modern urbanity is generally unimaginative, monotonous, sprawling and with inadequate natural open space. Market-driven, profit-maximising strategies, such as providing smaller houses and erven to reduce building, land and infrastructure costs, have become increasingly evident.⁸ Within this context, existing urban areas are usually characterised by a centre, consisting of a higher density central business district within an inner city area, and a periphery of medium density mixed uses surrounded by lower density residential suburbs. Urban planners in various countries have argued for, either a return to the abandoned inner city (in those cases where ‘flight’ to the periphery has taken place) or the continued development of multiple nodes within the periphery.

Hagan (2001: 11) believes that this binary ‘right/wrong’ debate on the form that a green urban environment should take should be discarded. “What is obsolete, therefore, is to view the centre/periphery debate in terms of ‘either/or’: privileging either the centre or the periphery when both have strengths and disadvantages, both are highly problematic environmentally, and both are entwined in an embrace that must become mutually beneficial rather than parasitical.” He supports this position with an argument for urbanity: “For example, if the periphery were transformed overnight, if all its rooftops and wasteland were cultivated, all its cars were solar-powered, or, better still, abolished in favour of clean and workable public transportation – if, in other words, the democratically desired periphery suddenly became environmentally sustainable as well, many architects would still object to it, on the grounds of urbanity, or rather its lack.”⁹

Caird (2001: 34) though, maintains that the suburban periphery is shaped by market forces: “The suburban fabric we see today is the result of market demand, and not any sort of (e.g. sustainable or green) urban vision. The market will continue to drive land-use patterns.”

Burton (2001: 24) suggests that an approach to the city centre might well be to allow it to reduce in density: “We should be turning (city centre) brownfield sites back to green space, increasing the tree planting, trying to reduce urban temperatures and maybe allow the city to begin to take a back seat.”

⁸“Energy conscious design is more critical in urban areas where the trend is towards increased densities and smaller stands. Buildings should be designed so as not to overshadow neighbouring buildings and in so doing inhibit solar access.” (Holm & Viljoen, 1996: 1)

⁹ ‘Planned polycentrism’ is also supported by Harrison & Oranje (2002: 28): “..we should accept the reality of the poly-city (the complex multi-nodal city)”

In his vision of the sustainable city, Christie (2001:41) lists the following ingredients:

- Density – this allows diversity without distance.
- Diversity of services – a wide range of needs can be met in a very close space.
- Efficiencies through resource-sharing in dense communities.
- Laboratories for the creation of closed economies.
- Centres of recycling (because of efficiency of scale and the mines of waste material).
- Centres of (environmental) learning, e.g. how to best link up production and consumption.

In South Africa, apartheid's policy of residential segregation has left a legacy of distant dormitory areas in the extremities of, or beyond, the urban periphery. In order to counteract this legacy, compact cities are proposed by Holm & Viljoen (1996: 2) to reduce the daily demand for public and private transport to and from residences and places of work. "Compact cities, therefore, promote reduced transport costs. Mass transport systems, which are more energy efficient, also become feasible where the population densities are higher, compact cities promote more economical energy distribution systems."

Therefore, given these points of view, innovative, green projects should be realised. These include:

- Single, or groups of, new green buildings;
- Urban renewal and urban recycling of land and buildings. For example, converting office buildings to apartments in the inner city; or converting former migrant worker hostels to family units in the periphery, thereby better utilising existing embodied energy and reducing the use of, and need for, new energy;
- Urban design e.g. creation of a square in the inner city by demolishing an obsolete building, landscaping the brownfield and renovating the buildings around it;
- The green planning of layouts on greenfield sites located in the periphery, so as to minimise environmental impact and energy usage; recycle waste and include a diversity of housing types and densities to provide for affordability, choice, spatial legibility and identity;
- The retention of natural open space and planting of more trees in all new developments to reduce built environment temperatures.¹⁰

In a praiseworthy local green urban recycling strategy, as reported by Malefane (2006), the Gauteng Province's "... housing department has already bought and refurbished 44 buildings in Joburg central, Germiston and Tshwane to convert these former office buildings to rental apartments, thereby reducing the housing backlog."

All these ingredients resonate strongly with the more environmentally sustainable interventions as implemented in Curitiba and presented below.

CURITIBA – A REFERENCE POINT FOR GREEN PLANNING

Introduction

Curitiba, a city in southern Brazil that was planned and built along green lines since the early 1970s, was visited by multi-disciplinary South African fact finding team in 1994. The team included urban and environmental planners, and their report provides a South African perspective on a highly innovative city that has emerged as a 'reference point'¹¹ for architects and urban planners. The more sustainable redevelopment of Curitiba started when Jamie Lerner and his team

¹⁰ "Urban areas have a major effect on the micro-climate. Waste, heat and pollutants generated in these areas result in higher temperatures. This may however be partially ameliorated by the higher densities of trees .." (Holm and Viljoen, 1996)

¹¹ Lerner rejects references to Curitiba as a 'model' that should be slavishly followed: "Curitiba offers the world a 'reference point' the word 'model' is too snooty." (South African Curitiba fact finding team, 1994: 14)

of architects and planners submitted a Master Plan for Curitiba in 1964, in response to a proposal call. The Plan was adopted in 1968 with Lerner initially at the helm of Curitiba's new planning department, and later the city's mayor: "An innovative plan, based on encouraging high density, mixed-use linear urban development radiating from the centre along major transport routes with efficient, affordable public transport was adopted. This structure has produced a vibrant city where one third of the population lives in the city centre, one third in the high density arteries and one third elsewhere. Some 70% of the population use the mass transit bus system for commuting, which is accessible and affordable." (Curitiba fact finding team, 1994:9)

According to Gnatek (2003), Curitiba's population tripled from 600 000 in the 1970s to 1,8 million in 2003. He visited Curitiba in December 2003, and observed that "Far from an idyllic utopia, Curitiba faces the same problems that metropolises around the world do, including overcrowding, poverty, pollution and limited public funding. What's different about Curitiba is that its planners have come up with some creative and inexpensive ways of to go about solving universal problems for cities."

Greener planning processes - lessons from Curitiba

Curitiba "... has succeeded in implementing a holistic and integrated city plan aimed at meeting human needs and empowering the individual. The environmental sustainability of this approach is now a major feature of the plan. It was done by putting in place an effective management system and by maintaining an exceptionally clear sense of direction and purpose for almost 30 years." (Curitiba fact finding team, 1994:5) The fact finding team (1994) identified four characteristics that underpin Curitiba's success:

"Vision and leadership

Consistent and sustained support for a common vision and planning ethic

...collaboration between policy formulation departments, institutes and operational departments.

Holistic and people centred

This is the basis of the city's planning and development programmes

...decisions are taken on the basis of whether developments will contribute positively to the quality of life of the city's people and whether developments are ecologically sustainable.

Creative, simple, feasible and integrated programmes

When developments are considered, they are evaluated as to whether they produce multiple benefits

...the ethic of integration. For example, waste disposal also offers employment to the poorer sector of the population, flood control methods provide recreational spaces.

Civic pride and transparency

Decisions are taken based on research, rather than direct community consultation

A policy of transparency and public education where the community is fully informed of all decisions and given the opportunity to respond has developed their trust. They are proud of their city and actively involved in the initiatives.

The Curitiba fact finding team (1994: 14) identified certain shortcomings with planning processes, e.g. metropolitan coordination; and poor people's lack of access to decision makers.¹²

¹² Christie (2001: 44) identifies such 'access to decision makers' as one of the key needs that has to be met to make cities sustainable: "...we end up with a vision of the ecopolis where we have a lot more dialogue between citizens, local government, and groups of experts, which experts will have to get used to."

Green urban planning interventions and outcomes - lessons from Curitiba

Several innovative spatial interventions deemed relevant for the South African context, are presented in the Curitiba fact finding team's report (1994: 12,13). These include:

- *Pre-primary schools.* Comprehensive support programmes in the form of creches and nursery schools enable economically active mothers to work as well as reduce the number of street children.
- *Tree planting.* Curitiba's programme of planting a tree in front of every house..
- *Large accessible parks* used for recreation and flood control lead to a high quality of life for all citizens...In 30 years the open space per person ...has grown from 0,5m² to 50m².
- *Environmental education.* This is reinforced through its parks programme and the Open University of the Environment, which teaches a diverse range of people – from children to business people – about environmental conservation.
- *Waste recycling.* In 1989 Curitiba realised that their land-fill site would shortly be filled and that a lack of garbage collection in informal areas was causing health problems. ...After establishing the clean up costs by private contractors the city offered an equal amount (in kind: fresh vegetables and bus tokens) to residents of poor neighbourhoods to bring garbage to pick up points. School children may exchange garbage for schoolbooks. Substance abusers are rehabilitated at the waste recycling centre, and recycling profits are used for welfare programmes.
- *Bulk transfer.* Urban conservation is achieved by a programme of transferring development rights...owners can trade their foregone development rights with developers in other zones.
- *Few social housing rental programmes.* All low-income housing programmes visited by the team were run on a home ownership basis.
- *Public transport.* Starting from a very similar situation to many South African cities where 16-seater individually owned and small company buses provided the main public transport system¹³, Curitiba has made remarkable changes. Bus operators were persuaded to form companies under the direction of an autonomous, non-profit company formed by Curitiba. The system provides a comprehensive low cost bus service throughout the city. Profitable express bus services are used to subsidise the conventional urban bus services.

As with planning processes the Curitiba fact finding team (1994: 14) also identified certain substantive shortcomings in outcomes; mainly with regard to water quality in informal areas, and engineering aspects, such as stormwater management, roadway maintenance and sewage treatment.

Unsustainable Urban Planning Outcomes – the case of 'Waterfall City' in Midrand

The biggest property development in South Africa's history (2 200ha) is currently under construction in Midrand. 'Waterfall City' includes a private golf estate with 2 600 homes, an equestrian estate and a public golf course. According to Fife and Bhengu (2006: 18) local and foreign property investors are queuing up for a piece of the profit action. However, environmental conservationists have condemned particularly the golf courses because:

- They will seriously deplete the region's water resources¹⁴ and pollute the Jukskei River and other water courses in the project area
- Endangered plant species in the area could be wiped out by insensitive construction

¹³ Cokayne (2006) reports that the South African government's R7 billion taxi recapitalization programme "...which was first mooted in 1999, aims over seven years to regulate the industry and replace the ageing and unsafe taxi fleet with safe and efficient vehicles via the once-off scrapping allowance." A R50 000 scrapping fee will be paid to a taxi operator for each old vehicle, and this process will be administered by a still to be established 'scrapping administration agency'.

¹⁴ For example, 900 000l of Sabi River water is used on one 18-hole golf course per day at the Sabi River Sun. (Personal communication, B Olivier, Guest Services Manager, Sabi River Sun, 17 June 2006)

- Birds, small mammals and invertebrates will be driven out
- An artificial, environmentally sterile and useless area will replace a natural eco-system.

Fife and Bhengu (2006: 20) also highlight serious social concerns with Waterfall City: "...the gap between rich and poor communities is perpetuated: a gated estate is located ...in the southwest, while the affordable housing is clustered in the northeast...development ...will reduce the largest open space in the city and aggravate congestion of roads and services networks." However, they do not refer to the lack of energy saving, water saving or solid waste recycling measures at Waterfall City. This is a poor reflection on both the readership, which is seemingly uncritical of new unsustainable built environments, and on Fife and Bhengu, who do not stress the crucial necessity for green urban planning.

CONCLUSION

A consciousness of green architecture, whilst not as broad as it should be, is discernible in South Africa. Currently this cannot be said for green urban planning, where almost no local debate and only a few examples of green planning processes and outcomes are evident. This should be urgently addressed.

Existing green planning-related legislation (e.g. concerning environmental conservation and the preservation of heritage resources) should be integrated and focused, in a similar way as done by the South African National Standards (Sans 204 and Sans 283 for energy efficient buildings). Local authorities should implement integrated legislation to ensure that only green, energy-conserving layouts, and not developments that will require resources beyond replenishable thresholds, are approved within their areas of jurisdiction. Integrated, transparent and participative decision-making processes should be followed.

Awareness of green planning should be increased by conferences (such as the 'Sustainable Built Environments' conferences); education at secondary and tertiary levels and by continued professional development programmes. More local awards for green urban planning (e.g. by SAPI and SAPOA for new green township extensions, nodes and squares) should be made annually. The Holcim Foundation has set an excellent example for all involved in the built environment, whether professionals or educators, or whether employed in the public or the private sector.

Finally, further multi-disciplinary research is required to develop appropriate technology and infrastructure for impoverished settlements, as well as to support more informed evaluation of the costs and benefits of planning outcomes across the five capitals.

EPILOGUE - 1975

In their book *The Autonomous House* Brenda and Robert Vale recognised that citizens in 1970s urban agglomerations do not have choices in the way their environments are planned or managed. More than 30 years later their comments ring all the more true:

"At present we have no choice. One must work to earn money to buy food. As the price of food rises so one must work more to earn more. There is no choice in the air we breathe; if other people choose to pollute it by building motorways and thereby generate traffic to put toxic fumes into the atmosphere, then there is nothing we can do but breathe it. With centralised services in the hands of the few, a small disruption can affect a great many people, and there is no choice in whether one is affected or not." (B & R Vale, 1975: 17)

Green urban planning would not only pay attention to the voice of the people, but would also plan to optimally manage all facets contributing to a quality of life in the urban environment, whether it is air pollution or drastic electricity shortages and outages as suffered in the Western Cape in early 2006.

REFERENCES

- Allen A (1995) New economic thinking to protect environment. *The Star*, 5 May 1995.
- Beall J et al (2002) *Uniting a Divided City*. London: Earthscan Publications Ltd.
- Britton E (1996) Introduction: the information society and the sustainability challenge. *World Transport Policy & Practice* 2/1,2 [1996], MCB University Press.
- Burton R (2001) Comments made during the discussion of Theme I. In Hewitt M. & Hagan S (2001) *City Fights: debates on urban sustainability*. London: James & James (Science Publishers) Ltd, p 24.
- Caird J (2001) Response to Theme I. (pp 29-36), in Hewitt M & Hagan S (2001) *City Fights: debates on urban sustainability*. London: James & James (Science Publishers) Ltd.
- Christie I (2001) Mission Impossible: politics and the production of urban space. in Hewitt M & Hagan S (2001) *City Fights: debates on urban sustainability*. London: James & James (Science Publishers) Ltd, pp 38-45.
- Cokayne R (2006) State to announce winning bid for taxi scrapping body. *The Star*, June 27 2006.
- Curitiba fact finding team (1994) *Curitiba – lessons for South African cities* Unpublished Report (19 pages)
- Eskom (2006) *Western Cape Energy-Efficient Zone Passport*. Hand-out at Cape Town Airport, June 2006.
- Fife I & Bhengu X (2006) Land of promise. In *Financial Mail*, February 3 2006, pp 18-20.
- Garassino M (ed) Sustainable Building Best Practice Awards (Africa region). In *Leading Architecture*, November/December 2004.
- Gnatek T (2003) BRAZIL – Curitiba's urban Experiment. December 2003, available at www.pbs.org/frontlineworld/fellows/brazil1203/.
- Hague C (2000) Planning for sustainable development in urban communities. Paper presented to the Commonwealth Association of Planners, Belfast. Available at www.commonwealth-planners.org/papers/psd.pdf, pp 1-7.
- Hague C et al (2006) Reinventing Planning: A New Governance Paradigm for Managing Human Settlements. Available at www.commonwealth-planners.org/papers/reinvent.pdf.
- Harrison P & Oranje M (2002) Between and beyond laissez faire expansion and planned expansion: The pragmatic 'poly-city' approach. In *South African Property Review*, March/April 2002, pp 25-30.
- Hewitt M & Hagan S (2001) *City Fights: debates on urban sustainability*. London: James & James (Science Publishers) Ltd.
- Holcim South Africa (2006) Holcimawards for sustainable construction. Catapulting sustainable construction and design forward in South Africa. Winning entries from around the world 2005, Weltevredenpark: Holcim South Africa.

- Holm D (1995) The Role of Energy in Sustainable Development as Illustrated in a Holistic Approach to Housing in South Africa – a heretic View. *Development Society of Southern Africa: Occasional Paper No. 1*.
- Holm D (1996) *Manual for Energy Conscious Design*. Pretoria: Department Minerals and Energy.
- Holm D & Viljoen R (1996) *Primer for Energy Conscious Design*. Pretoria: Department Minerals and Energy.
- Laing R (2006) S A fails green code. In *Mail & Guardian*, June 2 to 8 2006, p6.
- Malefane M (2006) MEC on R60m shopping spree. In *Sunday Times*, May 21 2006.
- Monbiot G (2006) Insulation is key. In *Mail & Guardian*, June 2 to 8 2006, p6.
- Naidu E Environmental cost of economic growth. In *The Star*, 6 September 1999.
- Parkin S (2000) Sustainable development: the concept and the practical challenge. In *Civil Engineering* 138, November 2000, pp 3-8.
- Pithouse R (2006) Shacks are here to stay. In *Mail & Guardian*, May 19 to 25 2006, p29.
- Sisulu L (2006) Breaking new ground in housing delivery in the age of hope. In *The Star*, May 31 2006; also available at www.housing.gov.za.
- United Nations Development Programme (UNDP) (2004) *Human Development Report 2004*. New York: UNDP.
- Vale B & R (1975) *The Autonomous House*. London: Thames and Hudson.
- Von Moos S (1987) *Venturi, Rauch & Scott Brown*. New York: Rizzoli.
- Ward S V (2002) *Planning the Twentieth-Century City - the advanced capitalist world*. Chichester: John Wiley & Sons.
- Watson D (1977) *Designing & Building a Solar House*. Vermont: Garden Way Publishing.