“Resolving urban poverty and ecological sustainability have nothing to do with one another” - a critique

Submitted in partial fulfilment of the Sustainable Cities Module for Prof. M Swilling

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Part A: 3497 words
Part B: 3863 words

Declaration: “I hereby confirm that the assignment is the product of my own work and research and has been written by me and further that all sources used therein have been acknowledged.”
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PART A: Literature Review

1.1. Introduction
The twin issues of poverty and climate change directly threaten mankind’s prospects for a peaceful future on earth. Although they have been recognised and debated for many years, the urgency with which they need to be resolved is alarmingly apparent as scientific recognition of irreversible climate change and planetary degradation grows (IPCC 2007:13). Poverty and ecological sustainability have been identified as global priorities in the Millennium Development Goals, and measurable targets have been set in an effort to get developed and developing nations to take them seriously before it is too late (Maxwell 2003:7).

The mass human migration from rural to urban areas has important implications for how these issues will be addressed. It is widely acknowledged that the future will be predominantly urban (WCED in Satterthwaite 2003:74, UN in Swilling 2008:8), and planning for this future will need to directly address inequality and diminishing natural capital. The design challenge is daunting, but understanding urban poverty and ecological sustainability and the relationships between them will help to inspire solutions.

To say that resolving urban poverty has nothing to do with ecological sustainability is to be blinded by four myths. In this paper I will show that poverty is more than a financial circumstance and that urban man’s involvement with nature is greater than meets the eye. I will also discuss the faulty logic behind aspirations to elevate the poor to a minimum level of conventionally accepted consumption, and the urgency with which this approach needs to change. Showing that poverty and the environment are indeed intimately related and that this link can no longer be ignored, I discuss how the solution to both problems lies in innovation that challenges the status quo, and the important role that governance plays in encouraging it.

1.2. The mythical divide between poverty and ecological sustainability
Integral to many mainstream development discourses over the years has been the implicit assumption that resolving poverty does not have to take the environment into account, and that environmental custodianship is at best a bonus or a ‘phase two’ if affordable. This mindset is based on 4 myths that can serve to lull public managers into a false sense of security:

1.2.1. Myth 1: Poverty is not having enough money
The parameters used to define poverty play an important role in influencing the solutions derived to resolve it. Poverty is not a new problem, and theories and approaches to it have evolved over the years. To monitor progress toward resolving poverty, comparable measures are required. International measurement systems are still biased in favour of monetary indicators like the ‘poverty line’: the threshold of income below which basic needs cannot be satisfied. The World Bank currently uses $1.25 per day as the upper limit of extreme poverty (World Bank 2009), but the exact dollar amount to use is a hotly contested topic (Swilling 2008:12).

The problem with using income alone to conceptualise a state of poverty is that it severely limits understanding of what it means to be poor. Focusing on economic solutions to poverty can overlook other issues of equal or greater significance. According to Hagberg, income poverty can be seen as a ‘Northern’ interpretation of poverty that doesn’t translate well to developing countries due to...
informal economic transactions and other regional differences (Gray & Moseley 2005:11). As Swilling puts it, “if money on its own could resolve poverty, poverty eradication would not be so difficult to achieve” (Swilling 2008:23).

The limitations of income measures are increasingly being recognised, and indicators of living conditions and access to goods and services have come to play a major role in assessing poverty. The 2001 World Development Report entitled “Attacking Poverty” includes social indicators like health, education, and access to services, as well as less tangible considerations like vulnerability, risk, access to social capital and social exclusion in its poverty assessment measures. Instead of one index for poverty, a multi-dimensional conception is deemed more useful (World Bank 2009).

The context is of critical importance when choosing which definition and approach to use as aggregating ‘the poor’ overlooks the diversity of circumstances constituting their existence. In each location, the number and relative importance of the deprivations they face will be unique (Satterthwaite 2003:75, Gray & Moseley 2005:12) and the definition, measurement and responses should vary accordingly.

There is no denying that city dwellers have a greater reliance on monetary systems than their rural counterparts, and that their ability to pay directly affects their access to food, natural resources and support systems. Global measurements tend to underestimate urban poverty due to failure to take into account the rising cost of non-food goods and services (Martine et al 2008:7). Income is important in an urban context, but Satterthwaite’s definition of urban poverty takes an additional 7 inter-related “deprivations” into account (Satterthwaite 2003:75):

1. Inadequate income
2. Inadequate or unstable asset base
3. Inadequate shelter
4. Inadequate access to infrastructure
5. Inadequate basic services
6. Minimal or no income safety provisions
7. Inadequate protection of the rights of the poor
8. Voicelessness and powerlessness

Satterthwaite argues that these circumstances trap the poor and impede their ability to improve their situation (Satterthwaite 2003:74). His approach is not unique, but the dimensions of his definition can be used to represent the multiple challenges faced when attempting to alleviate urban poverty in the long term. Poverty is not a problem that money alone can resolve, and it is no longer adequate to propose economic stimulus or job creation as all-encompassing solutions.

1.2.2. Myth 2: Green spaces = ecological sustainability

Viewing ecological sustainability as the preservation and creation of green spaces in and around the city leaves one with an extremely narrow perspective of the impact of urban lifestyles on the planet. The role of ‘nature’ in urban areas since the 19th century has focused on including landscaped interpretations of the wilderness, embracing that which is considered good and excluding or displacing that which is not aesthetically desirable or cannot be controlled. This has been done in an
attempt to cleanse cities and restore the sense of balance lost during the process of urbanisation (Swyngedouw & Kaika 2002).

A political ecological perspective facilitates a thorough understanding of the relationship between city dwellers and the environment (Swyngedouw & Kaika 2002) by integrating factors like power, history and political economy into more traditional cultural ecology or ecological anthropology debates (Gray & Moseley 2005:14). According to Katz (in Swyngedouw & Kaika 2002:569), the social power relations and natural resources fundamental to the functioning of market-based capitalist systems are hidden by turning resources into purchasable commodities. Political ecology takes into account the flows of this “...socially and physically metabolised ‘nature’...” that weave through urban spaces (Swyngedouw & Kaika 2002:577), and includes people as part of the city’s ecology instead of distinct from it.

Considering the political ecology of a city provides insights into the role of inequalities in man’s relationships with the environment. For example, Satterthwaite draws attention to the impact of socio-spatial divisions driven by the wealthy wishing to physically segregate their living environments from those less fortunate. Their comfortable lifestyles rely on extensive natural resources and have a heavy impact on waste sinks. The resultant environmental degradation is typically relocated to areas where land is less commercially valuable like the outskirts of the city or external ecosystems (Satterthwaite 2003:84). This creates areas of undesirable land near the city that are dangerous or polluted, but serve the poor well as locations for makeshift dwellings (Satterthwaite 2003:82, Bass et al 2006:43). The environmental problems observed in these areas may be strongly associated with the living environments of the poor, but are not necessarily caused by them and often serve to worsen their state of poverty (Satterthwaite 2003:77).

By considering the city as an open system with flows of disguised natural resources entering and wastes leaving, a political ecology perspective allows for an enriched understanding of our reliance on and interaction with nature. Pursuing ecological sustainability involves much more than designing parks and gardens. It requires a review of all flows between urban spaces and nature and within cities themselves to expose solutions that can benefit people and the environment.

1.2.3. Myth 3: It is possible to achieve a middle-class lifestyle for all

Conventional poverty alleviation measures are centred on elevating the poor toward a minimum level of comfort enjoyed by the wealthier classes. Such development tends to be based on the implicit incorrect assumption that there are sufficient resources to allow for this to be achieved worldwide using conventional approaches.

When discussing the effects of poverty on the environment, Satterthwaite describes how the consumption patterns of the non-poor are responsible for the bulk of a city’s environmental impact (Satterthwaite 2003:74). He details how environmental problems associated with consumption of resources, and the disposal of wastes into natural sinks are contributed to by the wealthy to a far greater extent than the poor, and that the resourcefulness of the poor can even help to reduce city waste through re-use of discarded materials (Satterthwaite 2003:84-86).

Ecological Footprint analyses can be used to quantify the differences in consumption and waste between different lifestyle groups by comparing “the area of ecological productive land ... that
would be required on a continuous basis ... to provide all the energy / material resources consumed, and ... to absorb all the wastes discharged” (Wackernagel & Rees 1996:51-52). This is often compared to the amount of productive land the earth has to offer and the size of its population to arrive at a number of planets that would be required to support the same lifestyle for everyone. In Swilling’s analysis of Cape Town, the poorest members of society were shown to live within the boundaries of what the planet can sustain (Swilling 2005:38). As people move out of poverty, a direct relationship is evident between improvement in living standards and the size of their ecological footprint as illustrated below:

![Ecological Footprint of Cape Town Residents in Number of Planets](image)

Figure 1: Relationship between lifestyle and Ecological Footprint (Adapted from Swilling 2005:38-39)

Lifting people from poverty following the status quo will involve increases in consumption of natural resources, with the main impact coming from the provision of shelter and increased access to infrastructure. According to Du Plessis, most of man’s impact on the planet can be linked to the built environment. She says that these effects “...can be caused by the operation of a building, as well as by the processes through which the materials used are extracted, beneficiated, transported and finally destroyed” (Du Plessis 2002:25). The challenges of providing the poor with rights, income stability or the ability to participate pale in ecological significance when compared to the task of integrating them into the built environment of the city.

Replicating the tried-and-tested high-consumption patterns of the non-poor has major implications for man’s role in the planet’s chances of survival. Simple mathematics shows that the dream of elevating the poor to anywhere near the same consumption levels as the top 20% who consume 80% of the world’s resources is not physically possible. What is required is a decoupling of human wellbeing from excessive resource consumption (Swilling 2008:11) so that there is enough to go around, and developing urban areas to accommodate the poor provides an opportunity to do this.
1.2.4. Myth 4: Ecological sustainability is optional

Proponents of the human development approach pursued by the East Asian Tigers would argue that it is worth sacrificing the environment in the short term for social and economic benefits. In the early 1980’s this region was among the world’s poorest, but in just over two decades they were able to achieve phenomenal growth and significant reductions in poverty through state investment in human development. This required vast quantities of natural resources, particularly in the earlier stages of industrialisation, and as a result the area has become known for its deforestation, destruction of habitats and pollution (Dresner 2002:72-73). Now that these economies enjoy high levels of wealth, they are able to look at ways of improving their quality of life by ‘greening’ their cities and displacing the environmental degradation to other parts of the world.

Making environmental trade-offs in the interest of human advancement is a deeply ingrained anthropocentric concept that even manages to permeate the sustainable development discourse. Taking the ‘triple bottom line’ approach to sustainable development can result in a “...language of trade-offs...” between the economic, social and environmental agendas (Swilling 2008:5). As long as there is some minimal degree of overlap between the three, the goal of sustainable development is considered by some to be achieved. The trade-off occurs in the level to which each sphere exerts its influence, as shown in the diagram below.

A systems approach offers the remedy to this common misinterpretation (Swilling 2008:5). By seeing the three spheres as embedded in one another (as per the diagram below), the relative importance of the economy vs. the environment in human wellbeing is clear. Although there are cases where technology can take the place of natural resources, there are many important instances where the one cannot be substituted for the other or where natural capital is a prerequisite for manufactured capital (Wackernagel & Rees 1996:36). As much as capitalists may like to ignore it, the simple fact remains that humans, whether wealthy or poor, depend on the ecosystem for survival.
While the wealthy can afford exclusive access to nature or to purchase commoditised natural goods and services, Bass et al find that “...poor people depend more on environmental assets than those who are better-off, and yet they find these assets both difficult to access and increasingly degraded” (Bass et al 2006:40). When it comes to environmental degradation, Gray and Moseley add that the poor are often more concerned with these problems as they come face-to-face with them on a daily basis (Gray & Moseley 2006:14). The wellbeing of the poor is heavily influenced by the state of the natural environment, and its maintenance has a role to play in reducing the deprivations of poverty.

It is clear that the environment needs to be considered in strategies to resolve poverty, but the urgency with which it needs to be integrated becomes all the more apparent when we consider the limited natural resources we have at our disposal. The 2005 Millennium Ecosystem Assessment (in Swilling 2008:15) decisively stated that we have depleted our resource base to such an extent that we can no longer alleviate poverty first and clean the environment up later. It showed that 60% of the ecosystems essential for human survival are degraded, mostly beyond repair. The environment is no longer an optional consideration, but a vital component in approaches to reduce poverty in a manner that allows for the continuation of the human race.

1.2.5. Moving beyond the myths

If we continue along current paths of environmental degradation and resource consumption, we will not be able to overcome the multiple challenges of poverty or achieve sustainable development (Bass et al 2006:41). The ‘clean up later’ approach of the East Asian Tigers may have worked in the 80’s and 90’s, but it does not fit with our current reality. Recognising that the relationship between humans and nature is one of dependence is crucial to our survival, and all development goals need to take this into account.

It is clear that measures to resolve urban poverty will need to look beyond the limitations of the false beliefs listed above and proceed in a new way that considers the earth in its rightful supporting role, working with it to arrive at mutually beneficial solutions. Swilling identifies poverty eradication executed in a manner that rebuilds eco-systems and natural resources as “…the key challenge of sustainable development...” (Swilling 2008:9), and the next section will look at how we might move beyond the unsuccessful approaches of the past.
1.3. The challenge of innovation

The literature on relationships between poverty and the environment points to the important role of governance in arriving at environmentally sensitive solutions to urban poverty (Satterthwaite 2003:86, Bass et al 2006:44, Martine et al 2008:1). Equally influential powers in the private sector are highly unlikely to provide adequate support for investment in human capital due to limited potential for profit and the unpredictability of investor returns (Swilling 2008:22), and do not have as broad an influence.

Satterthwaite’s call for “environmental actions” (Satterthwaite 2003:87-88) that help to reduce the deprivations of poverty by formalising areas occupied by the poor with better housing, services, infrastructure and improved participation is not unique. In his argument he suggests that there are “possible synergies” between these actions and long-term environmental goals (Satterthwaite 2003:86) but he does not adequately join the dots between his recommendation and his earlier observation that better living standards are linked to greater environmental impact (Satterthwaite 2003:84-86). Governance that follows conventional approaches runs the risk of repeating the existing pattern of relocating environmental degradation to fringe areas where new generations of urbanising poor will live and suffer in ever-expanding ripples until there are no resources left.

The solution to poverty in a world of limited resources lies in innovation. New ways of doing things that decouple production and consumption systems from rising resource use are described by Swilling as “...the only way poverty eradication can be achieved” (Swilling 2008:11). According to Birkeland, we need “...institutional or physical design that improves human and environmental health and whole system efficiency” (Birkeland 2008:xx). Cities have the potential to serve as testing grounds for these fundamentally different ways of approaching development (Swilling 2008:10), and can be considered as “critical elements” in the solution to the environmental problems caused by conventional development paths (Martine et al 2008:3).

On a national level, Swilling argues that meaningful decoupling and sustainable resource use could be achieved by filling the “institutional gap” (Swilling 2008:27) with a new approach to governance. He proposes merging the concept of deliberative democracy with ecological economics and the pursuit of public value to stimulate innovative value chains that work in harmony with the environment (Swilling 2008:28). The key to this approach is tweaking the developmental state model employed by the Asian Tigers from one of top-down bureaucracy towards Sen’s notion of a deliberative democracy where the focus is on expanding the capabilities for development. Instead of one-size-fits-all solutions to poverty reduction, this approach works on the accepted wisdom that local knowledge is key to successful development, and focuses on improving institutions to allow for innovative solutions to flourish (Swilling 2008:18). Adams suggests that efforts at sustainable development that come from below may even make more meaningful progress than those from above (in Gray & Moseley 2005:18).

Strengthening local governance and institutions helps to stimulate the contextually-relevant innovation necessary to realise new approaches to development that better link poverty reduction and environmental management (Satterthwaite 2003:90, Bass et al. 2006:48). Healey describes how urban governance processes can be creative both in themselves, and in terms of how they nurture innovation (Healey 2004:88). She proposes an approach to governance that differs greatly from what she calls the “…rule-bound administrative approach or … style of planning locked into a
culturally homogeneous concept of what a city region should be like” (Healey 2004:90). Healey advises the use of the following diagnostic tool to assess governance trajectories toward enabling innovation and creativity:

<table>
<thead>
<tr>
<th>Level</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific episodes</td>
<td>• Diverse range of actors</td>
</tr>
<tr>
<td></td>
<td>• Open and diverse arenas</td>
</tr>
<tr>
<td></td>
<td>• Stimulating, welcoming, respectful and knowledgeable ambiances; generative; insurgent potentials</td>
</tr>
<tr>
<td>Governance processes</td>
<td>• Diverse and mutually aware networks and coalitions; loosely-coupled; fluid</td>
</tr>
<tr>
<td></td>
<td>• Open, transparent and fluid stakeholder selection processes</td>
</tr>
<tr>
<td></td>
<td>• Open-minded, inclusive, informative and inventive discourses</td>
</tr>
<tr>
<td></td>
<td>• Facilitative and experimental practices, supporting self-regulating processes</td>
</tr>
<tr>
<td></td>
<td>• Laws, formal competences and resource flow principles which value local initiative and encourage experiment</td>
</tr>
<tr>
<td>Governance culture</td>
<td>• Appreciation of diversity; focused around the concerns of multiple daily live; emphasis on performance not conformance</td>
</tr>
<tr>
<td></td>
<td>• Identity and open negotiation of values and ethics, beyond utilitarianism and consumerism; encouragement of open-minded tolerance and sensitivity</td>
</tr>
<tr>
<td></td>
<td>• Self-regulatory and distributive; supportive and constraining</td>
</tr>
</tbody>
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Figure 4: Qualities of Creative Urban Governance (Source: Healey 2004:97)

Once the need for innovation is realised, the ever-changing complexity of the unique urban context should be accepted and experimentation should be encouraged with an understanding that failure is permissible in a process of learning. An attitude switch from rule-following to encouragement of imagination is required, along with an understanding that all policy interventions are risky when the future is unpredictable (Healey 2004:91).

1.4. Conclusion

To say that resolving urban poverty has nothing to do with ecological sustainability is an untruth based on narrow conceptions of poverty, a misunderstanding of urban man’s impact on ecology, unimaginative approaches to poverty alleviation and a head-in-the-sand attitude toward planetary limits. Acknowledging this, a radical change in the way things are done is required.

New solutions to urban poverty cannot afford to ignore their short and long term impacts on natural resources, and need to take the earth’s carrying capacity into account. Instead of outdated one-size-fits-all formulas for achieving this, the way forward will be best guided by innovations based on local conditions and knowledge.

It is arrogant for those in power to assume that the sheer amount of innovation required is within their capability. The role of governance needs to shift from prescription to releasing appropriate creative capacity. Pro-environment context-specific innovation in the field of poverty reduction needs to be embraced on all levels, with particular attention paid to the role of cities in leading this change. The alternative is a blinkered race to use up as many remaining resources as possible that could well see the end of our tenure on earth.
PART B: Case Study - the Mbekweni stonehouses

2.1. Introduction
There are numerous examples from around the world of efforts to address poverty that embrace environmental concerns in one way or another. From toilet building in India to tree planting in Kenya, these projects share a human ingenuity that acts as a refreshing contrast to the conventional ways of doing things that are destroying our life support systems. The Stonehouse Project at Mbekweni is one such case, premised on the provision of low-cost housing made from waste building materials.

This story showcases exciting new ideas and provides insights into the role of governance in innovative housing provision in South Africa. In order to gain an insider’s perspective on the realities of implementing such a boundary-breaking endeavour, I have based this paper on interviews with Pauline Houniet, the project’s instigator, and Vernon Collis, the architect and engineer. With the houses completed just over a year ago, there is surprisingly little written about them, so I am grateful for their time and the documents they were able to share with me.

I will begin with the story of Mbekweni and how the stonehouses came into being. A description of the ‘conventional’ low-cost housing used country-wide will form the basis for comparison with the stonehouse model, showing how the philosophies and practices that went into it represent a more sustainable approach. Considering the role of governance in the story, I will use Healey’s three-level diagnostic tool to explore the extent to which it supported innovation in this project.

2.2. The Mbekweni story
In the 1960’s, a large tract of land was set aside between Wellington and Paarl for the location of the Mbekweni township. Positioned on the outskirts of white suburbs by the apartheid government, the township was to provide housing for migrant labourers employed by local farms and industries.

Project Two lies to the south of the development, and has been a cause of much controversy over the years. In the early 90’s, the prevailing government designed a grid work of identical houses on 835 plots, which were sub-divided and serviced shortly thereafter. Titles were handed over and the beneficiaries had high hopes of getting homes in the near future (Collis & Cowen 2009).

Over the next 10 years, a handful of demonstration homes were constructed and subsequently demolished due to poor quality. Developers came and went, and while corruption festered and disagreements raged, little actually happened in terms of housing delivery. At one point, the municipality offered a wet core with a toilet and basin on a slab as consolation, but beneficiaries rejected the proposal and were left with mounting disappointment and bitterness (Collis & Cowen 2009).

In 2005, Pauline Houniet of the Western Cape Department of Housing motivated to have the project unblocked by securing additional funding for it under the PHP (People’s Housing Process). She was able to convince the department to revive the project on the condition that employment for 150 unskilled young people from the area would be provided. Houniet was referred via word of mouth to Vernon Collis, a Cape Town architect and engineer known for his environmentally sensitive approach to urban architecture using recycled building waste and local materials. Visiting his Vredehoek office built on these principles, Houniet and her local government delegation were suitably impressed and
commissioned Collis to demonstrate a new way of constructing subsidy housing using waste and locally available material and labour at Mbekweni (Collis 2009).

Starting with the prototype ‘Stonehouse’ in 2005, the architect’s aim was to use a process of trial and error on the initial dwellings to develop a model for sustainable housing that could be adopted country-wide. His approach to housing delivery is “…to shift the current mindset of entitlement to housing to one where people ‘own’ the process and view themselves as co-creators of their living environments…” (Collis & Cowen 2009). As a result, the process was heavily influenced by the participation of the beneficiaries, and uncovered useful insights that shaped the final design. These included aspirations for rectangular footprints rather than rondavel shapes, and for tile or tin roofs rather than thatch.

The plan was to develop an additional 7 dwellings experimenting with different layouts and combinations of materials to improve the technical design, liveability and costs. Subsequent phases would bring the total to 350 houses (Planting 2006). The project currently stands at 13 houses completed in early 2008. By the time they were built, local labourers had been trained and functioning systems had been set up to allow local contractors to replicate the sourcing and processing of recycled materials for the production of future houses. According to the financials and results of an anthropological study conducted on the beneficiaries, the stonehouses can be considered a successful model for sustainable low cost housing (Collis 2009).

![Figure 5: A stonehouse in context.](image)

Visiting the site today, one struggles to find the stonehouses amidst a rapidly expanding grid work of rainbow-coloured cement brick houses. The remainder of Project Two is being completed by Niall Mellon, an Irish developer providing upgraded RDP-style housing with the help of donations and volunteered labour from abroad. Aside from a few extras, these houses represent the unsustainable building practices so commonly used to address urban poverty through provision of shelter, and starkly contrast what the stonehouses have achieved.
2.3. Ecological sustainability of ‘conventional’ low-cost housing

Attempts at low-cost housing provision in South Africa typically consist of a 40m² single storey dwelling with 2 bedrooms, a small bathroom and an open plan living / dining / kitchen area. The foundations of reinforced concrete rafts on compacted earth form the base for walls of 140mm cement blocks which are plastered and painted on the exterior. The roof structure is pine, covered in fibre cement sheets, corrugated iron or tiles. Windows and doors are made from steel or low grade meranti hard wood harvested from virgin forests in Asia (Collis & Cowen 2009).

Figure 6: ‘Conventional’ low-cost housing under construction at Project Two, Mbekweni.

Most of these materials have high embodied energies, and although they are financially affordable they come at considerable environmental cost. The construction of these houses is strongly based on the use of cement, the production of which is second only to the burning of fossil fuels in the contribution it makes to anthropogenic greenhouse gas emissions (Du Plessis 2002:27). The materials vary minimally from site to site, and often have to travel significant distances within the country or from abroad, further increasing their carbon footprint.

To facilitate speed, the houses are designed to be erected in a production line process. Each labourer has a single task to complete before moving on to the next house. This provides limited opportunities for learning, and does not facilitate skills development. Extensive use is made of machinery for processes like digging, compacting foundations and cement mixing, so employment opportunities are minimal and there is a heavy reliance on fossil fuels (Collis & Cowen 2009).

The houses are seldom insulated, and their design and orientation do not intentionally take solar gains into account. They tend to be positioned relative to road and infrastructure grids in the middle of the site. The rigid floor plan results in at least one room facing south, and inhibits the potential for cross-ventilation. Their design is based on low cost, speed of construction, and service efficiency with minimal consideration given to skills development, liveability or the environment (Collis & Cowen 2009).

2.4. The poverty-sustainability relationship at the stonehouses

The Stonehouse Project focuses on housing provision as a means of reducing a number of the deprivations that define the urban poor. Instead of just providing shelter, the approach embraces
broader conceptions of poverty and allows for asset stability, participation, and income generating opportunities whilst decoupling the process from natural resource consumption and waste production.

2.4.1. Construction materials

Although the 13 stonehouses are unique, they share the same philosophy in terms of their building materials. Collis and Cowen aim through their work to shift the conventional linear approach to building from ‘create-use-dump’ towards a cyclical approach that sees waste as valuable commodity. “In Cape Town, 50% of landfill waste by weight is from the built environment. It’s a waste stream that will not easily run out and upon which we should capitalise” says Collis (Collis 2009). Not only does the use of waste reduce the impact of the building industry on natural waste sinks, but it reduces the amount of raw materials required. The aim of the Stonehouse Project was to show that it is possible to do this by building aesthetically pleasing homes within a housing subsidy budget.

The architect’s design philosophy aims for holistic integration, and started with a comprehensive mapping process. Part of this involved an investigation into the availability of free resources in the area. In addition to the abundant on-site rock and sand, he was able to source a number of materials from construction and demolition sites within a 20km radius. Not only were these materials free and local, but by diverting some of these ‘waste’ materials to the Mbekweni site instead of dumping them, transportation was further reduced (Collis 2009).

In order to make best use of the local stone, a composite wall system was developed to use bricks from demolition sites internally and stone on the outer layer. Damaged kerbstones were used in the foundations, and broken pieces of slate for flooring were sourced from a company planning on dumping them. Slightly discoloured roof sheets destined for the dump were obtained from industry nearby. Pallets that would otherwise have been burnt or dumped were used for ceilings, and combined with non-recyclable laminated glass in the construction of windows. Shutterboard was salvaged to make up the upper floors (Collis 2009).

Thermal quality was an important consideration from the start as it allowed for the creation of comfortable living spaces that could meet the occupants’ needs for shelter and warmth without needing to be upgraded or replaced. Earlier houses used carpet underfelt for insulation, and later designs used eco-friendly Isotherm. Energy efficient light bulbs were recommended to cut down on electricity, and some of the houses had sufficient budget for solar water heaters (Collis & Cowen 2009).

2.4.2. Design

Through consultations with the community, a design language was developed that took their needs and aspirations into account whilst making use of sound ecological design principles. A local take on aspirational homes dubbed ‘Xhosa Constantia’ was developed (Planting 2006), making use of vertical windows and gable ends combined with exposed natural materials and muted colours to create an aesthetic that is very much in keeping with the surroundings. Details like gum pole pergolas were included into the design to provide shading from the summer sun and to make the buildings feel more like homes.
All of the stonehouses take passive solar design into account to capitalise on the free heat and light offered by the sun and reduce electricity requirements. They are all north-facing with larger windows on the north side and smaller windows on the south to allow for cross-ventilation and provide balanced light. Generous eaves protect the windows from the summer sun but allow the warmth from lower-angled winter sunlight in. The dwellings are positioned toward the south side of each plot to allow for gardening and outdoor activities to take place on the sunny side. Space is designated for rain water tanks to be added at a later date (Collis & Cowen 2009).

The earlier dwellings were semi-detached and had a room in the roof, almost doubling internal floor space and allowing for maximisation of outside space and the sharing of materials in common walls. The design is narrow to allow for the economic use of structural timber in the construction of the second floors, and to avoid any south-facing rooms. Community feedback revealed useful insights like the security provided by semi-detached housing that removes ‘rape alleys’ (Planting 2006).

2.4.3. Human development and access to opportunity

With funding secured through the PHP, skills development was the main driver of the project and set the stage for ongoing job opportunities instead of making once-off use of local labour for low-skilled tasks. Collis’ processes were influenced by an anti-labour bias he has observed in conventional building material flows that use heavily mechanised large-scale processes. This favours big companies rather than grassroots entrepreneurialism, and ultimately makes no sustainable contribution to livelihood options for the poor (Collis 2009).
As illustrated above, Collis believes that by making use of waste one can not only cut down on costs and environmental impacts of building, but also make use of human resourcefulness to create new income-generating opportunities (Collis 2009). At Mbekweni, a central builder’s yard and sustainable construction school were set up on site to train the local youth. Inmates from the nearby Allandale Prison were also trained and involved in the construction process. Throughout the project, recovered materials and rejects were delivered, sorted and processed into building materials within a fenced yard on site, and windows were constructed in a warehouse provided by Transnet. A project manager was employed to manage the yard and the hope was that this would continue to run as a self-sustaining business. The establishment of a market for these materials through the repetition of this housing model had the potential to create viable ongoing livelihood options.

As a result of Apartheid era planning, Mbekweni is largely cut off from the areas of opportunity located in nearby towns. Although this is predominantly an urban planning issue, the use of space at the Stonehouse Project caters for income-generating opportunities at the scale of the individual erf. Positioning the houses at the south of the site allows for agriculture or the construction of backyard shacks to house businesses or tenants, and the second storeys can operate as separate rental units. The flexible structures allows for alterations and additions to enhance the investment (Collis & Cowen 2009).
The design of the stonehouses was deliberate and carefully thought out using detailed investigations into the local context and opportunities. It serves as an excellent example of how poverty reduction through housing provision can be relatively decoupled from resource consumption. Instead of treating housing provision, natural resource consumption and landfills as three separate problems, it makes locally relevant linkages between them to achieve mutually-beneficial goals.

2.5. The role of governance

Literature on the relationship between poverty reduction and ecological sustainability indicates that governance plays a crucial role in reducing poverty in a manner that is decoupled from excessive resource consumption (Satterthwaite 2003:86, Bass et al 2006:44, Martine et al 2008:1). Governance can encourage the necessary innovation on three levels: specific episodes, governance processes and governance cultures (Healey 2004:93-94). All of these levels interact continuously and thus have the potential to shape each other, particularly when driven by structural changes that put pressure on established practices and discourses to change (Healey 2004:95). Using these dimensions as a starting point, we can assess the extent to which governance fostered innovation in the Mbekweni case.

2.5.1. Specific episode

At first glance, the Stonehouse Project appears to be an example of the innovative governance described by Healey. The project was initiated by a provincial government employee, who was able to establish critical links within government and with the private sector to realise a break from convention. A diverse array of actors was involved from various levels of government through to the architects, private sector funders, contractors, NGO’s, the youth and local beneficiaries, assisting the learning process.

Collis acted as the service provider who project managed the process from start to finish and was responsible for the bulk of the legwork. Instead of the conventional approach to costing based on a set formula, Collis and his team were given a degree of leeway for innovation provided they remained within budget. Their hands-on involvement in multiple dimensions of the project resulted in the heavy influence of their ideologies, particularly regarding the processes of participation. Their approach is centred on the belief that

“…sustainable development requires co-creation and … the traditional method of ‘expert’ consultants knowing what is best is no longer useful. Sustainable development invites all participants to explore what is new and possible, and in so doing, requires innovation and creativity.” (Collis & Cowen 2009)

The danger of not including people is that they will become distanced from sustainability efforts by experts, and the resulting lack of ownership will come at the detriment of their original intentions (Collis & Cowen 2009). A number of different engagement processes were employed with the help of an anthropologist, including one-on-one interviews, focus groups and various meetings with beneficiaries. Although these investigations were helpful in informing the design process, public meetings were limited in their ability to delve into complex issues of sustainability, and ultimately budget constraints and the curtailment of the project impeded the desired levels of engagement (Collis & Cowen 2009). In this case, there is a relatively high level of innovation through the
involvement of multiple role-players on many levels, but it appears to have been driven predominantly by the service providers.

2.5.2. Governance processes

Aside from Houniet’s efforts, governance played a minor role in getting the project off the ground. In South Africa, provincial government allocates housing budgets and local government acts as the developer. In this case, Houniet was trying to drive the project from a provincial level, but the local Drakenstein Municipality were not actively involved (Houniet 2009, Collis 2009). This made progress extremely difficult, and a number of rules had to be broken to make it happen.

Houniet believes that rigid procurement processes have a role to play in stifling innovation in South African government (Houniet 2009). In the Mbekweni case, she was able to work around this using the PHP as an alternative. It was originally designed to encourage communities to contribute their efforts to housing delivery by taking control of the process in their area in exchange for a higher subsidy. Instead of the municipality managing the project and guaranteeing the finished structures, a support organisation made up of community members takes on the responsibility from start to finish. They are provided with basic project management training, and the goal is to empower local communities and develop skills whilst alleviating government’s housing delivery burden (Department of Local Government and Housing 2009).

In this case, the flexibility of the PHP opened up the potential for innovation and allowed for the stonehouses to be built with the assistance of sustainability-oriented service providers. However, this is unfortunately an exception to the norm. By shifting decision-making into the hands of the communities, the constraints of good governance are severed and profiteering and corruption are often able to creep in. The naïveté of the support organisations is open to exploitation by developers unable to comply with formal procurement policies or with the NHBRC standards required for municipal housing projects (Houniet 2009). There is no concern for sustainability or the training of local labour on the part of developers, and little incentive for innovation when aspirations of the poor are for a house like everyone else’s (Kruger 2006). Developers tend to be chosen based on the status attached to the homes they promise, and in Project Two it was the tiled roofs and larger floor plans of the Niall Mellon homes that resulted in unimaginative development triumphing over innovation and sustainability. Although the PHP allows for innovation, it is at best a fortunate coincidence rather than an explicit objective, and it appears that a greater degree of control is required to ensure that this opportunity is put to good use.

2.5.3. Governance cultures

From her experiences in provincial and local government, Houniet has observed receptiveness to innovation in South African governance, although she admits that processes can act against it at times (Houniet 2009). She received a lot of internal support for her experiments at Mbekweni, and this has motivated her to persevere with developing a sustainable low cost housing model in her new role working for the City of Cape Town.

Collis is more sceptical, citing the down-sizing of the CSIR and other creative bodies as indicative of a low priority placed on innovation development (Collis 2009). Both Houniet and Collis acknowledge the limitations of government’s ‘silo’ structure, but Houniet is optimistic about new trans-
disciplinary initiatives like that between housing and parks to ‘green’ new housing projects with trees and vegetation (Houniet 2009).

In this case, it was not so much governance culture as individuals with an understanding of sustainability and what Healey calls “imaginative strategic grasp” that acted as driving forces for risk-taking new processes (Healey 2004:95). Houniet was able to use her imagination to take advantage of the few available openings to break from the momentum of the contingent governance landscape and try something new. From a governance culture perspective, Healey points to the important role of developing a “strategic capacity” to encourage these kinds of episodes to take place more often. She believes that this involves more than just good leadership, and encompasses a “…habit of perception among a group of people with the power, imagination and institutional sensitivity to see the potential in ongoing processes, new initiatives and new ideas” (Healey 2004:99). The stonehouses may be an example of such potential having been observed, but the ongoing roll-out of conventional low-cost housing indicates that it has not become a habit in the South African housing context yet.

2.6. Conclusion
The stonehouses at Mbekweni show that it is possible to reduce poverty in a broad sense through housing delivery that is both participatory and ecologically sensitive. Although it is disappointing that the remainder of Project Two has not adopted the techniques proven in the stonehouses, there are signs that governance in South Africa is receptive to innovation, opening up the potential for creative solutions in the future. Such projects cannot be judged from a short-term perspective. They need to be seen as one of a number of small interventions that have the potential to contribute in some way to the base of experiences and memories from which new ways of doing things can emerge in a complex and unpredictable world (Healey 2004:99).

The actions of individuals are crucial to ensuring that innovation happens. In her new role working for the City, Houniet is determined to push for more projects to embrace the use of recycled materials. Within the next few months, work will start on a 100 unit low-cost housing development in Ottery based on similar principles to the stonehouses. This time, there is no underlying infrastructure and the project is aimed at being sustainable in every aspect. This groundbreaking experiment will be supported at a local level and although spearheaded by the housing directorate, will actively involve a number of other departments (Houniet 2009). It looks to be the first of many successors to the Stonehouse Project that build on its lessons to further push the limits of ecologically sustainable poverty reduction.

3. Bibliography


