ADDRESSING THE NEEDS OF THE OTHER 90% - THE ROLE OF CYCLING IN DEVELOPING THE SUSTAINABLE AGENDA IN JOHANNESBURG

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Abstract

Cycling is an energy efficient nonpolluting form of transport and is considered as one of the most sustainable means of transport. In South Africa cycling has been poorly recognized and supported by government and citizens as a sustainable mode of transport. However, drastic changes are proposed for the transport systems in the City of Johannesburg (also Joburg) and citizens are showing a growing interest in cycling for both recreation and commuting purposes. This paper investigates the changing cycling culture in Johannesburg and the extent to which cycling is recognized by government and included in the development of a sustainability agenda that addresses the socio-economic needs of Johannesburg citizens. National cycling projects, cycling associations and cycling events such as the monthly Johannesburg Critical Bike Mass Ride events are briefly described and used as reference points to illustrate the growing interest expressed by non-profit organizations and citizens to accommodate cyclists on public roads. This investigation aims to make a contribution to the sustainable design project through reflecting on a drastic proposed change for Johannesburg city transport which will impact on various design disciplines that can provide specialist knowledge in the development of a sustainable transport system. This paper therefore acknowledge the complex dynamic system in which society operates and argue that through paying attention to the needs of citizens, designers can become co-creators within the system.

Keywords: *Cycling; sustainable transport systems; cycling projects, non-motorized transport.*

Introduction

Investigation into the research topic did not commence in the theoretical realms of academe but through the personal interest that both authors share – weekend cycling. Through our personal involvement in cycling, we noted a steady increase in cycling events associated with a growing interest in cycling in Johannesburg. Christina Culwick (2013:147) explains in her reflection on non-motorised transport (NMT) in Gauteng that the popularity of recreational cycling is contributing to a growing bicycling culture in the region. Our personal observations generated the main research question for this paper – how can the increase in a cycling culture benefit the sustainable development of Johannesburg for all citizens?

We discovered early in the research investigation that the increase in a cycling culture is not merely a coincidental event, but it is assisted by organisations, campaigns and movements that attempt to increase the profile of non-motorised transport with particular focus on cycling. City cycling events

such as 94.7 Cycling Challenge and the Nelson Mandela Freedom Ride events have the firm support and assistance of the Gauteng Department of Public Transport and the City of Johannesburg.

The importance of cycling as a means of transport is evident in the development and implementation of national, regional and City of Johannesburg transport policies and frameworks. Reflections on international cycling cities assisted in identifying the valuable contributions that a shift from a heavily motorised transport system to a safe, environmental friendly and affordable non-motorised transport system can present in the development of sustainable city centers. Culwick (2013) indicates that "rural, marginalized and poor communities have the greatest need and dependence on NMT". Unfortunately, NMT forms of transport are often associated with the perception that it is utilised by people that cannot afford private vehicles and public transport costs. This paper therefore describes the drastic changes proposed for the City of Johannesburg, which aims to change the current marginalized, unsustainable transport system towards a more affordable, sustainable inclusive system that will address the need of the *other 90%*.

In the Integrated Transport Master Plan for Gauteng (2013) it is proposed that over the next 25 years a new transport hierarchy will be introduced placing pedestrian at the top, followed by cyclists, thereafter public transport and finally private vehicles. Through our investigation into the radical changes that are proposed in the complex transport system, we identified that designers can make a valuable contribution as co-creators of the new proposed system. In order to understand radical change we incorporate Gladwell's social tipping theories and the Green Building rating system to discuss the contributions that designers, both practitioners and researchers, can offer in the development and implementation of a cycle-friendly city for all citizens.

Cycling as a sustainable means of transport

Many extensive non-motorized transport (NMT) programs exist in both developed and developing countries. These programs support 'green mobility' which has multiple benefits for the environment and the society that inhabits it. Non-motorized transport modes like walking and cycling complement other transport modes and are considered as an integral component of a transport system.

The benefits of cycling as a sustainable means of transport- international perspective

Bicycling does not only enable quicker and sustainable mobility; but also has cardiovascular and other public health benefits that promote well-being of citizens (Buehler & Pucher 2010:36, Cervero, Sarmiento, Jacoby, Gomez, Neiman 2009:205). From a city planning perspective the introduction of bike-sharing schemes enable affordable mobility and the bike-on-transit schemes integrate bicycles in city centers within the public transit system (Advani & Tiwari 2006:8). The small space requirements for bicycling benefits high traffic areas, enable ease of navigation and utilize existing infrastructure. Finally, if cites continually grow and change according to cycling concerns and use bicycle promotion systems, a society can improve sustainably responsibility and nurture its sustainable environment. Cities with extensive NMT programs like Amsterdam (Netherlads), Copenhagen (Denmark) and Bogotá (Columbia) change and adapt bicycling policies continually. Pro-bicycling measures vary in these cities and present various benefits to city planners and commuters.

Developing cycling as a sustainable means of transport in South Africa- national projects
South Africa looks to the role-model cities above as it begins to promote sustainable mobility. There are a number of bike-empowerment programs that contribute to the increase of a sustainable cycling culture in South Africa which place particular focus on school learners and poorer communities.

Shova Kalula is a state run national bicycle partnership project which was launched in 2001. The project's primary intention is to target school children from poor households that are situated in both rural and urban areas that have to walk long distance to access their schools (Shova Kalula Bicycles for school kids. 2012). Two private sector projects, Qhubeka and Bicycle Empowerment Network (BEN) also aim to introduce cycling as sustainable form of transport in disadvantaged communities. Qhubeka's slogan – Mobilizing People with Bicycles- explains the non-profit organization's aim to assist in empowering people to access their distant places of work and study and therefore improve communities and their environment (About Qhubeka [s.a.]). The organization further embraces long-term sustainable principles through assembling the bikes locally, training mechanics and providing affordable bikes that meet the needs of the rough terrain in rural areas and load requirements of the users. The Bicycling Empowerment Network (BEN) South Africa, established in 2002 in Cape Town, addresses poverty and mobility through the introduction of bicycles in communities. BEN introduces imported bicycles, obtained from overseas countries, into the communities and also plays an active role in encouraging cities to introduce bicycle planning and infrastructure.

Cycling as a sustainable means of transport in Johannesburg – Future vision for the city
In 2013, during the State of City Address, the Mayor of Johannesburg Mpho ParksTau, presented the concept of 'Corridors of Freedom'. The Mayor described the proposed project as a change that "will forever change the urban structure of Johannesburg and eradicate the legacy of Apartheid spatial planning" (Tau 2013:5). The transport corridors propose to connect and improve mobility between strategic nodes, such as Rosebank, Inner City, Sandton and township CBD's. Furthermore, these corridors are envisioned to increase the ease of change between different transport modes and include dedicated cycling lanes that can also connect public system such as the Rea Vaya (Bus Rapit Transit system) and the Gautrain stations with the surrounding areas. An effective, affordable and sustainable transport system is considered as an important component in a spatially integrated city. In order to achieve the city planners propose to eliminate the need for private vehicles over the next decade and replace cars with an effective public transport system, cycling lanes and pedestrian walkways (Tau 2013:6).

To assist in enabling the future vision for the City of Johannesburg, a Strategic Integrated Transport Plan Framework (SITPF) was developed and adopted in October 2013 (City of Johannesburg 2013). The Integrated Strategic Transport Plan Framework (City of Johannesburg 2013:14) aims to build, maintain and manage public transport with NMT infrastructure and promote public transport, walking and cycling as modes of choice in Johannesburg (see figure 1). The SITPF (City of Johannesburg:16) identifies that cycling currently accounts for 0,2 per cent of NMT. This could be because almost no provision is made for cycling lanes in Johannesburg and in order to introduce this alternative form of transport, radical changes needs to be made to the current city transport infrastructure. To assist in developing the transport transformation and increase in utilizing bicycles as a mode of transport, the government has donated bicycles in townships such as Tshepisong and Orlando in the last year, and is currently setting up a Bike Empowerment Centre in Soweto. It is therefore evident why that Mayor

Tau referred to City of Johannesburg as a “City at work conducting a Green Revolution” in his State of the City Address, delivered in April 2014 (Tau 2014).

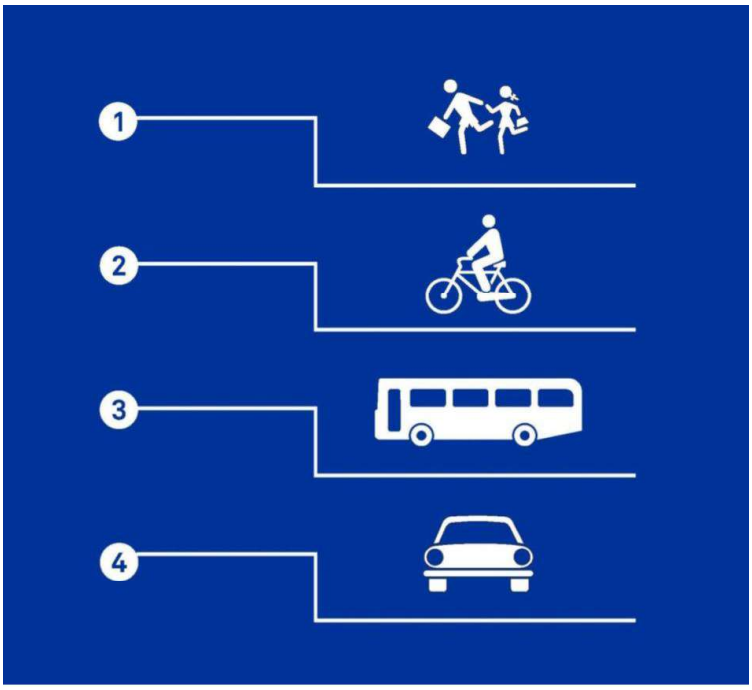

Figure 1: Changing hierarchy in Johannesburg’s street as illustrated in the Integrated Transport Master Plan for Gauteng (2013: 72)

A growing cycling culture in Johannesburg – finding the voice of the citizens

To this point we identified and presented the perspective and strategic objectives of the National Government and City of Johannesburg to transform the transport system and introduce a sustainable transport system that will improve connectivity and mobility. We will move the focus towards the growing cycling culture to indicate the support citizens lend towards cycling in the city.

Annual Cycling Events – promoting cycling amongst citizens

In South Africa many large scale cycling events take place annually that display the support for cycling as both a professional sport and recreational activity in the larger city centers. The two most prominent events are the Cape Argus Pick ‘n Pay cycle tour (around 109 km) taking place in Cape Town and the 94.7 Cycle Challenge (95 km) in Johannesburg. The Cape Argus cycle tour is the world’s largest individual timed cycling challenge and it attracts around 35 000 national and international cyclists annually (Cape Town’s spectacular Cycle Tour [s.a.]). This event originates from a Big-Ride In event that was organized by Bill Mylrea and John Stegmann in 1978 in an effort to draw the attention to the need for cycle paths in Cape Town (Cape Town’s spectacular Cycle Tour [s.a.]). In 1997, an equivalent long distance cycling event - the 94.7 Cycle Challenge, was introduced in Johannesburg and it grew rapidly to become the second largest timed cycling challenge in the world. This event draws a wide audience of participants ranging across age groups and from novice to professional cyclists. In 2013, a record breaking number of people of 31 500 took part in the 94.7 which indicates a continuous increase in cycling in South Africa (Most successful Momentum 94.7 Challenge ever. 2013). The event is supported and co-organized by the City of Johannesburg with event organizers and sponsors such as the radio station 94.7 Highveld Stereo.

Critical Mass Bike Rides

Blickstein and Hanson (2001:351) explain that the Critical Mass Bike Ride (CMBR) movement started in 1992 in San Francisco. The original bike ride was organized as a monthly rush hour ride which aimed to increase the visibility of bicycling in the city. From 1992 to 1997 the monthly mass rides grew from only 45 cyclist to more than 5 000 (Blickstein and Hanson 2001:351). The concept of the monthly critical mass cycling events in San Francisco expanded rapidly to neighbouring towns, cities and even countries across the world. It is evident that the core problem of mobility in city centers is shared by citizens across the world and participants in the Critical Mass cycling events attempts to raise awareness and 'public-protest' against these problems. Citizens therefore consider the bicycle as a tool to address the mobility problem and assist in providing a long term sustainable solution (Blickstein and Hanson 2001).

The popularity of the Critical Mass events were also introduced to city centers in South Africa. Critical Mass was founded in Johannesburg in 2007 by James Happe and Loic Bellet and "reignited by Louise Denysschen, Melvin Neale and Shaun van den Burgt in 2011" (Critical Mass Johannesburg [s.a]). The introduction of the event in Johannesburg was two folded; it aims to bring people back into the city center of Johannesburg and similarly to Critical Mass events across the world it also aims to raise awareness about the viability of bicycles as a form of transport in and around Johannesburg. Road closures do not take place for the events that take place on the last Friday each month at 19h00, but road assistance and support is available which contributes to a creating a safe cycling experience. The Johannesburg events take place after the peak traffic period and in contrast to the original event in San Francisco, the CMBR event in the city center does not impact on peak traffic activities. The CMBR in Johannesburg is well supported by cyclist and similar to organized cycling events; it contributes towards to developing cycling awareness amongst citizens in the City of Johannesburg.

Johannesburg Urban Cyclist Association (JUCA)

The Johannesburg Urban Cyclists Association (JUCA) plays a very active role in transforming Joburg in a cycle-friendly city. JUCA is a volunteer-based organization that strongly promotes the inclusion of bicycles within the day-to- day transport system. The organization has expert advisors on their management committee, one such as person is Rehana Moosajee who is a non-motorised and public transport expert. The organization acknowledges on their website that the transformation towards a bike-friendly city will "required massive changes in infrastructure as well as in mindsets" (Johannesburg Urban Cyclists Association. [s.a]). JUCA was therefore put in place as a formally structured organization, by citizens, to interact with government policy makers and represent specifically bicycle commuters (Blaine 2014). The mayor, Parks Tau has publicly acknowledged the contributions and advised that has been made by JUCA on developing a bicycle strategy for the City of Johannesburg. JUCA's vision is to have the City of Johannesburg bicycle friendly by 2015.

How can designers contribute towards change for a new transport system?

In the section of this paper, a brief discussion is presented around the contributions that designers, both practitioners and researcher, can offer in the successful development and implementation of a new NMT system in Johannesburg through applying Malcom Gladwell's social tipping point theory and considering the role of the Green building rating systems.

Radical change in a system – Tipping Point Theory

The successful implementation of a new transport framework is depended on a number of factors of which one is the transformation of the collective social behavior of all citizens and road users in Johannesburg. In research conducted by Phillip Ball (2004) around critical mass he investigates how one action or event can lead to another action/event. These actions include change in social behavior patterns. Malcolm Gladwell (2000) describes the dramatic points of change as a tipping point. Three components are identified by Gladwell (2000) that can contribute to the change in the exiting equilibrium or social behavioral patterns. These are; a carrier/messenger; an infectious agent/message; and the environment in which these operate. By fiddling with these components, an epidemic or social situation can in one sudden moment tip, spread, magnify, remain stable or otherwise reverse and weaken. Gladwell (2000) discusses these three components under three theories: the 'Law of the Few'; the 'Stickiness Factor'; and the 'Power of Context'. Gladwell suggests that to encourage tipping points requires of individuals or groups to "reframe the way we think of the world" (2000:257).

In reflecting on Gladwell's Tipping Point theory this paper argues that designers can play important roles in assisting to transform the environment which will be required to sustain a safe, easy and reliable NMT system in Johannesburg, since social patterns are strongly influenced by conditions and particulars of the environment it operates in (Gladwell 2000). The 'Power of Context' theory explains that peoples' actions depend on their surroundings. Gladwell (2000) indicates that 'Innovator' groups or individuals take risks to try something new and 'Translator/Connector/Maven' groups transform ideas to make it work. These 'Translators' can tip critical points so that a social epidemic can reach the general 'Late Majority', who will actually use these ideas practically. The roles of the innovator, translator or maven can all be fulfilled by designers and can assist in introducing alternative workable solutions or to contribute expert knowledge that assist in changing over to a new system.

Designers can be seen as a group of *Innovators* that can create and introduce sustainable solutions in our cities. Designers act as an *Innovator Group* and also Mavens (knowledgeable case-makers or co-experts) who can contribute expert knowledge in solving sustainable transport systems. Solutions can be presented by a broad range of designer disciplines such as urban designers; engineers; landscape designers; architects; interior designers and product designers. Bicycle-oriented Design (BOD) must evolve and spread to all parts of the new transport system to ensure holistic approach and resolution to the problem. The idea of a sustainable lifestyle has clear benefits, the message is strong and has '*Stickiness'*, and designers can educate one other, young professionals and their clients in order to become co-creators in future development of the city.

Incorporating transport within the design of green buildings

McGraw-Hill Construction (2013:34) recently released results of a study on green building trends. It states that in South Africa "…green building [is] growing at a faster rate than any other part of the world...". It shows that the percentage of firms with more than 60 per cent of green activity will triple in South Africa between 2012 and 2015. Green building councils and their relevant set of rating systems exist world-wide – e.g. USA (LEED); UK (BREEAM); Netherlands (BREEAM.NL); Australia (Green Star Australia); Japan (CASBEE); South Africa (Green Star SA). All of these rating systems have various rating tools for various applications (e.g. New Construction tool), each with various categories (e.g. Materials). All rating systems have transport added in or as part of a category. Designers must design with credits in mind in order to gain a high score. Each credit is further detailed – e.g. Cyclist

facilities include requirements for types of cycle racks. All rating tools in Green Star SA are continually being revised. Designers are important role players in addition to the list of role players identified by the Framework for non-motorized transport in Johannesburg (2009:17-18). With green building, designers are able to accommodate non-motorized transport (on a large-scale to a detailed level), and while green building grows in South Africa, the numbers of users may increase as a sustainable environment may create sustainable living.

Conclusion

The paper identifies that the City of Johannesburg is preparing for drastic change in both the approach and design towards the city's public transport system. Cycling is currently the least used mode of transport, but is proposed to become one of the most important non-motorised transport modes in Johannesburg. The paper identifies that the proposed increase in bicycle users will require not only a redesign of the transport infrastructure but will require of citizens to embrace and adjust towards a city cycling culture. Although this radical shift can present various benefits to the city infrastructure, the citizens and the environment, this project can be doomed during the early developmental stages if a holistic project approach is not included. A top-down implementation plan from the government and city policy-makers, that aim to introduce a long term sustainability solution for the city, should also consider a drastic shift that within the daily transport behavior of citizens.

Although this paper identifies a growing support toward a cycling culture in Johannesburg, it is noted with concern that current cycling events takes place with the assistance of road closure and/or traffic control support. Citizens are showing a growing interest in supporting organized events or group activities that will ensure safe road usage. Daily cycling commuters continue to describe the city's roads as dangerous and unsafe for cyclist. The successful implementation of the Integrated Strategic Transport Plan Framework will assist in presenting a radical shift in ensuring that dedicated cycling lanes will provide safe, quicker and far less expensive commuting opportunities to the citizens.

Finally, the shift towards an increase in non-motorised transport modes presents many opportunities to the designers and design researchers. By reflecting on Gladwell's Social Tipping Point theory designers can, across various design disciplines, make valuable can make valuable contribution in introducing a more holistic design process that will ensure that the change in transport focus is introduced and accommodated within the broader supporting context. Landscape architects, architects and interior designers need to ensure that the transition towards a cycling culture is supported within the immediate context that will support the daily activities of commuters. Through paying attention to the needs of cyclist, and implementing Green Building rating systems, designers can become important co-creators within the proposed new transport system.

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