A Transdisciplinary Inquiry Into Sustainable Automobility Transitions: The Case of an Urban Enclave in Cape Town

Elizabeth Henshilwood, University of Stellenbosch, Stellenbosch, South Africa
Mark Swilling, University of Stellenbosch, Stellenbosch, South Africa
Marjorie L. Naidoo, University of Stellenbosch, Stellenbosch, South Africa

ABSTRACT

The over-reliance on private cars carries significant environmental and societal costs. International accords call for low-carbon automobility transitions, particularly in cities. Understanding how, why and where this global dependency could shift is crucial for sustainability, natural resource use, and climate change. This research hones into a geographically isolated and automobile-dependent enclave in Cape Town. Various social actors and residents contributed to a collaborative transdisciplinary inquiry. The qualitative research relied on documentation, semi-structured interviews, and social media research (Facebook) as sources of evidence. The latter method enticed residents to contribute to a solution-driven online debate, thereby aiding e-participation around a pressing urban issue. True to the essence of transdisciplinary design research, science was produced with society. In terms of sustainability transition theory, it stresses the importance of contextually appropriate low-carbon transitions (science) while highlighting community interest in bottom-up solutions (society).

KEYWORDS

Automobile-Reliance, Electronic Participation, Multi-Level-Perspective, Social Media Research, Sustainable Transport, Transdisciplinarity, User Innovation

INTRODUCTION

A century’s reliance on the private vehicle as a dominant transport mode has led to a self-mutating ‘system of automobility’; a global socio-technical system with many interconnected components and actors (Urry, 2004, pp. 26–27). Current studies label automobility wholly complex and unsustainable given its environmental, social, economic and spatial impacts. Challenges range from motorization (increased car ownership), fossil fuel dependence, road accidents, increased air pollution, urban sprawl, loss of productive rural land, and the impact on climate change by resultant greenhouse gas (GHG) emissions (Sims et al., 2014). On the other hand, the global automobile industry fuels economic development and sustains livelihoods through providing approximately nine million direct jobs (Organization Internationale des Constructeurs d’Automobiles, 2016). To combat these detrimental impacts, international accords on climate change and sustainable development emphasize the need for a global low-carbon mobility transition (United Nations, 2015). Many argue that such a transition is already underway, driven by path-breaking technological innovations, in particular the
burgeoning electric car industry, the mass integration of autonomous vehicles, and the uptake of shared transportation in most developed nations (Arbib & Seba, 2017). Newman and Kenworthy (2015) confidently note that the world has entered a ‘peak-car’ period. Nonetheless, this optimism does not dampen the urgency to improve both the production (how transport systems are implemented) and consumption (user behavior) processes of this global socio-technical system (Guy & Marvin, 2001; Hoogma, Kemp, Schot, & Truffer, 2005; Sims et al., 2014; United Nations, 2016b).

To do so, an increasing number of researchers are employing systems theory (Capra, 2005; Holmes, 2013) and research methods traditionally belonging to social science (Geels, 2012; Hickman & Banister, 2014; Lyons, 2004, 2011) to transport studies to account for the complexity of modern life and mobility needs (Banister, 2008; Hajer, 1996 in Dimitriou, 2011; Atkins, 1986 in Newman & Kenworthy, 2015). This is in clear contrast of conventional engineering approaches (Schiller, Bruun & Kenworthy 2010). Researchers are urged to pay homage to the social element of transport systems (the consumers) (Graham & Marvin, 2001; Guy & Marvin, 2001), the ‘power of context’ (Hickman & Banister, 2014), and the importance of space and scale (Hodson & Marvin, 2010) when examining unsustainable socio-technical systems - such as automobile.

When looking to the African continent and its automobile-dependent cities, it is less plausible to imagine autonomous electric cars dominating African streets in the near future. Cape Town, the focus of this study, is one such city largely unaffected by the current front-line mobility innovations. Private automobiles in Cape Town consume two-thirds of the city’s total energy consumption, while being responsible for 87% of the city’s GHG emissions (City of Cape Town, 2015). The local government, the City of Cape Town (the City), is responding by supplementing its ailing public transport system with a Bus Rapid Transit (BRT) system and adopting transit-orientated development (TOD) as the guiding land use strategy (City of Cape Town, 2016). Justifiably, these low-carbon mobility efforts are directed to central and denser parts of the city over the short to medium-term. A key societal question driving this study is what will happen to isolated urban areas of this city not earmarked for such public investment in the near future? And what can communities do while they wait for change?

**Spatial Context: The Far South in Cape Town**

One such isolated area, the South Peninsula in Cape Town, is the focus of this paper. The main reason for choosing this area is because it embodies a local manifestation of automobile-dependency and it is the home of the main researcher. Figure 1 shows its location within the greater Cape Town. The area is geographically isolated from the rest of Cape Town by the renowned national park, the Table Mountain National Park, and coastlines. The setting aptly earned the area its colloquial name - the Far South. It accommodates a mere 2% of Cape Town’s population, despite being one of the fastest growing municipal wards in the city (Statistics South Africa, 2011).

Decades of authoritarian colonial and subsequent Apartheid rule left South African cities spatially segregated and grotesquely unequal. As a result, lower-income residents of the Far South rely on the failing public transport offerings, such as buses and mini-bus taxis (a paratransit option), while the middle-class and well-off residents use private cars. With only three access roads to the South Peninsula (one being a toll road), congestion levels are one of the highest in the city (Transport Cape Town, 2017). Development pressure is palpable and new housing is predominantly car-centered gated residential estates, which perpetuate the legacy of Apartheid segregated spatial planning and intensifies congestion (Landman, 2007). This complex reality has evoked protest action from the local commuting community (Rampele, 2016) forcing the City to respond to their transport needs in two ways. Firstly, the City embarked on a substantial road expansion project of a main arterial road - the Kommetjie Road Project, and secondly undertook to formulate a holistic, long-term transport plan for the area - the Far South Transport Plan (FSTP) (Saffer, 2016b; Transport Cape Town, 2015). Both these projects were underway when this research was conducted, with the latter providing a useful platform for liaising with key social actors.
Urbane-ing the City: Examining and Refining the Assumptions Behind Urban Informatics