SCRIPTING MOBILITIES IN SUB-SAHARAN AFRICA: A CASE STUDY OF SECOND-HAND BICYCLE NETWORKS

Lucy Baker

This thesis is submitted in fulfilments for the requirements for the degree of Doctor of Philosophy

School of Geography and Planning,

Cardiff University

2018

Abstract

This thesis explores a network of international and national non-governmental organisations (NGOs), donors, development subjects and materials, in order to understand the politics of designing mobilities for development. It does this by tracing the flow of second-hand bicycles from their production in the Global North to Namibia, sub-Saharan Africa. An analytical framework of Script Analysis is used to examine the social and technical meanings that are written into second-hand bicycles as they are re-valued for use in the Global South. Following the bicycles to Namibia, the thesis examines how users subscribe to, reject and adapt the bicycles' social meanings and physical properties in local contexts in order to suit their needs.

The thesis finds that the bicycle is prescribed singularly as an object that intends to technologically modernise homogenous utilitarian subjects in inaccessible 'rural' Africa. A scene is set onto which an appropriate piece of machinery is inserted. Desirable industrious activities are promoted and less productive practices, such as play, embodied sensory experiences of mobility and identity performance, tend to be discouraged. The thesis finds that with little opportunity for negotiation between designers and users, the needs and desires of Namibian consumers are being dictated. The proscriptions and politics of the network are further compounded by the second-hand materiality of the bikes, which reduce the flexibility of producers to respond to users. NGOs are also operating under pressure to align to the current trends and expectations of donors. Meanwhile, in a local context bicycles are proscribed by sand and thorns, a lack of infrastructure and gender norms, for example. The thesis demonstrates the complexity of design, which goes beyond a linear process, also includes heterogeneous social and material entities that relationally act in conflict with a prescribed and universal 'tool' for mobility imagined by NGOs.

Declaration

This work has not been submitted in substance for any other degree or award at this or any other university or place of learning, nor is being submitted concurrently in candidature for any degree or other award.

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1. Introduction

> "I: And you never know what stock you're going to get? How does that get decided then?
>
> R: They just throw the bicycles into the container and they send it. I was complaining to the NGO we don't get the nice bicycles and the manager said 'my sister you must take what you get' [laughs].
>
> I: There must be some system of sorting the bikes between each shop so the nice bikes are fairly distributed?
>
> R: They don't do this. I understand the container stands at the side of the pavement and the people throw in the bicycles [saying] 'I don't want these bicycles anymore'. If the container is full they send it to Namibia.
>
> I: So how do you feel about receiving the unwanted bicycles?
>
> R: It's our business.
>
> I: It's what you do?
>
> R: Yes we sell second-hand bicycles." (Local NGO second-hand bike shop, Namibia)

This excerpt from an interview with the manager of an NGO project in Namibia outlines the politics of a second-hand commodity network from the production of bicycles in countries of the Global North to the restricted choice of products that retailers and consumers can access in Namibia. An assumption is made in this network that consumers will make use of second-hand bikes regardless of their quality. As bicycles are discarded, shipped and sold, meanings are inscribed by NGOs to these materials for their use as a mobility 'solution' in developing countries. Within these travelling forms NGOs, under the influence of a network of transnational donors, construct a neoliberal representation of productive mobile development subjects. The bicycle is used in the study as a lens through which to explore the relationship between object and subject, a condition which lies between materiality and representation (Attfield, 2000). Within such relationships the meaning of objects shape the political ordering of the world, which link distant places in complex ways, reproducing relationships of power in material and social arrangements (Akrich, 1992; Swanton, 2014). The focus of this thesis is to examine the transition of the bicycle's meaning and how this is read by users in the Global South, and to examine the extent to which the object integrates, or is in conflict with, local mobility systems of social norms, identity, legislation, practice, and material environments.

The market of Second-Hand Bicycles in Sub-Saharan Africa

Bicycle ownership in sub-Saharan African countries is historically much lower than in other developing countries, particularly India and China (Grieco et al,. 1994). Although ownership does differ significantly between cities, regions and countries of sub-Saharan Arica (for example 10 per cent in Nairobi and 62 per cent in Burkina Faso), the overarching factor that seems to limit higher levels of ownership (but not necessarily use), very broadly speaking, is affordability (Gwilliam, 2013; Heierli, 1993). In African cities it is cited that a bicycle costs between one and three month's salary, whereas in India, a bicycle costs 60 per cent of an average owners' monthly income (Simon, 1996). In Tanzania, in the early 1990's, the price of a bicycle was recorded to be equivalent to nearly a year's salary on a minimum wage (Bryceson and Howe, 1993).

A number of factors are thought to reduce the affordability of bicycles and act as a barrier to increasing bicycle ownership in sub-Saharan Africa (Guathier and Hook, 2005; Nkununziza et al., 2012). For example, local manufacture of bicycles in Africa rarely occurs (Maganya, 2008; Porter, 2007; Starkey, 2001), which reduces access to affordable bikes. The cost of maintaining bicycles in sub-Saharan Africa is expensive with authors citing annual costs to be between 10 and 20 per cent of a bicycle's initial cost (Howe and Barwell, 1987; Malmberg-Calvo, 1994; Overton and Zambeze, 1999; Porter, 2003). Spare parts are expensive and not always readily available. They are subjected to import taxes in some countries, reported to be around 23 per cent in Senegal (White et al., 2000) and Ghana (Porter, 2003). High maintenance costs have resulted in bicycles being abandoned in development projects (Porter, 2003). Although the cost of purchasing and maintaining a bicycle is expensive, there is little evidence to suggest bicycle hiring for transportation takes place other than on a very small-scale in sub-Saharan Africa. Bicycle hire is mostly only cited to be a way for children to access bicycles and to learn to ride (Amoako-Sakyi and Owuwu, 2011; Grieco et al., 1996).

The unaffordability of new bicycles opens a market for second-hand bicycles in Africa (Howe and Bryceson, 2000). They are generally imported from Europe, the U.S. and Australia, brought in by small-scale importers including NGOs and other organisations in civil society and private businesses (Porter, 2003). A survey in rural Kenya reports that 65 per cent of bicycles are purchased second-hand because of the reasons cited above (Guitink et al., 1996). This figure is likely to differ from country to country in sub-Saharan Africa, but a significant market share of bicycles consumed are second-hand and thus, the politics of such flows, the realisation of value in the products and the forms of organisation and governance are worthy of enquiry (Crang et al., 2013). Such flows of other second-hand materials have been considered (Brooks, 2013; Crang et al., 2013; Hansen, 1999; Norris, 2014; Omobowale, 2013), however, less so in terms of

cultural significance and never before in relation to local socio-material systems, such as mobility systems.

This thesis addresses the ongoing re-valuing of the second-hand bicycle and the alternative lives of the object that unfold in its consumption in sub-Saharan Africa. In doing so it offers a novel understanding of second-hand consumers in the Global South who are not only acting out of necessity, but one who expresses a desire to perform a modern identity. Previous studies of cycling practice in sub-Saharan Africa have positioned the bicycle as an intermediate mode of transport as way of mechanising pedestrian mobilities (Heyen-Perschon, 2001; Howe and Bryceson, 2000; Porter, 2003; Starkey, 2001), however, the bike's use as a valid urban mobility for cosmopolitan users has not been explored academically. Previous work frames the bicycle as a necessicty for those who cannot afford motorised transport, rather than a more nuanced understanding of the alternative trajectories of bikes that go beyond neoclassical development and consumption rhetorics.

Second-Hand Consumption Networks

Things can move in and out of a state of commodity in reversible and terminal movements, and at varying cadence, shifting between culturally regulated paths (Appadurai, 1986). Second-hand materials fabricate the 'back-end' of commodity chains that are less well known to research (Gregson et al., 2010; Lepawsky and Mather, 2011). However, as these materials move from practices of disposal to consumption they are recoded with value (Pierce and Paulos, 2011). As the social value of goods are transformed through global flows they have the agency to constitute 'local' practices of self-identity and community, thus they are significant objects of academic enquiry (Lash and Lury, 2007).

A number of authors note that consumption network analyses have tended to consider only the linear and uni-directional flows of goods, usually from production in the Global South to consumption in the Global North (Brooks, 2013; Crang et al., 2013; Gregson et al., 2010; Lepawsky and Mather, 2013). Thus, studies have too often neglected the Global South in the geography of consumption (Gregson et al., 2010), but are now beginning to critically explore the political context and relations of power and control in second-hand commodity flows (Brooks, 2012) and mobilities of waste (Davies, 2012; Law and Mol, 2008; Swanton, 2014). These flows have implications for global representations of less-developed countries. Swanton argues that studying the mobility and materiality of waste opens a lens to explore the politics of wasted 'stuff' that reproduces material orderings of the world through mobilities that are "full of life, exposing social relations, material orderings, power relations, material transformations and

injustices" (2014: 296). Brooks also calls for further in-depth empirical work on geographies of consumption, recycling and second-hand goods and particularly the material-cultural aspects of networks given the current lack of understanding (2013).

The Design of Mobilities and Mobilities of Design

This thesis is aligned with literature that is concerned with the design of mobilities and follows from Jensen's (2013: 5) call to "include material and technological dimensions much more directly in relation to the social dimensions of mobilities research". Jensen (2013) adds to previous knowledge of mobilities design, the networked interactions of social subjects with technology, material infrastructure and built forms. The thesis is concerned with how second-hand bicycles as technical objects are re-valued, integrated, adapted and proscribed in material and social networks that are situated in local places. Therefore, this thesis engages with theories of Science and Technology Studies (STS) that examine the movements and formation of culture in the flows and translations between arrangements of human and non-human actors to understand how society shapes technology and how technology, reversely, shapes society (Akrich, 1992; Latour, 1987, 2005; Callon, 1987; Law, 1994). This thesis builds on Jensen's (2013) contribution to mobilities literature by examining how mobilities are shaped over distant spaces, politically, through the representations inscribed into travelling technological objects (Söderström, 2013). It pays attention to the translations between designers and mobile subjects and the complexity of design mechanisms, which are more than just linear trajectories outlined in previous consumption studies and design studies (Akrich, 1992; Fallan, 2008), but rather, are ongoing negotiations between multiple actors and actants in global and situated networks.

The thesis also takes inspiration from the edited collection *Mobilising Design* by Spinney, Reimer and Pinch (2017) that examines the role of design as a process and practice in producing mobility and society. The collection is a response to mobilities scholar John Urry (2000) who calls for researchers to examine how objects are materially produced and symbolically conceived of fluidly through networks of people, ideas and materials, in order to understand how social practices and identities are produced. This thesis applies the work of mobilities scholars to analyse how development objectives and 'solutions' are conceived in the mobility of design that problematically negotiates global and local spaces in politically mediated networks. The thesis pays attention to the multiplicity, complexity and restrictions of design networks and user networks, thus it delineates standard models of production and consumption (Akrich, 1992; Appadurai, 1986; Brooks, 2012).

Research Objectives and Methods

This case study sets out to explore how a second-hand technical object is used to prescribe a mobility practice by international and local NGOs using Script Analysis as a theoretical and analytical framework. The thesis is concerned with the politics of representation and design in the global staging of mobility 'solutions' for the Global South. It examines how the bicycle's social meaning is subscribed to by some users in sub-Saharan Africa, or is resisted and re-inscribed with more local and relevant meanings for others. Things, however, "do not always go where they are told nor go according to plan" (Attfield, 2000: 6). Therefore, the thesis also examines the mechanisms that prohibit bicycle use that occur in the particularities of complex heterogeneous socio-material networks that characterise local and situated mobilities (Jensen, 2013; 2014). The thesis examines the mechanisms through which the bicycle as an object mediates transnational connectedness and translates a modernist development discourse of mobility. The thesis seeks to understand how mobility design is constructed, not only as local and fixed, but also through mechanisms of travel and translation involving global producers and local consumers who adopt, reject, negotiate and recreate the socio-technical and physical scripts of objects to meet their own needs and desires. These desires are attuned with cosmopolitan and playful identities that are alternative to a more conventional, singular, representation of industrious and neoliberal development subjects. The following questions outline the objectives of the thesis:

1. How are development subjects constructed by NGOs in the mobility of second-hand materials and technical design 'solutions'? How are these conventional representations resisted in local contexts?

2. How are technological design 'solutions' for mobility practices proscribed in local situations?

3. How are Actor-Network Theory and Script Analysis relevant for examining how mobility practices are framed for, and in, the Global South?

These questions will be answered using a mobile methodology inspired by Doreen Massey's understanding of place as "the product of layer upon layer of different sets of linkages, both local and to the wider world" (2015: 41) and authors who consider the ongoing formation of place through processes and the continual movement of people and things (Cresswell and Merriman, 2011; Sheller and Urry, 2005). The method takes insight from Tim Ingold (2015) who describes people to exist as 'wayfarers' to imply an embodied experience of mobile life lived through places, around places and from and to places located elsewhere, rather than life lived inside of places. This applies to my own ethnographic enquiry as I adopt a 'wayfaring' method

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and in theorising the position of research subjects involved in this study. James Clifford's constitution of 'the field' is of significance to the mobile ethnographic approach used, which contests a more fixed definition of the traditional anthropologist's field. Alternatively, Clifford pays attention to the negotiations between local and global sites and recognises space as a product of translations and travelling objects, subjects and knowledge. Appadurai's (1987) recognition of *following things* in order to understand processes of consumption is also relevant to incorporating materiality into the method. Thus, as a starting point I trace the movement of second-hand bicycles from their point of revalue by NGOs in the Global North to their use in the Global South, but expand previous linear consumption studies by examining the after-life of these objects as they come to be used, adapted and proscribed in heterogeneous networks that are particular to local contexts. I examine the complexity of the socio-technical scripting of mobility practice from a distance, which is compounded through the materiality of second-hand objects using semi-structured interviews with international and local NGO representatives and interviews that include photo elicitation and mapping techniques with users and non-users of bicycles in Namibia. Furthermore, I use ethnographic observations to understand a more nuanced version of the social and material context for which a technological development 'solution' is applied by NGOs.

Thesis Structure

Chapter Two presents the literature relevant to the research questions. The review outlines the theoretical framework of the study bringing together Actor-Network Theory and Script Analysis. The review then turns to material and consumption theories that pay attention to the agency of objects to move and to shape society. The review suggests how mobilities studies can be relevant to examining the geographies of development. The literature examines second-hand materials and processes of revaluing as these materials become mobile across spatial trajectories, which creates an argument for using a mobile *following* method. A body of literature then highlights a predominant representation of the development subject as a rational, economically productive being. Alternative possibilities are also considered; particularly play, recreation, embodied and sensual mobility and consumption motivated by a desire to perform a cosmopolitan identity. The literature review draws parallels with these binary constructs of utilitarian and 'irrational' subjects identified in development, consumption and play literature, with those identified in the field of mobility and transport studies. It considers how playful, sensory and embodied ways of moving have mostly been absent from transportation research, however, some scholars consider play as integral to everyday life and

argue that mobilities and urban design ought to be 'loosened' to accommodate for playful practice, rather than seeing space and movement as purely functional.

Chapter Three outlines the research methodology, background literature relating to cycling in sub-Saharan Africa and also contextualises the research in Namibia, Africa. Firstly, the chapter describes the theoretical implications for the methodology. It then outlines the case study criteria, which is a qualitative case that follows and examines the translations within a second-hand commodity/humanitarian aid network. The chapter then introduces Namibia as a site where situated ethnographic methods are carried out. It outlines the data collection, study population, sampling and data analysis methods. The chapter outlines the strength and limitations of the research's validity and reliability. Finally, it considers the ethics and politics of the research and details procedures taken to account for any issues that arose.

Chapter Four examines the mechanisms used by NGOs to create a simplified stage of 'rural Africa' for which bicycles are inscribed with meaning and inserted as a technical development solution. Their modernist socio-technical product script favours utilitarian and productive use of the bicycles and discourages less productive use of the bikes. The chapter demonstrates how donor accountability and objectives, as well as the material properties of second-hand objects, restrict the scripting of bicycles and the representation of users. The chapter demonstrates how rational consumers are prescribed in the retail space of the second-hand bikes and how users are imagined to be adults as children's bikes are not seen to be economically valuable in this network and are therefore used as space fillers in transportation.

Chapter Five evidences the subscriptions, resistance and adaptations of the second-hand bicycle. The main focus of the chapter is how users negotiate the NGOs' socio-technical script of the bicycle to meet their own needs and desires. Users demonstrate playful and creative uses of bicycles that interweave with functional use. They also reject the bicycle whilst subscribing to alternative transport that is more appropriate for their needs. Whilst using mountain bikes young Namibians adapt and re-inscribe the NGOs' physical utility script of second-hand bicycles. Thus, this chapter sets out a more nuanced representation of Namibian development subjects as more than just the utilitarian subjects imagined by the NGOs. This chapter is central to understanding how mobility is staged locally, as well as globally, through user performances (Jensen, 2013).

Chapter Six examines how the bicycle's script imagined by NGOs' as a development tool for productivity is proscribed by multiple actors and actants in a complex network. This chapter demonstrates that a process of domestication, whereby bicycles may be used more widely,

requires not only object adjustments by designers, but also a series of adjustments that enrol heterogeneous actors, in which the bicycle's script is embedded. Without these relational elements that form a setting for a bicycle's use it is less valuable to users. Namibian consumers are given little opportunity to feedback to designers, however, and designers have little control over the adjustments that can be made to domesticate the second-hand bicycles into a network that varies from place to place.

Chapter Severn concludes the thesis by revising the objectives of the research and the key research findings. It discusses these findings in relation to the literature and demonstrates the theoretical and practical implications of the study particularly relating to the utility of Script Analysis and Actor-network theory. The chapter discusses the limitations of the method of the study and the use of Script Analysis and Actor-Network theory to examine processes of development. Finally, the concluding chapter identifies some recommendations and possibilities of future research.

2. Literature Review

Introduction

The literature review situates the thesis between mobilities studies that consider society to be constructed and carried out on the move, and development studies, which often tend to privilege local constructions of society, but neglect the connections development subjects and developing nations have with elsewhere. It provides a detailed account of how development subjects and practices are constructed by NGOs and donors. The review outlines the theoretical framework of the study bringing together Actor-Network Theory and Script Analysis in order to analyse the negotiations between beneficiaries and NGOs in flows of second-hand commodities used as technological 'solutions'. The review then turns to material and consumption theories that pay attention to the agency of objects to move and to shape society. The literature examines, in particular, second-hand materials and processes of revaluing as these materials become mobile across spatial trajectories. The review pays attention to the back-end of consumption processes that occur elsewhere and often out of sight, which creates an argument for using a mobile following method to examine the process of moving second-hand goods from developed to developing nations, the translations and negotiations that occur throughout such a process, and the points at which object scripts are reworked and resisted, thus moving between global and local scales of development.

Following on from a body of literature that highlights a predominant representation of the development subject as a rational, economically productive, being other possibilities are considered; particularly play and alternative consumption that is not only motivated by utilitarian desires. The literature review evidences that play is categorised as other than conventional life. The existence of play in the Global South is mostly neglected and ludic subjects are most commonly children. This observation can be extended to consumer representation, which has often constructed the consumer as a rational being that makes decisions based on utility and is largely Western. Commodity studies, therefore, most commonly trace the flows of goods from production in the Global South to consumption in the Global North and rarely vice-versa.

Ultimately the thesis broaches current debates on the representation and development of the Global South through a case study that examines the prescription and staging of a mobility 'solution'. Therefore, the literature review draws parallels with the binary constructs of 'utilitarian' and 'irrational' subjects identified in development, consumption and play literature,

with those identified in the field of mobility and transport studies. It considers how playful, sensory and embodied ways of moving have mostly been absent from transportation research and planning, but are becoming increasingly relevant in the Western context with a focus on health, wellbeing and equality in urban mobility planning. Some consider play as integral to everyday life and argue that mobilities and urban design ought to be 'loosened' to accommodate for alternative and playful practice, rather than seeing space and movement as purely functional. However, this argument has not yet extended to consider alternative mobilities of the Global South.

Global-Local Networks of Development

Not-for-profit, non-governmental organisations (NGOs) form a collective part of civil society situated between the state, market and individuals, that otherwise comprises of community organisations, faith-based groups, trade unions and activist associations (McIlwaine, 2007). Civil society has been particularly relevant in the development of the Global South since the post-Cold War independence of nations of the Global South from colonising nations, which has been focused on challenging totalitarian regimes of state actors and promoting democracy (ibid). NGOs of the Global North have been focused on providing intervention to poor communities of the Global South and facilitating participatory development, particularly since the 1990s (ibid). In response to criticisms of development being led by experts of developed nations, NGOs of the Global North have sought partnerships with NGOs of the Global South to manage projects at the grassroots level (Potter et al., 2012). NGOs are key agents in a transnational development business and some larger organisations have the capacity to influence international agendas, raise awareness of human rights and justice, and to campaign against state and corporate legislations (ibid). However, an overall legacy of their grassroots participation remains to be seen and NGOs have been heavily criticised for failing to reach impoverished and marginalised communities (ibid). Furthermore, assumptions that NGOs of the Global South represent the interests of the poor are regarded as contentious because they fail to act neutrally of local power structures (McIlwaine, 2007; Mercer, 2002; Mohan, 2002).

Development is a globally networked strategy compromising heterogeneous actors and materials that are dispersed across varying spatial scales of grassroots and transnational (McIlwaine, 2007). The understanding of civil society is evolving from one that is bounded locally and nationally to one that is more spatially porous; neither situated in the camps of local or global scales of space (ibid). Yet much research on NGOs is case-study based and does not explore the full workings of aid networks and their geographical nature (Bebbington, 2004). McIlwaine notes that the theorising of how civil society travels from one state to another

remains to be "fairly silent" and calls for further spatial enquiry into how organisations negotiate, challenge and concede to global formations of power (2007: 1259). This is partly because much recent research has situated, and at times elevated, development in the 'local', rather than occurring through spatially complex networks (Bebbington, 2004; Mohan, 2002; Sharp and Briggs, 2006; Watkins et al., 2012).

A large proportion of development research is routed in participatory-action projects, which firmly plants the researcher in the local field – a space constituted apart from elsewhere (Katz, 1992) - whilst attempting to produce postcolonial knowledge by giving voice to the local. The direction of development towards participatory approaches and livelihood perspectives involving civil society and NGOs attempted to bring about a shift in focus from top-down macro-development policies to grassroots approaches and towards the interpretations and priorities of development subjects (Chambers, 1997). It was a response to criticisms of modernist development, the objectives of which were to transform what are thought to be 'traditional' and 'backwards' cultures into modernised, rational, cultures based on Western social standards (Power, 2003). Conventional objectives of modernist development are industrialisation, economic growth, an equal distribution of social capital, an improvement in infrastructure and integration into the global economy (Greenstein, 2009). This notion of development intervention is cited to characterise the colonial mission of the 19th and 20th centuries and to be dominated by neoliberal economic-inspired top-down development (Manji and O'Coill, 2002; Potter et al., 2012). It has been criticised for continuing to fail to recognise the social and cultural bases for living, such as identity and aspiration in people's attitudes to their livelihoods (Escobar, 1995).

Whilst local-scale action has been prioritised the links to wider processes and institutions that shape local knowledge have been neglected (Kesby, 2005). Development research and practice has often overlooked "the webs of connection that ensure localities can never be entirely local" (Sharp and Briggs, 2006: 7). Instead Katz calls for "a 'state of inbetweeness' wherein the multiple determinations of a decentred world are connected" – to locate and connect practices (1992: 495). Some scholars refer to what Greenstein (2009) terms 'alternative modernity' (Cooper, 2005; Ferguson, 2006; Saldaña-Portillo, 2003). Saldaña-Portillo (2003) argues for a movement towards perceiving local knowledge to be based on the experience of being immersed in global relations, which seeks to reshape global-local relations rather than following an impossible pure native existence. Ferguson (2006) recognises that expectations of modernity are still very much in place in Africa and promotes a concept of modernity that involves catching up with the Global North whilst retaining local cultural distinction. Cooper (2005) highlights the multiple uses of the

concept 'modernity', which is also a native concept, adopted by people in order to convey their local understandings and aspirations in the context of global development. This understanding of modernity is based on a plurality of experiences positioned in a network of global relations (Greenstein, 2009).

The current body of spatially refined explorations of development are problematic whilst foreign donors cannot directly reach their intended beneficiaries and because aid works in a set of networked and complex movements (Watkins et al., 2012). Programmes designed in the Global North most often pass indirectly through a complex chain of smaller, less formally structured, organisations if they are to reach the ground in the Global South (ibid: 295). The few studies that have considered the mobile processes at work within development networks have broadened understandings of the power that flows through these networks and critically examine the possibility of development to move forwards using an actor-based approach to examine development's political ecology (Bebbington, 2004: 740). One example is Reith's (2010) study that adopts a following methodology to trace money as it flows through aid-chains to demonstrate that partnerships between donors, NGOs and beneficiaries are based on inequalities in the distribution of power.

The understanding of civil society and its position in development is evolving from one that is bounded locally and nationally to one that is more spatially porous (McIlwaine, 2007). Yet much research on NGOs is case-study based and does not explore the full workings of humanitarian aid networks and their geographical nature (Bebbington, 2004). The politics of aid-networks, their uncertainty and relationships of dependency have led to arguments that modernist values and agendas flowing from the Global North continue to be perpetuated despite the focus of development on local knowledge and participatory practices (Aveling, 2010; Mohan, 2002; Tvedt, 1998). The concept of 'alternative modernity' suggests ways to move from binaries of global and local space that remain to be problematic for development practice. It is aligned with Actor-Network Theory (section 4.2), which is concerned with the translations and flows between heterogeneous actors. A mobile approach to theorising development may address problems associated with the politics of development whilst paying attention to the structures of both local and global arrangements and the associations between each. This thesis uses a mobilities approach in order to recognise that ideas, meanings, materials and practices circulate neither locally, or globally, but as dynamically constituted in the movements of the meanings of objects (Lash and Lury, 2007). Focusing on an object and its mediation decentralises binaries of local and global space as stages for knowledge production, but instead draw attention to the translations and flows of culture and meaning in development networks. Following on from the literature

that recognises the current problems in development practice and theory, the review now provides a detailed account of the implications of the spatial politics of development networks on the goals and objectives set by NGOs that construct particular development activities and subjects.

Imagining Development Subjects

NGOs have faced issues of accountability and credibility as they have become increasingly dependent on donors for funding. Therefore, their ability to represent beneficiaries and to act independently of mainstream and hegemonic values is undermined (Edwards and Hulme, 2006). Foreign donors usually cannot directly reach their intended beneficiaries and must act through a network of other organisations and subcontractors (Bebbington, 2005; Mohan, 2002). It is thought that these smaller, local, NGOs implement donor visions in local communities having been trained in globally legitimised messages to be translated to "imagined beneficiaries" (Watkins et al., 2012: 288). Watkins et al. argue that subcontractor organisations may begin as community membership organisations, but in order to expand their efforts, or to survive, they approach outside donors, or are located by donors, and become subcontractors that interact with beneficiaries for global aid organisations. Similarly, Mohan (2002) argues that much of the power in these partnerships between international and local NGOs is held by the funding partner who controls the policy agenda to a greater degree. Although whilst much of the power in aid networks flows down in terms of financial, or material donations (Reith, 2010), organisations of the Global North are also dependent on impact flowing from local beneficiaries of the Global South in the form of accountability. Donors require organisations to invest resources in monitoring and evaluating their outputs and to provide evidence of how beneficiaries are impacted (Aveling, 2010). Therefore the imagined development subject within the aid network is a highly important concept as are the local NGOs that co-produce it and are thus entitled to a privileged relationship with a particular place and its inhabitants (Mohan, 2002).

It is argued that NGOs construct and represent particular notions of poverty and its reduction through discourse, project documents, policy and strategy statements, information gathering, and monitoring and evaluation systems (Bebbington, 2005). A great deal of ambiguity surrounds these notions of imagined beneficiaries, which Morfit (2011) argues, is partly due to NGOs attempting to buffer themselves against funding uncertainty by reinventing themselves as donor fashions change. NGOs are dependent on donors whom are unpredictable (Heurlin, 2010) and often provide short-term funds, which means NGOs must be constantly looking for new projects and contracts (Swidler and Watkins, 2009). They might diversify their activities to reduce dependence on a single funder adding complexities to their activities since different donors have

different expectations and goals (Reith, 2010). This is particularly the case as funding has declined in recent years resulting in a very competitive environment where NGOs chase money whilst under pressure to meet the needs and demands of donors, thus shaping themselves, adapting and fitting in (ibid: 447). Targets and performance indicators, such as the Millennium Development Goals and now the Sustainable Development Goals, tend to dominate the direction of funding for development (Wallace, 2004: 208). The concept of sustainable development has been criticised for its use in managing funding uncertainty since NGOs use it to announce programs are to be funded for a limited period and self-funding from there on (Watkins et al., 2012: 297). Donors gain more freedom in avoiding long-term commitment to existing programmes. This attachment to donor freedom shapes the types of projects set up to those that will not require recurrent funding, goods and services (ibid). These arguments demonstrate that NGOs, who are supposedly representing local grassroots development, are creating programmes based on the requirements of donors of the Global North.

Aveling argues that the downward flow of funding is controlled by large international NGOs, which may withdraw funding if the upward flow of accountability for use of that funding fails (2010). This dependency relationship, argues Aveling, encourages accountability to donors rather than services to developing subjects. This arises from a pressure on international NGOs to achieve sometimes overly ambitious targets, which are focused on maximising quantitative outputs rather than on the quality of community participation (ibid). This situation is described as an audit culture in development networks that concentrates on accessible and measurable indicators of output (Gray, 2003). It tends to alienate the real, rather than imagined, beneficiaries from decision-making (Mohan, 2002).

Partnerships are sought by international NGOs that meet their linguistic, management, administrative and reporting demands. Therefore, other local grassroots NGOs that lack this ability to connect with international organisations are prohibited from such global development networks. The hierarchy of local NGOs receiving international funding and the distribution of funds depends on the ability to partner with global organisations, which permits access to greater resources, materials and knowledge. The risk of this hierarchy of flow in the development networks is that local NGOs will always seek to follow international organisations and donors to gain credibility, but perpetuating the dominance of foreign values and agendas (Aveling, 2010; Mohan, 2002). This reflects Tvedt's criticism of development that is a donor created and led system that moves powerful language and Western, modernist, concepts of development, carrying resources and authority from the core to the periphery and information and legitimisation from the periphery to the core (1998: 75-80). Aveling (2010), therefore, calls

for a critical reflection of international NGOs' and donors' prioritisation of accountability and processes of accessing funding. These findings demonstrate that even when local organisations are involved in imagining beneficiaries and representing the local, the process is not void of global connections, knowledge, societal values, or the horizontal and vertical power structures that form these representations.

Since donor funds are limited, aid agencies are incentivised to make bold claims about what their activities can achieve (Kremer and Miguel, 2007). This involves a reconstructing of organisations' inputs and outputs environments (Pfeffer and Salancik, 1978). These environments are shaped for organisations to acquire the inputs necessary to operate - in terms of funds, knowledge, materials and personnel and in terms of outputs - to find consumers to target for their products (Scott and Davis, 2006). However, Watkins et al. suggest there is a "fundamental ambiguity about for whom the NGOs are producing" (2012: 292). Some argue that NGOs are self-representing transmission channels for images that legitimise beneficiaries and grass-roots interventions to donors in order to secure funding, which may not always be truthful (Townsend and Townsend, 2006: 272). In some instances local NGOs transmit alternative interpretations of local realities that are taken as authentic by international partners (Mohan, 2002). This raises some ethical issues of donors acting from a distance to care for those whom they will never meet and in situations they may not understand other than through the images of mass media of refugees, victims of war, famine and natural disaster (Silk, 2000). These images, Silk argues, are a "potent moral force behind selective, high profile humanitarian intervention by Western governments and NGOs" (2000: 303).

This environmental shaping of development is referred to by Watkins et al., (2012) as 'the technology of talk'. For example, the training of people to embrace democracy, environmental stewardship, disease prevention, reduction of gender-based violence, and to otherwise transform people's lives. Its message has a particular direction of flow in development networks and is hierarchical, cascading downwards to subcontractors and members of the community in which a subcontracting NGO operates (ibid). The value of the 'technology of the talk' is that participation in training, workshops and meetings, provide indicators of impact that in part contributes to NGO reporting (ibid). Watkins et al. argue that it "legitimates concepts at the core of the contemporary global enterprise of development" and "whatever the issue the donors want to promote, the solution is talk – only the topic changes" (2012: 299). Uncertainties are brought about by faraway, ambitious, vague and sometimes unrealisable goals, or ineffective technologies, that are exported "to a complex chain of subcontractors and affiliates whose activities they then struggle to manage and rationalise" (ibid: 288). These issues of translation

result in difficulties of organisations to establish a clear cause and effect relationship between the technologies they employ and the outcome they produce (ibid).

Organisations are motivated by funding uncertainties and donor requirements to construct objectives, however, these coping strategies tend to shape the type of aid that reaches certain beneficiaries, in certain places. The networked and transient nature of development has consequences for the distribution of aid and NGO activity. For example, Bebbington (2004) notes that NGOs tend to locate themselves in geographical locations where other partners and funders have already established relationships. Wallace (2004) has argued that many NGOs carryout their work rurally whilst fewer engage with urban slums. This could be because the 'people-centred', postmodern, development strategy has aimed to put first those thought to be most left out of development; principally a rural majority (Chambers, 1997; Lewis and Sobhan, 1999).

Bebbington (2004) notes the relationship of space and the viability of NGO outputs arguing that since low income populations build spatially complex and mobile strategies to deal with their poverty, a place's connections to other more economically dynamic places is necessary. The very poorest people in rural communities are often the least mobile and confined to rural spaces, which makes development difficult to achieve despite its global connections and flows (ibid). A beneficiary's local, regional, national and global connections are part of fundamental spatial processes that prohibit and enable action within development networks. However, rarely does development literature analyse NGO activity using mobilities or analytical approaches that focus on the networked and relational processes of development.

It is argued that NGOs have a universalistic tendency to categorise and homogenise communities as having the same needs and priorities (Mohan and Stokke, 2000). For example, Bebbington finds that NGOs "represent the rural poor as fundamentally agrarian" because they believe that is where donor interest is situated and thus NGOs tend not give attention to the non-agricultural (2005: 944). Local places are often treated as discrete and bounded denying the problematic notion of 'community' as a site of unquestioned local and authentic culture (Blaikie, 2000). However, this assumed homogeneity downplays the diverse development issues that exist across diverse contexts (Bebbington, 2005; Fowler, 2000). It denies that places and their people are constituted by flows of information, commodities and culture that extend far beyond their locality (Mohan, 2002). This assumption of 'the local' contradicts the heterogeneity of livelihoods of beneficiaries for which, non-agricultural activities contribute significantly (Bebbington, 2005). Representations of the poor, Bebbington argues, are thus "theoretically and normatively laden, and move in some relation to the balance of power in broader tussles over

the meaning of development" (2005: 497). Such representations of 'the local' flow in a hierarchy of power from global to local spaces thus, understanding the incentives for actors to create (mis)representations of poverty and poverty reduction, how these representations are translated, and how actors respond to them is crucial for addressing the current tensions in humanitarian networks (Bebbington, 2005). There is a need for more empirically adequate representations of poverty. Representations that are not limited to a homogenous rural, agrarian, livelihood, or biased by funding pressures of accountability, but realistic and nuanced representations that challenge conventional constructs that are aligned only with economic impact. The potential to see how development might impact the lives of the poor with outcomes that are not entirely related to economic, health or educational functions, but are emotionally sensed, and with less measureable outcomes, deserves further enquiry.

Funding is uncertain, transient and highly competitive, therefore, NGOs construct strategies to cope with uncertainty and to secure funding. They adapt to fashions and shape the environments in which they work to bring in funds and to create outputs, which proves their accountability to donors. The politics of these aid-networks, their uncertainty and relationships of dependency, mean that the dominance of values and agendas flowing from the Global North in many cases continues to be perpetuated by local NGOs and beneficiaries despite the focus of development on local knowledge and participatory practices. It means that development subjects are imagined and represented in a top-down process that is more aligned with the needs of donors for evidence of accountability than the needs and desires of real development subjects. The situation calls for a more mobile approach to researching development that challenges the binaries of local and global knowledge and instead focuses on the relations, processes and structures that constitute development at varying scales.

Mobilities Theories: 'A Global Sense of The Local'

A 'mobilities paradigm' has emerged in social science and geography over the past two decades as outlined by Sheller and Urry (2006). Other major works include those by; Urry (2000, 2007), Cresswell (2006), Merriman (2004) and Adey (2009), who mark a revisit and progression towards examining the movement of people, which is increasingly enhanced by technologies and objects. Mobilities studies explore space, place, boundaries and movement (Law, 1994; Murdoch, 1998; Sheller and Urry, 2006), whereas previous geographical knowledge has often assumed a stable understanding of places, boundaries and territories, which are temporally and spatially rooted (Cresswell and Merriman, 2011: 4) ,arriving from either static, or nomadic, understandings of the social world (Sheller and Urry, 2006).

Rather than thinking of place as a setting through which things move, mobilities theorists consider the ongoing formation of place through processes and the continual movement of people and things (Cresswell and Merriman, 2011). Massey describes the history of place as "the product of layer upon layer of different sets of linkages, both local and to the wider world" (2015:41). Rather than a conceptualisation of places that are areas surrounded by boundaries place is understood by mobilities theorists as a dynamic linking of the local and global (ibid). Place, for Massey, is not static, but conceptualised in terms of the social interactions that places bind together and the particularities of place that are located in "the constellation of social relations, meeting and weaving together at a particular locus" (2015: 40). Massey, therefore, calls for "a global sense of the local" (ibid: 42). Similarly, Ingold argues that people are not confined to particular places, nor are their experiences "circumscribed by the restricted horizons of a life lived there" (2015: 200). Ingold describes people to exist as 'wayfarers' to imply an embodied experience of mobile life lived through places, around places and from and to places located elsewhere, rather than life lived inside of places. Mobilities theorists are thus challenging the understanding of culture and traditional knowledge to be a product of local place and its people.

Mobilities theories situate places as connected to complex networks of people, technologies, images and materials. Materials and other non-human actors are therefore central to theorising mobility. Appadurai first wrote of the social life of things and called for the following of things as a way to understand social processes, such as consumption (1987). Callon (1987) and Latour (1987, 2005) have discussed the agency of materials to translate information and to act within heterogeneous networks. Sheller and Urry cite the growing interest in the making of places through material stuff; "always in motion, being assembled and reassembled in changing configurations" (2006: 216). Callon and Law note that materials may act to translocate users connecting them with others and other places (2004: 7). Mobilities studies therefore often draw on Actor-Network Theory as they recognise the agency of materials and their movement in producing and translating meanings and culture, and relations of power, which shape the social world (Jensen, 2014). For example, Lash and Lury (2007) take commodified things to be the centre of assemblages[1] that work to mediate a global culture and to shape social life. Jensen

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[1] 'Assemblage' defined by philosophers Deleuze and Guattari is a mode of arranging heterogeneous entities to work together for a certain time (Müller, 2015). Assemblages and networks of Actor-Network Theory (ANT) (see section 4.2.) draw parallels in that both follow heterogeneous associations and recognise the agency of humans and non-humans to shape networks and social phenomena. Both theories pay attention to the political structures within networks, how these orders emerge and are shaped in certain ways, how networks are held together or broken, and how networks mould space (ibid). 'Assemblage' assumes entities are autonomous from their relations and that there are no hierarchies in

(2013; 2014) understands the meaning of movement to be created in relational networks of circulating people, material infrastructure, goods, information and signs. For example, Jensen describes the process of 'staging mobility', which is designed meticulously from above and performed from below, which implies a political and material social ordering of the way people move in technological networks and governance systems of social and material elements. Söderström (2014) studies how the design of urban materials control other actors from afar through the meanings of movement inscribed in them. The relevance of material actants to society are perhaps more relevant now than ever before as increasing forms of technology and communication have enabled actors to become more connected across time and space (Sheller and Urry, 2006). These connections span various disciplines and processes and, therefore, Sheller and Urry (2006) call for the study of mobility to be situated in its fluid interdependence rather than separate spheres.

Mobilities studies also consider the representation of people presumed to occupy particular mobile subject positions, for example, refugee, migrant, tourist or commuter, and their resilience and reworking of these conventional stereotypes (Cresswell and Merriman, 2011). These are the meanings of movement; the representations, discourses and narratives of mobility that give it shared meaning. Furthermore, the politics of meaning is concerned with how mobility is represented and who constructs these narratives. The politics of mobility also explore its implication in the production and distribution of power (Cresswell, 2010).

Jensen (2013; 2014) pays particular attention to the design of mobilities, which he argues are staged through very specific design solutions that affect human culture, identity and social life. For example, Jensen considers how the design of mobility systems afford and/or prevent particular mobile practices in everyday life. He considers how "systems and networks assemble humans and non-humans in an attempt to stage mobilities" (2014: 47). Jensen terms this approach a 'mobile situationism', which "engages with the situational microecologies of mobile practices" (2013: 10). For example, a bicycle as a mobility mode depends on multiple requisites in order to be understood, including legal and economic systems, various material infrastructures and a user (ibid). The surface material and topography of bike paths, type of bike,

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the agency of entities, but rather the assemblage is the mode of agency. Assemblages act on external entities, events, practices, spaces, societies and so forth. Rather, networks hold together and shape entities internally, but how they act externally as a whole is not a concern of ANT. ANT understands the global as connected to the local through associations, whereas 'assemblage' views the global as an exterior force that arranges flows, however, is not present in the local. This thesis utilises ANT because it recognises that the political significance of materials is a relational and contingent achievement. It recognises things and technologies partake in processes of governing within a network, rather than externally of a network. It also recognises hierarchy between entities within a network.

number of gears and quality of tyres, for example, all contribute to "particular and mediated embodied mobilities" (Jensen, 2014: 236). Jensen's descriptions of 'situated microecologies' are inspired by Goffman's understanding of situations that are sites of social interaction that are arranged 'microecologically', and importantly, with materials (1979). He also cites Varnelis's 'networked ecologies' of the multiple entities of the city defined as:

> "Networked hyper-complex systems produced by technology, laws, political pressures, disciplinary desires, environmental constraints and a myriad of other pressures tied together with feedback mechanisms".

(Varnelis, 2008:15 in Jensen, 2003: 31)

Jensen also takes note of the material interactions in his 'situated microecologies' taking note of Easterling's connection of infrastructure and culture in contemporary mobilities, noting:

> "Infrastructure […] includes the countless shared protocols that format everything from technical objects to management styles of the spaces of urbanism defining the world as it is clasped and engaged in the space of everyday life".

(Easterling, 2011:10 in Jensen, 2013: 32)

Staged mobilities, therefore, include materials, technical objects and users, but also codes, shared protocols, cultures, values and norms in both design and user performance. In exploring the political affordances of certain mobile practices and the supressing of others created within multi-dimensional networks, mobilities design explores potentials for new experiences, opportunities and inclusive practices. For example, how mobile systems might become less environmentally and socially restraining and more inclusive, flexible, attractive, inspiring and fun (Jensen, 2014: 240). Researching the design of supposedly neutral systems of movement considers how they are inscribed with rationales and norms that may in fact be acts of dominance , power or ignorance (ibid: 179). This analytical perspective of mobilities as staged is central to this thesis as it unpicks who stages certain mobility solutions, how, why, where, by which technologies and design principles, and how this occurs politically (Jensen, 2014: 7). In order to eliminate imbalances of power in mobility, argues Creswell, we must understand it holistically through an awareness of the fact, meaning and experience of mobility (2010). This points to more nuanced understandings of mobility, its complexities and constellations, which are embedded in social culture and history.

This thesis is concerned with the politics of the physical movement of things and people, the construction and politics of mobility representations and the politics of mobility practice both in the way materials are moved globally through consumption and through development practices.

The thesis utilises concepts of place as a process of connections between local and global scales of space. It gives attention to how a mobility practice, in this case cycling, is translated globally, but equally how people perform mobilities in context, thus embodying, or resisting, local and global representations of mobility. Thus as materials are re-valued and transported for practice, it examines the complexity of design as a process that engages multiple actors to shape the meaning of an object, however, whilst also distancing users from the design process. It thus, challenges modernist development practices that do not give significance to situated and local solutions to development and adds to postcolonial and postmodern development theories that attempt to bridge local and global scales of conceptualising and practising development.

Situating Mobilities Theories within Postcolonial Geographic Development Research

Postcolonial theory is, and has been, used by critical development geographers to examine how interventions and relations that perpetuate poverty are embedded in geographies of connection and hierarchies of knowledge that are meaningful to actors across time and space (Radcliffe, 2005). It identifies how specific ideological formations and normative assumptions have flowed from colonialism into development studies (Power, 2003). Critiques of modernist approaches to development consider processes of knowledge production to be central to the way in which geopolitical and economic power is secured by certain groups in the North for their own benefit (ibid). Postcolonial thinking, rather, argues for the reconstruction of knowledge that attends to the diversity of perspectives and priorities (ibid). It stresses the involvement of the colonised as central in knowledge production and re-centres local knowledge and practice as valued outside of the Global North (Mercer et al., 2003). Postcolonial studies have paid attention to the mundane everyday realities of particular places and lived experiences. They are attuned to the politics of giving voice to the subaltern and the methodological challenges associated with a largely Western discipline established during the height of colonisation (Crush, 1994). Postcolonial studies recognise the range of subject positions located along different axes of power across different locations (Raghuram and Madge, 2006) and highlight social divisions within nationalism and forms of local resistance (Radcliffe, 2005).

Such theorisations of development studies have led to participatory research methods that are designed to bring focus to the 'local' in order to give voice to otherwise disempowered, subaltern communities so that they may be involved in the development of their communities, which is relevant for them and not only developers from other places. But despite much theorisation it is thought that a decolonisation of development is yet to occur and many consider the international development community to still be Eurocentric, modernist and/or neo-colonial (Katz, 1992; Sharp and Briggs, 2006). It is said that development geography, a colonised subject

is artificially produced by predominantly those in the North working in the South (Raghuram and Madge, 2006), although this claim is often made by those located in the Global North. There is concern that development research does not speak to the problems of those who are researched (Raghuram and Madge, 2006), and that it is too theoretical and bears little relation to the 'real world' (ibid). Raghuram and Madge (2006) respond to this criticism by arguing for geographers to move toward theory as a 'situated practice' and one that is historically and geographically contextualised. They acknowledge that theory is embedded in social hierarchies and historical entities and that it is marked by complexity and elaborated structures. But, they argue, this is a problem of how theory is produced, which validates universality over 'located-ness', rather than theory per se. Katz disembarks with binary ways of thinking about theory and practice and has argued for the need to move between theory and practice, between discourses and between 'us' and 'them' (1992: 505).

Furthermore, alternatives to universalistic assumptions, such as localism, community and indigenous responses lobbied by Escobar (1995) are criticised for failing to address the power relations that operate at the local scale and for overlooking the connections that stem from the local to elsewhere (Sharp and Briggs, 2006). It is often assumed that local knowledge is inherently good or useful and an appropriate way of doing development (Smith, 2011). It is assumed that local people understand local conditions constituting an understanding that is invaluable for effective development (Brett, 2003). But this way of thinking is criticised for being overly romanticised, harmoniously linked with nature, isolated from 'outside' influences and is unchanging in time and space (Goebel, 1998; Smith, 2011). The role of the 'outside' may be neglected through an assumption that local knowledge has worked in the past and should continue to do so (Bourdillon, 2004). Whilst development researchers are thinking both globally and locally, these concepts of space are not yet successfully aligned, or with recognition to how one structures the other (Katz, 1992). In overcoming these criticisms Raghuram and Madge (2006) suggest a postcolonial method that involves a mutual constitution of the North and the South whilst also making room for a South that is not entirely constituted through its relations with the North. Indeed many communities do combine both local and outside knowledge in practice (Briggs, 2005; Moyo, 2009).

Similarly, in relation to traditional ethnographic methods Clifford (1997) argues, such localisations of research in terms of the 'field' can marginalise or erase boundary areas and historical realities. Modes of travel are frequently ignored, but suggest prior and ongoing contacts with exterior places and forces, which are not part of the 'field'. The 'being there' of traditional ethnography is too sharply separated from that of travel, or the 'getting there',

Clifford argues (1997: 100). By localising the 'field', sites and relations of translation are minimised and complex, often political, negotiations involved tend to disappear. The traditional ethnographer's fixation with dwelling in a 'field' marginalises a culture's external relations and displacements. Clifford argues that in addressing the representational challenge of local/global encounters, co-productions, dominations and resistances, one must focus on hybrid, cosmopolitan experiences as much as rooted, native ones. Not to replace the native with the intercultural traveller, but rather to mediate between the two, since both are constitutive of cultural experience. Such an ontology brings focus to the modalities of inside-outside connection since travel involves forces that can pass via commodities, media and other travelling subjects (ibid). Ultimately Clifford argues that cultures can be thought of as sites of both dwelling and travel. This constitution of the field calls for a mobile ethnographic approach, which pays attention to the negotiations between local and global sites and recognises space as a product of translations and travelling objects, subjects and knowledge.

Mobilities theorists consider the ongoing formation of place occurs through processes and the continual movement of people and things (Cresswell and Merriman, 2011). This is a geography that is concerned with an understanding of the processes and relations that give rise to and configure particular spaces (Murdoch, 1998), which is useful for examining the staging of development mobility as a process that is situated in the negotiations that occur between global and local space. The work of Clifford and other critical postcolonial geographers suggests that mobilities theories are relevant and useful in working through some of the criticisms of modernist development and development studies that are thought to be overly situated in local contexts. However, mobility theories, so far, have had little acknowledgement by development geographers and practitioners. In this thesis Actor-Network Theory (ANT) and its closely associated Script Analysis, borrowed from science, technology and society studies, are employed as analytical tools to examine the relational processes that produce and define the modes of travel of culture and meaning within a development context, which involve non-human entities, in this case study a material object; the second-hand bicycle.

Actor-Network Theory

Actor-Network Theory (ANT) offers an ontological perspective of viewing the social ordering of the world and the construction and movement of knowledge. As a starting point, some key words that reoccur in descriptions and discussions of ANT that are of relevance to this thesis are; uncertainty, heterogeneity, association, network, agency, actor, material, negotiation, relational, translation and flow. Moving away from positivist and realist scientific interpretations of social phenomena that tend to view interactions and events as linear and that involve the

theorising of universal laws that predict causality, ANT considers social phenomena not as facts, that are stable and granted, but as arriving from incessant negotiations between heterogeneous actors in a network (Latour, 2005). An actor here is a form of agency that does something in its presence, or absence, that makes some difference and that "turns A's into B's through trials with C's", leaving a traceable pathway (Latour, 2005: 53).

It is this instability, multiplicity and breadth, of examining agency in the social world that creates the uncertain nature of ANT. Action is often not transparent, or of consciousness, but occurs through surprising sets of entangled agencies (Latour, 2005). It is an opaque process, as Latour states, "it is never clear who or what is acting when we act since an actor on stage is never alone in acting", other actants are at play, such as the backstage crew, the lighting, the audience, the playwright and so forth (2005: 46). ANT depicts the world as a mobile arrangement. It is the flow and movement between actors that is of concern in ANT analyses; the relationships that bind actors together along with their alliances and conflicts. ANT studies the traces that arise in processes of agency and translation through the constant assembling and ordering of the social (Latour, 2005). This is what Latour describes as a 'sociology of associations', which places no limit on the shape, size, and heterogeneity of associations. This view point influences the nature and definition of the research 'field' in this thesis, which adopts a 'Follow the Thing' mobile ethnographic method to examine the connections between local places and global networks. The thesis views the local as situated within the global and recognises its connections and relations to elsewhere. It does not privilege local, or global, spaces in which to site ethnographic work, but seeks to follow flows and untangle social relations involving a wide variety of actors and actants, thus utilising a mobile methodology.

ANT's openness to the heterogeneity of actors at work within a network means the epistemological positioning of this research recognises the agency of materials, whereas social constructionism considers the entire social world to be constructed by only humans (Latour, 2005). Latour argues that social actions may be delegated to non-human objects, which are able to transport action further "through other modes of action, other types of forces all together" (2005: 70). Material bodies, Law similarly argues, travel better than voices, although only reach so far and once out of sight may not do what they're told (1994: 102). Some objects travel better than others and some last longer than others, but their possibility to be more mobile than people within a network, is argued by ANT theorists (ibid). An object has the possibility to be a 'black box', which "stands for, conceals, defines, holds in place, mobilises and draws on, a set of juxtaposed bits and pieces" (Law, 1994: 101).

The ability of objects to transfer meaning is a procedure of *translation*, a term which ANT utilises to describe processes of negotiation and representation, which establish relations between people and places (Callon, 1987; Latour, 1987). This process of inscription, whereby social meanings are carved into material objects, describes how an entity is transformed into an 'immutable mobile'. These are material knowledge devices that stabilize knowledge and allow it to circulate (Latour, 1987). Latour theorised the movement of scientific laws and technology that were produced in laboratory settings and then extended to a universal space that transcends the global (Law and Mol, 2001). The only way the mobile remains immutable in Latour's actor-network is if it is inserted in a context with the same actors enrolled to confirm its meanings and uses. It requires ongoing effort by multiple actors to ensure objects (and their meanings) remain immutable. But, when we are not analysing scientific laws that are mobile in controlled settings, this is a very limited view of networks and the mobility of ideas, things and culture. It is a universalistic concept of translation that pays little attention to the situated production of culture, similar to the modernist and colonial development discourses criticised in the previous section. Although Latour (1987) talks of 'immutable mobiles'; objects that can travel and retain their shape given that a network of actors hold them in shape, other later ANT work has recognised the agency of materials to be relational, in that they are functional in their location in social networks, traveling with uncertain possibilities that are generated by a network that is mutable (Law, 1994: 103). Any constituent of a network may act in unpredictable ways thus transforming the physical, or symbolic, nature of the object. This calls for an enquiry into the flexibility of objects to negotiate unpredictable networks that change and re-arrange.

There is therefore some tension between fixity and fluidity regarding the travel and translation of materials in ANT analyses. For example, shipping containers are objects that have shaped the global mobility of goods allowing distribution to take place on a wide scale through mechanical processes. Their design has arisen through the desire to move more goods with increasing speed (Martin, 2016). Shipping containers are mobile objects that, through travel, have the power to mediate society in relation to a capitalist economy (ibid). They have the agency to organise geographical space and the movement of things to encompass global allegiances (ibid). They require a network of technical objects that are standardised across the globe in order to work consisting of, for example; ports, cranes, trucks, rail carriages, workers, drivers, designers, manufacturers and roads.

Some of these properties mirror Latour's (1987) 'immutable mobile' network of material and human components that are inflexibly reliant on holding one another together. Yet as a thing itself, the shipping container is flexible and versatile – "the perfect ad-hoc object" (Martin, 2016:

100). It can be repurposed and reconfigured for different uses and contexts (ibid). A study by de Laet and Mol (2000) brings in the concept of fluidity in the mobility of technology, which is relevant for actor-networks. Analysing the movement of a water pump, the Zimbabwean bush pump, in the context of a development solution to waterborne diseases, de Laet and Mol discover that the strength of its design is that its maker intended it to adapt to each setting it travelled to. Its designer did not patent it and encouraged parts to be re-worked and added to in a way that was convenient for local actors. The bush pump is an example of a 'mutable mobile' (Law and Mol, 2001). It retains its function as a bush pump because its script is loose and invites improvisation, so where ever it travels it can adapt in order to tie in with local actors. The actors in this network are not exerting great effort and control to keep a rigid design-script immutable, but embrace a fluid spatiality in which associations shift and move whilst allowing a performance of continuity across local and global scales of space (Law and Mol, 2001: 614). This involves a letting go and opens what Law and Mol (2001: 615) describe as 'configurational immutability' in a network, which acts to strengthen object design. Approaching technology, or materials, with curiosity to see how they are negotiated and adapted in context allows them to be transformed in unexpected ways that are more suitable to local contexts and allows the object to travel with fewer complications (ibid). Thus, it is argued that the flexibility of materials and actors is intrinsic to the function of some networks and practices that move, or occur, across space (Hui, 2012).

However, a number of limitations of ANT have been recognised. ANT is said to fetishize the concept of fluidity and thus appeals to liberal notions of the freedom of movement (Jóhannesson and Baerenholdt, 2009). For example, some authors have blurred the views of space and scale that can be seen as always existing as a product of the processes and relations of networks, which can lead to vague specifications of spatiality (Bosco, 2006). ANT studies do not discuss in depth the framing of practices (Jóhannesson and Baerenholdt, 2009), or the social situations within which activities are accomplished and can sometimes be more heavily focused on materials than social actors (Jarzabkowski and Pinch, 2013). Furthermore, ANT is criticised for not always making explicit questions of power, oppression and colonisation and normative positions do not tend to be clearly defined in ANT analyses (Jóhannesson and Baerenholdt, 2009). The concern with representing networks as non-hierarchical and apolitical spaces, in which all actors are seen to hold power, results in a lack of attention to their difference (Sheppard, 2002). When it comes to recognising different relations, outcomes and events and the different politics in a situation, it has been argued that ANT may leave no space outside of a network or any room for alternatives (Hertherington and Law, 2000). ANT may, therefore, obscure other relations and processes and for this reason it has been considered an apolitical

perspective by some, although many ANT analyses have addressed the politics of networks and this is dependent on how the perspective of ANT is addressed through research (Bosco, 2006).

This thesis recognises the possibility of objects to translate meanings and to act within a network, being very much a part of the mobile constitution of the social world. Relevant is Law's call to explore how attempts of ordering the social are "performed, embodied and told in different materials" and that "we should consider the ways in which they interact, change, or indeed face extinction" (1994: 95). Space is wholly relational and arranged so that certain types of action, or 'remote control', may take place (Murdoch, 1998). Or, as Jóhannesson and Bærenholdt suggest "actor-networks may be ordered in ways which make them capable of transporting objects intact over distance", a process that demands work and effort by diverse actors (2009: 16). ANT in conjunction with Script Analysis, described in the following section, allows an examination of how processes of mobility actively produce and shape social contingencies in movement through translations across networks of actors across varying scales of space (Söderstrom and Crot, 2010). This process requires constant negotiations and the work of enrolled actors. Or, as Law and Mol (2001) and de Laet and Mol (2000) argue, flexibility in design to account for changes in network associations. Exploring the degrees of flexibility and fixity in the design and use of objects as they move from global to local actors and an object's successes and failures is of central focus to the study. Tracing the flows and mechanisms of technological design in the context of a development network is an import line of enquiry in understanding how global and local arrangements of actors negotiate the meanings and uses of objects appropriated for development solutions.

Script Analysis

The idea of a product *script* has been used by the actor-network theorist Latour to closely analyse how products transport and transform social and cultural meanings, but the framework of 'Script Analysis' was later coined by Akrich (1992). Script Analysis recognises that users modify products to suit their needs, but simultaneously a user's behaviour, feelings and attitudes may be transformed by a product (Akrich, 1992). Akrich uses the term *script* as a metaphor for the message within a product given by its producer, or designer, to prescribe its intended use and meaning. Rommes (2002: 15) similarly defines a technological script as:

> 'the assumptions about the use context that are materialized in the technology, which pre-structure the use of technology … they attribute and delegate specific competencies, actions, and responsibilities to their envisioned users".

Within a product's script actors, or 'imagined users', are defined with motives and political prejudices. A vision of the world may be inscribed within the design and technical content of a new product, argues Akrich (1992). Script Analysis is a useful tool to examine how a product's social meaning and cultural identity are constructed and negotiated (Fallan, 2008). It is described as an analytical tool because of its inventory of terms that are used to explore how products transport and transform meaning (Fallan, 2010). These are as follows (Akrich and Latour, 1992; Fallan, 2010):

> **Script/inscription** – the design intentions of a product's use carried within a device

>> **Physical script** – the properties of a device's physical form and its utilitarian functions

>> **Socio-technical script** – a device's symbolic, emotional, aesthetic and cultural meanings

> **Subscription** – the utilisation of a product as intended by designers

> **De-inscription** – the rejection, disregard, or misunderstanding, of a device's script by users

> **Proscription** - what a device forbids from human actors and non-human actants (I also refer to this term as a process through which users are prohibited from subscription of a device)

> **Re-inscription** – the reconfiguration of a device's script in order to cope with the contradictory demands of actors and actants

Utilising these terms Script Analysis may examine how producers and users negotiate and construct the meaning of an artefact between the spheres of production and consumption, or between intention and interpretation. Such an analysis pays attention to the flexibility and fluidity of a network in negotiating technology and objects that may be mutable to some extent, but require a degree of rigidity when travelling to be able to work in a variety of contexts.

Script Analysis, in some ways, is similar to Pinch and Bijker's (1987) Social Construction of Technology (SCOT) approach to exploring the design trajectory of objects. SCOT is a response to technological determinism, which proposes society is determined by technology, and alternatively examines how artefacts are constructed socially. For example, Bijker has examined the social construction of the safety bicycle through a discourse analysis of historical accounts tracing how different groups of users interpreted the bicycle and influenced design

transformations in an evolutionary pathway (1995). SCOT identifies different groups of users who have diverse interpretations of a device's meaning and thus, new problems arise that subsequently prompt designers to modify a device as a solution. The approach, however, assumes the flexibility of designers to respond to users whom have the power to voice their needs. It does not fully consider nonusers, or the agency of users to reject and adapt design, rather processes of adaptation in SCOT occur only through producers. A further limitation of SCOT is that is does not take account of the agency of objects to shape users, whereas Akrich combines technological determinism and social constructivism to explore the agency of both human actors and non-human actants, for example, the ways in which artefact scripts prohibit, or determine, users (Fallan, 2010).

In the case of second-hand products, their scripts are likely to have changed since first inscribed by their original producers and marketers. For example, the Citroen 2CV car was once geared towards the conventional family car user and has since become an icon for an anti-mainstream car culture (Fallan, 2008). Consumers partake in shaping a product's meaning over time as it is read and re-read, accepted and rejected. As end-of-life products move from practices of disposal to consumption they are recoded with value (Pierce and Paulos, 2011), but simultaneously, actors whom re-inscribe this value are compromised by a product's original script and form. Therefore, although Script Analysis has predominantly been used to examine the design of new devices, it is relevant in examining the revaluing and transportation of the social and cultural meanings of second-hand products.

Akrich is mostly concerned with the transfer of objects between designers and users and mechanisms of the object's adjustment, which happens through disagreement, negotiation and conflict within actor-networks (1992). Akrich's investigations, therefore, critically examine objects that have intended functions that are poorly matched with other actors and the environments they are transferred to. Akrich recognises that technical objects contain and produce a specific geography of responsibilities. She argues that technical objects have political strength, build histories and impose certain frameworks (1992: 222).

Some authors have used Akrich's theory to examine how commodities embody gender (Oudshoorn et al., 2004; Van Oost, 2003; Rommes, 2002; Shade, 2007). A gender script is a term used to describe how products are designed and marketed in order to construct gender identities. Representations of gender and gender differences are inscribed into products by their designers (Van Oost, 2003). Gender scripts "may emphasize or hide, and reinforce or diminish gender differences and gender inequalities" (Rommes, 2002: 15). The scripts reinforce women's

role as consumers and reinforce normalised ideas of femininity by emphasising bodily preoccupations (Shade, 2007). For example, Samsung created a mobile phone that incorporated functions such as a menstrual cycle calendar and a calorie counter that reinforce monitoring of the female body. Thus, the liberating and emancipatory potential of some technologies for women is cannot be assumed.

Such studies demonstrate that Script Analysis is useful in analysing the structures of power that are present within actor-networks and which occur through the scripting of an object or practice. It will be used in this analysis to understand how certain actors use materials to construct representations of other actors and to influence practices, how some actors are disempowered through such processes by being excluded from a certain practice, or from using an object in a certain way and the implications of this. It will be used to examine how actors reject a product's script and use it in unpredictable ways to empower themselves. This widens the scope in understanding the structures of power within an actor-network, the processes of fluidity and negotiation that take place in actor-networks, which at the same time are configuring the immutable components and processes of socio-material networks.

In a similar analysis, Söderström (2013) follows the elaboration of scripts that are materialised in urban forms, such as shopping malls, and received by users who either adopt or resist the form's script, which therefore, has the power to shape human action. Söderström indicates that traveling urban forms are programs of action and are translated through power mediated processes. The acceptance, or rejection, of scripts embedded within urban forms, Söderström argues, is dependent on a society's relations with elsewhere and is not perfectly predicted. Söderström's material 'traveling forms' are modes of connectedness that create new meanings and shape consumers or users. Although assembled entities are diverse, each component reflects the whole and works in unison traversing time and space to tie in localised others, who bend to a system of remote control. These global connections are vehicles of exchange and enable a co-production of meaning, thus Söderström is utilising Script Analysis in conjunction with ANT to analyse how material forms act relationally in heterogeneous, spatial and political development networks.

However, in terms of the limitations of the current use of Script Analysis, the autonomy of designers over users is assumed and does not address the complexity of restrictions that steer designers towards certain forms (Mackay et al., 2000). Although, Script Analysis recognises the user as co-producing the script of an object, it assumes the designer has the power to control the product script and neglects the complexity of design that may not entail one actor alone.

Script conceptualises the success and failure of technology in terms of the extent to which designers can anticipate the needs of users. Therefore, users tend to be "degraded to objects of innovators' strategies" (Oudshoorn and Pinch, 2003: 15). In such a linear framework, technological innovation and consumption is at the fore and the agency of designers and producers tends to be framed with greater agency than other actors involved in social networks (ibid). Thus, alternative actors are in danger of being concealed within what has been described as an essentialist and linear perspective of production and consumption (Williams et al., 2005). In the framework of script, users are given limited choices of either adopting or rejecting the designers' intended use and meanings of an object, which Oudshoorn and Pinch (2003) argue is inadequate in understanding the full dynamics of design where users are more actively involved. This critique does not consider the additional actors unaccounted for by designers and who are alternative to users, which is a further argument of why Script Analysis has so far fallen short of understanding the complexity of socio-material networks. The framework assumes that the design of an artefact is the result of the values within certain social systems and reflects the priorities of designers and producers (Williams et al., 2005). Therefore, Script Analysis is heavily weighted to the world of designers and technical objects and alternatively the social processes and practices that facilitate and constrain the emergence of object revaluing remains largely unexplored by actor-network approaches (Oudshoorn and Pinch, 2003). For example, Jarzabkowski and Pinch (2013) suggest that the intention of actors is not always clear and that the broader activities and situations in which materials are surrounded are important to the reworking and repairing of object scripts. The authors argue that there is an "excessively dominant focus on the materials themselves and their affordances and, hence, non-affordances". Instead the social context of activities might be examined as they are accomplished with objects in a multiplicity of contexts rather than a preoccupation with the intentions encoded in the objects themselves (ibid). Williams et al. (2005: 99) similarly argue that the desire for a clear narrative "is at the expense of recognising that design takes place within a clamour of voices and is inevitably an imperfect compromise amongst a multiplicity of factors and actors" that Akrich's framework has tended to simplify.

Rather, designers are accountable to other actors that restrict product scripts, for example, regulations, rivals and investors (Mackay et al., 2000). Akrich focuses on product scripts and how designers fail to meet the needs of users, but does not go further to explore the constraints that prohibit designers responding to user negotiations. This may be because of the focus on vertical directions of flow, whereby negotiations between producers and consumers, or designers and users, are examined rather than a more multi-dimensional focus on other external actors and

materials that influence inscriptions, subscriptions, de-inscriptions and proscriptions. Jensen (2013) similarly considers the codes, shared protocols, cultures, values and norms in both design and user performance. However, he pays greater attention to the heterogeneity of design, for example, legislation and competing designs, which restrict designers. Jensen also focuses on the proscriptions and re-inscriptions that occur in situated socio-material environments at the user end, which is a concept this thesis utilises in order to deal with some of the limitations of Script Analysis and to bring the focus of this study outside of a restricted and linear representation of only producers and users.

Finally, Schwanen (2015) takes into account another shortcoming of Script Analysis that considers only the human interactions, either designers or users, with a technological object. The framework does not deal well with the capacities of objects that are never fully understood as they "withdraw from interaction into their own vacuum" (ibid: 683). This limits the extent to which conclusions from Script Analysis can be generalised over space and time having stripped the possibility of an object to autonomously engender effects. The full potential of an object's possibilities will always be unknown at any one time as objects will travel between contexts and temporal moments (ibid).

Limitations aside, the mobility of the material, along with its script, relates human actors across space, shapes social life and flattens the topology of the social world. Scripts connect both local and global actors, and therefore overcome spatial distance affording both political manipulation and resistance by actors. Analysing object, or commodity scripts, allows a detailed examination into how social meanings are constructed and translated within travelling objects and how these meanings are negotiated by actors elsewhere, thus, how technology is adopted, rejected and adapted by consumers in different contexts. But, whereas Script Analysis has previously assumed designers to be acting freely to inscribe meanings to new objects, the thesis will further consider the multiplicity and complexity of actors that influence and control a product's script at the design phase and beyond. The thesis highlights how the complexity of re-producing socio-technical scripts that overlay the existing physical scripts of second-hand objects, partly closes a feedback system for adaptations between users and designers. Script Analysis has only given significant attention to linear trajectories of translation between producers and consumers, which assumes design is an iterative feedback process. However, this thesis shows that consumption and production are not neat cycles of linear flow, but are messier horizontally at both producer and consumer levels. Thus, the thesis will also pay greater attention to the proscriptions and re-inscriptions that occur as a result of 'situated microecologies' in the context of local users and bottom-up performances, which are relevant for the design of mobility

practices (Jensen, 2013) and development practices that aim to overcome local and global binaries.

Mobilities theories and mobile methodologies do not assign hierarchy to either local or global meanings of culture, but recognise the connections between places as relevant and in constant rearrangement. They, therefore, offer useful analytical devices to construct appropriate ways of carrying out postcolonial, or 'alternative modernity' development research since they are able to move between local and global spaces of knowledge production taking into account the mechanisms of translation between providers and beneficiaries of aid. Actor-Network Analysis and Script Analysis enable detailed insight into the materiality of development, which is particularly useful in overcoming spatial hierarchies in the theory and practice of development because they recognise the agency of materials to circulate culture in politically shaped networks.

Material and Consumption Cultures and the Mobility of Things

Material culture is a field of study that examines how objects are appropriated by consumers, transformed into the stuff of everyday life, and are involved with social actors constructing identity, experiencing modernity and dealing with social change (Attfield, 2000). It acknowledges the materiality of objects; a condition which encompasses object design, manufacture, distribution, consumption, use, disposal and recycling; all stages that together form a mediation process between people and things (ibid). It presupposes the material object as the vehicle through which to explore a relationship between object and subject, a condition which lies between materiality and representation in order to examine object meanings (ibid). As, Miller proposes "things make people just as people make things" (2010: 135). Theories of material culture consider the agency of design to predict and influence the way in which objects are used, but also the users' agency to negotiate the environment that has been designed for them (Attfield, 2000). Materiality shapes the political ordering of the world, which link distant places in complex ways, reproducing relationships of power in material and social arrangements (Swanton, 2014).

Material culture theory considers no object to be purely functional and without meaning, or separated from its cultural form. This is because ideas of usefulness within products, or things, depends on particular ways of life and particular ways of doing things (Slater, 1997). Thus, the subject of focus is not the creation of meaningful things verses functional things, but rather the different systems of defining, producing, distributing and organizing meaningful needs, goods and their relations, which occurs through consumption (Slater, 1997). This theoretical position

will be used to examine the materiality of how and why NGOs inscribe meanings to bicycles and in doing so construct a particular identity of a development subject within a network of consumption practices. The thesis will also examine the meanings attributed to bicycles by consumers and development subjects, which are not necessarily aligned to the identities imagined and formulated by NGOs of the Global North. A focus on the materiality of development allows for an examination of the depth of agency that development subjects have in creating their own autonomous identity through consuming material objects and the political implications of such a relationship between NGOs and development subjects that is created and reproduced through materials, practices and their flow (Gregson, 2011; Swanton, 2014).

Similarly, consumption culture explores the embodiment of culture in the form of manufactured goods that become integrated into every life, are given meaning within commercial practices, but "do not always go where they are told nor go according to plan" (Attfield, 2000: 6). Things can move in and out of a state of commodity in reversible and terminal movements, and at varying cadence, shifting between culturally regulated paths (Appadurai, 1986). Actors may manipulate the cultural definitions of these paths, either restricting the movement of commodities, or intensifying an object's commoditization by the enhancement of its value – generating demand - both of which are political acts (ibid). From the view point of Lash and Lury (2007) actors, although geographically dispersed, are connected and observe one another in relation to an object, therefore the organisation of a market is partly by the objects themselves. From this perspective the commodity, or thing, is a central actor operating to mobilise ideas, meanings and culture. As goods are transformed through global flows, they may act to constitute 'local' practices of self-identity and community (ibid). Relations between ideas and stuff, social culture, space and time are constantly redrawn through the movement of things. Therefore, Lash and Lury argue (2007: 19) culture circulates neither locally, or globally, but as "dynamically constituted in the movements, the biographies of objects" (ibid: 19).

This positioning is useful in exploring how certain actors construct cultural meanings of goods and thus, create an object's value, but in doing so use their power to project identity onto other social actors, who may use their agency to resist, or conform to, such an identity through consuming goods. It positions the object as central to these political arrangements of culture and the construction of local social subjects and identity, which may also be simultaneously global. It is also useful in exploring how regulating practices restrict the flow and use of goods within a development network.

The Mobility of Waste and Consumption of Second-Hand Goods

A number of authors note that consumption network analyses have tended to consider only the linear and uni-directional flows of goods, usually from production in the Global South to consumption in the Global North (Brooks, 2013; Crang et al., 2013; Gregson et al., 2010; Lepawsky and Mather, 2013). The geographical context of the work neglects the place of the Global South in the geography of consumption (Gregson et al., 2010). The majority of commodity flow research has also tended to treat commodity materials as final and stable, neglecting that objects come and go through various commodity phases (Appadurai, 1986; Kopytoff, 1986) and are in fact mutable and transient, going through processes of deconstruction, recycling and revaluing after their initial consumption, use and disposal (Gregson et al., 2010). Rather than focusing on the consumer good, or materials of waste, in a single context, to study the movement of end-of-life things, then, destabilises the concept of their stability in ending and instead negotiates "the middle of things" (Swanton, 2014: 293).

More recently, analyses are beginning to consider how discarded, end-of-life materials have come to constitute globalised flows travelling in the opposite direction, from North to South, that reveal complex networks of governance and transformations; similar in their complexity to networks of primary production (Crang et al., 2013; Gregson et al., 2010). Studies are beginning to critically explore the political context and relations of power and control in second-hand commodity flows (Brooks, 2012) and mobilities of waste (Davies, 2012; Law and Mol, 2008; Swanton, 2014). Studies are also recognising that consumption flow research has not been far reaching in the variety of materials of interest, or the extent of geographical contexts of end-of-life material flow. So far, key considerations have mostly considered the ethical trade of, for example, clothing and the environmental risk of moving waste (Brooks, 2012; Gregson et al., 2010). Swanton, however, argues that studying the mobility and materiality of waste opens a lens to explore the politics of wasted 'stuff' that reproduces material orderings of the world, through mobilities, that are "full of life, exposing social relations, material orderings, power relations, material transformations and injustices" (2014: 296). Brooks also calls for further in-depth empirical work on geographies of consumption, recycling and second-hand goods and particularly the material-cultural aspects of networks given the current lack of understanding (2013). The study of waste and consumption is becoming more nuanced and is now recognised for its complexity, transience, mobility and political ordering, yet something the field has not yet broached is the entanglement of waste mobility, consumption and the materiality of second-hand goods in humanitarian aid networks.

Producing Second-Hand Things

Looking to the Global North and the production of end-of-life objects, rather than discarding possessions in a carefree manner, society fuses identity and meaning with end-of-life objects (Gregson et al., 2007; Gregson et al., 2010). Object disposal is wholly constitutive of social and ethical activity (Hetherington, 2003). There is an anxiety of possessing material goods since it may be felt that objects could have a more appropriate keeper elsewhere and that objects could be revalued (Gregson et al., 2007; Hetherington, 2003). Others are anxious about generating waste, too, because this behaviour is considered bad for the environment and wasteful (Gregson et al., 2007). This anxiety influences people to save objects from going to landfill and to adopt regulatory practices of disposal (ibid) since issues of social membership and self-worth are entangled in how people both dispose and consume (Hetherington, 2003).

Looking at the afterlife of disposed objects, Gregson et al. (2007) find that they don't necessarily become waste, but are often passed onto family members, or charity shops in acts that are used to construct identity for the disposers. Not only does disposal occur at the end of a sequence running from production to consumption, it is "recursively implicated in the ordering of a whole sequence of events" (Hetherington, 2003: 160) just as production does not always come before consumption, but is placed amongst other entanglements of materiality, practice and consumption. Networks of consumption, therefore, are not linear, nor with obvious beginnings or endings, since the end-of-life in one chain signifies the beginning of another (Lepawsky and Mather, 2011; Swanton, 2014). Although disposed commodities may have reached their end-of-life stage in the Global North, they are often resurrected and revalued in travelling to the Global South. However, little is known about the meanings these objects carry for consumers in the Global South, and particularly how these meanings are constructed and translated by humanitarian networks of donors and NGOs, or how much agency consumers have in negotiating the objects that flow from North to South.

Consuming Second-Hand Things

The consumption of second-hand goods is a process of revaluing otherwise discarded waste objects. Whilst some authors claim to have followed waste, Lepawsky and Mather (2011) fail to find waste on following electronic disposals to Bangladesh and instead learn to follow actions of both wasting and valuing. Similarly, following end-of-life ships, Gregson et al. (2010) call for a destabilisation of the 'thing', and instead look to the potential of the 'thing', which is a temporary moment in an endless process of assembling materials, always becoming something else, somewhere else. A process that requires repair and maintenance because of the instability

of the physical and cultural elements of materials, which eventually will always come apart physically, symbolically and socially (Gregson et al., 2010).

These materials fabricate the 'back-end' of commodity chains that are less well known to research (Gregson et al., 2010; Lepawsky and Mather, 2011). Waste and its disposal are dynamic, material and mobile, functions of consumption. Disposal indicates changes in the value of materials, the fluidity of which is implicated by social constructs of, for example, stability and trustworthiness (Hetherington, 2003). Similarly, Pierce and Paulos (2011) find that concerns of durability are matters of cultural perception and it is particularly newer technologies in the second-hand trade that produce anxieties of quality. The consumption of second-hand products is related to value in the temporal nature of materials and associations with trust and modernity (ibid). As end-of-life products move from practices of disposal to consumption they are recoded with value (Pierce and Paulos, 2011). As an object moves from one context to another its meanings may be entirely transformed without an object being changed in anyway. Pierce and Paulos argue it is the redesigning of how we think about and relate to an object as it moves from place to place that is of importance to its reacquisition.

Materials are sorted into various grades of value and function, which decline as materials are mobilised away from the Global North in a system described as 'downcycling' with products at the end of this process being recycled into new products (Crang et al., 2013). Whilst Gregson et al. (2010) concentrate on the breaking down and 'downcycling' of objects, Hui (2012) finds that as objects travel they are also, at times, 'added to' as other objects become allies in networks that are made of multiple objects, and actors, entangled in transient processes that facilitate their travel and use. For example, commodities move across the world within containers that make possible their movement, but objects must be suitable for being contained in order to travel. As Hui argues, "things' portability actively shapes the assembling of mobile practice networks" (2012: 209).

This recent strand of research exploring the back end of consumption often places further processing of objects in a positive light, since value is resurrected in objects, the longevity of their life is extended, thus reducing landfill waste. Whilst there is a market for these objects in the Global South they will generate economic activity. However, it is worth noting the negative aspects of the back-end flows of consumption. End-of-life objects are often consumed through necessity (Omobowale, 2013; Pierce and Paulos, 2011), particularly by markets in the Global South, which are segmented and determined by consumer's social status and class identity (Gregson et al., 2010). Some middle class and young consumers of the Global South seek

authenticity in consumer goods, expressing distaste of inauthentic, salvaged, end-of-life goods, preferring goods that look new, or are new, are branded, and have modern design aesthetics, pointing to a rise of global consumer culture in the South (ibid). Some feel the need to remove traces of an object's second-hand appearance (Gregson and Crewe, 2007), particularly for consumers buying second-hand goods out of necessity whom may resent the product's used status (Pierce and Paulos, 2011). The trade in second-hand clothing from the Global North to South demonstrates inequitable relations (Brooks, 2013; Norris, 2013).

An infiltration of second-hand clothing has been thought to have led to a decline in local manufacturing (Hansen, 1999). Also, imported ICTs are thought by Omobowale to stifle development that may otherwise occur in their absence and are accompanied by vast amounts of "irreparable junk" in a process that funds the removal of e-waste from the Global North (2013: 517). A similar process has occurred with second-hand cars travelling from Japan to Southern Africa, only this trade is stipulated by institutional regulations to increase the manufacturing of new cars in Japan (Brooks, 2012). There are also concerns of safety, hygiene and quality relating to second-hand products (Pierce and Paulos, 2011). The deconstruction of end-of-life goods generates toxic waste in the Global South (Gregson et al., 2010), particularly from electronic waste (Omobowale, 2013) and has political implications for both the environment and subjects that deconstruct and revalue waste (Gregson, 2011; Swanton, 2014).

Second-Hand Materials and Development

Analyses that consider the movement of second-hand goods to the Global South, most often do so to understand the economic relationships of such networks, but tend to neglect the cultural translations and constructs of such movements, particularly those that may be formed outside of the free market through actions of NGOs in the context of development. Omobowale (2013) argues that instead of only paying attention to the utility value of second-hand goods imported into Africa, attention ought to be paid to the implication of these products for development and regulating policies, which are absent in a consumption network that is built purely on the social relations of supply and demand.

Crang et al. (2013) call for greater engagement with material properties and material transformations to understand the realisation of value in end-of-life goods and the forms of organisation and governance involved in this process. Networks of second-hand goods differ from those of standard production-consumption because supply comes before demand where the impetus is to get rid of waste (ibid). The composition of used goods is therefore inflexible "being determined primarily at the point of manufacture and then overlain by patterns of use,

wear and tear, and also - potentially - repair and maintenance" (Crang et al., 2013: 15). This is in contrast to arguments of the flexibility required in the travelling of materials since second-hand networks are compromised and determined by the types of end-of-life materials available and their quality (Hui, 2012; de Laet and Mol, 2001). Attention is not given to how global actors negotiate these challenges in sourcing and maintaining demand for second-hand materials, nor is attention given to the development context of these materials, which might explore how NGOs revalue and recode end-of-life products destined for consumption in the Global South, or the political and ethical considerations of such material flows, for example, the reprocessing of used items overseas based on cheap labour sources (Crang et al., 2013).

Much research of global second-hand geographies that has any link with charitable work has concentrated on clothing (Brooks, 2013; Crang et al., 2013; Hansen, 1999; Norris, 2013). The trade of second-hand clothing is reliant on charitable organisations whom collect donations, which is then sorted and graded by quality. Between 40 and 60 per cent is disposed of in the Global North and the rest shipped in bales to the Global South, with sub-Saharan Africa being one of the largest importers, and sold to street or market vendors, before being sold to individual consumers (Brooks, 2013; Hansen, 1999). Narratives of recycling that are constructed as ethical behaviour encourage clothing donations, but have little impact in the afterlife of these travelling objects with many actors having an 'out of sight, out of mind' attitude towards material donations (Norris, 2013).

Used clothes are not sold with an ethical narrative in the Global South and Norris (2013: 186) argues that "despite the rhetorical framing of a positive environmental and development discourse, the trade displays the all-too-familiar characteristics of a global waste stream where rubbish is transformed into resources in unregulated places". In the used clothing trade donations may be sourced with the guise of charity, but are influenced by a neoliberal consumption network that consists of recyclers, brokers, international buyers and sellers (Norris, 2013), or what some refer to as a 'self-financing recycling system' (Brooks, 2013: 13). However, donors of second-hand goods interpret this trade in a way that is disconnected to the reality of what is a "large scale free market export trade" (Brooks, 2013:13). It is the material culture and the narrative of donating old clothes to fund raise for charity that stimulates donations and sustains the role of charities in the second-hand clothing trade despite its liberal economic context, which has no ethical context in the Global South (Brooks, 2013; Norris, 2013).

The used clothing trade is heterogeneous, supplying varying degrees of quality of clothing, which are sorted into different market segments; a spatially complex process including, for example,

Eastern Europe, Africa and Asia (Crang et al., 2013). This is an essential strategy that exploits the heterogeneous material properties of goods to extract values for different market segments (Crang et al., 2013). So far, the literature pays no attention to the role of NGOs in this process in second-hand trajectories because it is considered that few charities receiving donations in the Global North focus on overseas development (Norris, 2013) and few studies have broached the material context of development.

Pfaff (2010) references the significance of mobile materials, in this case a second-hand mobile phone, in negotiating identity and cultural meaning in African trading practices. Pfaff describes a case of a Canadian volunteer who gives their mobile phone away on returning home after a placement in Zanzibar, which for the volunteer, opens up a more appropriate future for the phone "than re-appropriating it to its former environment and connections" so that it becomes a "personal development aid" (Pfaff, 2010: 347). Although the donor had certain intentions for the phone, the beneficiary found more value in selling it than keeping it. The phone is then followed along its trade path of exchange, acquisition, appropriation, abandonment and selling processes that influence its different meanings and the role of mobility (ibid). This second-hand phone, Phaff argues, has agency in shaping and managing hierarchies, ideologies and cultural negotiations (ibid). But, most relevant to the development context, is that although the phone enters the network as a development aid, its trajectory does not stop at the beneficiary. It is further traded and passed on along numerous actors as a functional and economically viable object, which is also deeply imbued with many cultural meanings along its trajectory. Whilst the object begins its journey inscribed with meanings of aid, ethical and moral gifting, and having higher functional value in the hands of the poor, the beneficiary rejects the object's functional and cultural value, since it is not the latest model seeing only economic value in selling it, thus the object's meaning of aid is only temporary.

Phaff's (2010) analysis points towards a relationship between development practices, donated objects and commodity networks, however, does not explore fully the entanglement, or the difficulty in framing and containing development subjects. Global second-hand trades are dependent on large heterogeneous and complex networks driven by varied market demands, but there remains a gap in the literature of research that explores the agency of humanist charities that do extend their work into the Global South, or how charitable donors and mediating NGOs influence the shaping of a market of imagined beneficiaries for used products.

Second-Hand Materials and Concepts of Modernity

Consumption culture is bound up with the theory of modernity. The potential for any 'thing' to be commodified perpetually places the world of the everyday into the world of the market, and its values. It is through commodities that modern everyday life, and the social relations and identities within it, are sustained and reproduced (Slater, 1997). For example, it may be argued that identities of poverty are reproduced through consumption since goods may be used to exclude. The meaning of commodities can represent underlying social divisions of a community because those in poverty do not have access to a flow of goods and social knowledge, thus remain behind others (ibid). Understandings of material inadequacy, Slater argues, are inextricably bound up with modernity; a part of the making of the modern world and modern social subjects whom are individual and free actors (1997). Although a constant controversy is at play that challenges consumption as a sphere of freedom and critically acknowledges its possibility for manipulation of consumers (Slater, 1997).

It is accepted that the trade of second-hand goods from the Global North to South provides an example of inequitable global relations of dependency with little proof that trades, such as second-hand clothing, alleviate poverty (Brooks, 2013; Norris, 2013). However, these trades do demonstrate how people in the Global South sense themselves and their situation in a wider global place beyond the local (Hansen, 1999). This is because cultural ideals are created through both local and global practices and the movement of materials (ibid). It is thought that local social constructions work to transform unwanted materials from the Global North into desirable products that project status (Hansen, 1999; Norris, 2013, Omobowale, 2013). Consumers in the Global South look for exclusive materials to distinguish themselves from others striving to imitate the West, which turns the commodity into a token of modernity and particularly for young, urban consumers looking for the 'latest' trends (Hansen, 1999). Whilst being an affordable alternative to low quality, new, commodities second-hand clothing consumption, Hansen argues, promotes awareness of local livelihoods and their difference to elsewhere, but also allows expression of variety, individuality and uniqueness, thus clothing mediates individual and collective identities and desires through the power of the dressed body (1999). It is through material cultures that dress practices are produced; a process which involves the mobility and consumption of the Global North's cast off clothing (ibid).

Second-hand information communication technologies (ICTs) are found to be symbols of modernity and development as they are imported from the Global North, as 'development aids' into Africa and revalued from degraded technology into good quality imports that allow access to ICT (Omobowale, 2013). The reuse value of ICTs in Nigeria is structured into the existing

cultural meanings attached to second-hand imported materials, which is named *Tokunbo,* translated to 'from across the seas' *(*Omobowale, 2013: 514). Omobowale cites that Nigerians have developed a culture of dependence of *Tokunbo* to cater for consumer needs, which is constructed through economic hardship in a context where goods are used until there is no life left in them and so no local second-hand markets exist. The materials are given meanings of quality, good value and durability in contrast to new Chinese, or *Chinco*, products considered to be of substandard quality (ibid).

There is, however, also resistance to processes of mobility within material cultures and global networks of second-hand trade. In some countries second-hand clothing has been sub-ordinated beneath locally styled clothing, for example, in Muslim-influenced North Africa (Hansen, 1999). Many countries place restrictions on the import of second-hand clothing in order to protect local markets including 32 countries with outright bans (Norris, 2013: 184). However, in sub-Saharan Africa Brooks and Simon have found that local textile production has declined since economic liberalisation while imports of second -hand clothing have risen, but do not necessarily reflect a causal relationship (2012). Whilst the West is imagined as a place "associated with power, wealth, and consumer goods that surpass most local products in quality and style" (Hansen, 1999: 359), Brooks (2013) reports inconsistencies in the quality of stock in bales of clothing, which cannot be checked by market traders before purchasing them. An element of luck is involved, so much so that the opening of a bale of clothing is called "*totobola*", translated to "lottery". Furthermore, less trendy garments may be offloaded onto rural consumers whom have less experience of second-hand clothes markets and the latest fashions (Hansen, 1999). Whilst these second-hand materials afford a possibility for people living in poverty to identify with global constructions of modernity, the market is driven by necessity (Omobowale, 2013).This evidences the hierarchy of power flowing through the global trade networks of second-hand goods, however, there is evidence of local resistance and some autonomy within the networks.

This thesis is particularly concerned with the re-commodification of second-hand goods; "things retrieved, either temporarily, or permanently, from the commodity state and placed in some other state" (Appadurai, 1986: 16). A process whereby used commodities are politically and culturally (re)produced (Brooks, 2012) and through which, value is added (Pierce and Paulos, 2011). It is also concerned with the distant and intercultural flows of second-hand goods and the diverging of production knowledge and consumption knowledge of commodities; two readings which, Appadurai argues, diverge proportionately as the social, spatial and temporal distance between producers and consumers increases (1986). Production knowledge includes

technical knowhow and an understanding of the market, the consumer and the destination of the product. This is a knowledge that requires mechanisms for matching the consumer and product – knowledge which is commoditised in itself – a pairing of goods and services that create politically mediated systems of demand (Appadurai, 1986: 54).

Global and local NGOs are responsible for such commoditised services of technical knowhow provided for financial donors and material consumers in the Global North, simultaneously delivering aid whilst removing and mobilising waste. NGOs mediate technical knowhow, along with material things, to development subjects and consumers in the Global South. Little academic acknowledgement, however, is given to these political and cultural associations of second-hand goods production, consumption, and development, nor the nature of materiality in development. The thesis seeks to explore such mechanisms at work in the commodification and flow of second-hand goods and their agency in shaping constructions of development subjects as well as the autonomy of consumers of the Global South to adopt, or reject, such constructions.

Narratives of Play and Fashion Conscientious Consumption

Whilst there is a dominant narrative of the development subject as an economic and productive adult, other representations of lifestyles of people living in poverty in the Global South, including leisure and play, are marginalised from development narratives. The following literature counteracts assumptions that deny the importance of play within cultures of subsistence and more generally in society. It then links understandings of play as irrational and marginalised to similar understandings of 'irrational' consumer behaviour.

There are multiple perspectives of what constitutes play. The theorising of play is diverse and so too is its spatial and temporal conditions (Sutton-Smith, 1997). The multiplicity of play suggests that no such event 'play' exists, but rather it is a fluid and polymorphous process that requires multiple and complex understandings that challenge the notion of play as occurring beyond the rational and therefore seen as serving no useful purpose (Woodyer, 2012). Play theories thread through broad patterns of ideological value, such as power, identity and progress, evidencing an interplay between forms of play and non-play (Sutton-Smith, 1997).

Play is generally thought of as a positive practice with numerous benefits. Concepts of play idealise the imagination and creativity of human and non-human worlds (Sutton-Smith, 1997). Play is described as enchanting and captivating (Huizinga, 1949). Furthermore, the desirable experiences of players have become relevant to 20th century consumption including feelings of escape, relaxation and fun (Sutton-Smith, 1997). Play can be an act of affirmation and self-

validation (Geertz, 1973). Playing marks social transformation and opportunities to learn (James et al., 1998; Katz, 2004; Sutton-Smith, 1997). It is tactile and often involves engagement with objects to toy with the meanings of things in the social world (Katz, 2004). Play in sub-Saharan Africa is described as resourceful by Berinstein and Magalhaes (2009), whom observe children creating toys out of bicycle parts in a context where poverty prohibits the consumption of play equipment. Children revalue discarded objects for play which is about "having fun, about getting fit, and strengthening the body and social interaction" (ibid: 102).

There is also a utilitarian theorising of play. For example, the well-being potential of play to adult mental and physical health, adaptability, creativity and sense of well-being has been identified (Pressman and Cohen, 2005; Sheldon and Lyubomirsky, 2009; Stevens, 2007; Sutton-Smith, 1997). Concepts of play are being utilised to increase productivity, for example, by increasing innovation and the well-being of the labour force (Bogdan et al., 2007; Dodgson, 2009; Leeder, 2014). In terms of progression play allows children to experiment with social roles and cultural and political practices (Katz, 2004).

Whilst play is widely recognised, it is frequently only thought of as in opposition and the exception to other forms of conventional behaviour (Stevens, 2007); a counterpoint to normal, calculated behaviour. For example, Huzinga states "we must be more than merely rational beings because play is irrational" (1949: 4). However, it remains in constant tension with rational life and is positioned in such a way that it risks disturbing what it should not and it is thus often isolated (Woodyer, 2012). Huizinga states "play is not 'ordinary' or 'real' life. It is stepping out of 'real' life into a temporary sphere of activity with a disposition all of its own" (1949: 8). Play has been considered by some as something that happens only in the practice of sport and is thus played out within the limits of time and space (Huizinga, 1949). Play is managed in such a way that it is given specific timings and rules that dictate when and how it ought to be undertaken. Play in this positioning is practised by a '*homo ludens*' figure (Huizinga, 1949) in binary opposition to the conventional '*homo economicus*' figure whom is assumed to be consistently rational arriving from classical theories of economics. Play is considered in this way to be a risk to society that is motivated predominantly by capitalist prospects of economic growth that encourages efficient and productive behaviour. The risk of 'irrational' play to an economically driven society is evident in the way in which actors attempt to position ludic practice as an exception to utilitarian practice and as a practice that occurs at specified places and times. However, others consider play and work to be tightly bound and often indistinguishable (Katz, 2004). Play can be seen as dialectically occurring within the everyday (Stevens, 2007). For example, Katz (2004) finds that amongst children in Sudan, their work time involves sharing

songs, riddles, stories and wrestling. During playtime girls might role play housework tasks and shepherd boys do not let their flocks slip away entirely whilst being absorbed in play (ibid).

One of the major criticisms of the theorising of play to date is that it is seen as opposed to adult behaviour (Stevens, 2007; Sutton-Smith, 1997; Woodyer, 2012). For children, learning is considered an opportunity for growth, but for adults, play is merely a diversion (Sutton-Smith, 1997). A work/play binarism is mapped onto an adult/child dichotomy whereby play is carried out by children and work by adults (James et al., 1998). Within the rhetoric of play as progression, children are positioned on a linear trajectory towards a fixed point in adulthood and pass through development stages along the way. Children are considered to be incomplete subjects; 'human becomings' rather than human beings (James et al., 1998). Play in this sense is positioned as other than adult conventional behaviour and more of a rehearsal for adult life (Woodyer, 2012). Within this boundary play, for children, is seen as a means to an end and is partly constructed and analysed by adults as rational, educational, behaviour that readies children for becoming rational adult subjects. It is thought that the association of play and childhood partly arrives as a product of research, which has tended to represent the culture of childhood most often in the playground where children are easily observed (James et al., 1998). Play and playtime is thus more so positioned as integral to childhood. This is particularly true of developed nations whereas in the Global South working children are more visible (James et al., 1998). Contrary to these popular adult/child and work/play binaries, Woodyer (2012) argues that play is fundamental to human experience across the life course and if play is examined away from the preserve of only children, we can relate it to the everyday and the more-than-rational features of social life.

Looking to the history of a now global leisure activity, surfing, it is evident that leisure and play amongst adults in the pre-colonial era is central to the lifestyle and culture of Polynesians. The history of surfing is traced back to Hawaii, where its inhabitants had three months of the year when local crops were not productive, enabling them the time for play (Bourne, 2013). However, the arrival of the missionaries and Western colonies almost killed the surfing culture as cash crops of sugar cane were brought in and play was discouraged (ibid).

Perhaps one of the oldest forms of play that is documented in Africa is Mancala, an indigenous game that is recorded from 1500 B.C. and can be found in many different versions across the continent (Natsoulas, 1995). It is played on a board, or on the ground, and involves shifting counters – seeds, beans or pebbles - and capturing the counters of an opponent. It is played by adults and children and remains to be hugely popular today. In East Africa a ball game, *naga*,

involving hitting a hard seed with a club into a neighbouring territory and retrieving it, is documented to have been played seasonally after the harvest of crops in Tanzania "for centuries" (Ndee, 2010a: 783). It was, however, disrupted as land ownership changed and men migrated to urban areas, losing its relation to harvest times and its popularity (ibid). Target and spear games are recorded in Tanzania, which have been regarded as sporting events involving competitions between different districts and attraction of spectators (Ndee, 2010a). Ndee writes "pre-colonial East African youngsters, like youngsters elsewhere, enjoyed the pleasure of spontaneous games and sports" (2010a: 787). The work duties of boys also include narratives of play, for example, livestock herding is recorded as an opportunity for boys to meet and compete in wrestling, stick-fighting, running, jumping and donkey riding (ibid).

Despite sub-Saharan Africa's history and dominant representations of agricultural and subsistence lifestyles, and conflict, the history of indigenous sports suggests leisure and play has always been an important part of culture. Play for pre-colonial African youths has provided the opportunity for personal development; strengthening bodies and minds, and developing personalities (Ndee, 2010b). Play has been significant for communities in affording an outlet for rivalry, group unity, the practising of hunting and warfare skills and learning gender roles (ibid). This is not to argue that these attributes of play are wholly positive, but play has social functions (Ndee, 2010b) and ought to be recognised. Although many indigenous games may no longer be popular in postcolonial Africa for reasons that are related to its colonial histories (Carotenuto, 2013), soccer is hugely popular and is played in almost every village throughout the continent (Ndee, 2010b). However, whilst development is most often focused on economic productivity and is often aligned with a neo-liberal and rational agenda as argued in the above section '*Imagining Development Subjects'* other identities of development beneficiaries are dismissed. Alternative playful, joyous and informal constructions of 'self' by development subjects are not given enough recognition within the objectives of NGOs or within the focus of development research.

In light of the above arguments that describe the theoretical positioning of play as alternative to a more mundane and rational concepts of social behaviour, the dominant theorisation of consumption can be analysed similarly. Consumption is reduced by some to an abstract act of acquiring goods based on an instrumental decision of what to buy according to the utility of goods (Sassatelli, 2007). The *homo economicus* figure of classical economic theory is assumed to have needs that direct them towards objects that satisfy a need and thus they make consumer decisions based only on maximising utility (Baudrillard, 1988). This economic and rational view of consumption, however, loses the myriad and contradictory relationships that people can

build with objects (ibid). Sassatelli argues that the neoclassical view of the consumer is inadequate in understanding consumer behaviour (2007).

Mass consumption began in the late 18th century with industrialisation. Goods became an indication of a person's status and obtaining goods of a higher stratum publicly indicated a person's rank. As fashion became more important, the use value of an object began to become less important than its fashion value. Through consuming objects of fashion people can identify with and/or differentiate from others. In short, consumption produces social difference (Bourdieu, 1984). Similarly, Simmel (1971) argues that there is a need for cohesion and differentiation from others that influences consumption. Thus, consumption, fashion and style can be seen as a modern and individualist version of identity construction and social distinction (Sassatelli, 2007). There has also been a distinction between consuming necessities for existence and luxuries for pleasure. Veblen's (1975) model of consumption separates the consumption of goods by lower classes to be for their subsistence, whereas only the upper classes supposedly consume goods for reasons that are more conspicuous in a performance of status. More recently, however, consumption is recognised as a matter of both rational calculation and irrational despite consumer class (Corrigan, 1997; Sassatelli, 2007).

Development beneficiaries are conceptualised predominantly in the same light as rational, productive and utilitarian subjects. As recipients of donor funding the poor are rarely recognised as consumers of material products, despite the market for affordable commodities now in the Global South. This is evident from the above review of commodity studies that predominantly have traced material flows from producers in the Global South to consumers in the Global North (Gregson et al., 2010). Amongst a network of organisations and donors that prioritise economic impact and growth, the alternative identities of development subjects are not a point of mainstream discourse of relevant development objectives. However, play, fashion and identity creation may feature equally to more rational lifestyles for beneficiaries, which may be important for de-colonialising development to incorporate more heterogeneous lifestyles. For these reasons the thesis contributes by deconstructing the current normative representations of the poor of the Global South that are "theoretically and normatively laden, and move in some relation to the balance of power in broader tussles over the meaning of development" (Bebbington, 2005: 497). Alternatively, it pays attention to the nuanced and homogenous lifestyles of development subjects whom are sensitive to global fashions and embrace this through their consumption, whilst simultaneously remaining connected with local cultures and environments and economically functional practices.

Playful, Embodied and Sensory Mobilities

The concept of informal mobile experiences date back to the poet Baudelaire's *flâneur,* whom is translated as a male bourgeois stroller of the city playing the role of distant critic and immersed spectator. The *flâneur* re-territorialises the city through performative, spontaneous and casual mobility that merges boundaries of playful and serious space (de Souza e Silva and Hjorth, 2009). Similarly, the 20th century situationist Guy Débord developed the *dérive*; a way to experience the city with no purpose other than to be drawn to its terrain and the encounters found there (Knabb, 1981). The *dérive* is an exploration of urban space through an alternative mobility that contextualises and gives meaning to the in-between moments of a journey as urban space is explored within the narrative of a game (de Souza e Silva and Hjorth, 2009). More recently Parkour, a way of moving through the city by running and jumping, involves pleasure and freedom taken in discovering alternative meanings of space and new ways to experience it. Parkour merges playful mobilities with more serious structures of the cities that impose restriction on certain movements (Ameel and Tani, 2012). Horten et al., (2014) comment on the playful nature of children's walking mobility, which incorporates games and in doing so, everyday spaces are enlivened and imagined. However, walking was taken for granted in its everyday unremarkable nature by children, despite its affordances. Horten et al. also argue that mobility studies also disservice the affordances of *just* walking.

Jensen (2013) argues that a complex relationship exists between the sensual moving body and the material infrastructures of mobility systems that co-produce norms, meanings and cultures within everyday practices of movement. Mobilities are embodied and are "felt by a much more rich and differentiated bodily register than the dominating view of the instrumental rationality governing much transportation and city planning" (ibid: 112). Rather, mobilities have the potential to be creative and playful acts of emotional character (Vannini, 2011). Sheller (2004) considers the emotional aspect of car driving, which entails feelings of pleasure and euphoria, as well as frustration, fear and envy. Solomon (2009) explores the pleasurable sensations evoked through movement that cannot be experienced in other ways. For example, the exhilaration felt when actively powering a bicycle using human energy. Spinney (2007) recognises that the bicycle is a vehicle that affords an embodied understanding of place through multi-sensory, moving, experiences. This does not mean the experience of cycling is always enjoyable, or playful, but travel by bicycle is recognised by Spinney to stimulate mind and body senses that engage a person with place in deeply meaningful ways (ibid). Solomon recognises peoples' desire to move for movement's sake, but states as adults "we have ceased to allow ourselves to

indulge in spontaneous creative expression in physical movement" and in doing so we are missing out on our "emotional and spiritual vocabulary" (2009:163).

Mobility embodied often occurs in relation with objects and as Woodyer (2012) argues, emerges through tactility and proximity, thus, it has been described as a 'coming-with' the moment or a 'coming-with' technology. Peterson (2007) talks of the freedom and right to the city afforded by the bicycle, which provides a range of sensory experiences thus opening the discriminatory boundaries of neighbourhoods and providing an alternative and expressive understanding of place. Stevens (2007) describes how skaters' bodies and senses are stimulated by the rapid, intense engagement and sudden encounters experienced through movement over surfaces of varying texture, elevation and geometry. Pathways afford speed and effortless, playful travel, or at times friction and risk. The embodied and material, socio-technical, activities of skaters open up new ways of experiencing space in playful movements (ibid).

Although casual and playful mobilities are recognised in the literature, playful movement in urban space is categorised as other than the norm, just as play has been defined by Huizinga (1949) as separate activity from serious daily life. For example, Salen and Zimmerman state "being playful while walking down the street means playing with the more rigid social anatomical, and urban structures that determine proper walking behaviour" (2003: 304). This view highlights the utility of street design, which doesn't usually promote playful ways of walking, but regulates 'proper' movement. The regulation of space for economic function utilises mundane objects-in-relation, such as road signs and cars, which form the "protocols and codes of civic and public conduct that regulate the everyday social life of cities" (Amin and Thrift, 2007: 110). Stevens (2007) notes how boundaries are often used as spaces of play where the edge is seen as a more secure place to undertake play discreetly. Boundaries offer a sense of escape from institutionalised settings. These 'edgy' spaces beyond boundaries afford a sense of transcendence for some, but define play as often occurring outside conventional place as a marginal activity. When play does occur, it is often through an unintended consequence of sophisticated urban design, thus it challenges social conventions and boundaries of functional architecture and provides an escape from a more mundane reality (Stevens, 2007).

Vannini (2011) draws on an example of playing with the structured format of ferry timetables that offer a game of chance in which travellers challenge themselves to make it to and from a destination in one day, whilst bounded by the strict timing of ferry crossings. Vannini states that "playful spatial mobilities subvert the seriousness of mundane travel, lighten the load of responsibility and deny the consequentiality of strategic planning" (2011: 358). Playful mobilities

are spontaneous rather than rational, orchestrated performances and mark a performer's disengagement from the mechanisms of social control (ibid: 358). Vannini describes an 'outside world', "a distant, inimical social world that in one way or another seems to exert a uniform pull across individual lives" (2011: 358). In opposition to this rational world, playfulness is positioned by Vannini as a deviation from ones usual work and social paths that suggest a freer 'wayfaring' style of movement.

Authors are now utilising the possibility of play within the narrative of sustainable transportation planning. For example, Urry points towards the need for playful interventions that "win hearts and minds" in order for people to engage with future challenges of climate change "for fun" (2011: 132). Solomon (2009) also argues for a greater understanding of the pleasure travel provides in designing future sustainable mobilities. Stratford (2016) calls for planning to take into consideration more playful forms of active travel for health and sustainability, however, these are utilitarian objectives to the function of play as a means to an end. Auto-mobility also offers the potential for play, yet the playfulness of car driving is not being promoted by these authors because it is not aligned with a health, or environmental, narrative.

Play when theorised as other than normal, or conventional, behaviour situates it within certain boundaries of space and time. However, some argue for the mobility of play, which can "occur in any space, or place, or journey between them" (Woodyer, 2012: 320). Considering play within everyday mobilities positions it as a practice that threads through utilitarian movements rather than being separate from them. For example, skateboarding is used both recreationally and for transportation. It is therefore both playful and utilitarian (Stratford, 2016). De Souza e Silva and Hjorth (2009) consider boundaries between play and ordinary life to be blurred, thus with this view of play, urban structures are not necessarily enforcing rules, but rather setting clues to navigate space whilst also enabling spontaneity. Much of the work on playful mobilities highlight a contradiction in theorising playful mobility as separate from rational movements, but also so often entangled with them.

Stevens (2007) deals with such an ambiguity of play by arguing that it is performed by diverse subjects in diverse places, thus public space could be more openly constructed in such a way that is less restricting and opens opportunities for exploratory and imaginative forms of play. Thus, a secondary function of public space becomes important in the design and use of material infrastructure that allows movement through space. The meaning of playful space, however, is not practical or easily pre-determined. The risk of incorporating play into otherwise regulated spaces is that it can be disorderly, dangerous and destructive. The playful use of space shows

that it is not neatly staged, functional, or unambiguous. Stevens argues that public space can serve more than predetermined, practical functions and that urban design can expand people's experience (2007). This often occurs through engaging with material objects of the urban form with their varied textures and shapes that suggest their physical properties are a stimulus to non-instrumental behaviour (ibid). Playful use of objects such as street furniture diverge from the object's intended function in a creative and unexpected way, thus new meanings for objects are discovered and enacted through bodily engagement (Stevens, 2007). Or, material objects may be placed more obviously to invite play, such as the addition of table tennis equipment on the edge of zones between fast and slow moving traffic, which demonstrates a shared space philosophy, incorporating infrastructure of play into mainstream mobility places (Jensen, 2013). However, there is a tension between incorporating playful object scripts into urban space, which cannot easily be predicted and that in re-interpreting object scripts, users' safety cannot be fully predicted and managed.

Stevens (2007) summarises that play ought to be thought of as something that may arise within the built environment and is an ingredient of people's experience of place, but recognises the tension in supporting this through design since play often arises through the resistance of functional design and boundary making. Play and its performance in mobility is the product of the contradictions between designers and users. Therefore, Stevens ambiguously encourages loosening regulatory design of space and mobility to enable other possibilities. Stevens recognises an opportunity in the design of built environment to facilitate and stimulate unexpected and impractical behaviour as part of everyday life and occurring in public space (2007).

Similarly, Jensen calls for the exploration of how future mobile systems might become "more inspiring and attractive; and more open minded and fun" (2014: 240). In staging mobilities, Jensen argues that we need to see more than just the rational and utilitarian goal satisfaction of the hardware and practices of mobilities (2013: 186). Therefore, not only does the performance and practice of movement have the potential to afford play, but so does the designing of mobilities. Authors, such as Stevens and Jensen, see play as integral to everyday life and argue that mobilities and urban design ought to be 'loosened' to accommodate for ludic practice, rather than seeing space and movement as purely functional. If imagining and designing mobilities of the future needs to be a more fun, creative, engaging and playful as argued by Jensen (2013) and Urry (2011) then it is important to understand how playful mobilities are both afforded and managed within processes of design, practice and performance. However, this remains a neglected subject in the Global South whilst dominant representations of those living

in the Global South are homogenously constructed in the Global North as subsistence and utilitarian subjects. The more ludic and cosmopolitan elements of these societies are largely under-represented and mobility design is one area of research that can address prevailing concepts and seek a more nuanced understanding of mobile subjects of the Global South.

Conclusion

The understanding of civil society and its position in development is evolving from one that is bounded locally and nationally to one that is more spatially porous; neither situated in the camps of local or global space, however, is recognised to compromise of heterogeneous actors and materials (McIlwaine, 2007). Yet much research on NGOs is case-study based and does not explore the full workings of humanitarian aid networks and their geographical nature (Bebbington, 2004). This is despite consequences of the networked and transient nature of development for the distribution of aid and NGO activity (ibid). It is argued that NGOs have a universalistic tendency to categorise and homogenise communities as having the same needs and priorities (Mohan and Stokke, 2000) with a tendency for development subjects to be represented as rural and agrarian. Whilst funding is transient and highly competitive NGOs construct strategies to cope with uncertainty and to secure funding. They adapt to fashions and shape the environments in which they work to bring in funds and to create outputs, which proves their accountability to donors. The politics of aid-networks, their uncertainty and relationships of dependency have led to arguments that the dominance of values and agendas flowing from the Global North in many cases continues to be perpetuated by local NGOs and beneficiaries despite the focus of development on local knowledge and participatory practices (Aveling, 2010; Mohan, 2002; Tvedt, 1998).

There is a need for more empirically adequate and recent representations of poverty and poverty reduction. Representations that are not limited to a homogenous rural, agrarian, livelihood, or biased by funding pressures of accountability, but realistic and complex representations that challenge normalised constructs that foster only economic impact. The potential to see how development might impact the lives of the poor with outcomes that are not entirely tied to economic, health or educational functions, but are emotionally sensed, and with less measureable outcomes, are rarely explored. The theorisation of play has been criticised for assuming play to be largely associated with children, but has not yet been criticised for centring the ludic subject as Western. The playful African subject has been described as resourceful in a context where poverty prohibits the consumption of play equipment (Berinstein and Magalhaes, 2009). Consumption is often thought of as rational behaviour centred on economic theories of utility value (Sassatelli, 2007). This is particularly true in representations

of those who are economically deprived. Consumption has been theorised to be distinguished by class, whereby those of lower social classes are assumed to consume based only on rational principles of utility (Veblen, 1975). More conspicuous consumption has been thought of as something that is only relevant to those of a higher class (ibid). Little is understood of the alternative motives of consumption that take place in sub-Saharan Africa, for example the performance of identity and recreational needs. Situating non-conventional mobility more closely with functional mobility and the importance of flexibility in urban planning is increasing in Western contexts. For example, research is examining how infrastructure is designed in such a way that prioritises functional movement and restricts playful practise (Stevens, 2007). However, this remains a neglected area of research in the Global South and therefore the thesis aims to explore how representations of mobility are resisted, reworked and proscribed locally.

A modernist framing of development has been criticised for bringing uncertainties by faraway ambitious, vague and sometimes unrealisable goals, or ineffective technologies, which are exported to a complex and often unmanageable network of partners (Watkins et al. 2012). Technical talk dominates an arena of aid and the translations that occur amongst its actors (ibid). Despite a focus on participatory research, which has encouraged both local and international NGO and civil society activity, there remains a barrier in communication between beneficiaries and development funders and practitioners. An environment of accountability is working to distance development subjects from the design of development programmes. These diverse and transient networks of development have rarely been successfully understood and have traditionally focused on local accounts of participatory case studies. Therefore, this thesis applies analytical tools from mobilities and science and technology studies in order to provide a more nuanced understanding of the complexities of representing development subjects and designing humanitarian technical solutions, which can be theorised as a product of the flows between global and local spatial ontologies rather than problematically privileging either modernist, neo-liberal and global development discourse, or overly situated development that continues to be structured both horizontally and vertically.

There remains a gap in the literature of research that explores the agency and the design process of NGOs in re-valuing second-hand products for the Global South, and how these organisations construct and represent those living in poverty materially and technically. Furthermore, Script Analysis has paid little attention to the inscription of second-hand goods and the complexity this adds to user feedback mediations in design mechanisms. The agency of development subjects to act as consumers, and in doing so to actively shape the scripting of technical commodities, has not been examined. Little attention has been given to the ways in which consumers of the

Global South re-inscribe commodities from the Global North for their own needs and desires, or the feedback mechanisms between producers and consumers in such a relationship.

Whilst mobilities research is expanding the understanding of movement, its complexity and multiplicity and its situational properties, studies that critically consider the design processes of mobility practices and networks in the Global South are very limited. In the field of transport development, studies do not fully examine the complexity of translating a practice of cycling to sub-Saharan African contexts from elsewhere, which requires the configuration of many different cultural and material components (Jensen, 2013; 2014). An Actor-Network/Script Analysis framework is useful to examine the use of second-hand bicycles in sub-Saharan Africa, which traces their revaluing and purpose in development as inscribed by NGOs, their appropriateness in local contexts and an examination of the material and human agents that proscribe and subscribe cycling in rural and urban contexts, which in themselves are not possible to tightly define.

Mobilities theories and mobile methodologies offer useful analytical devices to construct appropriate ways of carrying out postcolonial development research since they are able to move between local and global spaces of knowledge production taking into account the mechanisms of translation between providers and beneficiaries of aid. These approaches do not assign hierarchy to either local or global meanings of culture, but recognise the connections between places as relevant and in constant rearrangement. Drawing attention to materiality and commodities is particularly useful in overcoming spatial hierarchies in the theory and practice of development. This is because as goods are transformed through global flows, they may act to constitute 'local' practices of self-identity and community (Lash and Lury, 2007: 150). Thus, culture can be theorised to circulate neither locally, or globally, but as "dynamically constituted in the movements, the biographies of objects" (ibid: 19). Actor-Network Analysis and Script Analysis, thus enable a rich examination of the details of design processes and modes of representation that connect diverse social actors and material actants over space. The study demonstrates how representations in the form of object scripts are reworked and resisted locally and how technologic design solutions are proscribed by networks of human actors and material actants.

3. Method

Introduction

The methodology of this research acknowledges and explores the current uncertainties of overcoming spatial binaries of local and global that are often politically problematic in theorising and practicing postcolonial and postmodern development of the Global South. It does so by engaging with Actor-Network Theory (Latour, 2005) and Script Analysis (Akrich, 1992), which influence the choice of a mobile ethnographic 'following' approach (Appadurai, 1986; Cook, 2004). The method positions the bicycle as a node in a consumption/development network and is used as a lens to view the mechanisms that prescribe and proscribe a staged mobility for development subjects. The bicycle is also used to examine both the utilitarian and fashion conscientious consumption choices that are made by development subjects that go beyond modernist constructions of utilitarian development mobility for economically productive social actors. This mobile method allows an open and reflexive approach that attempts to negotiate spatial scales of global and local in order to examine how one influences the other and how translations and mediations of culture occur between each, which is relevant for postcolonial, postmodern development. The method is partly situated ethnographically in order to understand how mobilities are practised in particular situations where human actors interact with each other and material actants that shape local mobility practices and meanings (Jensen, 2013). The following sections describe the theoretical implications for the methodology, the case study criteria of the research and an overview of cycling in sub-Saharan Africa and background information to contextualise the case as it moves from a global network of NGOs to Namibia. It describes data collection and analysis methods, and outlines the strengths and limitations of the validity, reliability, politics and ethics of the research.

Theoretical and Ontological Implications

Postcolonial theory offers a starting point in defining the incentive for this research as well as the methodological and analytical decisions made throughout this thesis. I adopt a mobile approach influenced by Actor-Network Theory and Script Analysis that examine how global and local spaces are related, how mobility practices travel in the form of object scripts, how translating these practices and their material forms may be working to stabilise and continue relations of power, how they are resisted and reproduced locally and what this implies for de-colonialising transport development. The legacy of postcolonial theory in this thesis is that it avoids being grounded 'here' or 'elsewhere', which tends to imply that one place affords

superior knowledge over another. My research focus is on the relations and negotiations through which localised and global spaces are constructed and object scripts are translated, which is power mediated and thus has implications for achieving postcolonial development practices.

Postcolonial/'Alternative Modernity' Theories

Postcolonial theory is used by critical development geographers to examine how interventions and relations that perpetuate poverty are embedded in geographies of connection and hierarchies of knowledge that are meaningful to actors across time and space (Radcliffe, 2005). It identifies how specific ideological formations and normative assumptions have flowed from colonialism into development studies (Power, 2003). Critiques of modernist approaches to development consider processes of knowledge production to be central to the way in which geopolitical and economic power is secured by certain groups in the North for their own benefit (ibid). Postcolonial thinking, rather, argues for the reconstruction of knowledge that attends to the diversity of perspectives and priorities (ibid). Postcolonial studies have paid attention to the mundane everyday realities of particular places and lived experiences. They are attuned to the politics of giving voice to the subaltern and the methodological challenges associated with a largely Western discipline established during the height of colonisation (Crush, 1994). Postcolonial studies recognise the range of subject positions located along different axes of power across different locations (Raghuram and Madge, 2006) and highlight social divisions within nationalism and forms of local resistance (Radcliffe, 2005).

Such theorisations of development studies have led to participatory research methods that are designed to bring focus to the 'local' in order to give voice to otherwise disempowered, subaltern communities so that they may be involved in the development of their communities, which is relevant for them and not only developers from other places. But despite much theorisation it is thought that a decolonisation of development is yet to occur and many consider the international development community to still be Eurocentric, modernist and/or neo-colonial (Katz, 1992; Sharp and Briggs, 2006). Raghuram and Madge (2006) identify a problem with the production of theory, which validates universality over 'located-ness' and calls for geographers to undertake 'situated practice'.

However, alternatives to universalistic assumptions, such as localism, community and indigenous responses lobbied by Escobar (1995) are criticised for failing to address the power relations that operate at the local scale and for overlooking the connections that stem from the local to elsewhere (Sharp and Briggs, 2006). It is often assumed that local knowledge is

inherently good or useful and an appropriate way of doing development (Smith, 2011). It is assumed that local people understand local conditions constituting an understanding that is invaluable for effective development (Brett, 2003). But this way of thinking is criticised for being overly romanticised, harmoniously linked with nature, isolated from 'outside' influences and is unchanging in time and space (Goebel, 1998; Smith, 2011). The role of the 'outside' may be neglected through an assumption that local knowledge has worked in the past and should continue to do so (Bourdillon, 2004). In overcoming these criticisms Raghuram and Madge (2006) suggest a postcolonial method that involves a mutual constitution of the North and the South whilst also making room for a South that is not entirely constituted through its relations with the North. Indeed many communities do combine both local and outside knowledge in practice (Briggs, 2005; Moyo, 2009). Similarly, the literature review discussed alternative concepts of postmodern theorising of development that is evolving from one that is bounded locally and nationally to one that is more spatially porous (McIlwaine, 2007) and incorporates a plurality of experiences positioned in a network of global relations (Greenstein, 2009).

This methodology is selected for its relevance to postcolonial/'alternative modernity' development, which recognises that both local and global knowledge are of value and that local situations are connected to elsewhere. The reasons for using analytical frameworks from mobilities theory were discussed in greater detail in Chapter 2, but to summarise here, ANT stresses an empirical investigation that traces relations, or translations, and describes them. Using a mobile ethnographic methodology, the researcher follows the traces of the diverse actors in a network and describes their ways of ordering the social world (Jóhannesson and Bærenholdt, 2009). The method's attention to the political hierarchy of a development network and its ability to move between both global and local scales make it particularly relevant to critical, postcolonial and postmodern development geography. The flexibility of this method considers how different social fields, usually conceived as separate, are related and woven together (Söderström and Crot, 2010). The case study thus follows the design of an object to be utilised universally for development subjects of the Global South and examines how the object's meaning is received, understood, contested and re-produced in local space that is contextually particular whilst existing as a product of global networks of things, people, power, economies, culture and knowledge.

Follow the Thing

Human geographers use '*following*' methods to trace the movement of cultural meanings attached to commodities as they move through space. Appadurai introduced the methodological importance of studying objects in motion to understand their social context and

calls for sociologists to "follow the things themselves, for their meanings are inscribed in their forms, their uses, their trajectories" (1986: 5). Several authors have since used a 'follow the thing' method to trace the flow of materials, for example, food (Cook, 2004; Cook and Harrison, 2007; Kleine, 2008), clothing (Brooks, 2013, Lash and Lury, 2007; Norris, 2014), objects of leisure (Hui, 2010), second-hand cars (Brooks, 2012; DeLyser and Greenstein, 2015), films, art exhibitions and other media (Lash and Lury, 2007), and end-of-life ships (Gregson et al., 2010) within networks of consumption. A 'follow the thing' approach is applicable to studies of consumption because it is a multi-sited process that involves networks of social actors and materials, where objects exist in dependable relationships, for example, shipping containers and commodities (Hui, 2012; Martin, 2016; 2017).

It is a method that has been described as a mobile ethnography, in which the ethos is a community of relational things (Lash and Lury, 2007). It is applicable to Actor-Network Theory being an analysis of the movement of objects within networks of social actors and recognises the agency objects have to shape social networks and practice (Hui, 2012). 'Follow the thing' is applicable to Script Analysis for similar reasons and because of the way it conceptualises commodities to mediate culture and meaning with political implications. A following approach is relevant for tracing the prescribed meanings of things and how these meanings are adopted and negotiated by users. Following and understanding the travel of materials is important in understanding their patterns of use in different social contexts and particular human-material networks.

A 'follow the thing' method avoids an opposition of the local and the global with no strict spatial boundaries and instead holds an emphasis on following any possibility of object trajectory regardless of spatial structures (Lash and Lury, 2007). It is therefore applicable to recent theorising of postcolonial development geography, which adopts a travelling approach to ethnographic research (Clifford, 1997). It offers a response to Katz's critique that development is not simultaneously thinking both globally and locally, or with recognition to how one structures the other, or the social relations and the practices at these two different scales that are not yet connected (1992). It is applicable to a positioning of development practice and research that is not bounded locally, or nationally, but is more spatially porous (McIlwaine, 2007).

However, actor-networks are held together by connections that are difficult to trace with a range of different actors, of different cultural heritages, some of whom conceal activities from others, and neither producers nor consumers understand processes that occur at opposing ends

of networks, which makes the mapping of such networks methodologically difficult (Brooks, 2013). A limitation to the scope of following object trajectories, is that it is complex, multi-sited and ongoing. Decisions have had to be made within the method of this thesis, for example, what objects to follow and where to follow traces of translations to despite that trajectories and connections may never be exhausted. Thus, the method relies on a partial account of the traces of negotiations between actors that constitute a staged development mobility. However, the current lack of understanding between producers and consumers as Brooks (2013) highlights demonstrates the need for further research, which this thesis contributes to, that examines the proscription and facilitation of negotiation between actors in consumption/development networks. This method goes beyond *following the thing,* but takes it as a starting point and from there the method follows associations between the thing and other multiple and heterogeneous actors in a complex networks that are dynamic and change composition from place-to-place. Thus, the method started with 'the thing' and from there 'the thing' became less central because there was no clear cut linear trajectory of the second-hand bicycle from producer to consumer in this network.

Staging Mobilties

Jensen (2013) argues that mobilities are staged "in physical settings and material spaces that are designed and practiced" (p.195). The framework defines mobilities as staged from above through regulations, material design and social norms, for example. It is also practiced from below in local situations of diverse social subjects. These are the physical and social geographies of mobility systems and practices. Jensen recognises that people are pulled towards and pushed away from places and practices in codified systems of infrastructure (ibid). These socio-material systems, Jensen argues, are brought together in specific combinations that afford certain practices of mobility and restrict others. Mobility cultures are linked to official codes of practice and legal regulations, they are embedded in the body tacitly, are locally anchored and express local cultural norms and customs, whilst some mobility codes are recognised globally (ibid). This implies that the relational symbolic ordering of mobility systems is produced and re-produced at varying spatial scales. A 'mobile situationism', Jensen argues, is an engagement with "the situational microecologies of mobile practices", which are framed within physical design, everyday human embodied practices and the built environment. But, it is also an engagement with the interactions between distant actors and systems reaching across time and space (ibid: 14).

Such a theorisation of mobility calls for a methodology that recognises the design and production of systems of mobility to occur in multiple settings and for one that is able to trace

the production and modification of mobility across varying spatial scales of global and local. It requires a situated understanding of the particularities of mobility cultures and coded socio-material networks that are embodied locally, whilst being mediated from elsewhere (Kullman, 2017). Similarly, Cox (2017: 59) states that in order to understand the process of object scripting "we need to look not only at the technologies themselves, but the much broader sets of connection in which they are entangled". The mobile subject is constructed through not only connections between designers and users, but also with the environments they are used in and the cultural discourses with which they are engaged (ibid). Jensen's staging mobility concept demands an understanding of mobility that may only be reached through an open and reflexive methodology that recognises the multiplicity of actors and the varying scales of space in which mobilities are designed and practiced. A methodology that is equally comprised of both following *and* situated ethnography is therefore useful to examine a staging of mobility, which aims to trace the mediations of mobility design and practice, which occur at multiple sites.

Case Study Criteria

The research design of this thesis takes the form of a qualitative case study. The case being the second-hand bicycle used as a lens to analyse the socio-technical design mechanisms involved in staging a mobility for development in Namibia. A case study strategy, Yin (2003: 9-13) argues, should be used when answering *how* and *why* questions about contemporary events within their real-life context. For example, Stake argues (2000: 440) that the case study "invites attention to ordinary experience but also to the language and understanding of the common disciplines of knowledge". In contrast to more structured experiments and hypotheses testing, qualitative case studies focus on the complexities of "ordinary practise in natural habitats" (Stake, 2000: 440). This focus on the particularities of a case is relevant to this study, which examines the particularities and the complexity of translating mechanisms that connect distant actors in a unique socio-material assemblage. Considering the weight the research gives to mobilities that are created and practiced *in situ* (Jensen, 2013) a detailed examination into real-life context and ordinary experiences in a particular setting, or network, is necessary. It is important to point out here that although case studies are usually associated with a fixed location (Bryman, 2008), this methodology adopts a following approach from Actor-Network Theory (ANT). An ANT ontology avoids situating the case in a defined location, but rather, follows the trajectory of an object in a network of actors that connects multiple actors through a series of translations (Latour, 2005). Therefore, the case defined is a mobility practice that is prescribed for development within a network that is held together by the second-hand bicycle as it travels from the Global North to the Global South. As described above, however, the method takes a situated approach to

ethnographically examine how local performances also stage a mobility according to Jensen's (2013) framework.

Cycling as a mobility practice and its material form – the bicycle - are selected for this case study as a lens to explore the processes, relevance and political implications of the translation of mobility design. The study, based on ANT and Script Analysis, positions the second-hand bicycle as a vehicle that carries and mobilises ideas about development, for example, whom receives aid, in what shape and how it may be used. Cycling has received much attention lately in developed countries to meet modern ideologies of a greater proportion of trips to be undertaken using low energy, healthy and socially inclusive transport modes influenced by concerns of global warming, environmental sustainability and poor health. The bicycle is a typical, every day, modern mode of mobility and is also typically used by development practitioners in participatory research projects that aim to improve the mobility of development subjects (Malmberg Calvo, 1994; Overton and Zambeze, 1999; Porter, 2003), thus it presents a case that is representative of the mechanisms that occur in staging development mobilities. The bicycle and the practice of cycling are chosen as a 'typical case' that provides a suitable context for certain research questions to be answered (Bryman, 2008). The bicycle is suitable for the overarching consideration of my research, as influenced by postcolonial theorists and Actor-Network research undertaken by Söderström (2013), which is to understand how modern and productive ideologies of mobility travel from the Global North to developing nations and the political implications of this movement mediated in a material form.

In the West second-hand bicycles are a waste product of consumption and previous practitioners discard unwanted materials, such as the bicycle, the value of which is reproduced by NGOs that collect and ship the bicycles, selling them to developing countries. Many African nations are partaking in this consumption network of second-hand materials and Namibia has been selected as the case study because it meets the following criteria. Firstly, second-hand bicycles are shipped to Namibia by international NGOs. These bicycles and their users are easily traced because one of the NGOs distributing bikes has established a substantial network of 33 partner projects that repair, sell and maintain the bicycles from shipping containers. Secondly, Namibia is a country that exhibits contrasting ethnicities grossly marked by unequal access to resources and wealth following the South African apartheid regime (Tötemeyer, 2013). It is therefore relevant for examining the processes through which mobilities are produced by NGOs for imagined subjects of development and practised, or proscribed by real users in situational assemblages (Jensen, 2013). Thirdly, Namibia is a large country with a very low population density whereby it is likely that the mobility practices have developed to account for moving low

numbers of people over longer than average distances for access to health care, education, employment, shops and social networks, for example. This makes it possible to examine the extent to which a staged mobility prescribed by international organisations integrates and conflicts with existing mobility practices. Namibia is a country perhaps least suited to cycling because of its low population density, lack of historical cycling culture and sandy, arid environment. These features make Namibia a unique place in which to trace the translations of a staged mobility for development subjects, however, similar projects and networks exist in other locations of sub-Saharan Africa in which this research is likely to be applicable to. Finally, Namibia is selected for reasons of convenience. It is a relatively safe and accessible country to conduct research given that other nations advise against travel because of conflict, security threat or infectious disease, for example. Furthermore, a partnership between Cardiff University and University of Namibia exists, which offers additional security of myself during an initial scoping visit, the possibility of recruiting a translator and the involvement of a local researcher.

Although I have detailed some criteria for selecting Namibia as a place to follow second-hand bicycles to, there is a limitation to the justifications presented. Case studies are usually associated with a fixed location, community, or study population, for example (Bryman, 2008). However, Actor-Network Theory and a methodology of following things is focused on tracing the movements and associations of things. A following approach requires a method that is free to pursue all associations and negotiations between actors. This is a messy process and the social world is often difficult to map as Law describes:

> "Such is the task…to begin to imagine what research methods might be if they were adapted to a world that included and knew itself as tide, flux, and general unpredictability" *(2004: 7)*.

Law sees much of the world as vague and indefinite, and calls on the social sciences to adopt mobile methodologies to embrace the flux of society (2004). He implies methods that are non-linear and arrives through trials and errors. Thus, whilst this research has adopted a following approach to trace the trajectory of the bicycle to actors in the Global South, it was not a linear process and the method's trajectory was more of a back-and-forth process. Ethnographic observations of use and non-use of the bikes were limited to Namibia, however, precise locations were not committed to prior to traveling to Namibia and these were partly defined by the possibility of organising accommodation and transport. There is a conflict with the practicalities of undertaking research that is temporally and financially limited with an Actor-Network/*following* methodology. In reality it is not possible to freely follow all translations that take place within a spatially boundless network, which is a shortcoming of the theory. The

research deals with this by examining the translations that occur in staging a mobility for development, partially, in a case study format that is likely to represent the translations that occur elsewhere in other situations and contexts that are related to the trajectory of the material object in focus. Meanwhile it is recognised that negotiations between multiple actors are dynamic and unpredictable (Kullman, 2017; Söderström, 2013).

A Background to Cycling in Sub-Saharan Africa

The following section demonstrates how the bicycle is framed within the everyday mobility in urban and rural sub-Saharan Africa for low-income populations in order to build a contextual overview prior to examining the staging of development mobility. This methodology adopts Jensen's (2013) framework of staging mobilities, which pays attention to how mobilities are designed and practised in situational environments that are co-produced in designer/user networks of multiple material and social actors. Therefore it is relevant to first consider the background of sub-Saharan African mobilities, broadly speaking, and how bicycles are situated within this context.

Cycling in Rural and Urban sub-Saharan Africa

It has been found that bicycle use decreases as environments become increasingly rural, distances to market settlements increase and population densities decrease (Malmberg Calvo 1994; Porter, 2007). Land-use and population density impacts the availability of repair services (Porter, 2002; Starkey, 2001). The terrain, surfaces, climate and topography of rural areas also limit bicycle use. For example, Malmberg Calvo (1994) describes that bicycle use is compromised by mountainous terrain and poor road surfaces. Overall the contextual literature implies that cycling is not as conducive to a sparsely populated rural environment as an urban environment.

Cycling accounts for as high as 45 per cent of trips in some secondary African cities (Gwilliam, 2013). In at least two secondary cities in Ethiopia there is a positive trend of bicycle use (Dagnew Bogala, 2012). In the secondary city of Morogoro, Tanzania, cycling accounts for 23 per cent of the mode share and in Eldoret, Kenya, accounts for 12 per cent (Howe and Bryceson, 2000). However, this is not the case in primary cities of sub-Saharan Africa, where cycling uptake is often low and it is thought that safety is a key contributing factor (Amoako-Sakyi and Owusu, 2011; Howe and Bryceson, 2000; Heyen-Pershon, 2001; Overton, 1994; Pochet and Cusset, 1999; Salon and Aligula, 2012; Simon, 1996). The overall proportion of trips made by bicycle in most sub-Saharan African primary cities equates to only 1 to 2 per cent (Gwilliam, 2013). Infrastructure for either cyclists, or pedestrians, that separates them from motorised traffic is

rare (Overton, 1994) since transport planning in sub-Saharan Africa has generally neglected non-motorized modes (Leinbach, 2000; Peters, 2001; Uteng, 2011).

Drivers of trucks, buses and private cars in urban areas are thought to behave aggressively and carelessly (Heyen-Perschon, 2001; Howe and Bryceson, 2000). The modal and social hierarchy of the road dictates the cyclist's feeling of safety in African cities where the bicycle does not have a legitimate place (Pochet and Cusset, 1999). Some population segments have greater sensitivity to the dangers of urban cycling than others. For example, Tanzarn (2008) finds that women in Uganda have greater perception of security issues than men. Pochet and Cusset (1999) find that non-use of bicycles and feelings of insecurity increase with age and social status.

Urban and Rural Perceptions of Bicycle Use

There is a spatial bias against the perception of bicycle use in many regions of Africa, which is mostly observed in urban environments. Higher-income groups most often found in urban regions have a negative attitude towards cycling and consider it to be a transport mode for low-income rural dwellers (Bos et al., 2008; Heyen-Perschon, 2001; Pochet and Cusset, 1999; Porter, 2007). For example, in one study a respondent connects the bicycle to use in the colonial period and suggests that "peasants can use bicycles, but in town it's the moped" (Pochet and Cusset, 1999: 10). In a bid for modernisation, African governments orient transport planning towards automobility and in a small number of cases to public transport (Bos et al. 2008; Leinbach, 2000; Sietchiping et al., 2012; Vasconcellos, 2003). Bicycles are sidelined and often represented as primitive (Porter, 2007). However, evidence suggests that in rural settlements the bicycle is less frequently associated with poverty (Kemtsop, 2008; Overton and Zambeze, 1999; Porter, 2003; Ugorji and Achinivu, 1975).

Revaluing the bicycle

Negative perceptions towards bicycle in Africa are not static or completely all-encompassing, however, and Pochet and Cusset (1999) note that mountain bikes are more fashionable among younger people in West African cities. Interviews revealed that the mountain bike "is perceived as an elegant means of transport, comfortable, modern and upmarket therefore a certain social status symbol for those who use it" (Pochet and Cusset, 1999: 11). Optimistically, a South African report from The Daily Maverick (2012) suggests cycling is "an increasingly fashionable mode of conveyance for a new generation of hip urban youngsters" and "for the first time in South Africa's history, riding a bicycle might soon no longer carry connotations about class and money". Similarly Bos et al. (2008) note aspirations for mountain bicycles since they are the most expensive type of bicycle available in Uganda. The Shova Kalula project is a mark of the

South African government's support of bicycle policy, which introduced 72,000 bicycles by September 2011 through finance schemes (Mahapa, 2003).

Gendered Mobility and Cycling in sub-Saharan Africa

There is a broad pattern of gender disparity in mobility, transport access and use in sub-Saharan Africa (Porter, 2008). It is argued that men became cash earners under colonial policy, physically absent from the home whilst in employment, and women became more involved in subsistence production (Uteng, 2011). Taboos were formed about men's involvement with household tasks, such as head loading wood and water, therefore women are considered to bear a greater transport burden of load carrying than men (Malmberg Calvo, 1994; Porter, 2008). This is particularly the case in rural regions where traditional female and male gender roles tend to be accentuated (Bryceson and McCall, 1994; Overton, 1994; Uteng, 2011). In an urban context whilst mainstream African transport planning is predominantly focused on motorisation as a means to modernization (Uteng, 2011) it does not pay significant attention to the transport needs of women whom are less likely to own, or have access to, a vehicle (Peters, 2001; Porter, 2008; Uteng, 2011). Therefore, the pattern of increasingly automobile dependant African cities reduces the transport options of women (Simon, 1996; Vasconcellos, 2001).

Bicycle use is predominantly associated with men (Grieco et al., 1994; Tanzarn, 2008; Porter et al., 2009) and this trend is most prominent in rural regions (Malmberg-Calvo, 1994). It is considered that "the gendered aspect of bicycle use reveals that many cultures do not accept such movement of women primarily due to the rigid cultural underpinnings in women's movement and representation" (Uteng, 2011: 19). Overton (1994) finds in rural Mozambique men often associate female cycling with promiscuity. Malmberg-Calvo (1994: 29) reports from a rural district of Uganda that women are "supposed to be subservient and a bit secretive" and many accounts are given of fears of women leaving their husbands if they become financially independent or "too liberated" through using a bicycle. These cultural norms are reflected in the disproportionate number of boys learning to cycle comparatively to girls (Porter et al., 2009). Similarly when bicycles were introduced to Western countries, it was fiercely contested that women should cycle and bicycles were deemed inappropriate to women because of the physical demands of the technology and its liberating potential (Domosh and Seager, 2001).

Traditional gender norms are maintained by restricting women's access to vehicles, considered to be household assets (Malmberg-Calvo, 1994: Overton, 1994; Peters, 2001). Malmberg-Calvo (1994: 30) and White et al. (1999: 11) suggest that the best way to ensure women have access to bicycles is for households to own more than one, however, it is usually not financially possible.

It is usually the case that women have more limited resources to purchase transport equipment than men (Malmberg-Calvo, 1994; Porter, 2008; Porter, 2014). When women do have access to money, there are often more urgent financial priorities, such as school fees, medical bills and existing debts, that take precedence over buying a bicycle (Bryceson and McCall, 1994; Malmberg-Calvo, 1994).

Credit purchase schemes as part of development interventions can enable women to purchase bicycles by paying the cost in instalments (Malmberg-Calvo, 1994; Overton and Zambeze, 1999; Porter, 2014, White et al., 2000). However, credit schemes for bicycle purchase are rare outside of pilot schemes (White et al., 2000) and may not be an adequate incentive for women to purchase bicycles if they are not considered appropriate (Starkey, 2001). Owning a bicycle does not necessarily equate to income generation for women, particularly in rural areas where employment opportunities are less regular and market opportunities fewer (Porter, 2014; Starkey, 2001). Lenders are often not willing to give credit to women without regular cash income and therefore the extent to which credit schemes are used to purchase bicycles is limited (Porter, 2003).

Feminist geographers have conceptualised the use and creation of space as an indication of gendered social constructions (Massey, 1994). Through this conceptualisation of space it is recognised that the harassment of women (and men) in public spaces exercises power to exclude certain societal groups, which has major implications for the ways in which women (and men) choose to travel through space, or to avoid certain spaces, thus restricting their mobility options and autonomy (Law, 1999; Massey, 1994). Gender variations of the physical ability of individuals to move safely through space are in part shaped by biological limitations, but also by social constructs, which interact with biological processes providing constraints and opportunities in specific contexts over time (Flannery, 2003). Judith Butler (1990) argues that our gendered identities are based on routine practices and that there is no pre-discursive 'sex' on which a culturally constructed notion of 'gender' then sets to work. Our sexed bodies can ascribe a number of gender identities since they are performative and shaped by culture. Similarly, Busby (2000) argues that the body is materially altered by history, interactions with others and with the cultural and physical environment. Such actions over time alter the muscle tone, flexibility and capability of the body. Differing perceptions of bodily strength and self-protective ability of men and women are therefore consequences of gender embodiment reiterated through practices over time (Bourdieu, 1990). Women's movement is, therefore, determined by an associated set of respectable and safe behaviours carried out by women,

which is produced by the social coding of a body as female and which is vulnerable to assault by men (Law, 1999).

African women are perceived to be at greater risk than men in their everyday practices of mobility (Greico et al., 1994; Tanzarn, 2008). This is extended to women's cycling (Fernando and Porter, 2002; Greico et al., 1994; Overton, 1994; Paul, 2002). Some authors argue that the cosmopolitan influence of urban spaces enable women to contest embodied gender norms (Brycesson and McCall, 1994; Malmberg-Calvo, 1994; Onwumechili, 2011; Simon, 1996). However, there are very limited accounts of the resistance of such gendered mobility practices in Africa. One example, is a narrative of the first female truck and bus driver in Tanzania in the late 20th that notes how the masculinity of driving is embodied in the physical strength required to operate the technology (Grace, 2013). In driving a bus, the female driver contested gender stereotypes through an embodied and mechanised performance of mobility.

The appropriateness of bicycle technologies available for women's use is also often cited as a limitation in increasing bicycle use amongst women and girls in Africa. The direction of focus of initiatives in rural regions promotes the bicycle as a tool for load carrying tasks undertaken predominantly by women and girls. However, bicycles can be unsuitable for carrying loads where infrastructure is limited and the cost of modifying bicycles to accommodate loads presents a barrier for women (Malmberg-Calvo, 1994). For example, bicycle trailers were introduced to Ghanaian women, but were unsuccessful because they lacked the strength required to carry heavy loads whilst remaining affordable (Salifu, 1994). Traditional clothing fashions - usually a long dress or skirt - makes it difficult for women to ride standard bicycles (Mahapa, 2003; Malmberg-Calvo, 1994; Overton and Zambeze, 1999; Salifu, 1994; White et al., 1999). Starkey (2001) suggests that interventions need to create the demand required to justify the design and manufacture of more appropriate technologies for women. However, interventions have so far been small, piece-meal interventions with inadequate appreciation of social and contextual factors (Porter, 2014).

Overall cycling is a gendered mobility practice in sub-Saharan Africa because women often do not have the financial means to purchase a bicycle and because of the embodied gender norms that restrict women from cycling in public space. These societal restrictions to women's mobility is relevant to the way in which actors design and inscribe a tool for mobility. The literature suggests that the popularity of cycling in sub-Saharan Africa is mostly limited to secondary cities because of the lack of safe infrastructure and the focus of transport developments on private car use in primary cities. Cycling is less popular in rural areas because of the lack of

infrastructure, maintenance networks and increased distances of trips. Higher income groups tend to associate themselves with private car use in sub-Saharan Africa and disregard the utility of the bicycle. However, some authors suggest there is a recent change in attitudes toward bicycle use since the introduction of mountain bicycles. This contextual evidence underlines the relevance of using Actor-Network Theory as an analytical tool in this thesis because multiple local and global actors are influencing the suitability of the bicycle to be included in a staging of development mobility in sub-Saharan Africa.

Namibia: an Overview

Namibia is located in the South West of Africa (Figure 3.1). The population of Namibia has been increasing over recent years although is still very small relative to the country's land mass and comparatively with other sub-Saharan African nations (Table 3.1).
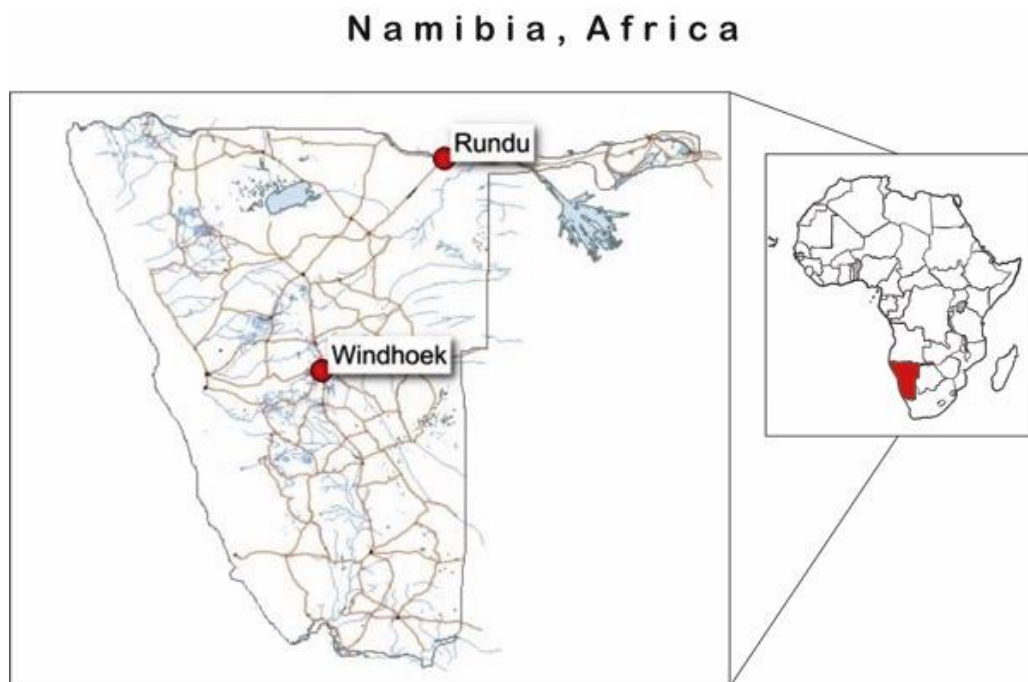
Figure 3.1 Map showing the location of Namibia in sub-Saharan Africa, the capital city Windhoek and the town of Rundu situated in Kavango Region

Country	Population (per square kilometre)
Namibia	3
Botswana	4
Zambia	22
Angola	23
Zimbabwe	42
South Africa	46
Tanzania	63
Kenya	85
Ghana	124
Nigeria	204
Rwanda	483
Mauritius	622
Sub-Saharan Africa	44

Table 3.1 Population density of Namibia relative to other sub-Saharan countries (World Bank)

The implication of such a low population density is that accessibility is a challenge for rural populations, there are few cities and Namibia's urban towns are dispersed. In rural Namibia only 56 per cent of the population live within one kilometre of a source of drinking water, which presents a greater need to travel daily relative to the population living in urban areas (Namibia Statistics Agency, 2012). Three per cent of the population are reported to travel over 3km for drinking water. Eighteen per cent of rural households in Namibia have over 10km to travel to the nearest primary school, but this figure is as high as 42 per cent in one region. Whereas in urban areas 71 per cent of households are located within 1km of a primary school (ibid).

Although Namibia is listed as a middle-income country its wealth is distributed disproportionately (Tötemeyer, 2013) with German speaking households earning 26 times more than Rukavango speaking households, amongst the lowest earning households in Namibia (Namibia Statistics Agency, 2012). The wealthiest 10 per cent of households have consumption levels fifty times higher than the poorest 10 per cent (Namibia Statistics Agency, 2008). Poverty is racial in Namibia and the vast majority is distributed amongst black households; an economic injustice that has so far only been partly rectified (Tötemeyer, 2013). Ninety Five per cent of German speaking Namibian households own a vehicle compared with 6.9 per cent of Rukavango speaking households and sixteen per cent of Oshiwambo speaking households (Namibia

Statistics Agency, 2014). Poverty is greater in rural areas, which affects over half the population (Tötemeyer, 2013). Most of the country's wealthiest households are located in Khomas region, which hosts the country's capital city Windhoek. An initial scoping visit followed second-hand bicycles to Windhoek because there is an NGO project in its township Katutura, some active cycling advocacy groups and an NGO that teaches teenagers and women to ride. However, the northern region of Kavango was selected as the primary location where data would be collected regarding Namibian mobilities.

Kavango Region

During a scoping visit I traced the second-hand bicycles to the Northern Kavango region of Namibia where there is a cluster of NGO bike shops as highlighted in Figure 3.2. Although the methodology is a following mobile ethnography, this region is the main focus of ethnographic observations, interviews and mobility mapping methods partly because this is the least wealthy area of the country and partly because it is one of the most populated regions of the country. Researching the mobility of individuals in one of Namibia's least wealthy regions is aligned with the research questions and methodology of this study that follows materials shipped by NGOs designed as tools to alleviate poverty.
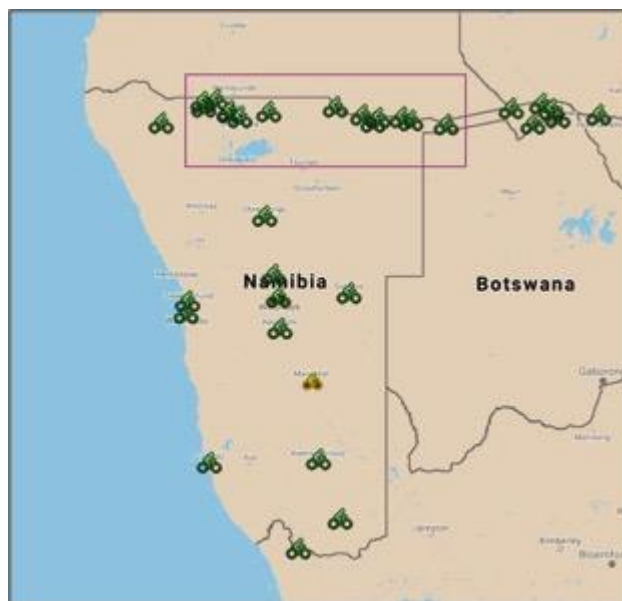
Figure 3.2 Location of NGO bike shop projects in Namibia (NGO 1)

Figure 3 shows that over half of the population in Kavango region are recorded to be living below the nationally defined poverty level (Republic of Namibia Planning Commission, 2015). Only 7.5 per cent of households own a motor vehicle in this region whereas on average this figure is 20 per cent of Namibia's households (Namibia Statistics Agency, 2014).

Figure 3.3 Headcount poverty rate (N$262.45/£15 per adult Per Month 2004) by region in Namibia (Republic of Namibia Planning Commission, 2015)

The average population density of Kavango is 4.6 persons per square kilometre, whereas the average of the whole country is 3, and it is thus selected over more rural regions. Namibia is a largely rural country and the most rural locations are not accessible without a four-wheel drive vehicle. For the ease of access to respondents an area was selected that could easily be travelled to interview respondents and undertake a mobile ethnography. The region is mostly rural outside of Rundu and Nkurenkuru towns, therefore Kavango was ideal for easily accessing both rural and urban sample populations, which became relevant to the study. A period of fieldwork began in Namibia without defining locations within this region where respondents would be interviewed. This gave the freedom to be more mobile and to trace the bicycles to where evidence was found of their subscription and proscription. Although some justifications are stated for selecting the Kavango region to collect data, the study focus was open to the possibility of undertaking more interviews and observations in other locations, such as Windhoek, until enough nuanced data was collected to analyse the multiple negotiations between designers and users that are occurring within this situated staging of mobility (Jensen, 2013).

Kavango region is situated to the North of Namibia (see the label 'Rundu' in Figure 3.1) and lies in the flood plain of the Kavango River, which makes this area considerably greener than the rest of Namibia, although the environment of this area is largely sandy. The river forms a natural

border between Namibia and Angola. The Kavango region is divided into nine constituencies: Kahenge, Kapako, Mashare, Mpungu, Mukwe, Ndiyona, Rundu Rural West, Rundu Urban and Rundu Rural East. There are two urban localities in Kavango region; the largest being Rundu, located on the border with Angola in the centre of Kavango, with a population of 63, 431. The other, far smaller and recently established, is Nkurenkuru to the East with a population of 618; with 20, 787 people residing in its surrounding constituency (Namibia Statistics Agency, 2014). The remaining 71.3 per cent of Kavango's population are defined as living rurally, but with a trend of rural to urban migration. Farming accounts for 40 per cent of the population's income. Most are engaged in farming crops (53 per cent) or livestock (22.8 percent), which reflects the largely rural nature of the region (ibid).

Urban Rundu attracts a greater proportion of people aged 15 to 59 (59.5 per cent) than any other area within Kavango where this age group comprises 50 per cent of the region's population. This demonstrates the function of Kavango's main urban centre as a place of employment for those of working age. Likewise the main source of income in both Rundu Urban Constituency and Rundu Rural East Constituency is defined as wages, salaries and non-farming business by Namibia Statistics Agency (2014). The most common languages spoken in the region are Rukwangali/Rukavango and Oshiwambo.

As traces of the negotiations were followed between the NGOs staging of bicycle use and the users of bicycles, a spatial influence was discovered to the proscription and subscription of the second-hand bicycle's utility. This prompted interviews and observations to be undertaken in three locations (Figure 3.4):
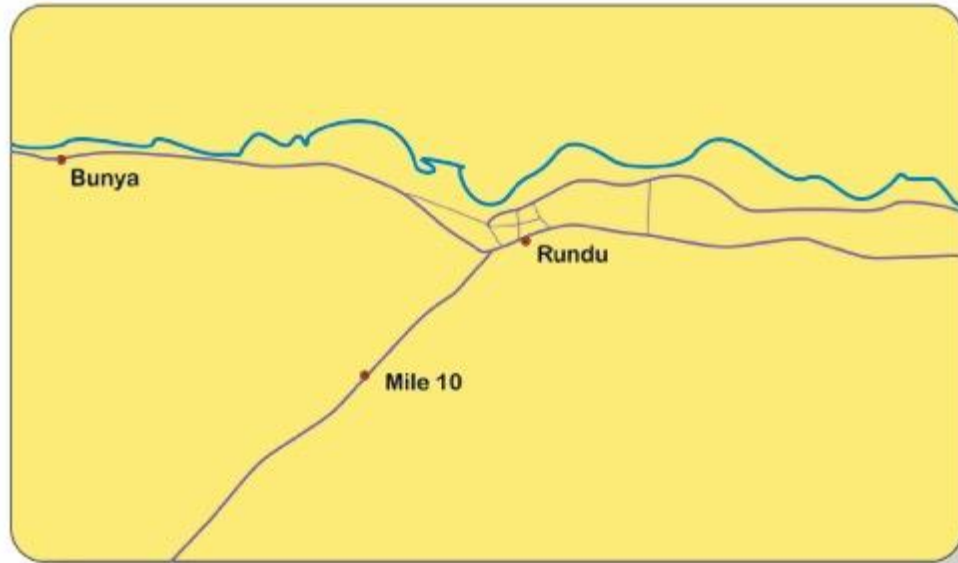
Figure 3.4 Study locations in Kavango region, Namibia

1) Bunya village located 47km to the West of Rundu town. The catholic mission at this village hosts an NGO bike shop project and offered hostel accommodation so was a convenient place to stay for 2 weeks. This was where a rural sample of respondents was accessed.

2) Mile 10 village located 17km South West of Rundu town. This village was accessible by hitch-hiking on a busy road from Rundu town and there is an NGO bike project in this village. This location provided access to a rural sample that is located within approximately 60-90 minutes of cycling, and is easily accessible by other means, from Rundu town.

3) Rundu town (Figure 3.5) was the site where an urban sample of low income Namibians was collected. The research was mobile across a number of informal low income settlements referred to as 'locations'. These were situated between 1 and 5km from the centre of Rundu. An NGO bike shop project is situated in the location Ndama. Accommodation was in a church hostel in the location Kehemu. Other significant locations are Kasote and Sauyemwa.
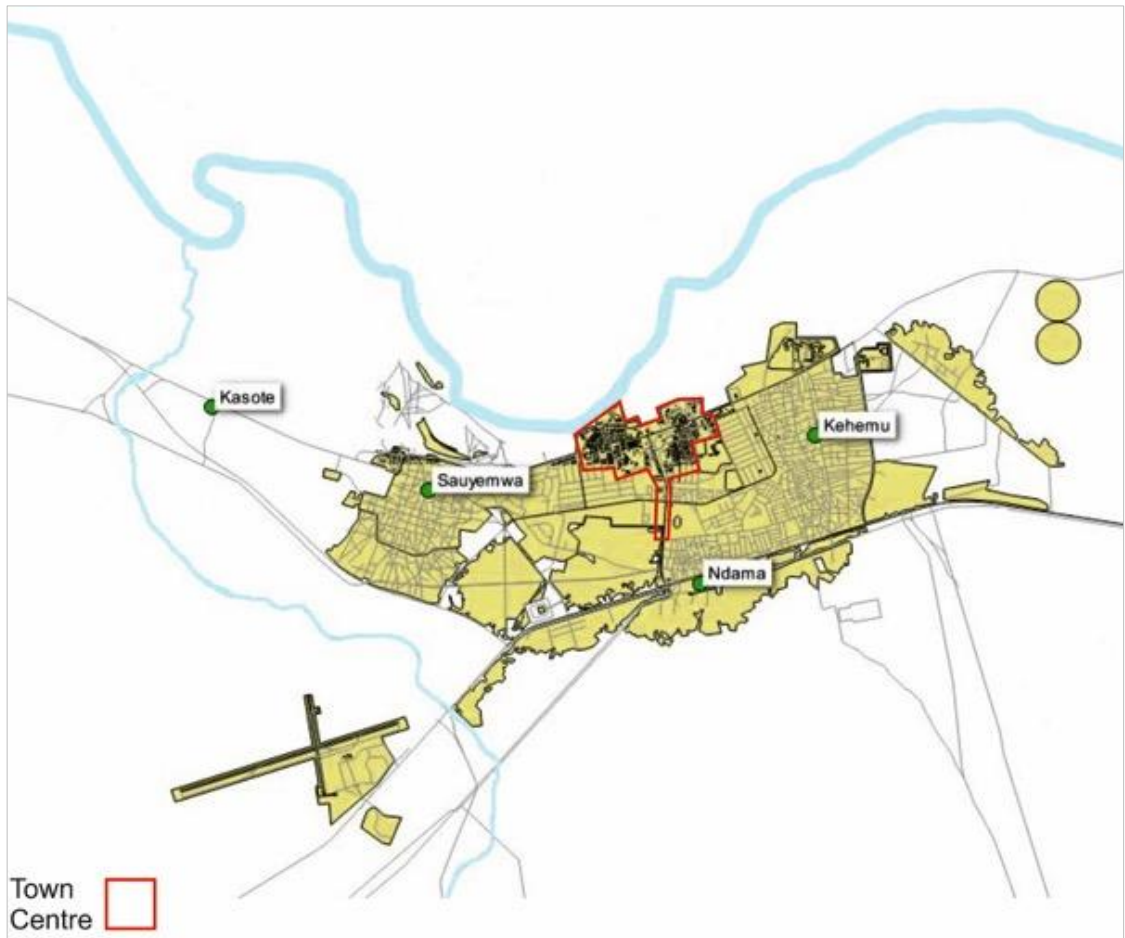
Figure 3.5 Locations of data collection in Rundu Town

Data Collection Methods

Data was collected in three phases (Table 3.2). Following an initial exploratory scoping visit to Namibia, desk-based online interviews with NGO representatives constituted the second phase of data collection and finally the third phase involved a second field study visit to Namibia to collect further interview and ethnographic data.

Table 3.2 Time frame of data collection

Time Frame	Methods			Objectives
Phase 1 Scoping Visit Namibia 3 weeks	• Ethnographic observations • Non-structured discussions • Semi-structured interviews with facilitating actors (local NGO bicycle mechanics, non-NGO bicycle mechanics and commercial enterprises, cycling organisations)			• Openly generate explorative data that will be used to define research questions that are contextually and temporally appropriate • Identify study population • Pilot research methods • Establish contacts • Scope field study sites
Phase 2 Desk based fieldwork 8 weeks	• Semi – structured interviews with international NGO representatives online			• Collect interview data to identify the key themes of how material tools and subjects of development are constructed through a design process of scripting • Collect data to explore the objectives and intentions of an international development community that prescribe the bicycle's use
Phase 3 Fieldwork Namibia 5 weeks	• Semi-structured interviews recruiting participants door-to-door and snowballing • Mobility mapping (individuals during interviews) • Photo elicitation (individuals during interviews) • Ethnographic observations • Mobile auto-ethnographic mapping			• Collect interview and visual mapping data from study population (low-income Namibians) • Generate observational and mobile ethnographic data of local mobility practices (walking/cycling/hitch-hiking/taxis/bus/canoe) • Research will be more focused than phase 1, however, continues to be mobile and explorative (mobile approach identified 3 phases in 3 locations described retrospectively) • Identify all material and social actors that shape the bicycle's subscription, de-inscription, re-inscription and proscription.
	A Bunya Village 2 weeks	B Mile 10 Village 10 days	C Rundu Town 10 days	

The data collection methods included ethnography and semi-structured interviews during which, visual mobility mapping and photo elicitation methods were used with individual participants. The mobile ethnographic approach was designed to be flexible and explorative. It included semi-structured interviews with international and local NGOs, interviews with low income Namibians, participant observations and ethnographic mobile experiences. These

included walking, cycling, using taxis, hitch-hiking in saloon and backie vehicles, public buses and a dugout canoe. Multiple modes of transport were used to ethnographically explore a range of local mobility practices. These experiences were documented textually and graphically in the form of three hand-drawn maps. Ethnographic experiences and observations were used in conjunction with accounts from participant interviews that informed mobile and spatial knowledge. This was developed through the practice of drawing whilst in 'the field', which was utilised as a thinking exercise as well as a documenting exercise as is described below.

Ethnography

The method used was ethnographic since it set out to observe the unfolding of a practice in context rather than to be informed only by post-hoc accounts of participants. It provided an opportunity to observe what is often taken for granted and what might not otherwise have been brought up in an interview (Bryman, 2008; Crang, 2002; Shutz, 1962). For example, it is argued that the power relations interview participants are entangled in may limit the extent to which they can engage with and discuss the research topics (Pain, 2004). This was apparent when women told me they could cycle, yet I observed that they were not, which demonstrated that participants might have been telling me what they understood to be true, but actually their mobility was evidently being structured by gender norms.

Ethnography has been developed in order to understand "the world-views and ways of life of actual people from the 'inside' in the context of their everyday, lived experiences" (Cook, 2005: 167). A key element of ethnographic research is that is considers social order to be constructed *in situ*, therefore an understanding of social life in the local is critical (Atkinson, 2015). Atkinson insists that fieldwork ought to be conducted in the settings "wherever and however they are brought into being by the social actors who collectively engage in their production" be those virtual or multiple settings and not necessarily bounded in any traditional sense of a field (2015: 4). An ethnographic analysis is open and exploratory by nature, which makes it relevant to a mobile methodology. A boundless view as to what constitutes the field is essential for this study that follows the translations and negotiations of actors connected to, but outside of local concepts of the 'field'.

Ethnography is a methodology aligned with a social construction epistemology, which rejects positivism and argues that reality is dependent on place, time and social contexts (Berger and Luckman, 1966; Gurney, 1999). Individual social actors have a role in the construction of reality, which exists in terms of actions, thoughts, meanings, values and interpretations. It is thought concepts are not shaped by the external world, more so that "our concepts help us organise the

world in various ways" (Gergen, 1999: 11). Methodologies of social constructionism, however, are criticised for their subjectivity and human bias in interpretations of subjects and research. This criticism is relevant for an Actor-Network analysis, which pays attention to the agency of both people and material things to shape relations and practices. Actor-network Theory brings together social constructivism and technical determinism, which refers to the way in which technology shapes heterogeneous networks of humans and non-humans (Akrich, 1992). It is possible through participant observation a researcher is attentive to the actions of social actors, material culture and the spatial and temporal arrangements that constitute the field (Atkinson, 2015). Ethnography is therefore aligned with Actor-Network Theory because it can be used to observe the agency of both social and material actors. Furthermore, observation goes beyond just seeing and also involves a multi-sensory and sensitive experiencing of the physical environment in order to make systematic sense of the social world (Atkinson, 2015; Kullman, 2017). This approach is relevant to Jensen's (2013) concept of 'staging mobilities', which defines mobility as situational because of the complexity of multiple material and social actors that assemble and hold together mobile practices in particular and relational settings. The understanding of which is reinforced by an embodied and sensory interpretation of physically being mobile 'in situ' (Kullman, 2017). In this case part of my ethnographic research involved embodying various ways of moving in the Northern region of Namibia, including cycling, walking, canoeing, hitch-hiking, using taxis, and buses. I was able to experience the uncertainty of travelling as a female (albeit a non-local) in shared cars in rural places, the difficulty of cycling through sand and the frustration of punctures. I felt unsafe cycling on a fast and straight trunk road and whilst canoeing in a river frequented by hippos. These were sensory engagements that built my experience of moving in a particular place, which helped me to understand the accounts given by participants.

The knowledge gained from ethnography does not make factual generalisations of society or attempt to define causality. However, ethnographic studies do gather rich and context specific data. For Atkinson (2015), an ethnographic generalisation is possible and is based on the derivation of 'ideal-types' – generic concepts that transcend the local and that can be applied across a range of social situations. There are commonalities across ethnographic studies, which are not isolated cases, but often coherent and cumulative (ibid).

This approach offers an alternative to mainstream transportation research which traditionally and predominantly arrives from a positivist epistemology. Mainstream transport research is concerned with the probability of causal relationships and makes predictions based on mathematical and scientific laws. It is concerned with behavioural patterns amongst large

numbers of people, which will change given certain external predictors and is observable. It therefore does not offer rich examinations into the socio-material construction of mobility practices, their global transfer, or the political implications of this process. For example, a key positivist transportation behaviour study by Cervero and Kockelman (1997) examines the relationship between the density, design and land-use diversity of the built environment and travel demand. It identifies measured variables and consequently uses regression models to estimate probability of miles travelled and transport modes used. Generalisations about travel behaviour are made from this study and others to larger populations predominantly in the Global North. This kind of positivist approach allows for control of socio-economic factors known to influence travel behaviour and the certainty of the predictions is accepted as fact. However, not just influenced by their external environment, social actors make less calculated decisions based on circumstances, emotions, attitudes and values that are not ahistorical, but changeable and culturally specific.

There is a growing body of research within the field of transport that uses interpretive methods. In seeking greater insight into attitudes, values and cultural or class perceptions towards transport choices and interventions that cannot be captured by quantitative modelling techniques, interpretive methods are used (Barnett et al., 2012; Beirão and Sarsfield Cabral, 2007). Cycling as a practice embodies a culture in its own right that is constructed by society. Within the expanding research of cycling, a number of authors explore the meanings of place and mobility, sensory experiences and meanings of journeys using ethnography and in-depth interviewing (Spinney, 2007; Daley and Rissel, 2011; Steinbach et al., 2011). This is the type of analysis this thesis sets out to achieve and also to examine how meanings and embodied experiences of mobility practices travel globally and the political consequences of this movement. In contrast to experiments and hypotheses testing, this qualitative case study chooses to focus on the particular complexities of "ordinary practise in natural habitats" (Stake, 2000: 440).

The ethnographic observations in this method required access to low income Namibians who use bicycles and also those who do not, but instead choose to use other modes of transport. The fieldwork involved both observing and interviewing research subjects, which served to enrich data based on the interpretations the research made from observations (Delamont, 2004) as well as the accounts given by respondents about their mobility. Ethnographic interviews, which were recorded, or informal discussions that were later recalled from memory, enriched the data with speech accounts that revealed practices, attitudes, performances and opinions that may not have been observed. In participating in local mobility practices I hoped to gain the

perspective of how low income Namibians travel day-to-day, the materials and knowledge shared within these practices and how the practice of cycling is situated amongst other mobility practices. This would develop an understanding of how a staged mobility translates from an international development community of NGOs to a local context and how it is used, performed, adopted, rejected, prohibited and reproduced locally.

Ethnographic Mapping

Visual mobility mapping can be applied ethnographically as well as being used by participants. Whilst textual notes are were used to record ethnographic experiences and observations daily, a visual representation offered an alternative mode to produce and represent knowledge. It is thought to situate a viewer in place through a different sensory engagement with that knowledge using craft and skill (Gell, 1992). Ingold has described drawing as "fundamental to being human" (2011: 177) and remarks on how architects "draw as they think, and think as they draw" (p. 162). Hurdley et al. (2017: 4) suggest that drawing attunes researchers to "the multivalent, ambiguous modalities of exercising eyes, hand, pen, and paper" allowing alternative analytic themes to emerge and is a different mode of shaping the world. Sketches are thus more than representational and produce more than a mirror of reality. They are simultaneously creating ideas as well as mediating ideas (ibid). It is thought that drawing offers a way to share what cannot be verbalised (Hurdley et al., 2017). It is an act of creating slowly rather than pulling in information too quickly (ibid). The embodied, reflexive and exposed nature of drawing is also said to rebalance power relations between the 'expert' and the research participant (Hurdley et al., 2017). Furthermore, it can engage participants and is a method to "get to know a research site, stimulating active looking" (ibid: 5).

A drawing method was used ethnographically in this thesis to record my embodied and sensory learning experiences of place. Field sketches and hand-drawn maps also recorded observations of participant's everyday mobility practices and how they are particular to place. Thus, the practice of drawing was used to deepen an ethnographic knowledge of mobilities as 'situated', which is applicable to Jensen's (2013) concept of 'staging mobilities'. Jensen (2014) presents a number of drawing methods to explore the design of everyday mobilities. For example, motion can be captured in two-dimensional graphical representations by the researcher whilst observing people's movements and participating in practices of movement (ibid). This method is described as 'situated ethnography' that represents mobility through an observer's embodied, situated and performative sensing of place (Jensen, 2014). Mapping is thus used as a vehicle for thinking in order to visualise theoretical, conceptual and reflexive practices. For Jensen, drawing facilitates and supports "thinking work" (2014: 45). Drawing was used to enrich my engagement

with and interpretation of the places in which the ethnography was situated, to allow an alternative thought process and to provide opportunity for analysis and representation that is additional to a textual interpretation of place. Having drawn a map at the beginning of the ethnographic fieldwork in each site, the method was useful to iteratively build an understanding of how participants were moving in, and engaging with, their local place and how these places were formed as a result of social practices that were particular to each site. Through visualising this knowledge, a clear representation of the spatial land-use patterns in each field site was used for the empirical analysis.

Interviews

Interviews are commonly used to understand how individuals experience and interpret their lives (Brinkmann and Kvale, 2015; Valentine, 2005). Knowledge is obtained through conversation and attention is given to discourse and meaning of the lived world (Brinkmann and Kvale, 2015). They are not representational or replicable and are fluid conversations open for steering toward each individual interviewee's interests (Valentine, 2005). The data generated is rich, detailed and multi-layered (Valentine, 2005) producing a deeper picture of the particularities of local contexts than surveying methods (Silverman, 1993), which are rigidly structured and force participants' answers into predefined choices (Valentine, 2005).

Interviews emphasise the processes that operate in particular social contexts and so they were applicable to this ethnographic methodology, which shares the same focus on situated experience (Valentine, 2005). Whilst ethnography was used to observe what is often taken for granted and what might not have been brought up in an interview, the individual narratives produced in interviews allowed participants to construct their own accounts of their local contexts by describing their experiences in their own words. Interviews, therefore, offered a way of obtaining details that I could not observe through ethnographic study (Stake, 2000). An advantage to the approach was that it was unbound enough that interviewees could raise issues that I may not have anticipated, for example, in this case issues with bike security and maintenance (Brinkmann and Kvale, 2015). Thus, it is aligned with a postcolonial approach to research that allows participants to define their own experiences and issues rather than to produce knowledge that is shaped by the researcher alone. Semi-structured interviews were used to allow for open responses, whilst the main issues and topics of research were defined. This allowed a focus on the specific case as identified by prior theory development (Flick, 2002). A number of themes were pre-defined before interviews began for NGO respondents and Namibian respondents (see Appendix).

Bloor et al. (2001) argue that interviews are superior for documenting individual biographies or atypical behaviour, which can be underreported amongst groups. For this reason participants were interviewed individually, where possible, to be given a chance to express individual values that they may not have wanted to express within a group setting because of potential confidentiality issues attached to wealth and gender, for example (Barbour and Kitzinger, 1999). Whilst individual interviews do open the possibility for extreme statements that are not necessarily socially shared (Flick, 2002), a sample size of interview participants was collected that would be large enough to recognise outlying and extreme statements (LeCompte and Goetz, 1982).

Mobility Mapping with Interview Respondents

This creative and visual method is used to demonstrate how people interpret and construct knowledge of their local area in relation to key landmarks and participatory spaces (Kesby et al., 2005; McKinnon, 2011; Perry, 2015). It offers a method for visually "delineating the non-neutrality of urban environments" (Rattray, 2015). Ideas are generated through an interactive map-making process, which is a mechanism to generate qualitative data; to stimulate discussion and self-analysis (ibid). Participant's meanings attached to place and mobility were identified through the dialogue that accompanied a thought making processes of constructing the map. Decisions of what to include, what to leave out, what is near, what is far, and what is peripheral were thought out by participants and recorded. Through this process key places of interest in participants' local areas were identified, such as places of trade, education, health care, or social interaction, along with information about how participants travel between these places, whom has (or does not have) access to certain places and the meanings attached to travel and places.

It is thought that discussions that begin through the process of drawing can enrich interviews. This is because participatory mapping diverges from spoken dialogue and is accessed through creative engagement. The process formulates ideas that may otherwise have not yet been processed or described through the medium of speech. In this sense mapping has been described as a visual language used to exhibit both real and imagined travel (Castleden, 2013). Not only does the method produce a static two dimensional account of a person or a community's interpretation of their local area, but also a discussion that has evolved throughout the process which is of equal value and open for analysis. During and after the exercise participants were invited to reflect on their map, which prompted discussion of ideas that arose through the mapping process. It is therefore thought that this method facilitates participants' learning and self-reflection allowing them to be involved in an analysis of their data (Kesby et al., 2005).

Mapping is a method used for collecting local meanings of place whereby the researcher is facilitating 'participatory self-research' so that a community is given agency to affect positive change (Herlihy and Knapp, 2003; Kesby et al., 2005; Perry, 2015; Rattray, 2015). Participatory techniques, such as diagramming, arrive from an epistemology that conceives knowledge creation to be more centred to participants rather than the researcher, who in more conventional research techniques can distance participants from the knowledge generation process (Herlihy and Knapp, 2003; Kesby et al., 2005). This method is therefore suitable for research that attempts to be theoretically and practically postcolonial since a key objective is that participants are involved in knowledge production. It is the participant's self-analysis of a map or diagram they have produced that differentiates this technique from other ethnographic and qualitative techniques rather than just answering a researcher's questions directed by the researcher (Kesby et al., 2005). Instead mapping was used in this study to inform a situated knowledge of embodied local mobility practices (Rattray, 2015), which is aligned with Jensen's concept of a staged mobility that engages with the "situational microecologies of mobile practices" that are comprised of an assemblage of human subjects, built design and material infrastructures (2013: 10). The method was particularly useful as it encouraged participants to pay attention to how the material environment acts to afford certain mobilities and to prohibit others (Rattray, 2015).

Another feature of visual mapping is that it can overcome social boundaries through its informality whereby participants feel more at ease in the activity than a formal meeting or interview setting (Brodie et al., 2011). The mapping activity therefore was used in order to be socially inclusive and encourage collaboration and relationship building between myself and participants (ibid). It is thought to be a flexible method and was used for its adaptability to use materials that are to hand and with which participants feel comfortable (Kesby et al., 2005). Due to the rural setting of much of this research, the mapping was a hand-drawn exercise because where digital techniques were likely to have been inappropriate (Perry, 2015). Many participants in this case study were not expected to be digitally literate and expecting them to engage with unfamiliar technology was practically, ethically and politically problematic. The pen holder(s) can hold disproportionate power within a group and to some extent dictate the creation of the map and its outcomes (Kesby et al., 2005). Therefore this method was used individually rather than collectively to avoid the production of publicly held opinions rather than individual embodied and mobile knowledge of place.

A limitation to this method was that many participants were not comfortable with drawing and particularly male participants. Some older participants were not literate, or able to see clearly

to draw, and whilst mapping is considered to be a useful and adaptable method in the context of development research, it was often problematic in practice. For this reason, myself and the field assistant often mapped as directed verbally by participants. Inviting participants to engage in drawing was not always convenient and because it made many respondents feel inadequate about their drawing capabilities, as a mode of a participatory engagement with the research, the method's potential for empowerment was overestimated. The method was most useful for giving participants time to reflect on their mobility and to start a discussion, offering points of entry for questions.

Photo-Elicitation with Interview Respondents

Photograph cards were used to elicit responses from Namibian participants relating to their mobility and the meanings they attach to local and global modes of transport. The photos were used in interviews after the mobility mapping exercise and a discussion of the respondents' mobility. Participants were asked what they thought of different images and their responses prompted further questioning and discussion in a semi-structured format. The photographic images used in this method were taken during the scoping visit to Namibia and were also sourced online by myself. They were selected with their relevance to the research questions, the literature and observations during the scoping visit that identified local modes of transport. Inserting photographs into interviews can be used to prompt discussion, reflection and recollection (Harper, 2002). They were used in this research to depict specific examples of culture that form the basis for a discussion of broader abstractions and generalities (Banks, 2007).

Interviewees can engage with the materiality of photographs and touch is an integral process of viewing images that produces embodied responses (Rose, 2004). The exercise was used to explore how participants would group photographs thematically, based on their interpretations of certain modes of transport. Thus, the method was used to test hypotheses that were relevant to the research questions and to compare results across participants. It was expected that the exercise would reveal how participants situate bicycles amongst other modes of transport that would be arranged by themes, such as modern and traditional transport normally associated with concepts of rural and urban mobilities. A central process in this exercise was the tactile engagement respondents had with photo-cards that enabled them to take time to consider how they might thematically arrange different transport modes by moving the photos and rearranging them until they were satisfied with their choice of categories. The particular arrangements of photographs offered a point of analysis that was additional to the discussions generated in interviews. A photograph was taken after the interviewees arranged the images

into categories, which were used in the analysis to demonstrate themes and patterns in how respondents interpreted and gave meaning to their mobility. Not all participants engaged in grouping photographs and some did not see a reason to group the images thematically, but these respondents were still prompted to discuss the content of individual images.

There were a number of other advantages of using photographs in interviews. They open space for interpretation and an interviewee's meanings and perspectives to be shared, which may be different to the interviewer's interpretation of the images (Tinkler, 2013). Using photographs offered an opportunity in interviews for silence and reflection (ibid). It is argued that the method shifts power in an interview and thus, has the potential to empower research participants (Clark, 1999). This is because interpreting the content of images can be explored through a conversation between the participant and researcher (Pink, 2006). It is thought that using photographs can ease respondents, removing pressure from them by shifting the focus of attention to the images (Tinkler, 2013). By reducing the need for eye contact, photographs may relax a respondent, opening the possibility of discussion (Prosser and Burke, 2006). Photos are therefore, thought to facilitate connection and trust between interviewer and interviewee (Collier and Collier, 1986; Tinkler, 2013). For these reasons using photographs in interviews is useful whilst interviewing people who may feel intimidated by the process (ibid), which may have been the case in the context of this research. Photographs are thought to enable participants to take the lead, inviting them to share their knowledge (Collier and Collier, 1986). Many participants took pleasure in viewing the photographs and I believe that their tactile engagement with the photographs eased their discussions. Using photographs also enabled participants to engage with discussions about modes of transport that they may not have previously encountered, such as bicycles designed to carry children, but to which they could formulate meanings and opinions based on their own experiences of mobility and what is relevant to themselves. Photographs had the potential to convey contents to participants that words may only partially have represented. Some content may have been visible to participants that I may not have considered, particularly relating to the interpretation of local culture.

Study Population

There were two study populations of central interest that were recruited for interviews in this study. One was low income Namibians, both male and female adults. The other was the actors involved in shipping bikes including international and local NGO representatives (Tables 3.4 and 3.5). The two study populations were selected because of their proximity to the research (Mason, 1996; Valentine, 2005) (Table 3.3), which is to follow the process of staging a mobility

practice for low income development subjects from the point of designing an object for prescribed mobility, to its consumption and use, modification and proscription in a local context.

Research Question	Study Focus	Method(s)	Key Objectives
1.1. How are development subjects constructed by NGOs in the mobility of second-hand materials and technical design 'solutions'?	Actors involved in shipping second-hand bicycles (local and international NGOs)	Semi-structured interviews online and in Namibia	Identify how users of second-hand bicycles in sub-Saharan Africa are imagined by NGOs and the type of utilities of the bicycles that are encouraged. Identify how the actors involved in the socio-technical scripting of second-hand bicycles stage a mobility for development subjects.
1.2. How are these conventional representations resisted in local contexts?	Low income subjects; bicycle users Low income subjects; non-bicycle users	Ethnographic observations Mobility Mapping Semi-structured Interviews	Explore the mobility practices that take place amongst the target population and examine how cycling fits within these practices and whether, or not, Namibians subscribe to bicycles as intended by NGOs. Identify how and why real users de-inscribe the bicycle *in situ*. Identify re-inscriptions/modifications of the bicycle's socio-technical script by real users in Namibia.
2. How are technological design 'solutions' for mobility practices proscribed in local situations?	Low income subjects; bicycle users Low income subjects; non-bicycle users Non-human proscribing actors	Ethnographic observations Mobility Mapping Semi-structured Interviews	Identify how the bicycle's script is proscribed by human and non-human actants *in situ*. Identify how negotiations between designers and users are prohibited in a development network and the political implication of this for users.
3. How are Actor-Network Theory and Script Analysis relevant for examining how mobility practices are framed for, and in, the Global South?	Empirical evidence collected in order to answer research questions 1. and 2.	Drawing theoretical conclusions from the empirical evidence of the thesis	Explore and reflect on the use of Actor-network and Script Analysis for examining, theorising and practising development in sub-Saharan Africa. Draw conclusions and future recommendations for the use of theory in development studies and practice.

Table 3.3 Relevance of methods to research questions and objectives

The sampling method used is theoretical whereby data is collected depending on emerging theory (Glaser and Strauss, 1967). It aimed to cover a range of possible variations in the topics

and phenomenon of study (Flick, 2018). The sampling procedure of this method was flexible and mobile and more analytic lines of enquiry were followed as theory developed through the timescale of the field research. Thus, with a mobile and reflexive ethnographic methodology, data collection continued until the data deriving from of all identified materials and social actors were considered to be saturated. A snowballing technique was used to recruit participants, which is an iterative recruitment process that uses participants' contacts to recruit similar participants. One participant puts the researcher in contact with another as relevant to the research questions and so forth. This helps to easily identify participants with particular experiences, or backgrounds, although there is a concern when using this technique of recruiting from a very small circle of like-minded people (Valentine, 2005). This technique was used to recruit participants in Namibia whom use a bicycle because there were few of them. Sampling across various ages and in three locations (Table 3.6) avoided the possibility of the sample of cyclists being too narrowly focused. The sample is skewed to males because of the gendered bias in those who use bicycles. This was not a methodological decision, but reflects that very few women were observed cycling in this region of Namibia. More men were interviewed than women because the sample aimed to represent men who do and do not use a bicycle. Because women who cycle were not identified, less women were interviewed overall and the focus of these interviews was steered towards the gendered proscription of bicycle use.

Sample of International NGO Representatives

Respondents that represent NGOs as key managerial staff were recruited for semi-structured interviews using a snowball sampling technique to identify a sample of relevant actors who are involved in the process of shipping bicycles from the Global North to the Global South. These interviews were conducted online due to the international scope of NGOs. They aimed to identify the intentions, processes and materials, through which translations occur in this network and any disparity between the intentions of designers and the reality of cycling practice situated in the everyday mobilities undertaken by both male and female low income participants in Namibia.

NGO CODE	Country(ies) of head office(s)	Scale of operations	
		No. of bicycles shipped per annum	Countries distributing to
1	Australia, UK, Canada, USA, Germany	5,000	Namibia
2	UK	10,000	Kenya, Zambia, Ghana, South Africa, Namibia, The Gambia
3	UK, USA, Canada, Germany, Australia	30,000	Zimbabwe, Zambia, Uganda, Tanzania, South Africa, Rwanda, Malawi, Kenya, Eritrea, Colombia, Thailand
4	Australia	800 - 1,200	Namibia
5	UK	400	Ghana, Sierra Leonne
6	USA	5,700	Nicaragua, Guatemala, Albania, Maldova, Ghana
7	UK	10,000	Ghana, Sierra Leonne
8	Switzerland	25,000	Tanzania, Ghana
9	USA	2,250	Uganda

Table 3.4 Sample of international NGO representatives

Table 3.4 demonstrates the range of scale of the operations of NGO's represented. NGO 3 is the largest organisation with head offices in 5 countries, is producing 30,000 bikes per annum that are shipped to 11 countries. It is selling bikes to the world's largest children's charity UNICEF. In contrast NGO 5 is a very small organisation shipping 400 hundred bikes per annum. The numbers of second-hand bikes being exported to sub-Saharan Africa relative to other markets of new bikes are very low. For example, 3.4 million bikes were calculated to have been sold in the UK in 2010 (Grous, 2011). The overall impacts of these organisations are quantitatively small in contrast to markets of new bikes, however, the objective of the thesis is to examine the processes and politics of scripting development mobilities using second-hand bikes rather than to examine the impact of the organisations. Therefore, the sample aimed to represent the variety in scale of the organisations in terms of the number of different countries they ship bikes to, the level of expertise the NGOs might have in understanding their targeted users and the level of organisation practiced in shipping products to partners.

Sample of Local NGO Project Representatives

Semi-structured interviews were undertaken with representatives of local NGO bike projects who receive and sell second-hand bikes from international NGOs (predominantly NGOs 1, 2 and 4, see Table 3.4). These were undertaken during the scoping visit and used to explore the mechanisms of shipping second-hand bikes and how they are modified, retailed and maintained in Namibia (Table 3.5). One local partner project representative was also interviewed in Arusha, Tanzania. The local project staff are recruited by an international NGO, and trained in bike repair services and business management. They are in control of the profits of their projects from which they earn a salary. However, they remain dependent on their connections with the international NGO to restock their supply of bikes. These interviews also offered an opportunity to scope out potential sampling and recruitment techniques, key actors in the network, consumer characteristics and the practicalities of accommodation and field safety.

Location		Interview respondent's role in project
Rural	Bunya, Namibia	Mechanic (x3 females)
	Nkurenkuru, Namibia	Manager/mechanic (1 male)
	Mile 10, Namibia	Manager (1 female)
	Shikenge, Namibia	Mechanic (1 male and 1 female)
Urban	Rundu, Namibia	Manager/mechanic (female), mechanic (male)
	Katutura, Windhoek	Manager (Female)
	Arusha, Tanzania	Manager (Female)

Table 3.5 Sample of local NGO representatives

Sample of Namibian Participants

It is from a study population of low income Namibians that data was collected referring to the meanings attached to situated mobility practices, the embodied and sensory accounts of cycling and the de-inscriptions, proscriptions and re-inscriptions in the use of bicycles that occur contextually (Table 3.6). This study population were recruited for individual interviews and mobility mapping (during interviews) by door-to-door canvassing.

	Bunya Village (16)		Mile 10 Village (16)		Rundu Town (15)	
	Males	**Females**	**Males**	**Females**	**Males**	**Females**
18 – 35 years	6	4	5	3	5	3
36- 65 years	2	3	4	3	3	3
65 years +	1	0	0	1	1	1
Totals	9	7	9	7	8	7
	16		16		15	
	47					

Table 3.6 Sample of low income mobile development subjects in Kavango region, Namibia

The role of space became relevant to the study during fieldwork in Namibia, which was explored by recruiting participants within urban and rural places that have diverging material and social characteristics. Recruiting urban participants offered the opportunity to explore how Western ideas about cycling as an urban mobility practice are subscribed to in a culturally and materially contrasting context. Rural participants were recruited to examine how the prescribed ideas about mobilities for development subjects are subscribed to and negotiated in contexts of low-population density, limited infrastructure and economic activity. This was relevant to understand the multiplicity and complexity of actors that facilitate and proscribe the design script of the bicycle in situ. It was expected that the characteristics of the rural space were likely to impact the translation of the bicycle's script from the Global North to Africa and that the more global connections of the towns, economic activity and the material infrastructure would influence the bicycle's subscription. Therefore, a sample focus that explored space was considered necessary and was a decision that occurred in the field.

Other Facilitating Actors in Namibia

The scoping visit to Namibia was exploratory and mobile in nature as directed by the study's following mobile ethnographic methodology. This led to a number of interviews with actors that facilitate cycling in Namibia in various capacities (Table 3.7). Interviews with the spare parts wholesaler and retailers demonstrated the mechanisms, difficulties and extent of the maintenance network in Namibia. The interviews with the local NGO teaching cycling and cycling advocates were an opportunity to examine the extent to which local actors are involved in facilitating cycling across Namibia.

Participant	Location	Significance to the study
Local Cycling Advocates (Organising committee members x 3)	Windhoek	Evidence of the activities of local groups that help to facilitate cycling in Namibia and advocate for infrastructure and a recognition of cycling needs. Evidence of events, coaching and Windhoek cycling social network.
NGO teaching women to ride and providing teenagers with bikes for short loans (director)	Katutura, Windhoek	Demonstrates an alternative NGO project that facilitates short-term access to bikes and coaching in the capital city.
Cycle Wholesaler (manager)	Windhoek	Evidence of the mechanisms involved in supply network of spare parts.
Bike and spare part sales (Furniture Mart and Cymot, managers x 2 males)	Rundu	Evidence of the mechanisms involved in supply network of spare parts, sales of new bicycles, quality of new bicycles, credit schemes and consumers.

Table 3.7 Facilitating actors in Namibia

Data Analysis Methods

The data gathered from interviews and ethnography was analysed thematically and at first deductively led in order to produce data that would be used in an analysis that is relevant to the literature, theory and research questions. The analytical methods are as follows:

- Thematic analysis of interview transcripts and ethnographic field notes based on observations, informal discussions, sketch maps and photographs
- Analysis of visual mapping data (interview transcripts and maps) identified themes participants represented graphically
- Analysis of photo elicitation data (interview transcripts and photographs recording how photo cards were arranged by participants) explored repeating and diverging themes

Interviews were transcribed and thematically coded using NVIVO. Ethnographic notes made from observations were also thematically coded. Thematic analysis is a technique used by qualitative researchers to identify, organise, describe and report themes found within a data set (Braun and Clarke, 2006). Coding is a technique used to move from unstructured data to developing ideas about what is happening in the data (Morse and Richards, 2002). It involves important sections of text being identified, labelled and indexed according to certain themes in

the data (King, 2004). These codes represent phenomena of interest in the data relevant to the research questions (Creswell, 2014; King, 2004). Themes were searched for in the data based on a number of techniques described by Ryan and Bernard (2003) including repetitions, similarities and differences and theory-related themes. Broad themes were identified deductively from Script Analysis (Akrich and Latour, 1992) that coded data based on:

- **Scripting** – intentions for the social and technical use and meanings written into the bicycle by designers;
- **De-inscriptions** – how users reject the socio-technical and physical scripts written by designers;
- **Re-inscriptions** – modifications to the design and/or use of the bicycle following de-inscription or proscription;
- **Proscriptions** – actors and things that prohibit the use of the bicycles.

The data was coded into sub-themes with a more inductive approach arriving from the data (Boyatzis, 1998), for example; 'playful and recreational use of bikes', which was hierarchically arranged (King, 2004) under the code 'de-inscriptions'. The sub-themes 'environment' and 'gender' were arranged under the code 'proscriptions'. Some of the sub-themes contained codes that further divided the data into themes, for example, the sub-theme 'environment' was divided into themes 'thorns' and 'sand'. Some themes were based on the differences and similarities that certain participants documented, for example, men and women and participants over and under the age of 35 years. Other themes were identified based on repeated material in the transcripts, for example, many participants stated they did not own a bicycle because they could not afford one and the repetition of similar material generated a sub-theme 'affordability' under the theme 'proscriptions'.

Themes and data extracts were reviewed to ensure themes coherently represented the patterns and meanings within the data (Nowell et al., 2017). Quotes from participant and ethnographic transcripts were used in the empirical analysis chapters in order to illustrate data and to validate the analysis (King, 2004; Nowell et al., 2017). The significance of the themes and patterns within the data were theorised in terms of their significance to broader meanings in the literature (Braun and Clarke, 2006). Themes were identified in this study that demonstrate the multiple material and social actors that proscribe the translation of an object's script in a situational, staged mobility, as well as local and contextual mobility practices. Themes were used to demonstrate the prescriptions, adaptations, and rejections of the bicycle, and therefore, the interplay between real and imagined development subjects. The themes generated in this research were also used to challenge and add to existing knowledge and theories of mobility and development and to contribute to the practice of development (Nowell et al., 2017).

The mobility maps and photo elicitation data were coded by themes in much the same way as the textual data. The visual data was analysed simultaneously with interview transcripts taking each respondent's interview transcript, their mobility map and image depicting their arrangement of photo cards. Participant maps were analysed in terms of their similarities and differences in order to understand how participants understood and conceptualised their local space (McKinnon, 2011). Any relevant themes that emerged in the visual data were annotated and highlighted and this provided visual evidence of themes that were identified as conceptually relevant to the analysis. For example, one respondent demonstrated the surface material of road infrastructure visually in their map and some respondents grouped the picture cards by rural and urban transport modes.

Validity and Reliability

The reliability of the research concerns its ability to be reproduced by other researchers, its consistency and trustworthiness (Brinkmann and Kvale, 2015). Its validity is concerned with the accuracy of the research's scientific findings and the effectiveness of its representation (LeCompte and Goetz, 1982). Yin (2003) highlights two common criticisms against the validity and reliability of a qualitative case study. Firstly, the design lacks rigour where research has not been systematic, or is interpreted with bias. Secondly, it is commonly argued that there is inability to provide statistical or scientific generalisations. However, ethnographers argue that their research aims for comparability and translatability of research findings that can contribute to effective generalisation (LeCompte and Goetz, 1982). Qualitative research methods are contextualised given that every situation is unique and "phenomenon has its own intrinsic structure and logic" (Brinkmann and Kvale, 2015: 295). Qualitative research is rigorous where arguments are constructed logically and adequately support the evidence collected, which Yanow (2006) argues and describes as 'analytic rigor'. It is thought that thick description and naturalistic enquiry take priority over the intent to generalise (Seale, 1999). However, the generalisations to be made using case studies are not dismissed entirely since the relevance of findings for other cases depends on the judgement of the reader (Seale, 1999). Theoretical generalisations are made from the research, which draw the theoretical principles from the study findings for more general applications of Script Analysis and Actor-Network Theory (Richie et al., 2013). Findings from the study may also be inferred to other contexts beyond the sampled one (ibid), for example, the use of bicycles in other development contexts, the use of other materials in mobilities design, or North-South consumption patterns.

Flyvbjerg (2006) argues that understanding the local context of the practices in which human activity is situated may even act to falsify the generally accepted beliefs reached by scientific

induction. This is a tacit form of knowledge that arrives from interpretive qualitative research (Polanyi, 1966) and one that is sensitive to the form of the data (Schwartz-Shea, 2006). In this case the research followed translations outside of local context, but also paid attention to situated practices and culture relevant to the research questions. With a postmodern dismissal of positivist objective reality, against which knowledge is measured, the validity of this research is concerned with the craftsmanship involved in qualitative research including its moral integrity and practical wisdom of ethics (Brinkmann and Kvale, 2015). Seale (1999) comments on the difficulties of replication of qualitative research due to unique cases changing over time, but argues that the best alternative is a detailed, reflexive account that demonstrates all lines of inquiry that lead to any conclusions made. This allows other researchers to replicate studies and supports knowledge claims with adequate evidence (Seale, 1999). By systematically and analytically collecting and extracting evidence and using existing theories to compare the empirical results gained from the study, the research aims to contribute to theories useful for similar analyses (Yin, 2003), the understanding of situational mobilities and to add nuance to the construction of development subjects and their mobility.

A question of internal validity in this qualitative research is how accurately I have reflected findings in the view of those being studied. Brinkmann and Kvale (2015) underline issues of the subjectivity involved in interviewing from wording questions, transcribing and coding analyses, but also argue that a strong emphasis on reliability may counteract the creativity and variability of research. In this study interviews were semi-structured using themes that arose from the literature and a scoping visit to Namibia and an initial interview with one of the international NGOs (NGO 1). Thus, the interviews could be repeated in this study and other contexts, yet they also allowed participants to digress from the main themes in order to give them the agency to express their thoughts, ideas and issues in a way that is meaningful to them. This is particularly relevant in in participatory research. However, because of this space for digression in interview structure, in terms of representation and validity, interviews are contextual and are "sensitive to the qualitative differences and nuances of meaning, which may not be quantifiable and commensurable across contexts and modalities" (Brinkmann and Kvale, 2015: 64). Interviews are interactional and collaborative and the narratives produced may be "as truncated as forced-choice survey answers or as elaborate as oral life histories" (Holstein and Gubrium, 2004: 141).

A translator was required for interviews with Namibian participants. This ensured participants could fully engage in the research and respected their choice to use either their native language, or English. Some of the younger respondents chose to speak in English and a translator assisted when necessary, however most of the respondents chose to speak their primary native

language. It was a possibility that participants may have needed to use other languages to convey meanings about certain subjects (Twyman et al., 1999). This is because not all concepts can be assumed to be equivalent across languages and existing in separate cultures (Simon, 1996). A research assistant was employed to act as an interpreter and cultural advisor and was sourced through a collaboration with the University of Namibia. The research assistant was a Master's student in geography and was paid a research assistant's hourly wage as advised by the University of Namibia. The research assistant interpreted as the interviews were carried out and the interviews were then transcribed by myself in English. Field reports were written in English by myself and translated to Rukwangali by the research assistant.

Using a translator enabled me to be involved in a semi-structured interview and able to steer the discussion in relation to the research questions. However, the limitation to using an interpreter is that information is received second-hand by the researcher, which creates distance between the researcher and participant (Watson, 2004). There is a risk that an interpreter will filter, or change, information to some extent to reduce potential embarrassment or because they think the information has little relevance to the research topic (Devereux and Hoddinott, 1992). The process of meaning making involving researcher, translator and participant is complex and meanings are negotiated, which decentres the conceptual and linguistic assumptions of the researcher (Twyman et al., 1999). The presence of linguistic imperialism in cross-language/cultural research also needs to be highlighted because it is a political issue in the researcher's position that the use of English is a baseline language in conceptualising the interview questions, in producing research outcomes and in social research more broadly (Temple, 2002).

In order to minimise the potential filtering that might have taken place by the interpreter a careful decision was made as to whom the research assistant employed would be. They were employed by recommendation of the University of Namibia and it was ensured they were fluent in the languages spoken in the Northern region, were reliable and were knowledgeable in social science research methods. Clear instructions were given to the research assistant about the research topic and ongoing communications enabled clarity about the extent to which the interpreter could use their own judgement about when to translate literally and when to interpret more concisely what the participant is meaning to convey (McLennan et al., 2014). It is accepted that to some extent the data collected for this analysis is a collaborative product of researcher, participant and research assistant because of their interpretive and subjective input in interviews, professional assistance and contribution to a mutual learning experience whilst carrying out field research in a cross-cultural environment. Translators are recognised, as much

as researchers, to produce texts from their own perspectives and therefore the interpreter is recognised as active in producing research rather than a neutral conveyor of messages (Spivak, 1992; Temple, 2002). This study considers its research to have been produced 'with' a translator rather than 'through' one (Edwards, 1998). The research assistant also advised about the cultural particularities of undertaking interviews in Namibia as well as the local customs and greetings, which eased an initial relationship to be built between interviewee and interviewer. A male research assistant was selected to offer some additional protection and to help balance the power dynamic between male interviewees and the female interviewer, which may have potentially been problematic, or uncomfortable, for ether the interviewer or interviewee (McLennan et al., 2014).

There is a practical concern of how interviewees respond to an interviewer based on their thoughts about the interview's age, gender, race or class, for example, which may be exacerbated when the two do not share the same membership of a social group. The same was true for the research assistant involved (Temple, 2002). Interviewees may not have trusted myself as interviewer, or the interpreter, and at times misunderstood questions and sometimes gave misleading answers. For example, respondents at times attached the research to an existing, or imagined, development projects and gave answers that are skewed towards the sustainability of that project and its funding. Answers were sometimes given that were more positive towards the income of donor funding and some cross-checking was required. In Mile 10 village, some participants we initially interviewed had negative experiences from previous humanitarian projects they were involved with and did not trust our intentions. This interview was ended prematurely because the participant was clearly aggrieved. Furthermore, Miller and Glassner (2004) argue that an interviewer who presents themselves as either overly committed to, or against, the subject of research restricts the cultural accounts told and how they are told. This required a degree of self-reflexivity and thought about how I presented the research and expectations of the richness of data to be collected. Some participants were more interested in the topic than others and some self-reflexivity was required not to demonstrate favour, or disagreement to, in this case, cultural practices and NGO projects. Interviews were therefore designed to be balanced, thorough and include a range of perspectives on the topics covered by the research (Rubin and Rubin, 2005). The accuracy of interviews was also increased by recording and transcribing the whole interviews, all of which were thematically analysed (ibid). Furthermore, by sampling a large number of diverse participants deviant cases and distortions in the data were controlled for (LeCompte and Goetz, 1982).

Internal validation may be achieved by comparative methods, involving deriving hypotheses from one part of the data, testing them on other parts of the data and comparing them across sites, time, cases and individuals (Ritchie and Lewis, 2003). The problem this methodology has encountered through using an Actor-Network framework is that it relies on a partial account of the translations occurring in a network because of the unlikely possibility of following all traces of connections between heterogeneous actors and places. To quote LeCompte and Goetz (1982: 35) "human behaviour is never static, no study can be replicated exactly, regardless of the methods and designs employed". Another challenge to being truly mobile in the field was seeking permission to research and access was not possible to all research subjects (ibid). Seeking accommodation was particularly relevant in rural areas of Northern Namibia and so the research was restricted to areas where I could travel to and find accommodation. Whilst already stretching the research across multiple sites and tracing many actors, it would not have been possible to compare more than one case, for example, bicycles and perhaps motorcycles, without compromising the richness of the data collected. It is also a limitation that other actors ship second-hand bikes to sub-Saharan Africa including private business operations and more illicit activity (stolen bicycles, cars and mobile phones are reported in the media to have been traced from Europe to Africa). The rigour in this research, however, prioritised identifying all actors and the negations and mechanisms of translating design within a snapshot of a larger development network.

Thus, with a mobile and reflexive ethnographic methodology, data collection continued until the data deriving from all identified materials and social actors were considered to be saturated. This sampling method is theoretical whereby data is collected depending on emerging theory (Glaser and Strauss, 1967). It aims to cover a fuller range of possible variations in the topics and phenomenon of study (Flick, 2018). This sampling method is thought to prevent researchers from reducing their phenomenon under study prematurely based on a sample of too similar cases because it adds diversity to the data (ibid). The sampling procedure of this method was flexible having adopted a mobile approach, discovered more analytic lines of enquiry as theory developed through the timescale of the field research. For example, it was decided to sample the mobility of Namibians in rural, semi-rural and urban locations because this was theoretically relevant to the research questions. Both international and local NGOs were interviewed because of the patterns of partnership and negotiation between them and the dependence the network had on the presence of both actors. The sampling procedure aimed to interview a variety of international NGOs that differed in terms of their size, structure and outcomes.

Triangulation is a method that assumes using different sources of information will assist to confirm the validity of research findings (Ritchie and Lewis, 2003). It is employed to deepen knowledge through the combination of multiple methods, analyses and theoretical perspectives (ibid). Research findings may also be validated by asking participants to check if they agree with the researcher's interpretation of findings to avoid researcher-bias (Ritchie and Lewis, 2003). However, this assumes participants always represent themselves and their communities truthfully and are without their own bias. It assumes that the social contexts being researched are not politically shaped. For example, female participants in the study reported that it was acceptable for women to cycle in Namibia and that women do cycle. They may have believed this to be true. However, taking only this response as evidence would have dismissed the ethnographic observations undertaken that indicated in the population that the research focused on in Namibia, women rarely cycle and it would have dismissed that women's mobility is being politically shaped. This methodology uses ethnographic observations in order to be more rigorous than a method that takes only the accounts given by individual participants. Similarly, the method uses interviews to collect the experiences of individuals that are relevant to the research questions because their self-representation is important to the research methodologically and politically. Speech accounts were collected to reveal practices, attitudes, performances and opinions that may not have observed. The two methods of observation and interviewing are designed to cross-check one another and to add richness to the data (LeCompte and Goetz, 1982). However, the method will not use participants to validate the research. Instead, it is accepted that there are limitations of research in that there is no completely reliable and independent access to 'reality' and validity is judged on the basis of the adequacy of the evidence on offer for the research subjects described (Hammersley, 1992).

Politics

Researcher Position and Reflexivity

Denzin (2009) argues that politics are associated with power to control the definition of evidence, to determine methods, criteria and standards that best produce and evaluate quality forms of evidence. This extends not only the power of the researcher, but also the external power research committees, funders, institutions, peers, and employers have over the research and its knowledge claims. Participants were given the power to either comply or to remove themselves from research as they wish, which was clearly explained to each participant at the beginning of interviews. This was so participants would not feel obliged to comply with the researcher and give answers they feel the researcher wants to hear, which is thought to some extent to assist in distributing the power between the researcher and participants (Valentine,

2005). As Katz (1992: 49) suggests, the research relationship is "a peculiar relationship – unequally initiated, situationally lop-sided, spatially dislocated, temporally isolated, extrinsic in purpose – it oozes with power". This is particularly true for Western academics carrying out research in developing countries. This type of research relationship has been criticised for continuing the coloniser – colonised relationship and thus, demands a reflexive consideration of the researcher's position. As LeCompte and Goetz (1982: 47) suggest "to guard against their own ethnocentrisms and biases".

Reflexivity in the context of social research, defined by Davies (1999: 4), "refers to the ways in which the products of research are affected by the personnel and process of doing research". A researcher's position, intentions and responsibility over how participants are represented in any account produced must be considered, as well as how it is circulated and the impact this may have on the lives of participants in the future (Cook, 2005). The ethnographer's sociocultural contribution to the research must be considered since it has moral and political implications (Davies, 1999). Researchers to some extent co-construct the social world in collaboration with those who are observed, interviewed and engaged with (Atkinson, 2015). It is therefore crucial to be reflexive and to consider impacts when collecting, analysing and writing up data (Lincoln and Guba, 2000; Barbour, 2007). Lincoln and Guba (2000: 184) argue that reflexivity:

> "Demands that we interrogate each of ourselves regarding the ways in which research efforts are shaped and staged around the binaries, contradictions and paradoxes that form our own lives".

It is through reflexive research that these binaries and paradoxes shape findings, writing and interaction with respondents (Lincoln and Guba, 2000). It is accepted that I have influenced the form of evidence collected during interviews having defined a number of themes to discuss and prompt participants when necessary, which required reflexivity to know when to prompt and when not to prompt participants (Barbour, 2007). I have prompted participants to talk about things they may not have considered important and may have steered the conversation away from other concerns that could have taken precedence given the choice of the participant. However, the consideration of research questions are based on previous trips made to sub-Saharan Africa and a scoping visit to Namibia. It is not possible to research every problem that each participant may have, but rather one must accept the limitations of the scope of topics that can be researched at any time. I was realistic about the contributions of research and consider that the research is appropriate to the issues participants discussed. I accept that there are several ways in which the research could have been approached and analysed, however, the

analysis carried out does seek to represent the accounts given by participants as accurately as possible and is informed by relevant theory and literature.

A feature of Actor-Network Theory is that a mobile method constructs 'the field' and situated knowledge of it since the researcher follows traces of connections between actors across fields otherwise conceptualised as separate. I therefore had to be sensitive to my role in constructing the field described (Jóhannesson and Bærenholdt, 2009). Namibia was selected as a place to follow up the translations of the bicycles and the reasons behind this decision are stated with transparency. However, this is a decision made by the researcher and it is accepted as a limitation that this decision was based on some conveniences for the researcher rather than those researched.

In ethnographic methods the researcher is active in constructing the observations that become data and therefore requires reflexivity (Davies, 1999). It was necessary in this research to think about how my interpretations might be biased by being an outsider and of a relatively privileged position. I am aware that my experiences were more informed than those of a tourist, however, I believe even as a researcher one cannot disassociate themselves entirely from the gaze of a visitor who is seeing things anew and imposing certain judgements on the events they witness. I was also often assumed to be a teacher, or aid worker, by Namibians who may have behaved accordingly with me, for example, this affected some of the conversations I had whilst hitch-hiking.

Despite concerns of positionality, Atkinson (2015) argues that ethnography is the most ethical way of doing research because it embodies a personal and intellectual commitment from the researcher to the lives of others. The method gives serious consideration to the culture and social organisation of research participants whom are represented in their full complexity (ibid). Other research methods, such as surveys, Atkinson argues, imply no commitment to the complexity of the lives of social actors and do not respect "the particularities of given social worlds" (2015). In response to criticisms of Western researchers producing knowledge of the Global South, Motzafi-Haller (1997) argues that a researcher who is from a non-Western society does not necessarily have a greater sense of oppression nor a greater moral right to carry out research on that society. A researcher from the Global South may also be from a privileged background relative to their research subjects. Furthermore, arguments against white and middle-class researchers' presence in the Global South give too much importance to the researcher's identity, Motzafi-Haller argues. Rather, it is possible to experience oppression and

to be conscious of it in a way that has the capacity to produce politically engaged and relevant research (Davies, 1999).

Cook (2005) suggests that initial conversations and interactions with participants allows the researcher to learn what aspects of their identity allows them to be more, or less, acceptably placed in the world-views of participants under study and how common ground might be found between researcher and participant. A local field assistant helped me to engage reflexively with participants and to undertake research in a sensitive and appropriate way. The assistant taught me local greetings and codes of practice. For example, I was always given the best seat in households and at first was uncomfortable with this arrangement, which placed me in a position of power over research participants. However, the assistant explained that this is how all guests are treated in Namibia regardless of their position. A degree of reflexivity was also required to consider the appropriateness of when informal comments could be made in order to relax participants and with whom, for example, elders, a more serious conduct should be used.

Politics and Representation

The power exercised by researchers is identified as claims of expertise and authority over some areas of knowledge, which are present in all publications of research findings (Hammersley, 1995). Hammersley highlights the importance of recognising a difference in making authoritative claims and exercising power. The idea that science can produce universal knowledge and certain validity, arrives from positivist research, and can be challenged because complete certainty is not possible, argues Hammersley (1995). These are concerns of the authority of voice in representing the social world; of how it is reconstructed into textual, photographic or diagrammatic forms, as is the case in this thesis. Such representations cannot be avoided, however, we can make choices about how we use conventional representations and conceptualise ourselves within texts (Atkinson, 2015). For example, researchers can challenge their experiences of analysing, representing, speaking and writing otherwise subjectivities can make researchers privilege some angles, aspects and attitudes in their analyses, but can also occlude others whom participate in postcolonial research (Raghuram and Madge, 2006). Each empirical chapter has been edited twice in response to feedback from two supervisors, which has helped to ensure neutrality in the representation of participants and relevant analysis that is true to the data generated.

This research is written in a way that reflexively evidences an appropriate methodology, justifies and explains all choices made relating to methods used in data collection and analysis, and demonstrates validity and reliability. The analytical writing is inevitably authoritative to some

extent because of the expertise gained by myself during the experience of undertaking the study of this particular case. However, it is not autocratic and assumes that its claims may not be generalizable, or accepted by all. This stance is motivated by Hammersley's argument (1995: 108) that "there is a tendency to exaggerate both the impact of research on culture and the significance of cultural reproduction from social reproduction". In the context of postcolonial research it is argued that even prior to beginning fieldwork research questions should be formed in dialogue with research subjects so that the beginning of the project is embedded within and takes account of the priorities of the researched and is not delimited by the concerns of Northern experts (Escobar, 1995). The funding for this thesis has been flexible and was not predefined by any necessary research topics. The methodology has accommodated changes to the initial research questions prior to the scoping visit to Namibia. A period of fieldwork early in the research allowed me to identify appropriate research questions through engaged dialogue with those who were to be researched. The research has been a reflexive process from its beginning and is not motivated entirely by the interests of myself, or those of funding bodies, or a research institution of the Global North. Although it is difficult to measure the extent to which the research subjects feel represented by this research, steps have been taken to incorporate their ideas and needs in the decision of the methodology and in writing the analysis and research conclusions.

Ethics

Whilst there are ethical benefits of postcolonial and postmodern participatory research in that it can give adequate analytic attention to marginalised actors and ensure that research promotes social justice (Atkinson, 2015), there are also numerous ethical issues that arise in undertaking research and a number of additional issues that are relevant to researching subjects of developing countries (Banks and Scheyvens, 2014; DARG, 2017). Therefore, the consequences of the research to participants and benefits expected from their involvement in the research, as well as the larger group that participants represent, was considered (Brinkmann and Kvale, 2015).

Permission and Informed Consent

Formal government monitoring of research access seeks to protect the interests, needs and rights of institutions and to exert some power over the research agendas of foreign institutions (DARG, 2017). Formal permission was sought to comply with research requirements of the Namibian Embassy in the form of a research visa, which required a letter of support from the University of Namibia. More locally, in Namibia, an ethical consideration of the ethnographic

methodology was whether, or not, I would be overt, revealing my identity and a full explanation of my role, or covert, concealing my identity and purpose (Cook, 2005, Ryen, 2004). In the context of undertaking observations in the two villages, my presence was quite obvious and permission was requested from the village head to undertake research there including observations and interviews. Whereas, is the town reflexive decisions were made about when to reveal my identity and to ask permission to informally question a subject, or to observe a subject, requesting their involvement in the research where necessary. At times it was not considered necessary to reveal my identity in undertaking ethnographic observations, for example, when riding in a taxi, hitch-hiking, or observing consumer and mobility behaviour in Rundu town, for example. These are the public spaces in which the formalities of informed consent are not considered to be particularly relevant or necessary (Flick, 2018). However, at other times, for example, observing the customers that arrived at NGO bike shops, it was necessary to use informed consent.

Participants were formally interviewed only after informed consent was granted by the participant. Informed consent and voluntary participation eliminates some of the power held by the researcher because participants are informed of their right to remove themselves from the research, which is respectful of their capacities to make decisions and to reduce the possibility of harm to participants (Brinkmann and Kvale, 2015; Hammersley, 1995.) It is a contractual agreement between researcher and participants that "establishes an appropriate balance of rights and obligations, freely entered into, and fully understood on both sides" (Atkinson, 2015: 175). Participants were informed of what the research entails, its purpose and procedures, information about confidentiality, access to transcripts, research findings and the researcher's right to publish research (Brinkmann and Kvale, 2015).

An ethical consideration of informed consent involving ethnographic field research, however, is that it is dependent on privileged access to participants and the researcher's commitment to participants is more than just individual (Atkinson, 2015). It can be problematic for a group, or community, if one individual chooses to leave the research. Brinkmann and Kvale (2015) also point out that when obtaining informed consent from a superior person in a community, they may imply pressure to their subordinates to take part in the research. Difficulties arise with informed consent in presenting research to participants in a way that is meaningful since many will not be informed and knowledgeable about the theoretical debates and terminologies in which the research is grounded – a problem that is enhanced with cultural difference (Davies, 1999). Another dilemma of cultural difference in informed consent is that written consent may be interpreted as a token of the bureaucratisation and institutionalisation of Western societies

with their trust in written documents and formal bodies of organisation (Ryen, 2004). In southern countries written informed consent may work as an unintended device that accentuates cultural and power differences rather than builds relations. This is because the symbolism of signed documents may not be positive and participants may not be fully literate to read and sign a document (Ryen, 2004). Demanding an illiterate participant to read and sign paperwork may have risked highlighting an unequal power relationship between myself and participants in this context. Informed consent is a contextual and cultural device and for these reasons Ryen (2004) seeks general oral consent from her research participants in sub-Saharan Africa, as opposed to written signatures, which is how consent was attained to use data in this thesis. This was verbally sought by the field translator from participants in Namibia and verbally by myself from international NGO representatives. A translator explained the content of the research and interviews before beginning each interview.

Risk of Harm

This research did not expect to cover any particularly controversial or confidential data, however, other potentials for harm to participants as indicated by Iphofen (2009: 54) and related to this research were considered prior to the data collection. These were:

- embarrassment or harm to the self-esteem of participants if they were unaware of the research themes that arose and unable to comment
- misperception the researcher would alleviate issues identified
- psychological distress if themes relating to certain mobilities associated with poverty would be contentious among participants of various backgrounds and personalities
- economic deprivation through the sacrifice of participants' time
- possible damage to NGOs' and other facilitating actors' reputations if their identity is revealed

The possibility of harming participants was reduced by briefing and debriefing participants prior to and following interviews to maximise their understanding of what the research involves, to be given the opportunity to withdraw from research at any time and to recall the value of their contribution to the research. The cost of attending interviews could not be reimbursed, but was minimised by the research taking place at the most convenient time for participants and in, or usually outside of, their household. NGO respondents were interviewed using Skype online at their convenience and took between 1 and 1.5 hours, but not more than this to reduce the time burden imposed on them by the research.

There are cultural and contextual specificities to ethical procedures that are relevant to this research including; informed consent, confidentiality and the researcher's positionality as a

white, Western woman representing black, low-income populations living in the Global South. The circumstances in which I found myself dictated how ethical, political and practical problems were overcome by acting reflexively and with realistic flexibility. Potential field issues were eased by the assistance of a local translator who prepared myself for the cultural particularities of undertaking research in the North of Namibia. Other steps were taken to attempt to reduce the imbalance of power between myself and participants in Namibia, for example, by using local signs of respect and greetings, wearing practical clothing and using a mobile phone that did not show obvious signs of material wealth. The visual methods during interviews were used partly in order for Namibian participants to feel more comfortable, to be accessible and to build trust between participants and the researcher (although it was not anticipated that this would be the case for all participants).

Anonymity

Anonymity is an agreement between a researcher and a research subject about what can be done with data that arises from their participation and implies information that identifies participants will not be disclosed. It is commonly thought that precaution should be taken not to reveal the identity of participants (Brinkmann and Kvale, 2015) and in some cases research locations (Ryen, 2004). Any photographs that revealed the identity of those who wished to remain anonymous are not published in this thesis (Ryen, 2004). Consent was sought before taking photographs of all participants. Anonymity was given to all NGO representatives who are, therefore, not named and nor were the organisations they represented instead they were coded for reference. Some of the Namibian NGO projects are identifiable by location, however, it is not expected that these organisations will face any repercussions of the research and their consent to identify their locations was given.

There are cultural differences in what information or aspects of their lives people consider to be confidential and private (Davies, 1999). Ryen (2004) notes that in some African cultures the interviewee's names are listed in an appendix implying that the requirement for confidentiality is cultural and contextual. This was not necessary in this research, however, it was at times difficult to describe the purpose of offering anonymity to some Namibian participants due to the cultural difference in expectations of research ethics (Ryen, 2004). The research assistant was able, however, to advise and smooth any issues in using appropriate forms of anonymity and consent it the context of Namibia.

Research Outcomes and Reciprocity

It is expected that researchers consider what they can give back to participants (Banks and Scheyvens, 2014). The benefits of the research must balance potential harms and is to be assessed by the researcher continually through a reflexive stance (Iphofen, 2009). However, an issue with informed consent is that the outcomes of the research cannot be fully anticipated (Atkinson, 2015). Murphy and Dingwall (2007) suggest that consent is relational and sequential rather than based on a one off contractual agreement and that ethnographers cannot commit to exactly what their research will involve. Therefore 'informed consent' is not necessarily meaningfully possible in ethnographic fieldwork. The foreseen benefits of this research were that people were given the opportunity to reflect on their mobility, to discuss issues and to learn about potentially improving their mobility to suit their needs from others in their community. Local voices are represented in this research whereas they are otherwise often marginalised from transport development policy produced either in the Global North or South.

Cook (2005) suggests that the account of research given to participants and gatekeepers in the field may be a simplification of a project, or the latest version of a project that is constantly changing, or a version of a project that the researcher thinks will gain its shape from what participants want it to be about. Participants were informed that evidence may be used in further research after publishing and that they could access a written report of research findings. In Namibia, reports were translated to Rukwangali the most commonly spoken language of the region and left with either the village head (Bunya) or one of the NGO bike shops (Mile 10 and Rundu). Many participants were grateful to be involved in this research project, however, since the research was not defined by participants it is possible that some were not interested in the research and others may have felt they would have preferred research to have covered other topics, but it was felt important to offer feedback to participants should they be interested and in a format they could interpret. It was explained to participants that this is a postgraduate research project that was modestly funded and although the research would be published they ought to be realistic in their expectations of the outcomes of the research. Expected contributions of the research were explained realistically and honestly to all participants. The NGO representatives have been given the opportunity to receive a written report, however, the research is critical and not fully aligned to the interests of all of the NGOs, some of whom have requested evidence of the quantitative impacts of the bicycles to African users, for example. However, other findings are anticipated to be more useful for NGOs.

Reciprocity was demonstrated to the Namibian research assistant other than through offering a paid opportunity in that they were given an opportunity to further develop their field research

skills and to expand their practical and theoretical geographical knowledge. Whilst a collaboration with the University of Namibia benefited myself through gaining access to participants and to a reliable interpreter/field assistant, it is hoped that the learning experience gained by the Namibian graduate student made the collaboration worthwhile for both myself, the research assistant and the University of Namibia through fostering collaborative learning and cross-cultural research, rather than being an exploitative relationship, which I attempted to avoid.

Overall, the research findings aimed to represent the research subjects as accurately and validly as possible. My analytical interpretations were validated and checked as fully as possible by the supervisors of this research. This methodology chapter has outlined the procedures that have led to the research conclusions in a transparent format (Brinkmann and Kvale, 2015). The research was conducted in the interest of producing knowledge that is relevant for those participating in research as well as the scientific community (Hammersley and Traianou, 2012) and activities were undertaken with full scientific commitment in order to justify the intrusion on the participants' everyday lives (Atkinson, 2015).

4. Prescribing Development Mobilities

Non-governmental organisations (NGOs) are key actors in mobilising second-hand objects across the globe from developed to under-developed nations. As is evidenced in the trade of second-hand clothing, charity shops are largely responsible for collecting and supplying second-hand products to an overseas market of under-developed nations. After collection the clothing is commoditised and charities have no influence on, or responsibility for, users since a global free market trade model shapes second-hand clothing consumption (Brooks, 2013; Norris, 2013). However, in the mobility of second-hand bicycles to developing nations, consumption and humanitarian processes become entangled and many NGOs develop a greater connection with overseas consumers. I demonstrate that the bicycle is at the centre of a network of cause and responsibility and acts as a vehicle for charitable organisations and donors to project a singular vision of development onto the bike's users (Akrich, 1992).

This chapter will explore how and why particular functions are inscribed to objects for users that are imagined to have needs aligned with typical representations of utilitarian development subjects. Thus, a material prop is designed to facilitate ideal performances in the places that are targeted for development. A vision of the developing world is constructed by a network of donors, international and local NGOs and is inscribed in a material object that is transported to the Global South (Akrich, 1992; Callon, 1987). The chapter will demonstrate how the scripting of the bike is linked to broader discourses of economic productivity produced by the accountability of NGOs to development donors rather than more nuanced understandings of identity and development produced by consumers of the Global South. The chapter demonstrates how donor accountability and objectives, as well as the material properties of second-hand objects, restrict the scripting of technical objects and the representation of users. The chapter therefore, demonstrates how the 'macrodyamics' of socio-technical scripting (Oudshoorn et al., 2004) influence a staging of mobility (Jensen, 2013), which in this case study, is a mechanism for defining representations of societies of the Global South, which are partially susceptible to reconstruction (Akrich, 1992). The chapter provides some detailed insights of the design mechanisms used to stage mobilities from above, which analytically strengthens Jensen's framework of staging mobilities.

The Financial Incentive for NGOs to Use Second-hand Bicycles

Western nations generally do not manufacture low cost commodities for a market in the Global South, which are now predominantly produced in China and India. Sub-Saharan African nations

are not manufacturing goods locally and therefore, the unaffordability of new bicycles opens a market for second-hand bicycles in Africa (Howe and Bryceson, 2000). For these reasons NGOs have identified second-hand bicycles as a way to increase the quantity of low cost bicycles for African consumers. As humanitarian organisations, they extend their responsibilities from sourcing and shipping second-hand bikes to building networks of maintenance, retail and employment, through partnerships with local NGOs and have an overall objective to increase the mobility of their beneficiaries. However, their responsibilities, so far, have not extended to infrastructure provision.

By using second-hand bikes donated by Western consumers, the NGOs have some control over the quality of bikes they export, which places them competitively in the local market for low cost bikes in Africa:

> "With the budget that they [a health organisation] have given me I can provide new bikes at that price, but I simply wouldn't do it because the bikes wouldn't be a decent quality to really be used by health workers. They would break it in months and I wouldn't want our reputation attached to a project like that. So in this case I'm going to say they either double their budget or they have second-hand bikes. It can be half the price to use second-hand bikes so it makes it more affordable." (NGO 1)

In this example, NGO 1's requirement of accountability influences their choice of second-hand bikes over cheaply produced new bikes. Second-hand bikes are supplied as the best compromise between affordability and quality. One organisation (NGO 3) designs a bespoke bicycle for sub-Saharan African users. However, most of the NGOs interviewed favour the lower cost of supplying second-hand bicycles rather than designing and producing a bespoke bicycle for African consumers. These NGOs foresee that firstly they are shipping a greater quantity of affordable bikes than the NGO shipping new bikes and secondly, they foresee an advantage to supplying a larger quantity of bicycles to partners in developing nations rather than fewer new bicycles of reputable quality and bespoke design:

> "Their [new] bike is like $134 or something and I'm saying for that we can get a lot of bikes into the field."(NGO 2)

However, NGO 2 shipped 12,000 bikes in 2016 whereas NGO 3, whom ship new bikes, exported 48,000 in the same year. The argument that using second-hand materials increases the capacity of bicycles exported is not an individual reality of NGOs, although collectively, the organisations shipping second-hand bikes outweigh the exports of NGO 3 who are the sole organisation designing a bespoke bike. This demonstrates a collective scripting process whereby the NGOs producing second-hand goods can only do so in quantity collectively and dispersed across the

Global North, rather than individually, because the number of bikes they have access to is limited by the rate of turnover by consumers of the Global North. NGO 3 have no competition from other companies, or NGOs, producing quality bikes marketed for African users and disperse themselves geographically over the Global North to extend their donor base.

NGO 2 draw attention to the quantity of bikes they export partly because this produces a measurable outcome of the NGOs' work. In the reports of international NGOs the numbers of bicycles shipped are cited in the opening pages. For example:

> "In 2016 we have delivered 12, 013 bicycles to our partner projects across Africa" (Annual Report, NGO 2)

With a focus on quantitative outcomes and with little feedback to report, numbers are an obvious measurement of achievement. The statistics easily convey the growing activities of the NGO and therefore demonstrate success to donors. The objective of the NGO, thus, has a tendency to be aligned with increasing the quantity of the supply rather than supplying for user specificity. This is an example of the impact and measurement driven audit culture of development that tends to concentrate on accessible, readily available and measurable indicators of output (Aveling, 2010; Gray, 2003). Measuring the productivity of organisations in terms of export quantity, however, does not demonstrate that success is measured by the extent to which these bicycles are matched to the multiple specificities of users (Oudshoorn et al., 2004).

NGOs are less reliant on donors if they do not supply new bikes, which are more expensive to produce than second-hand ones donated for free as a by-product of Western consumers:

> "Those bikes if you wanted to buy one new it'd be twice as much as a second-hand one. So there's a lot more finance required to back their [NGO 3's] efforts." (NGO 7)

This quote evidences that the product NGOs supply and its initial scripting is constrained by the funding that they have access to. A new bicycle cannot easily be designed and produced for African consumers that is of reputable quality without donor funding because it would be above their budget. Constrained by limited financial resources, development organisations adapt by utilising second-hand products with an impact objective of producing bicycles in quantity and cheaply in substitution of user focused design and manufacture. This demonstrates the 'macrodynamics' that influence the scripting of second-hand bikes for beneficiaries of the Global South (Oudshoorn et al., 2004). In the first instance designers are restrained by their limited finances that steer them towards using second-hand bikes and away from researching their

overseas market of users. With limited budgets the organisations cannot afford to travel to their users and investigate how appropriate their product is or who their users are. The second-hand materials also act to constrain designers and users because they are layered with the socio-technical scripts inspired by previous consumers and producers of the Global North (Crang et al., 2013). The potential of users in the Global South to find relevant meaning and to subscribe to the product is therefore reduced from the beginning of the production process. This evidence suggests that the autonomy of the NGOs as designers cannot be assumed, or simplified. There is complexity in the restrictions that steer designers towards certain forms (Mackay et al., 2000), which requires a greater emphasis on the multiplicity and structuring of restrictions negotiated by designers engaged in scripting mechanisms than previous studies have accounted for (Akrich, 1992; Söderström, 2013).

The following sections describe how organisations construct a place to undertake development, which in this case is a simplified version of 'rural Africa'. The interviews reveal how bikes are scripted for some places, over others, and why. Secondly, I will describe how organisations imagine development subjects that are aligned with broader discourses of development of Western donors. I will examine how a scripting mechanism emphasises desired and 'ideal' user performances, whilst reducing a heterogeneous imaging of a bicycle's use for social, emotive, leisure and play activities, which are not aligned with broader economic discourses of development subjects and objectives. This marks a distinction between how designers imagine consumers of the Global North and consumers of the Global South and the agency of each to feedback their needs as consumers. The final section will examine the tensions in the network. Firstly, I will examine issues with scripting bicycles for women and children in this network and the gendering of the bicycle's script, which accounts for male consumers, but excludes women and children as NGOs act for profit. Secondly, I will discuss the dynamics between local traders, and repairers, and the NGO projects.

Constructing a Place for Development

All but two of the organisations I interviewed specifically target rural contexts for the use of bicycles, over urban contexts, for example:

> "The project was started in 1999 by a former Peace Corp volunteer who recognised the value of bicycles as a means of transportation particularly in rural areas of Africa." (NGO 7)

Organisations suggest this is because there is greater opportunity for the bicycles to impact rural lifestyles in Africa, where there is no other means of transport, by improving people's mobility:

> "We think there is a huge barrier in many parts of the world, but it is most acute in rural Africa where distance is preventing people from reaching their full potential. There are communities where walking is the primary mode of transport. Whether that's to access health care, education or selling your goods in a market. This is most acute in sub-Saharan Africa. It's where we feel we can create the biggest impact. There are issues in urban areas too, but we are not going to have as much impact. There are other factors, such as buses, motor scooters... All these other modes of transport come into play in the urban context that aren't available to communities in rural areas."(NGO 3)

This quote demonstrates how sub-Saharan Africa is represented by NGO 3 as being particularly under-developed. Distance to services and markets is often used as a measurement of a country's level of development in terms of accessibility amongst the organisations and any transport mode that theoretically reduces a distance barrier is assumed utility. 'Rural Africa' is being constructed generally as a place where there is no transport. NGO 3 is building a stage onto which a prop is inserted to facilitate mobility. As Callon (1987) argues designers not only determine the precise characteristics of technology, but also the social universe in which the technology will function albeit a simplified version of reality. The interviewee is situating a social world for which a second-hand mountain bicycle is imaged to be useful, but in doing so they do not necessarily represent the complexity, or reality, of rural sub-Saharan Africa. By situating the socio-technical script of the bicycle in a rural context, users with urban lifestyles are not represented as part of the product's ideal function.

Furthermore, this quote is an example of the impact and measurement driven audit culture of development that prioritises accountability of outputs (Aveling, 2010; Gray, 2003). The NGO state that they go where they feel they can "create the biggest impact". Rather than prioritising the needs and desires of consumers in sub-Saharan Africa, the NGO scripts the bike in order to achieve the desired impacts that are legitimised by a network of donors and development organisations. This demonstrates a macro network of actors are working to restrict the NGO from imaging the full complexity of users (Oudshoorn et al., 2004).

The following sections use interview data with NGOs to examine how they construct a rather unified and extreme context for development to take place in rural Africa; a place with poor accessibility, no transport, poor terrain, and limited infrastructure; yet relative safety for cycling.

Distance

Limited accessibility, low population densities and long distances by foot are commonly cited in the NGOs' construction of an African development place that is generally rural:

> "If your job is 8 miles away, it's a long walk there every day. And in Africa what I tend to see is there is a major road and then going off the road are little dirt paths that go 2/4 miles into the bush. The people live out there." (NGO 6)

NGO 6 has cited an exaggerated journey length of 8 miles that is undertaken daily to describe the immobility in Africa. The organisation describe minor paths leading off a major road, which are dirt and reach extensively into 'the bush'. The description of the paths materiality is relevant and is examined in a later sub-section. The organisation describe people as living "out there", which describes a place far removed from the road. The images of paths leading off a main road and of people living in what is termed 'the bush' are aligned with the ethnographic observations undertaken in Namibia. However, the language in this interview separates and creates a place that is distant. Another way of considering the same place might be within a context of connection and mobility. Without using language, such as "out there", the community could be represented as living within walking distance of a road in order to have access to motorised transport and a gateway to other amenities and possibly a nearby urban area. The respondent is using specific language to construct a place that serves as a relevant stage for which the technology that is accessible may be inserted as a development aid, in this case the second-hand bike. They are associating various performative and material elements of mobility – walking, roads, dirt paths, distance and inaccessibility, in order to simplify a version of the world that is relevant for the technology to hand (Callon, 1987).

Whilst most of the NGO respondents have generalised the immobility of rural sub-Saharan Africa, NGO 3 recognise a difficulty in simplifying and defining 'rural Africa':

> "I: These rural areas? Like how far away are they from the nearest town?
>
> R: It varies, but as a rule, it's going to be somewhere where it's more than a day to walk. Sparsely populated areas. But it varies hugely. I've been to Zambia where you drive for 5 or 6 hours then you come across a village and there's a small population there. That's where the school is, that's where the market is. Each family will have a plot of land even further out, so it might be a 3 hour walk to their small holding.
>
> I: With no road right? Or a dirt track?
>
> R: Yeah or a poor quality one even to there. So that's the extreme. Then you do have some communities, in Kenya, that are a little bit more built up, but there are poor quality roads and you do have to walk long distances to access a place of needs." (NGO 3)

This organisation acknowledges that rurality and accessibility vary hugely across sub-Saharan Africa. They recognise "extreme" places of rural Africa that might take a day to walk to from a road, or a place that is a 5-6 hour drive from an urban area. The organisation gives an example

of a long journey to a field that takes 3 hours. But, they also recognise that there are more built up areas in rural Kenya. This is evidence of a more nuanced representation of the rural context. The organisation outline an extreme rural place measured by its poor accessibility relative to more built up, urban, places. The language used to describe underdeveloped places as far removed from the normal mobility expectations of developed places is relevant in the construction of a place that is relevant for bicycles to be used. It is not necessarily a place in which the technology works efficiently, but is a place in which any low-cost transport technology might be imagined as an improvement to no transport technology.

Access to Alternative Transport Modes

Organisations do not just cite that transport services are underdeveloped in rural areas, but rather tend to produce an exaggerated and generalised conception that there is no transport in rural Africa:

> "Well there is no transport. They work way out in rural areas and there is no transport infrastructure. The only way of getting around is paying for a motorbike taxi or walking. Families can't prioritise paying for a taxi to get children to school. So they just walk. So you either walk or ride a bike to school." (NGO 5)

The rural place is described as "way out" with no transport or infrastructure. This is an attempt to simplify and conceal the complexity of actors and actants that are present in the network in order to build a place that is suitable for the bicycle (Callon, 1987). Yet, the interviewee goes on to describe motorbike taxis. The limitation in this example is actually the cost of the transport rather than the absence of it. The interviewee is suggesting the options are two fold; walk or ride, and the latter is privileged without revealing the complexities of other elements that are required to ride, for example social protocols, maintenance and infrastructure (Jensen, 2013). Similarly another NGO state:

> "It's much quicker than walking, the default mode of transportation." (NGO 7)

Walking is put across as the only alternative transport mode people have, comparatively to which, cycling is in theory faster and more efficient. However, this assumes that the bicycle can be transferred simply to this stage and removes other transport alternatives including animal driven mobilities and shared motorised transport.

There is little recognition amongst NGO interviewees of the utility of local intermediate modes of transport, whilst they raise the utility of the bicycle; a mechanical object:

"It [the bicycle] represents mankind's greatest invention: the wheel. And half the people in the world don't have man's greatest invention and they walk everywhere they go. And they wonder why they're not doing well." (NGO 6)

The interviewee is representing poverty through an account of walking that is juxtaposed against cycling, which is being described as technologically innovative, whilst walking is encouraged for health and wellbeing in other contexts outside of the Global South. The quote suggests a privileging of the bicycle as a universal tool over other forms of mobility, which are absent from the NGOs representation. The bicycle is being scripted for a walking world. This is a distinct contrast from the scripting of the bicycle for consumers of the Global North aligned with health, pleasure and efficiency verses the inefficiency of motorised traffic and the inflexibility of public transport. The interviewee's statement is aligned with a modernist discourse of technological development that positions "half the people in the world" as lagging behind the other half.

The respondents simplify contrasting rural and urban contexts with regard to access to public transport being available in the urban context and unavailable in the rural context:

"In an urban context we might be selling comparative costs of taxis, for example. In a rural setting people don't have access to motorised-transport." (NGO 1)

This representation is limited and serves to fulfil the organisation's need to validate their impact to donors:

"We tend to assume that bikes work best in rural areas where there's no transport and people have to travel further and the bikes can have a greater impact." (NGO 4)

It is assumed that accessibility to services and transport is greater in the urban context and this is true as is described in a later chapter. However, the access to shops, bars, health care and education is usually dismissed by the NGOs as they construct a stage for which their scripting of the bicycle is imagined to be relevant. NGO 4's impact objective is to mechanise mobility and in the absence of more local representations of mobility is thus aligned with a modernist discourse of development. Some rural African communities may have very limited transport options, some may have none, but many do have access to public transport and shared taxis. Organisations envisage a place that functions as being most appropriate for a targeted distribution of second-hand mountain bikes. Within this place NGOs believe their work will have greater impact than in the urban context, but overlook the lack of affordable and reliable transport options in towns and cities, with many low income people having to walk long distances. The evidence suggests that an 'extreme' construct of 'rural Africa' is attractive to donors and 'urban Africa' is not. Inflexible and binary perceptions of rural/urban African mobility are a process of simplifying complex actor-networks to prime the scripting of the bike (Callon, 1987), particularly and often singularly for use in rural areas, which serves to validate the NGOs impact to external donors.

However, such a selective conceptualisation of African mobility is distancing real users from the scripting process.

Terrain and Infrastructure

Another recurring theme in how organisations narrate rural Africa as a place for development is through descriptions of the terrain. The bicycle is advertised as a useful tool in harsh, rugged, terrain that seasonally deteriorates. In one case the bicycle is considered more useful than cars where there is poor transport infrastructure because it was damaged in conflict:

> "You really couldn't drive a car anywhere. Every culvert was blown up. To cross a creek you had to drive off the road, go down the creek then drive on the road again. They blew it all up. But the bicycles passed right by with no problem." (NGO 6)

This respondent is using post-conflict, war torn, imagery to raise the suitability of the bicycle for an extreme and inaccessible place over other modes of transport. As this organisation advertises the utility of the bicycle to negotiate war-torn terrain, it is simultaneously disregarding alternative solutions to the problem of conflict damage, which is to repair or replace the infrastructure. The respondent creates an image of an inaccessible place with accounts of underdevelopment and chaos, which may be true, but a more nuanced representation of the terrain and infrastructure present in sub-Saharan Africa is missing.

This quote is also an example the significance of associating both material objects and human actors in constructing a world into which technology is placed (Callon, 1987). The materiality of infrastructure is inscribed with meanings of progress and development (Söderström, 2013), however, in the interviews with NGOs, infrastructure is described as absent, or damaged. Materials are used to represent underdevelopment and to contextualise a place that is in need of development. However, these material representations are not inclusive of more developed urban areas of sub-Saharan Africa. The bicycle is not being scripted for use in conjunction with material infrastructure but as a solution in its absence, which denies the heterogeneity of 'situated microecologies' that form mobility systems (Jensen, 2013).

The NGOs cannot reshape the physical properties of the second-hand bikes to suit user needs in complex socio-material networks and so use other techniques to alter the socio-technical scripts of the bicycles. In this case they create a simplified version of the social world, pulling in various elements together in order for their script to work for imagined users (Callon, 1987; Akrich, 1992). As Cox (2017: 49) argues, the design of the bicycle is "constrained by tradition and pre-existing social and embodied practices". None of the interviewees considered it a challenge that mountain bicycles were not originally designed for transport utility. Rather they were designed

for off-road recreation and thrill seeking, and certainly not for load carrying. However, the constraints of the previous practices for which the second-hand bikes were designed, does not detract from the ambition of NGOs to re-value them as a daily transport solution, superior mechanically, to local transport, such as the ox, which is quite capable of carrying heavy loads over rough terrain. In this case, the scripting of the bicycle is not transferred for recreational use to functional use through any alteration to the physical script of the bicycle itself, but "through making novel connections with other, external factors. These connections reframe the meanings of the objects as much as any intrinsic qualities of the object themselves" (Cox, 2017: 52).

Of all the second-hand bicycles that are available to be sent overseas to be used on 'extreme' terrain, the mountain bicycle has a reputation to be the most appropriate:

> "We try to focus most of our programme on a standard rigid mountain bike so that they have a bit more rugged durability to deal with the dirt roads. It's always going to be a problem in the rainy season with any transport options. Whether its roads being so flooded they're not easy to pass. It hasn't proved to be a hindrance to us." (NGO 7)

The interviewees frequently bring up the "challenging" infrastructure and terrain in their choice to re-value mountain bikes, rather than other bikes, to be used functionally in rural sub-Saharan Africa. The mountain bike's previous physical script of durability over rugged terrain for recreational use is being selectively associated with elements of the world the NGO respondents are creating (Callon, 1987). Thus, the second-hand bikes predominantly available appear to be suitable for users in sub-Saharan Africa. The interviewees imagine users to be rural, thus requiring a bike that can handle terrain with limited, or damaged, infrastructure. It is a selective script, however, that narrates a context for a heavily restricted design solution and its users. The construction of a simplified development place reduces the capacity of African consumers to influence a market that responds to demand, be it urban, or rural. This is partly because of the inflexibility of the second-hand products that are predominantly available and as Crang et al. (2013: 15) argue are "determined primarily at the point of manufacture and then overlain by patterns of use". This challenges the agency that Akrich (1992) assumes designers have in scripting objects for development. NGOs are restrained by their limited funding, the needs of donors for accountability and the material properties of the objects they are re-inscribing. This outlines a more complex and relational process of scripting that is influenced by multiple actors that work to distance users from the design of a mobility solution unintentionally.

The only organisation that considers the mountain bike's popularity in the market to be for reasons other than its strength and utility over rough terrain is an African organisation based in Uganda:

> "Mountain bikes are preferred by a lot of people because they look nice and are suited for most terrain." (NGO 9)

This organisation first talks of the style and image of the mountain bike before terrain and describes terrain as varied, rather than a unified extreme. In this quote the mountain bike is described as flexible for a range of terrain. Chapter 5 will describe in further detail how mountain bicycles are an object of fashion for African consumers, which drives a demand for them and not only the terrain and infrastructure as NGOs tend to predominantly focus on.

Whilst there certainly is a great deal of rough and difficult terrain with limited infrastructure and low population densities in sub-Saharan Africa, as ethnographic observations conclude in Chapter 6, organisations simplify and construct the context in which development takes place, which dominates to such an extent that other contexts, such as urban places, are excluded from a more nuanced scripting in the re-valuing of second-hand bikes for development.

Safety

Another factor that contributes to the NGO's positioning of the bicycle to be used in a rural place of development is a general perception of the danger of African roads in cities:

> "You and I, here, know about traffic jams and Christ they know about traffic jams in a bunch of African cities as well, there's also this thing of safety." (NGO 2)

This respondent is constructing a generalised image of African cities that are unsafe environments with heavy congestion and unsafe roads. They acknowledge congestion as a problem for both Western and African cities, but with regard to safety consider it to be more of a problem in Africa than in other contexts. It is well known that there is a lack of infrastructure for non-motorised transport modes in sub-Saharan Africa across rural and urban contexts, which makes cycling unsafe and acts as a barrier to cycling uptake (Amoako-Sakyi, and Owusu, 2011; Heyen-Pershon, 2001; Howe and Bryceson, 2000; Overton, 1994; Pochet and Cusset, 1999; Salon and Aligula, 2012; Simon, 1996). However, rather than addressing the problem of a lack of infrastructure by lobbying or implementation, organisations instead use a safety narrative to validate their scripting of the bike for use in rural Africa:

> "But safety is an issue that we are aware of and I don't think any of the major urban areas in Sierra Leone, or Ghana, are particularly bike friendly. So that's

something that we've shied away from and the primary focus is rural areas
that have limited transport options." (NGO 7)

This interviewee generalises major urban areas in Sierra Leone and Ghana - the two countries they are shipping bikes to - to be uniformly unsuitable for cycling, whereas the literature evidences that cycling is more popular in secondary African cities (Howe and Bryceson, 2000; Dagnew Bogala, 2012; Gwilliam, 2013). The interviewee comments that the urban context is something they have shied away from, which suggests it is foreseen as too problematic and beyond their capability to advocate for improvements of infrastructure. The NGO do not see themselves as having a role in adapting African cities to enable bicycle use, but tend to instead construct an inaccessible place that is more appropriate to insert the bike. If the rural is imagined as generally an inaccessible place, then conflicts with other road users are not likely to be significant. Therefore, the rural context is positioned as safe for cycling relative to the danger of primary African cities. This is despite that rural African settlements are often positioned directly beside straight, fast moving, roads as ethnographic observations conclude in Chapter 6.

Until more recently, cycling infrastructure has not featured in African cities and organisations are very aware of this, seeing it as a hindrance to their work if they were to target urban areas. One organisation considers the lack of planning cycling infrastructure to be because of the low social prestige of riding a bicycle in Africa:

"That's really the biggest transfer that has to happen. In terms of adaptation
in African countries and until it has social prestige it's going to be very marginal
in terms of getting infrastructure built and so on. But a lot of our work is in
rural areas so it doesn't have the same application" (NGO 1)

This interviewee acknowledges their organisation's limitations in increasing cycling because of issues of social prestige and a lack of infrastructure. They acknowledge the social and material components that form the 'situated microecologies' that are necessary for a cycling practice (Jensen, 2013). By focusing on a rural context, however, the NGO dismisses infrastructure as being relevant to its objectives. Without the capacity to adapt the material and social orderings of the urban context the NGOs place more emphasis on the rural place as a mobility stage and choose not to represent urban users in their script.

Whilst organisations have a strong perception of the challenging terrain and infrastructure in 'rural Africa' they also have a perception of the poor infrastructure and safety in 'urban Africa'. Organisations overlook smaller, secondary, cities and towns where traffic safety is less of an issue, as well as the possibility of improving infrastructure in cities. They choose instead to avoid them, thus privileging one development place over another. This demonstrates a top down

staging of mobility, however, the user performances are also being prescribed in this process, rather than arriving from the bottom-up as outlined by Jensen (2013). It is evident that the agency of designers can predict and influence the way in which objects are used, but the users' agency to negotiate the environment that has been designed for them, as Attfield (2000) describes, is not evident in the NGOs' scripting.

The Role of Local NGOs in Constructing a Place for Development

Local NGOs in Namibia who order the second-hand bikes are often located rurally for health outreach with the objective of improving access to health care in rural areas. For example, NGO 1 state:

> "We started our shops with organisations mainly doing outreach or some kind of social programme. It might be pyscho-social or supporting orphans and vulnerable children, it might be supporting people with disabilities, but there is this focus on outreach and improving mobility for the work of these organisations." (NGO 1)

These partner organisations tend to be situated in rural areas because of the direction of development to take health care and aid infrastructure out of towns to increase accessibility. In response to poor mobility within communities in Namibia, healthcare, or social enterprises, must be mobile and have presence within rural areas. For example, outreach in healthcare involves having nurses stationed in large villages and volunteers, or staff, who visit patients for follow up care.

In Namibia, NGO 1 found that the cheapest and most risk-averse way of running their bike shops is to attach them to existing development projects, usually located in rural areas. The partner organisations provide free access to land where the NGO can put a shipping container, which becomes a make-shift bike sale and repair facility. Without these organisations being involved, the NGO would have to pay rent for the land to a local council, which would increase the costs above what the organisation can afford to operate:

> "In practice it's more about the situation with the land that they're relocated on. Often they get the land for free or low cost rent". (NGO 1)

This quote describes how local NGO partners adapt to operate with limited financial investment by forming other local partnerships with organisations that own land. As local NGOs streamline their overhead costs in this way international NGOs are further influenced to script bicycles for rural places rather than following the market demand of consumers.

Not only does this model provide access to free retail space, it also ensures responsible organisations are nearby to oversee the bike shops:

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> "It might be some financial oversight initially so there will be multiple account holders. You know people who can authorise payments and one of those would be a staff member of a partner organisation. They'll provide that oversight and regulation and financial mechanism. […] And so it's a supporting role." (NGO 1)

The supporting role of an overseeing organisation is required since an aim of NGO 1 is to employ people who have little, or no, other employment prospects and who are not experienced, or entrepreneurial.

NGO 1 comment that donor funding is more readily available to set up new projects, so the organisation respond by spreading their bike shop projects thinly and regularly seek new organisations to partner with:

> "One of the challenges is being project based - depending on project funding - is to deliver more projects, whereas ideally, we wouldn't deliver as many projects as we had and we could focus on the ones we already have. At the same time if it's the difference between doing another bike shop project if there's demand and getting funding for it, or just dissolving the organisation, I have to choose to do another project." (NGO 1)

This demonstrates that rather than focusing on areas where there is the most demand for bikes, the uncertainty and the nature of funding influences the NGO to set up bike shops in locations where partners exist and these are usually located in rural areas. To appeal to donors, the international NGOs demonstrate the social benefits of their projects to deprived rural communities rather than focusing their efforts on marketing and retailing their second-hand product to consumers where they will sell most efficiently, but at a higher cost. This highlights a tension between organisations working entrepreneurially, which would involve a model that follows the market demand for bicycles to urban areas and a model that has objectives for capacity building in rural communities and improving the mobility of development subjects in a place they imagine the most impact can be made. The focus of development on the rural context within the wider development network, including local partners and donors, and the way in which NGOs adapt to work at minimal overhead costs, influences the direction of the international NGOs to construct a development stage into which they insert a prop. The evidence suggests that advertising bicycles to have greater utility in a place that is constructed homogenously as inaccessible is a mechanism that is the product of multiple actors, but overall is pre-structured by donor needs and desires (Mackay et al., 2000). NGOs construct places in which second-hand products are conceptually and politically re-coded with value (Pierce and Paulos, 2011). This scripting mechanism is closely aligned to the needs and desires of donors. For example, NGO 2 state:

> "There's been no feedback, which has been painful for funders wanting stories and stuff. The stuff on Facebook and the website, some donors are happy with that, but there comes a point with bigger funding where people want more percentage increase and attendance in school. Pfff. Detailed stuff."

In order to attract larger amounts of funding, this NGO is under pressure to produce quantitative evidence of school attendance. This is a motive for the organisation to script a utilitarian user who will use their bike to attend school. A user is selected for the impact that they can demonstrate to donors.

And similarly NGO 6 state:

> "I do a good job of bringing back stories to the donors of where the bikes went and how they're being used and a lot of publicity and media so it maintains people's interest."

This NGO recognise that donor interest is based on the content of images and stories that are collected from users. This demonstrates a strong focus on the needs of donors and gaining publicity. The agency of consumers of the Global South, in this case, is being overshadowed by the power of donors who demand evidence of impact in return for their investment. It is also shaped by the organisations' need to operate on a shoestring and thus, they are attracted to sell bikes in places where they do not have to pay rent rather than where is accessible to consumers. This evidences a North-South hierarchy of power in this socio-material network through the movement of material objects, such as the bicycle (Lash and Lury, 2007; Swanton, 2014).

Conclusion

Organisations that are involved in shipping second-hand bicycles to sub-Saharan Africa privilege the rural context as a development stage in contrast to more developed urban areas. This section has examined how organisations construct an extreme and homogenous context for development, which is an inaccessible and immobile place, with limited infrastructure and harsh terrain. The NGOs situate 'rural Africa' in a binary contrast to the mobility of primary African cities, which are unsafe places for cycling in the organisations' representations. The staging of 'rural Africa' as a development place occurs through descriptions and associations of material components, such as infrastructure and the surface materiality of paths, roads and other areas. Accounts of poverty, such as deterioration of roads as a result of past conflict, embellish descriptions of the materiality of inaccessible 'rural Africa'.

The pressure to validate impacts and to generate donor funding drives a selective and homogenous construction of rural sub-Saharan Africa, for which a development prop is prescribed. The mountain bicycle is positioned as the most appropriate technology for this

rugged, extreme and inaccessible place. It is also the most readily available second-hand bicycle as a result of Western fashions and consumption patterns. The second-hand nature of the bikes imposes inflexibility on the construction of place most appropriate for this type of bicycle to be used for development. The bicycle signifies how NGOs and donors construct a vision of modernity geographically as they reference what it means to be modern in relation to place (Söderström, 2013). To be modern in a rural 'walking world' is to use a bike, but to be modern in a city is to use other forms of transport, therefore, the NGOs do not relate their script to the urban context. Rather, the NGOs' script is conveyed in rural space where it is read as modern relative to non-technical forms of mobility, such as animal driven transport and walking. However, a more nuanced and user-centred scripting process would not assume that all African consumers purchase mountain bicycles based on their appropriateness to be used only in distinctly rural places to mechanise more traditional forms of mobility as Chapter 5 later explores. Alternatively, consumers may use the mountain bike to perform a cosmopolitan identity, which is relevant to their definition of a modern and urban place.

Constructing Utilitarian and Rational Development Subjects

The objectives of development practitioners and donors are central in conceptualising desired identities and performances of development subjects to be expressed and enacted through staging mobility (Jensen, 2013). This section examines the top-down staging by NGOs and donors as they script bicycles and in doing so orchestrate staged mobile subjects (Jensen, 2013). As Latour states "no scene is prepared without a preconceived idea of what sort of actors will come to occupy the prescribed positions" (1992: 237). The following section applies this argument to a network of development organisations and donors that actively materialise assumptions about the mobilities of development subjects, which pre-structure the technological script of the second-hand bicycle (Rommes, 2002). Its social value is re-coded as NGOs facilitate its transportation to sub-Saharan Africa. The section demonstrates how organisations predominantly script bicycles for desired mobilities centred on producing economic subjects and supporting utility trips, however, repress undesirable performances of social prestige, recreation and play. The script emphasises the load carrying function of the bicycle, however, neglects the embodied elements of its design, such as its comfort and ease of use. The section examines how and why imagined users are defined with the motives of multiple actors of an external development network, which demonstrates the politics and complexity of staging mobilities through socio-technical configurations.

Constructing Development Subjects in the Prescription of the Bicycle

In interviews the organisations pay significant attention to the utility and functionality of the bicycle whilst outlining its use in development. One organisation gives an account of a common representation of the function of the bicycle in sub-Saharan Africa:

> "So there're pictures of people in Uganda with 80 pineapples on their bike. They load their bike with pineapples, push it to the road, sell them and ride it home. They use it more as a cargo vehicle to move their goods." (NGO 6)

This is an image of a heavily laden vehicle carrying produce to a road; the nearest piece of material infrastructure that signifies mobility. 'Home' is elsewhere and other to the mobile and economic road, which a development subject aspires to reach. This representation is outlining the bicycle's intended function in facilitating economic productivity in a rural setting. The meaning of productivity is materialised in the bicycle as it is described as a 'cargo vehicle'.

Another organisation states the economic benefits that a bicycle could bring:

> "Instantly the life situation changes; you can save money because you don't have to spend money on transportation anymore. You can take up new jobs. You can start a new business. You can improve your business – the quantity of your business. So our view is that a bike instantly brings an economical advantage to a family." (NGO 8)

This NGO highlights two things about their assumptions of the economic productivity of the bicycle. One is that it is instant and another is that the economic advantage is brought to a family. Here, the organisation imagines a beneficiary to be a breadwinner figure within a family, who will find employment and distribute the economic wealth the bicycle has facilitated amongst their family. The bicycle's economic benefit is extended from individual to family. This signifies that the imagined unit of beneficiary is often the household, rather than the individual. However, this assumes family responsibility and supresses the autonomy of individuals to act freely of domestic commitments. Assuming a bike is useful as a cargo and domestic vehicle acts to narrow the reach of distinct users and facilitates some users to subscribe to the technology, but restricts others by filtering the representations of users that are incorporated into the bike's socio-technical script (Oudshoorn et al., 2004; Söderström, 2013). This demonstrates how "roles and responsibilities" are being allocated to imagined users (Akrich, 1992: 219).

The perception that a bicycle is used as a "cargo vehicle" in Africa originates from the use of roadster style, single speed bikes that have been imported to Africa from China and India from the colonial period usually used with heavy duty carrier racks (Figure 4.1).

Figure 4.1 Typical image of a roadster used in Africa (Sourced: www.bicycles-for-humanity.org)

Figure 1 is an image from an NGO's website used to demonstrate the type of mobility they are facilitating. The bicycle is a roadster most likely to have arrived from China or India rather than a second-hand bicycle that the organisation have exported to Africa. It is heavily laden with water containers and the rider appears in a rural setting. This image evidences a mis-match of this NGO's user representation and the product they are actually distributing to Africa, which is a second-hand mountain bike. An image of a mountain-bike and its rider, however, is less likely to signify to its reader that the user of the bike is acting productively. The NGO is representing their vision of development and their beneficiaries in this image which is not fully accurate, but rather, it promotes productive outcomes to donors in order to secure funding (Townsend and Townsend, 2006).

Meanings of productivity are materialised by NGO 3 who recreate roadster style bikes (Figure 4.2) for Africa with load carrying utility at the centre of their physical script.
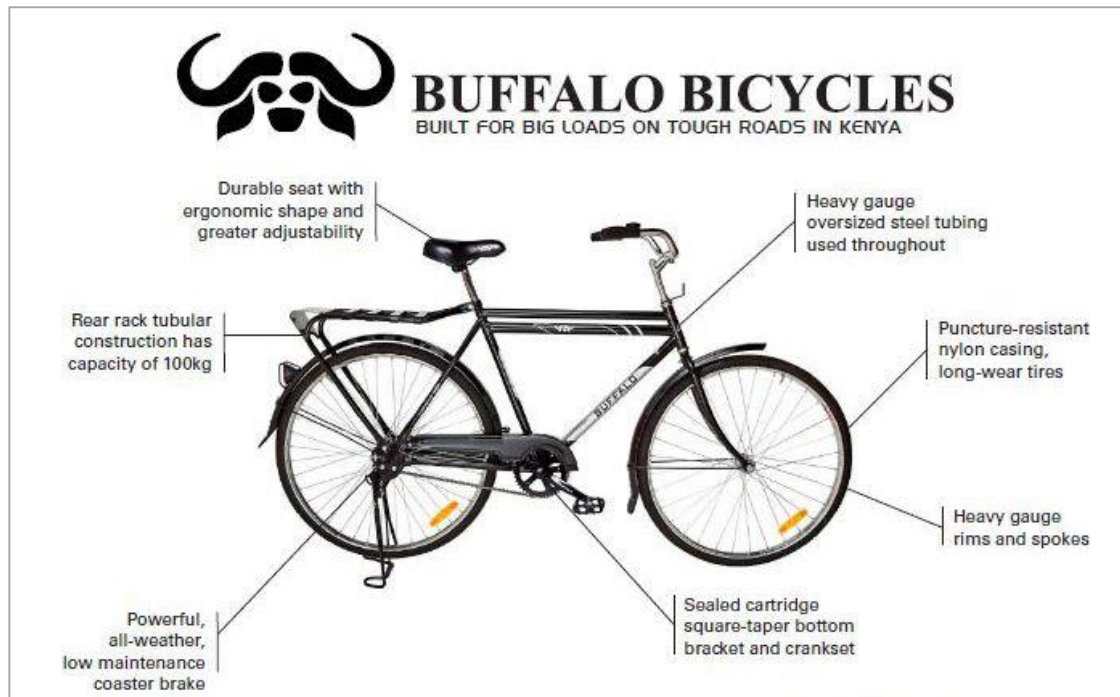
Figure 4.2 Marketing material of NGO 3 demonstrating the physical properties of their 'Africa' bike

NGO 3 designs a bike for Africa that is solid, has a high carrying capacity and few parts to maintain. These meanings are inscribed in the advertising material, for example the product branding 'Buffalo' suggests strength and the slogan 'built for big loads on tough roads' stages the bike's use for load carrying in an inaccessible and extreme place. The image demonstrates the physical and technical components of a bike's script intended for load carrying and durability. Its design is based on the older roadster model therefore it assumes that African consumers will easily read the bicycle's script because the model has been present in Africa since the 20th century. The product's socio-technical script, which consists of its symbolic, social and cultural meanings (Fallan, 2008) are particularly recognisable by the bicycle's heavy duty carrier rack and steel tubing.

Whilst the NGO respondents emphasised the carrying properties of bicycles and their use by economically productive subjects, some rejected alternative social scripts, for example:

> "I would say the first concern is that it [the bicycle] brings economical, or physical, benefits to the family because you have to buy something that brings a return […] I hardly heard I brought the bike to ride around." (NGO 8)

This NGO projects economic functionality onto development subjects whose identities are shaped within the scripting mechanism and materiality of staging a mobility. This stage is being pre-structured for productivity by the technical prop that is inserted into it. Inscribing a travelling form in this way can be read as an instrument of power used to project discourses of modernism

and morality, and thus lead users "from tradition to modernity" (Söderström, 2013). The material properties of this bike attribute and delegate specific competencies, actions, and responsibilities to its envisioned users (Rommes, 2002). The bike's script also denies alternative uses such as riding around casually. The organisations do not conceive that users want a bike for getting around quickly, or for purposes other than load carrying, health, or education. These are narratives that do not usually fit into normative development objectives and are unlikely to attract funders. The utility of a bicycle and the possibility of a bicycle to be functional in a way that will support people's livelihoods in rural Africa is sometimes alternated with the script of a car. For example, one organisation states a bike is "like being given a family car, you know, it's an important part of the family" (NGO 3). The estimation of a bike's utility is that it will function in the same way as a motor vehicle to transport the family:

> "You can fit a few kids on the back of a bicycle. I've seen 3 or 4 people on each bicycle." (NGO 3)

In this staged development context the function of a family car becomes a part of the bicycle's script. However, it is unlikely that the function and utility of a bicycle would be described in this way for Western consumers, unless it were a large, extended, cargo bike. This is because the bicycles are intended for a place, constructed by development practitioners, that has no, or very limited, alternative transport options. The bicycle is positioned as the only alternative to walking, thus is intended to fulfil the role of a motor vehicle. Imagined users are blurred between family units and individual subjects. Not all users are represented in this design, which suggests a design mechanism that is biased by a dependency on donors. This distances users whose multiplicity is not incorporated into more specific, or alternative, designs (Oudshoorn et al., 2004). This is evident in the lack of variety in models that the organisation produce with currently only three in circulation.

NGO 3 have varied the original design in a later model based on consumer feedback that incorporates elements of both a mountain bike and a roadster (Figure 4.3). This is apparent in the straight handle bar, the addition of gears and the size of the wheels. It also comes with a carrying rack although it is lightweight and cannot take heavy loads.
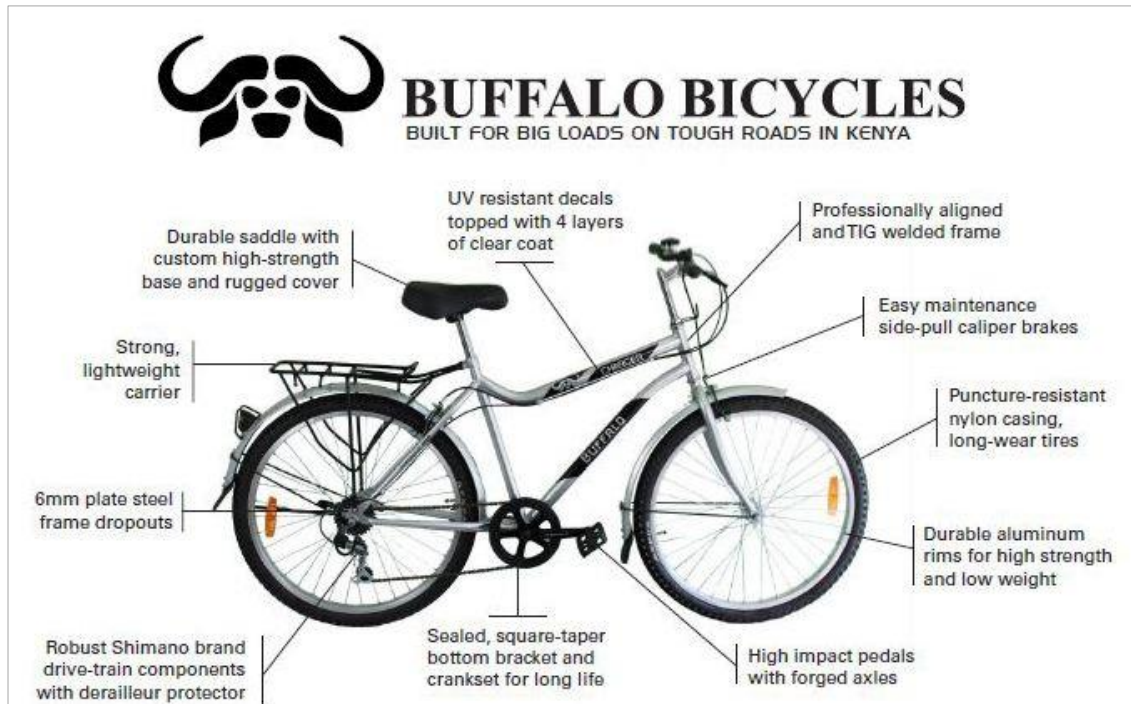
Figure 4.3 Marketing material of NGO 3 demonstrating the physical properties of a later version of their 'Africa' bike

This design is intended for urban users as NGO 3 state:

> "We have created a bicycle, we're developing it further at the moment. It has gears, it's lighter it's less heavy duty and we are distributing this bicycle in urban areas through Africa." (NGO 3)

This demonstrates that the organisation have the flexibility to respond to consumers because they can adapt its design, whereas the second-hand bikes cannot be modified. For example, the NGO have developed their own tyre to be more durable than those currently available on the market. However, the NGO has not negotiated directly with their consumers to reach modifications:

> "Most of that demand has come from NGOs. Because we supply our bikes to other NGOs like Unicef or Eros, various other organisations. They said 'look, we love your bicycle it's very durable, very reliable, but we've got some programmes in urban areas and we need something a little bit different'." (NGO 3)

Other transnational and local NGOs act as gatekeepers and mediators between this designer and users. The modification of the original script towards the desires of urban users is the production of negotiations between various development organisations. This evidences greater user feedback than is apparent in the second-hand bike networks, however, it demonstrates that users are negotiating through gatekeepers that have motivations directly linked with donors. The agency of users/beneficiaries is restricted by their distance from the designer who

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is responding to their customers – the transnational NGOs (for example UNICEF in the case of NGO 3) - who place the biggest orders and therefore have more agency to influence the bike's script than the end users.

The significance of bicycles to carry heavy loads is brought into question when one of the organisations points out that their bicycle trailers have not been popular:

> "We've got a trailer that we sell on our website made from redundant bikes but partners have been slow to take it up. It's partly the expense, you've got two wheels and it's partly the track thing; if you've got wheels that are wider, they're not going to be so happy on tracks." (NGO 2)

Reasons cited for the trailer's failure are challenging terrain and cost, rather than a lack of demand for additional load carrying attachments. This again highlights a tendency for NGOs to presume the value of a bike's function for load carrying as they set a stage for prescribed mobilities and direct users towards preferred practices (Söderström, 2013).

Another organisation have experienced the same lack of popularity with cargo bikes:

> "We've actually sent down cargo bikes in the past which have a very high carrying capacity. And they're not as popular there and I think it's a cultural perception. It seems like they would have a high utility potential to farmers and the like but they just haven't been well received." (NGO 7)

Even though the organisation perceives a value in the load carrying utility of a cargo bike, in reality, it is not popular amongst African users. The respondent cites this to be a "cultural perception" and recognise that African consumers are not necessarily always predominantly contemplating the carrying function of a bicycle. This response is more nuanced because the cultural differences between users in different contexts are recognised. The statement demonstrates that the trailer was imagined be useful to "farmers and the like", who are the rural and productive users they imagine, but in reality it was de-inscribed by real users.

NGO 3 demonstrate that they do recognise that bicycles have a role in identity creation, or projecting a person's status for some users:

> "In South Africa, the young men are using their bikes as status symbols; as sort of toys almost." (NGO 3)

However, whilst the organisations are focusing predominantly on economic productivity and load carrying utility in a bicycle's script for African users, they do not consider playful and recreational, uses of a bike. Using the bike to perform an individual's social status is described in this quote as playful behaviour, whereby the bicycle is described as a toy. This demonstrates an alternative and undesirable user of the bicycle, which devalues the embodied performative

aspects of bicycle use and the purpose of a mountain bike, for young African men, in expressing their identity and social status. It is denied that the bicycle is used by South African users in ways that meaningfully embody their identity (Spinney, 2007) and a desire to move for movement's sake (Soloman, 2009). Rather, development mobilities are staged in such a way that ideally would not allow users "to indulge in spontaneous creative expression in physical movement" (ibid: 163). This demonstrates a top-down regulation of ludic mobilities and a mechanism for social control as development practitioners filter out unconventional ways of moving and exert a uniform pull across otherwise diverse mobilities (Stevens, 2007; Vannini, 2011). Instead the NGOs emphasise the rational and utilitarian goal satisfaction of the hardware and practices of mobilities (Jensen, 2013).

NGO 3 clearly separate users into binary categories of irrational/performative and utilitarian/subsistence:

> "NGO 3: When you say cycling culture, there's the sort of consumer cycling culture, more akin to the UK market, people see the bicycle as a status symbol, or a lifestyle option, and then there's the culture of using bicycles for utility and subsistence and we're focused on the latter.
>
> I: But is this not the bicycle being used for transport as much as it is about style? Would it not be a good thing to tap into if it's helping people's mobility? Even if it's urban or rural?
>
> NGO 3: Yeah that's true. It's a question of whether, our bicycles being slightly more expensive, if there's going to be demand at that price. Because if people don't value the additional strength then they're not going to pay a premium for it." (NGO 3)

This quote demonstrates how the NGO's business model is influencing the scripting of bicycles for rural development subjects and not for who they deem to be 'irrational' consumers, who may have no requirement for a heavy duty utility bicycle at a more expensive price than others already available on the local market. Their strong utility bicycle is scripted to be more durable than others on the market and the NGO expect that users will pay a little more for this utility benefit, which is why their price must also reflect the bike's premium quality. This demonstrates how designers are also influenced and restricted by competition. The NGO foresee that users will choose cheaper products if they do not have a significant need for a strong and durable bicycle. The NGO's reputation and accountability is based on durability and quality, therefore, they cannot compete with the cheaper models without risking their reputation and losing donors. The NGO choose not to script their bicycles for these users, but actively adjust their script for utilitarian and productive subjects whom are willing to pay more for a durable, new, bicycle that can carry a heavy load.

The NGO are not producing a bicycle with gears because of the increased cost of parts and issues with supplying spare parts, where as a utility bicycle has fewer parts to go wrong, which avoids any criticism of the sustainability of their development initiative.

> "Building a strong bike is not necessarily that much more expensive. Because the cost of the steel and of the welding isn't actually that much. When you add extra parts like derailleurs it starts to get more expensive [...] If you're in the middle of nowhere and you have a complicated bit of machinery that breaks, if you can't fix it yourself, or if you don't have someone local who can fix it, then it becomes junk very quickly [...] we have to always balance the two together; durability with reparability." (NGO 3)

The NGO are obligated by their accountability and a donor interest in sustainability to produce a bicycle that will not become junk quickly. They aim to produce a durable bicycle, which is a physical scripting of the bicycle for rural Africa, but in their favour this is actually a cheaper bicycle to produce. However, if the organisation add parts to their bikes like gears, this adds to the cost of production and they cannot compete with the price of the local market of mountain bicycles, which the NGO recognise are the trend in an urban African context, where bikes are less used for functionality. Again the NGO is restricted by a local market of bicycles that they must compete against. The NGO recognise a value of a geared and stylish bicycle for urban use, however, this does not fit into their model because they cannot produce it cheaply enough without losing their reputation within the development network. Therefore, NGO 3's 'Africa' bicycle is scripted for a rural, economically productive, adult development subject and it is not possible to script the bicycles for leisure, play, or identity creation amongst adults. This demonstrates the complexity of design scripting, which involves multiple actors dispersed across global and macro scales and translations between Western donors, transnational NGOs, rival Chinese manufactures and local African markets. The mechanism is weighted towards donors and accountability (Aveling, 2010; Gray, 2003; Wallace, 2004; Watkins et al., 2012) rather than consumers and thus the socio-technical scripts of bicycles that stage African mobilities impose certain frameworks on users (Akrich, 1992; Söderström, 2013) who are distanced from the process.

NGO 7 demonstrates a more nuanced understanding of African consumer demand for a bike's carrying utility and describe a cultural move away from the carrying function of bicycles, especially with people who choose to buy mountain bikes:

> "Another thing is that for a while we were equipping all our bikes with a rear carrier because it would add value to the bike, but over the last year or so we've recognised that more and more people are taking them off their bikes after we've installed them. And the reason for that is that they're not often used for carrying capacity" (NGO 7)

The representative of NGO 7 accepts that there are alternative values of a bicycle and that users will not always rationally choose the bike that others deem to have the highest utility:

> "There's always a cultural perception in what bikes have the highest value. You see it in Europe and America too. There are plenty of people who will go out and buy a cheap full suspension bike because they think it looks cool. But if all they're doing is riding around the city a skinnier, single speed bike would be much more practical. I don't think that's specific to Africa. Does it have a higher value on a utility level? Or is it THE bike to ride?" (NGO 7)

This respondent is not distinguishing the performative value of a bicycle as being for Western consumers only, but accepts that style and fashion may have more importance than utility for African users too. NGO 8 also recognises that mountain bikes are not popular for their load carrying capacity:

> "But in the rural areas the Phoenix is the preferred mode because it's so useful if you need to load stuff. And then the mountain bikes come in handy to ride fast, to reach somewhere. You cannot load that much." (NGO 8)

This demonstrates that whilst organisations perceive their second-hand bikes to be functional objects and prioritise load carrying and economic impacts, the mountain bikes, which they export predominantly, are not seen as load carrying bikes locally by African consumers, or by this NGO. It is generally the older single speed roadsters imported from China and India that are purchased for their weight bearing utility at this interviewee acknowledges:

> "Yeah the Phoenix is just hard style, that's what you need right. You can just load stuff like a donkey." (NGO 8)

This respondent makes an association between the roadster bikes and a donkey, since they are both thought of as more traditional transport modes than the mountain bike and are associated with rural mobilities. NGO 8 recognises that mountain bikes have social value other than utility for development subjects, whereas a heavy single speed colonial bike – the Phoenix - is preferred for its load carrying utility. However, the organisations supply second-hand mountain bikes despite that they are staging a mobility for economic productivity.

There is a miss-match between the type of technology being exported and the NGOs' socio-technical scripting of a bicycle's value for development use in Africa. Most of the organisations interviewed only have access to second-hand mountain bikes that arrive from Western

consumer fashions and cycling culture, rather than single speed roadster bikes. In this materially compromised position the organisations can't fully support African consumers who want to buy a bike for its load carrying utility despite their scripting of the bicycle for economically productive, rational subjects. They cannot supply the type of bicycle that physically and materially fits their own concept of a development subject. This evidence reflects findings by Crang et al. (2013) of the inflexibility of second-hand objects in consumption networks because supply arrives before demand, rather than objects being designed for demand. This evidence demonstrates that the agency of designers in this network cannot be assumed. Restricted by limited funding sources and the materiality of second-hand goods that have been physically inscribed by previous designers and users for recreation, the NGOs cannot exactly insert the prop that matches their prescribed mobility stage, nor can they fulfil other requirements of users, such as identity creation, or play because this would not satisfy their donors.

Constructing Development Subjects in the Local Retail Space

The limited economic resources of the NGO operating in Namibia prohibits the bike shops from mainstream consumption space and in turn proscribes consumers from buying second-hand bicycles in such a way that enables them to perform cosmopolitan consumer identities. Alternatively the retail spaces setup by NGOs act in this network to construct development subjects that purchase second-hand bicycles based on necessity and utility and with little autonomy. Partnerships are formed with local organisations that provide free access to land where a shipping container is setup with a bike sale and repair facility. The bike shops are not located where they will be most accessible to consumers, but where retail space is free, often in rural or peripheral urban spaces. This demonstrates how the position of consumers in this relationship is secondary to the needs of the NGO. Shops are not easily accessible, or attractive. For example, Figure 4.4 depicts the inside of a shipping container in which bicycles are stored rather than displayed for consumers. They are dark, dirty and in Namibia, very hot.

Figure 4.4 Interior of NGO bike shop, Bunya, Namibia

Pierce and Paulos (2011) argue that many consumers purchase second-hand products out of necessity, which is also relevant in the context of the Global South (Omobowale, 2013). However, this argument excludes users who wish to purchase second-hand bikes as cosmopolitan consumers who buy goods in order to express their identity and status (see Chapter 5). The NGOs do not compete with other shops in Rundu who alternatively display new bicycles more attractively in retail spaces (see Figure 5.3, p. 144). The shipping containers offer very little space for customers to browse products in order to make a choice about the product they are buying. The second-hand nature of the bikes is not concealed by creating an attractive retail environment. This is in contrast to other retail spaces, such as shopping malls that are built with grandeur and luxury, and that function to conceal the cheapness of mass produced commodities held in-store for a market of middle class consumers (Corrigan, 1997). Whereby objects are displayed attractively in department stores, they are appealing to consumers in such a way that their focus shifts from an object's utility to an object on display and therefore desirable (ibid). Similarly, Söderström (2013: 52) describes how shopping malls are used by consumers of the Global South "to encounter and experiment with ways of life or to try out new social identities". Thus, shopping malls are "portrayed by the users as operators of the modernization of selves" and act to stage new identities (ibid: 48). Corrigan (1997) argues that "the association of objects with meanings far beyond use-value lies at the base of consumer culture: we purchase the meanings of objects rather than the objects themselves" (ibid: 58).

Shopping department stores are where modern consumers can "buy status off the shelf", Corrigan argues (ibid: 60), which contrasts Baudrillard's (1988) understanding of consumption that is based only on the utility of goods. The NGOs' concept of a development subject is more aligned with Baudrillard's representation of the consumer than Corrigan's, which is based on theories of consumption that understand it to define consumer identity as goods are purchased in order to differentiate from and relate to others (Bourdieu, 1984; Simmel, 1971).

The NGOs' shipping containers emphasise a difference in the identity of consumers of new commodities and of second-hand, utilitarian, goods. The NGOs and shipping containers act relationally (and unintentionally) to spatially and symbolically differentiate the class that second-hand consumers belong to as separate from an urban and modern, middle class, Namibian consumer. The shipping container, thus, is acting in the network to script a development subject that has separate needs from modern consumers, based only on necessity and utility, rather than desire and status, or a combination of both (Sassatelli, 2007). Although the shipping containers and the NGOs are not acting intentionally, this representation of the bike user is comparable with Veblen's (1975) theory of consumption that separates the consumption by class whereby lower classes consume goods for their subsistence, whereas only the upper classes supposedly consume goods for reasons that are more conspicuous in a performance of status. Furthermore, it could be argued that the shipping container contributes to a gendering of the script of the bicycle if, as Corrigan (1997) argues, men's retail spaces have been smaller and in peripheral parts of stores whereas department stores produce attractive retail spaces for women. This trend may have changed since the author's publication, however, there remains an argument that the shipping container may not be representative of female consumer identity and is more suitable for male consumers. The retail space of the shipping container is likely to be acting in such a way that it partly proscribes women from purchasing a bike and produces a gender script (Oudshoorn et al., 2004; Rommes, 2002) that reinforces the inequality of women's access to bicycles in Namibia (see Chapter 6).

The location, function and appearance of retail space is part of a network that is required for the subscription of the bike. The shipping container may be read by users as a consumption space that is on the periphery of a more mainstream space that is used by consumers to embody a modern, middle class identity. The limited economic resources of NGOs and the materiality of the shipping containers proscribe certain consumer practices and thus shape a user identity of a beneficiary who has little autonomy in their consumption choice. In this case a wider network of donors, international and local NGOs and material shipping containers, act to arrange consumer behaviour and to shape consumer identities. This demonstrates the heterogeneity of

staging mobility and evidences how designers have multiple guises and are stretched across global and local spaces.

This is not to say that utility in goods is not important for African consumers and there is value in aiming to improve the economic situation of developing communities. But rather, objectives tend not to be about assisting people to create an identity that moves away from poverty, rurality and colonialism. Instead of staging a purely functional and utilitarian mobility in a top-down hierarchy of power, NGOs could also embrace the bicycle's emotive and representational socio-technical script and role in cosmopolitan identity creation, status and pleasure. This would be aligned with Akrich's argument that the physical and socio-technical scripts should not be outlined as separate entities, but as one, nuanced conceptualisation of how things act, communicate and transform meaning (Akrich, 1992). Within this distribution network, the need for bikes to appeal to end users is being overshadowed by the needs of NGOs. That is for streamlining overhead costs and to script the bike in such a way that it is attractive to donors who are mostly concerned with economic functions and impacts of mobility within a measurement driven audit culture of development that concentrates on measurable indicators of output (Aveling, 2010; Gray, 2003). A less political scripting process might seek to involve more closely the heterogeneous identities of African consumers who make purchases based on their desire to express a cosmopolitan identity, their desire for comfort and speed in their mobility, as well as more utilitarian based decisions (see Chapter 5). Currently, however, the organisations assume users will always rationally prioritise utility over style, which evidences users are not actively involved in negotiating the scripting of technologies that stage their mobilities.

Tensions in Scripting Bicycles for Children and Women

Whilst bicycles are scripted for economically productive users, children's bikes are not prioritised for shipments despite that there is a large supply of second-hand children's bikes available, donated by Western consumers. For example, NGO 6 state: "I don't ship the 12's, they're toys." These are smaller bikes with 12 inch wheels that are used by children younger than school age. The NGO assign little value to children's play, or children as development subjects whom are not yet in education. This demonstrates a hierarchy of value ranging from adult bikes, to school children's, to toddlers' bikes, which are worthless within a development network that prioritises measurable impacts.

Adult bikes retail for a higher price than children's and teenagers' bikes, therefore, local African partners order only adult bikes from the organisations so that they can maximise their profits:

> "No road bikes and no children's bikes and that's really based on discussions with Namibia that the space in our containers is quite precious and we want the most utility from each bike and we feel that adult or close to adult bikes are the ones that are going to provide the most utility in Africa. So it's not that we want to deprive the children of having a bike, but we feel that the economic benefit is greater for adult bikes." (NGO 4, Australia)

This quote demonstrates that users are defined as adults and shipping container space will not be given up for children's bikes. The business models of the international and local NGOs often seek to generate as much economic gain as possible, rather than to script bicycles and to design business models that account for the full diversity of users in the network (Oudshoorn et al., 2004). The NGO say that the decision is based on discussions with their African partner, and NGO 2 similarly state:

> "Generally the partners say like no more than 10 or 20%, or no more than a handful [of children's bikes]." (NGO 2)

The NGOs have formed 'local' partnerships and therefore might satisfy donors that their projects are participatory and represent local mobility needs. However, local partners request adult mountain bikes in order to maximise their profits. Often the only way the international NGOs can access user feedback is through the local partners whom act as gatekeepers to represent user needs and desires. Local NGOs therefore have more agency than end users of the bicycles in influencing the stock that is received in Africa. This demonstrates a horizontal structuring of the bicycle's script at the micro level (Oudshoorn et al., 2004). Local NGOs act to stage mobility by first meeting the needs of their businesses and thus, it cannot be assumed that local partners represent the needs of all users. Therefore, the agency of African users cannot be assumed in their ability to incorporate the technology into their lives (ibid).

Organisations describe how the shipping container is packed firstly with adult bikes, which are the majority, followed by smaller children's bikes to fill the space in between, to get the greatest financial value out of the container's space:

> "Every container is going to have a certain number of children's bikes just because they're easier to pack in the top of the container, in the small spaces, but the value that they have in the country is about half that of an adult bike and because of that our priority is to send as many adult bikes as possible." (NGO 7)

> "Sometimes with kids bikes they fit in a gap in the container and they're useful that way." (NGO 2)

These interviewees also prioritise making the biggest return possible on the bikes, therefore the organisations serve firstly local partners selling the bicycles and secondly the mobility

requirements of the community. It is crucial for the sustainability of the bike shipping network to ensure that the African partners make enough profit to continue. Therefore, these interviewees foresee that it is too costly to give up space for children's' bikes in a container.

This signifies a tension in the NGOs' hybrid financing model, where their overheads are funded partly by selling the bicycles and partly by donors. Often, the humanitarian objectives of organisations, for example, that bicycles will reduce the distance barrier to children's education, is at odds with the objective of organisations selling their bicycles for profit. The two funding sources conflict in the network because the humanitarian objectives of the NGOs are to improve people's access to affordable transport and income generating opportunities. However, the objective to generate profit from sales proscribes any users whom are not consumers. Children are positioned at the very bottom of a consumer hierarchy, which is argued to disqualify the materials children use to craft identities, relationships and meaning (Cook, 2013; Pugh, 2009; Waerdahl, 2005). Bicycles could be valuable to children, but because of the priority organisations often place on adult bikes, for their higher capacity to generate profits and to be used functionally, the bicycle's script excludes children as users. This demonstrates how the use of technical objects is shaped politically (Akrich, 1992) in complex networks that move between global and local scales of space.

The shape of the container also partly mediates the number of adult and children's bikes that are exported to partners. The shape of the container allows two rows of adult bikes to be stacked one on top of the other. The remaining space is used for children's bikes, spare parts and anything else that has been donated and considered useful, such as helmets. Shipping containers are mobile objects that through travel have the power to mediate society in relation to a capitalist economy (Martin, 2016). They are designed for the purpose of economic efficiency and are thus filled in such a way that they contain their maximum capacity. The empty container space around objects, thus, becomes as significant as the objects themselves (Martin, 2017). As Martin (2017) describes, packaging is either designed specifically to protect valuable goods for consumers, or is used in an ad-hoc fashion. What is evident in this case is that no protective packaging is used. Instead the container void is filled ad-hoc with children's bikes to maximise its value regardless of maintaining the condition of products. This compromised situation arrives from the second-hand nature of the bicycles exported. Because the bicycles already evidence prior signs of wear and tear, there is no expectation from consumers in Africa that the products will be in as-new condition. Any faults that are a result of moving the bicycles with little care for their protective packaging is concealed by their second-hand quality.

As Martin argues "packaging inserts and void fillers are significant registers of the relationship between design and mobility" (2017: 100). The void space in these containers contributes to the scripting process of bicycles for adults by NGOs whom filter out children's bikes from the main container load. Their use as void fillers, is evidence of scripting economic productivity throughout the process of staging mobility. Regardless of any development objectives NGOs may uphold of improving children's mobility for education, the shape of a shipping container partly prevents children receiving bicycles because it allows them to be used as void fillers, rather than being exported in substantial numbers. The scripting mechanism of NGOs is relational and also partly depends on the materiality of products, containers, packing and logistics, as well as the politics of consumer expectations. It is not only the thing to be followed that is of significance in this network, as Appadurai (1986) argues, but also the thing that contains it (Martin, 2017).

Some organisations do, however, appreciate it would be beneficial for children to have access to bikes in Africa and see value in children's bikes, for example:

> "When I first started in Revos, Nicaragua in 1991, the average student only completed fourth grade. Because by fourth grade, you're 10 years old, you've gotta milk the cow […] And parents had this terrible quandary because most people lived out on their farm and it was a 3 or 4 mile walk to school. So the kids by the time they were 10, they had work to do. 25,000 bikes later in one small town, the average kid now goes to high school because all the kids have a bike and can ride that 3 miles to school, get out at noon and ride home. By 1pm they're on the farm working." (NGO 6)

The value in a child's bike, demonstrated by NGO 6, is not only in its ability to keep children in school to further their education, but its value is also implied in its function to increase a family's productivity, achieved through the increased speed in a child's mobility afforded by a bicycle. This scripting of the bicycle constructs children as economic, as well as educated, actors. Although the respondent is representing children as users they are scripting in the domain of rational productivity, which is void of unconventional and undesirable use of the bikes.

NGO 6 also recognises the value in shipping out children's bikes for them to learn to ride:

> "They get sold really cheap, but those first bikes where we grab a 6 year old and teach them to ride a bike. I mean that's where you really get someone who's going to take care of the bike in the future and be a bike rider is when you get 'em when they're young." (NGO 6)

This, in theory, benefits the business model of the NGOs since children will become adult consumers of bikes. It would also assist the organisations in meeting their development objectives since children would be able to improve their mobility prospects as they grow older

if they have learnt to use a bike. However, it is not a strong enough incentive for most organisations to ship children's bikes since it is not financially viable, or efficient, which is an example of how the NGO's business model dictates the scripting of bicycles for adult development subjects.

A number of organisations aim to target girls, particularly in rural areas, because their education attendance is generally lower than boys:

> "Well there's overwhelming evidence to show that educating women has a far greater effect on communities in getting them out of poverty compared with educating boys. There's a bias on educating boys in rural African communities. A cultural bias. So part of our work is trying to counteract that bias." (NGO 3)

The reasons this interviewee states for educating girls is to improve the economic productivity of a community. This is a neoliberal framing of the female development subject that is homogenously "hyper-industrious" and entrepreneurial; a figure that will be "central to sustaining neoliberal capital accumulation" (Wilson, 2018: 95, 96). This respondent also implies that the use of bicycles for children, as well as adults, are intended for activities that will produce some measurable impacts. NGO 3 is also constructing children as economic actors, but with a view to their future productivity, rather than immediate productivity as NGO 6 describe above. This positions children, and particularly girls, as potential instruments of change for the Global South and in doing so disembody an adults' role of industrious entrepreneurship in poverty reduction (Wilson, 2018). Within the rhetoric of progression adolescents and children are positioned on a linear trajectory towards a fixed point in adulthood. These adolescents and children are considered to be incomplete 'human becomings' rather than human beings (James et al., 1998). Within these representations children's engagement with unproductive and playful practices are missing. The above quote is an example of a gendered vision of development that establishes an adolescent girl as a key agent for economic growth. Wilson distinguishes this representation of feminism in development discourse as neoliberal, however, not liberal. Such interventions in girl's education aim to produce ideal economically productive subjects "who will be able to negotiate unfettered and unregulated markets with ease, whilst simultaneously assuming full responsibility for social reproduction" (ibid: 98). This is a gendering of the NGOs' socio-technical script, which places greater pressure on adolescent girls, than boys, to be industrious. The focus on girls as future neoliberal subjects also displaces the potential of adult women to subscribe to using a bicycle.

Adolescents and children do not usually have the economic capacity to purchase a bicycle and the NGOs are reliant on donors to fund programmes that target children's education:

> "So our education programme is called BEEP. Bicycles for Education Empowerment Programme. Bicycles are distributed through - they're paid for by donations. So all the bicycles for schools are paid for by donations in one form or another."

Because of the reliance on donors to fund children's bicycles, they are scripted for rational neoliberal disembodied adult subjects (Wilson, 2018) and not for play, leisure, learning to ride, or exercise.

Although NGO 3 are a not-for-profit organisation, they must sell the bicycles in their business model of sustainability. This is the future aim of the organisation:

> "Now the dream, the ultimate aim is the profits from the social enterprise to sustain the philanthropic work in the long term." (NGO 3)

This respondent is motivated to move away from a reliance on funding. They say "the dream" is "a long way off" and perhaps it is a dream. If the sales of their adult bikes are not covering the donation of children's bikes now, then perhaps they will not in the future. If they increase demand for their adult bikes this could be possible, however. I asked NGO 3 what the barriers were to their work and they replied:

> "One is social acceptance of the bicycle. Even with a strong bicycle culture, women in some areas are still seen as you know not the done thing. And that's why we create these bicycle supervisory committees so there's a supervision that exists to make sure the community understands the value of educating girls before we go and distribute our bicycles." (NGO 3)

NGO 3 recognise a stigmatisation against the bicycle, particularly for women, and a need to 'educate' communities about the value of the bicycles to change attitudes towards them. This is an example of the 'inclusion work' the organisation need to undertake to adapt girls and the community to technological designs (Oudshoorn et al., 2004).

Another NGO has a similar approach, although do not give away their children's bikes, they do discount them, which requires funding and this is considered to be 'charitable' work:

> "We have 3 key pillars […] the third one is those mobility initiatives we do. That's very much the charity part where kids and women and various co-operatives can get bikes for a discount. So that's what we mainly do the fundraising for." (NGO 8)

The two business models of NGO 3 and 8 separate women and children into distinctive users whom are given bicycles and thus require donor funding, whereas men are targeted as economic subjects with income to purchase a bicycle. This type of business model identifies the male African development subject as a consumer, whereas women and children are not and are

identified separately for being donated bicycles. This gives more agency to male consumers in the network, however, a respondent states:

> "There's a continuum of completely profitable and completely charitable organisations; we're not completely on the right or the left anymore. We moved from charity to profitable. We will see which part takes over and which is easier to develop. But fundraising is difficult and time consuming. We think the entrepreneurial approach is the most promising and durable approach." (NGO 8)

If, as this interviewee implies, selling products and services becomes easier and takes over fundraising, then women and children may not fit into the NGOs business model unless they choose to continue to finance it, or unless women's and children's consumer agency increases. Despite a recognition that children and women have poor mobility in sub-Saharan Africa, the evidence suggests that in reality, few of the NGOs can particularly focus on improving the mobility of children, or women, since it's not financially viable and would involve seeking more funding rather than relying on the sales of adult mountain bikes to male consumers for the sustainability of the organisations. Scripting bikes for access to education in Africa is only possible for organisations that have more of a charitable model than an entrepreneurial, business model that largely sustains itself without relying so much on funding. A small number of organisations have built a model whereby the sales of adult bikes can support giving away some children's bikes and adult bikes to women and health care volunteers. However, generally, the economic viability of adult bikes in the organisation's business model takes priority over improving children's and women's mobility. Thus, the bicycles are mostly scripted for adult, and predominantly male, utility and do not account for the full diversity of users in the network (Oudshoorn et al., 2004). Organisations are not intentionally imagining users to be male and in interviews many respondents have stated objectives to improve the mobility of girls in particular and their access to bikes. However, multiple social and materials actors in this network restrict the designers whose agency cannot be assumed. In the context of Namibia, other actors have shaped family household structures in such a way that women are not usually breadwinners and are often economically depend on men, which prevents their ability to consumer bikes. There are social norms that continue to restrict women's mobility relative to men's and in Namibia women are often fearful to ride in public spaces beyond their childhood years (see Chapter 6). In the context of an international humanitarian aid network, the NGO respondents demonstrate pressure for their organisations to be self-financing and sustainable. Thus, whilst seeking and receiving donor funding is a highly competitive process, NGOs are steering their efforts towards male consumers. This demonstrates the complexity of restrictions that steer designers towards

certain forms that are not always obvious actions of scripting, or the consequence of fully intended decisions taken by NGOs in this network (Mackay et al., 2000). It is evident that a design mechanism allows a message to be materialised within a product given by its designer to prescribe its intended use and meaning (Akrich, 1992). However, in this network multiple social and material actors restrict designers whom are not only acting from afar as Akrich (1992) and Söderström's (2013) analyses conclude. Local actors are also acting in this network by scripting adult users at the expense of excluding children from the mobility stage.

Dynamics Between Local Traders, Mechanics and NGO Projects

There are no local traders, as such, selling bikes in the Kavango region of Namibia. There are local shops selling more upmarket bikes to middle and upper income cyclists in Windhoek, as well as a wholesale company that distributes parts and bikes throughout the country. However, in Windhoek and Kavango region, the only other traders selling low cost bicycles to low income cyclists are Chinese retailers who also primarily sell household goods and electronics, Botswanan furniture stores and a German company 'Cymot'. A limitation of this case study is that it is restricted to Namibia, a country of such low population density, it is difficult for any local traders to make an order of bicycles from a factory to import a container of new stock. It is likely that other countries in sub-Saharan Africa will have more local bicycle traders present. It is also possible that local traders are sourcing second-hand bicycles independently of NGOs in other countries.

In this case the NGO bike projects are not in competition with other 'local' sellers, if local is defined as other Namibian bike sellers. They are, however, in competition with Chinese traders who sell low cost, low quality, bikes. These traders import a small number of bikes within containers of other goods using their connections in China rather than having to order directly from a factory that would require an order of a certain size. For a similar price customers can either purchase a second-hand bike from the NGO shops, which range in quality, or they can alternatively buy a poor quality mountain bike from a Chinese owned shop, or a roadster style Challenger from reputable Cymot. Both Cymot and the Chinese traders offer sales on credit. Cymot offer a guarantee whereas the Chinese stores do not accept returns. The NGO project staff in Rundu explain:

> "Most of our customers are bringing bikes back to be fixed. Even the frame is not strong. The bike only lasts for one week then it breaks. One [customer] brought a bike from the shop and couldn't get home and had to put it in a taxi. Then they brought it to us. The China shops refuse to take the bikes back." (NGO shop, Rundu, Namibia)

Although the NGO shops lose some customers to the Chinese stores, particularly when their stocks are low, the Chinese shops compliment the NGO shops in that they bring in customers for repairs. This Rundu store report that they are fixing on average 4 or 5 bikes per day and this number would be far less if the bicycles sold by Chinese sellers were of higher quality, or if the traders offered a guarantee and repair service.

In Namibia, there were no visible signs of local repair services in Kavango region, or Windhoek. There was evidence of a small number of men who repair bicycles from their own homes, however. For example, when I visited the NGO project on the outskirts of Rundu town, a young man came to the bicycle shop to buy a set of gear shifters. I was told by the shop staff that he is buying spares to fix a bicycle and that he is a regular customer who buys parts because he runs a small private business repairing bikes. Another mechanic employed by the Rundu NGO project told me that he is a self-taught mechanic and has repaired other people's bikes for a fee. The NGO project in Nkurenkuru, Kavango region, however, said they did not know of any other mechanics in the area that repair bikes.

I asked the Rundu NGO shop staff how she felt about the competition from other mechanics and she replied:

> "There are private people fixing bikes. They don't have tools like we have. They are not well trained. They use a hammer and we are more [expensive]." (NGO shop, Rundu, Namibia)

This respondent considers that the NGO projects have a higher level of expertise because of the tools they possess. Another mechanic in Bunya mentions the qualification certificate that she holds, which she has to use to prove to customers that she is capable of providing a good service when they doubt her ability to fix a bike, or to charge for the service. The tools and the formal qualifications of these mechanics, which are a result of the international NGO's involvement, do place them in a more competitive position relative to other local self-taught mechanics. They are able to charge more for their service knowing that their competitors do not have the ability to make some repairs that require certain tools. In other ways, however, the involvement of NGOs in Namibia complements opportunities for the growth of a local maintenance trade since they are increasing the number of bicycles and cyclists in Kavango region. The NGOs are increasing the supply of spare parts in the region as demonstrated by the local mechanic in Rundu who is buying parts from the NGO shop in order to run his repair service. The self-taught mechanic in the Rundu project was also learning skills from his employer who was trained formerly by the NGO. Therefore, in Namibia, where trade in bicycles and maintenance services

is low, the NGO are involved in capacity building and may positively impact a growth in local repair services in future.

In Arusha, Tanzania, local traders and mechanics are visibly present working in small enterprises in the city centre. The NGO enterprise is located in a suburb of the city on free land donated by an enthusiastic cyclist who also runs a local cycling club. This NGO manager does not see the project as being in competition will other local traders and mechanics, stating:

> "R: So we decided we didn't want to be competing with these guys around town. We thought we will make them our customers.
>
> I: Ok so you provide bikes for the other sellers?
>
> R: Yeah they buy bikes from us and sell them in town.
>
> I: Do they sell them at a higher price than you sell them here?
>
> R: We have a business negotiation. It's different. We don't sell them like we do to other customers.
>
> I: It's a bit less?
>
> R: It's a bit low so they can go and make some profit." (NGO project manager, Arusha, Tanzania)

Rather than competing with local traders, the NGO shop located on the outskirts of the city choose not to rent a retail space in the city centre, but instead choose to act as a wholesaler to local retailers. Their connection with an international NGO ensures their supply of second-hand bikes, which they can distribute to smaller enterprises that have access to consumers in the city. This is a complementary and mutually beneficial relationship with local traders that the NGO enterprise and its locally employed manager have chosen to respect by negotiating a business deal with traders, rather than choosing to locate in the city centre in order to compete with them. Customers do not often come from the town centre to this suburb to buy bicycles; therefore, the NGO relies on trade partnerships with local retailers, whilst they can take advantage of a free location. This NGO project is also currently training four young locals in bicycle maintenance and repair who can potentially set up their own businesses later.

This case demonstrates that in Namibia there is very little evidence of the NGO projects competing with local Namibian retailers, or any evidence of either international, or local, NGOs negatively impacting on local markets of imported, or locally manufactured, bikes. The negative impacts of NGOs associated with local markets and manufacturing of products is thought to have previously been an issue in the trade of second-hand clothing, which Hansen (1999) has argued

displaces local manufacturing. Similar issues have also been documented in second-hand ICTs, which Ombowola (2013) claims to stifle development, and in second-hand car trades, which have affected the market of new cars in South Africa (Brookes, 2012).

In Namibia, the NGO projects are in competition with Chinese, German and Botswanan traders that sell new, low cost and low quality, bicycles. Yet, a market has opened for second-hand bicycle imports because of the lack of affordable bikes of similar quality available locally. Bicycles have never been produced on a large scale in Africa and therefore the actions of international NGOs in this case have no repercussion to a local bicycle trade and instead complement existing networks, which is also the case in Arusha, Tanzania. However, the limitation of this case study is that this finding cannot necessarily be generalised to other contexts, such as other African primary cities that may operate local networks of second-hand bicycles and spare parts, and repair services (Porter, 2002; Starkey, 2001). This highlights a key theme of the thesis that the mobility of object scripts depends on networks of heterogeneous actors that are complex and that change in-situ. It cannot be assumed that a network of actors and actants will take the same form, or will be held by the same set of associations and with the same political hierarchies and tensions, as it moves from context to context.

Conclusion

The commodification of second-hand bicycles involves their utility being inscribed by NGOs for targeted users in a conceptualised place of development. This development place is described as inaccessible where walking long distances is the only feasible transport option. The terrain is described as rugged and extreme, and infrastructure is said to be either not present, or in poor condition. This rural context is a generalised binary to an urban place, which is described as irrelevant for use of bicycles since infrastructure does not accommodate cyclists. With heavy traffic the city is deemed too unsafe a place for bicycle use. Alternatively the rural place is used to prime a modernist script for the bicycle, which mechanises more traditional forms of mobility, such as walking and animal driven transport.

The conceptualising and generalising of 'rural Africa' is influenced by wider discourses of development funders that steer NGOs to create a place where they foresee bicycles having a greater opportunity for impact. In Namibia local partners whom support a Western organisation by hosting bicycle shops on their land and assisting with administration are located in rural areas for outreach of their work. This evidences how scripting bikes for use in rural contexts is linked to wider funding sources whose discourse is centred on development in rural and inaccessible places. This environmental shaping is referred to by Watkins et al. (2012: 299) as 'the technology

of talk', which "legitimates concepts at the core of the contemporary global enterprise of development". The real or perceived pressure from donors to demonstrate impact on poverty reduction pushes NGOs to create strategies that work to legitimise their impacts and productivity in certain places (Bebbington, 2005). This demonstrates how NGOs and donors spatialise their concept of modernity in the bicycle's script relative to a rural place (Söderström, 2013). With this construction of a place for development that is rural, extreme and with limited infrastructure, a stage is created into which a bicycle is inserted in order to function as a development solution (Callon, 1987). Mountain bikes, most commonly available, are deemed to be appropriate and able to cope with rugged terrain and little infrastructure. This scripting is materialised in the bikes, which must be strong and simple so they are easily repaired with the few spare parts and tools available in 'rural Africa'.

NGOs focus on the utility of a bicycle as a functional vehicle that will bring a financial return to families by increasing access to income generation. This script is weighted more towards the desired impacts of organisations and funders, which are economic and measurable (Bebbington, 2005), rather than the needs and desires of multiple, heterogeneous, users. Other performative, sensual and playful uses of the bicycle do not fit into the prevalent conceptualisation of a development subject. Greater value is given to adult bikes by both international and local NGOs and children's bikes are considered to be space fillers in shipping containers within a development network that prioritises the physical utility and economic impacts of mobility. Watkins et al. suggest there is a "fundamental ambiguity about for whom the NGOs are producing" (2012: 292). Some argue that NGOs are self-representing transmission channels for images that legitimise beneficiaries to donors in order to secure funding, which may not always be truthful (Townsend and Townsend, 2006). The legitimisation of beneficiaries in this case may not always be untruthful either, however, a more nuanced scripting of bicycles would align production further towards end users and further away from donors.

As a strategy against funding uncertainties, competition for funding and a pressure for organisations to be sustainable, some NGOs have designed a two pronged business model that sells bicycles to consumers and uses donations to fund development subjects whom are not economically active. This model entangles profit making business activities with charitable, not-for-profit, development. Development that is taking place through a model of entrepreneurship and consumption operates more independently of funders and is more sustainable. However, children and women as development subjects whom are not economically as powerful in Africa as males, do not fit into the business model as consumers, which demonstrates a gendering in the scripting of bicycles for males and a tension between the humanitarian and for-profit

objectives of NGOs. Bebbington (2005) similarly finds that individual beneficiaries are often self-selected in communities, which means the NGOs are working with more dynamic, resourceful and economically viable individuals, but have little benefit to the most poor people in the communities in which they work. Currently, the only way the NGOs can reach women and children is through reducing the price of bicycles for them, which marks a deficit in profits and a dependency on donors.

Akrich (1992) recognises the possibility of objects, through a process of scripting, to have political strength, produce geographies of responsibility and to impose certain frameworks to users. The inscription of productivity into second-hand bicycles imposes a moral framework of economic growth onto the mobility of African consumers and development subjects. Thus, bicycles are positioned as vehicles that co-produce and translate a modernist discourse of economic growth to development subjects. The mobility of the bicycle, along with its script, relates human actors across the globe and shapes a place and subject of development (Söderström, 2013). However, the agency of designers and users cannot always be assumed in networks and in this case, multiple actors influence and restrict the construction of users and desirable mobility performances for users who are excluded from the design mechanism. Material actants also restrict the scripting process; in this case shipping containers and the second-hand materiality of bikes constrain designers with their physical scripts materialised by previous consumer fashions. The direction of power in scripting users cannot be assumed to operate only in North to South flows as this chapter has demonstrated, which further develops Akrich's (1992) study. Local partners also use their agency as gatekeepers and mediators to represent local users in such a way that their own financial needs are benefitted firstly, but in doing so, end users are distanced from negotiating with designers. The result is that even though local partners are involved in the design mechanisms of mobilities for sub-Saharan Africa, they are not staged as inclusive for diverse users and are conceived in a top-down process.

5. De-inscribing Development Mobilities

In the previous chapter I described how NGOs and funders inscribe utility and economic function into second-hand bicycles as they are re-valued for sub-Saharan African users. The process of product scripting by NGOs occurs in-situ with conceptualising a homogenous stage onto which the bicycle is placed as a relevant development solution. The script envisages particular uses for second-hand mountain bicycles focused on agrarian economic and domestic productivity, but denies other uses, such as play, recreation and consumer identity performance in a variety of contexts. Development organisations reinforce the object's economic function and durability to promote the objectives of their own activities in order to compete for funding resources. In doing so, organisations have to align themselves with normative development narratives, which prioritise income generation and productivity.

Following the second-hand bikes to Namibia, this chapter evidences the subscriptions, de-inscriptions and re-inscriptions of the technology. The main focus of the chapter is how users negotiate the NGOs' socio-technical script of the bicycle to meet their own needs and desires. Users demonstrate playful and creative uses of bicycles that interweave with functional use. They also de-inscribe the bicycle whilst subscribing to alternative transport that is more appropriate for their needs. The user's definition of the product is often at odds with the producer's intentions. Whilst adopting outside technology – the mountain bike – young Namibians adapt and re-inscribe the NGOs' physical utility script of second-hand bicycles. These users select bicycles according to their needs, desires and abilities (Fallan, 2008) and relate to the more embodied aspects of mobility, such as identity performance and play, expressed through using gears to ride fast, for example. The role of mobility for Namibians to perform and embody their identity may be less, equally, or more important, than the functional and economic role of mobility. The key point argued is that consumer identities are heterogeneous and evolving rather than the singular identity promoted by NGOs. Therefore, through detailed understanding of their appropriation of second-hand bikes, this chapter sets out a more nuanced representation of Namibian development subjects as more than just 'homo-economicus'. This identity is created within mobility performance as users select a bicycle based on the identity they wish to reflect and is therefore central to understanding how mobility is staged locally, as well as globally, through bottom-up/top-down, user/producer, relationships (Jensen, 2013).

Firstly, the chapter demonstrates how an older generation of riders subscribes to the NGOs representation of mobility for practicality, durability and utility. Therefore, their consumption choice is a traditional roadster bicycle, yet they often reject the physical script of the second-hand mountain bike. This demonstrates the tension in the scripting by NGOs as they create a stage for the mountain bikes donated by Western consumers and construct productive users. This generation believes that young riders are are impractical in their consumption choices, however young riders demonstrate the contrary in interviews as they compare the strength of second-hand bikes relative to Chinese imports sold at a similar price. The chapter then considers how younger people relate to their mobility in Namibia and explore the reasons they give for choosing to ride mountain bikes, which relate to modern ideals of speed and efficiency. Following this, the chapter demonstrates how the bicycle is de-inscribed relationally amongst alternative transport technologies. The next section focuses on the alternative mobility performances and practices, such as playful and recreational practices, that make use of bikes in such a way that de-inscribes the more dominant and homogenous narrative of productive bike use in Namibia conceptualised by development organisations. Finally, I consider the cultural meanings young people assign to mountain bikes, the bikes' image and their desire for objects of fashion. I explore the materiality and performativity of this relationship, for example, the objects attached to bikes and the way in which loads are carried, that function to distinguish old and new mobilities.

Collectively these narratives develop an account of how Namibian mobility needs and desires are transient and reflect a younger generation's need to connect with modern perspectives and practices of mobility, which are not always fixated on income generation or practical function. Alternative performances include play and the expression of modernity and global connectivity through the speed and style afforded by second-hand mountain bikes. That is not to say, however, that young people reject a bike's meaning of utility, strength and durability, rather they make informed decisions that include and go beyond this script. Thus, it is argued that the bike is used to accomplish multiple identities by African users rather than the homogenous representation of African development subjects constructed by NGOs and their donors.

Strength and Durability of Traditional Roadster Bicycles

The roadster bike was introduced to Africa during the colonial period and is still imported from China and India (Figure 5.1). It is a heavy, single speed bicycle typically weighing 16-20kg. It is designed to be simple in its mechanical function, strong, stable and durable with solid steel tubing.

Figure 5.1 A roadster bicycle manufactured by the Indian company Atlas

It is the type of bike that appears in images of Africans carrying large, heavy loads, such as Figure 4.1 (p.125) depicts. They have a reputation as the go-to bike for those who frequently need to transport goods.

There are a number of variations throughout Africa, although all are based on the same design, but are produced by different manufacturers; in Namibia the brand imported is Challenger and so amongst respondents roadsters are referred to as 'Challengers'.

Figure 5.2 Challenger and mountain bikes for sale in a furniture shop in Rundu, Namibia

Photographed above (Figure 5.2) is a Challenger for sale next to a mountain bike in a furniture store that also sells new bikes in Rundu town. These are the two most popular types of bike

available in the region. Mountain bikes with full-suspension are also available on the market, imported from China.

Predominantly it was male participants, aged 35 and upwards, who stated a preference to use a Challenger. This was either when participants talked about the bike they ride, or during the photo elicitation exercise when these participants would select an image of a Challenger bike over images of mountain bikes as their preference. This is partly because of the load carrying utility of the Challenger:

> "R: This is the Challenger style - the only thing this needs is a good rack. You can use it for water. You can use it for firewood." (Male, 50 years, Rundu)

The socio-technical script read by this user is one that emphasises its strength for practical purposes such as carrying wood and water. The participant highlights a physical element of the bike's script – "a good rack" – that is significant in his subscription of the technology relevant for his needs. The roadster bicycles are known to be durable, for example:

> "I: Why do you prefer the Challenger?
>
> R: It's very good because it's the one I used to use. The brakes are not frequently damaged. " (Male, 46 years, Mile 10)

This respondent doesn't consider the mountain bicycle to be one that he would use and alternatively subscribes to the durability of the roadster bike's physical elements, which demonstrates rationality in his consumption choice.
However, despite a desire of an older generation of Namibian men to ride Challengers, one participant talked of how increasingly difficult they are to purchase:

> "R: There are not so many Challengers now, they're getting fewer.
>
> I: It's harder to find one now? Why do you think that is?
>
> R: They are mostly manufacturing mountain bikes [rather] than Challengers.
>
> I: Why do people prefer mountain bikes now?
>
> R: Because they're fast." (Male, 33 years, Mile 10)

This quote demonstrates a growing trend to ride a bike that is faster than a Challenger, which is slower because of its weight and single gear mechanism. The demand for a faster and more efficient bike may be reflecting a temporal change in Namibian mobility, which is speeding up. For example, the majority of Namibians own cell phones, which have transformed the speed of communication. Almost all of the respondents desire to own a car and many cited that the public bus is too slow. Many of the respondents living in the suburbs of Rundu choose to travel to town

by taxi rather than walking and animal-driven mobilities are almost non-existent from Rundu except for those who collect firewood to sell. It may also reflect a desire to express a performance of speed that embodies a person's style, physical strength, modern identity and awareness of global fashions. It may reflect a reduction in the need, or desire, to carry heavy loads. The trend towards mountain bike use may be a result of a combination of these factors as the following sections explore.

The perception of the Challenger as the most strong and durable bicycle is contextualised in relation to more recent mountain bike imports from China and India, which are perceived to be less durable:

> "Chinese bicycles shine. But just after a day the tyres are damaged. The price will attract you but it won't last long." (Female, 53 years, Rundu)

Goods sold in Chinese owned shops have a reputation for their poor quality and lack of durability. This quote refers to bikes which may look good and are fashionable, but are quickly damaged due to the poor quality of their components. Despite the lack of durability of these bikes, many consumers are attracted to their price, style and gear mechanism.

The reputation of Chinese goods to be of poor durability has reduced the trust in new technologies and consumer goods on the market, which compounds some users' subscription to the traditional roadsters:

> "The older bikes from the colonial time were very strong, whereas modern ones, even the tubes are very light and weak that's why I prefer the older ones." (Female, 31 years, Mile 10)

This demonstrates that respondents have formed an understanding of the strength and utility of roadster bikes comparatively against newer bikes, which are manufactured to be sold at a lower price and are, therefore, of lower quality. Even though it may not be the best design in terms of speed and efficiency, the roadster is scripted for its strength and as other newer models are particularly likely to be weak, its script holds firm and its physical design is stable. It is particularly older Namibians who typically favour a bike's physical script of strength and durability over speed.

The disapproval of new bicycles by elders tends to fuel a narrative of younger generations' mobility desires being driven by a lack of knowledge held by youth:

> "I: Do you think it's for younger people the mountain bike?
>
> R: Yeah it is.
>
> I: Why do you think they like the mountain bikes?
>
> R: The knowledge of the young ones and the knowledge of the elders are two different things." (Male, 46 years, Mile 10)

The respondent suggests that young Namibians think differently about their mobility, which is not concerned with the utility of the bike. They are not considered to be rational actors by an older generation who tend to think the youth don't know any better and are irresponsible in their mobility choices:

> "R: Challengers are made from strong metals, but the mountain bikes are weak.
>
> I: And why do you think the younger ones are going for the weaker mountain bikes?
>
> R: It's because they don't know." (Male, 45 years, Mile 10)

> "I: Do you think the younger generation, as they grow older and wiser they will want a stronger bike, or will they stick with the fashion?
>
> R: They will still stick to the new ones. They are not getting any wiser." (Female, 38 years, Mile 10)

These quotes suggest that an older generation are differentiating themselves from the youth through the choice of bicycle they use, which is scripted for practicality and utility. For the older riders, de-inscribing these practical elements of the bicycle is frivolous behaviour.

> "R: When I was a kid elders could put me on the rack and quickly go to hospital.
>
> I: So you don't trust this new one for its strength?
>
> T: No
>
> I: Why not?
>
> R: These new ones are for the modern generation. For the young ones we're giving birth to now. They're the ones who like them.
>
> I: Do you think when this generation grows older, are they going to want a Challenger? Or will they stick with the mountain bike?
>
> R: They will not like Challengers, because Challengers were THEIR generation. They are growing up with mountain bikes. So they will love what is for their generation." (Female, 38 years, Mile 10)

This respondent is stating that mountain bikes are thought to be modern and are only relevant for younger users who do not value the strength and durability of a bike. Instead, young Namibians are constructed as fashion conscientious and concerned with having the latest commodities. However, the younger users interviewed did not demonstrate a lack of knowledge of the different scripts of bikes or of their mobility needs. They do not necessarily always disregard strength and durability when selecting a bike. For example, they prefer to buy bikes from Cymot, a reputable German company located in Rundu, or from the second-hand shops because they arrive from the West and have a better reputation than Chinese bikes known to be of poor quality. Therefore, young users are also attached to a bicycle's physical script of strength and quality:

> "I: Does it matter if they're second-hand, or new, with the mountain bikes?
>
> R: Some of the bicycles, even if they're second-hand, you can see that they're strong.
>
> I: What about those two there [showing images of second-hand mountain bikes]?
>
> R: You can find them bent like this. But even though it's second-hand, it's strong." (Male, 34 years, Rundu)

This 34 year old places value on the strength of mountain bikes that are second-hand over new Chinese models. Even if the bicycle clearly looks second-hand and damaged, the respondent still believes it to be strong. This demonstrates how the consumption of second-hand bicycles is partly an outcome of their value, which is generated by social constructs of trustworthiness (Hetherington, 2003) in relation to other products. Concepts of trust in products are constructed through the respondent's knowledge of global identities of production. For example, reputations of strength are associated with the West and weak products associated with China (Omobowale, 2013):

> "R: [Studying photographs of bikes] these ones [the Challengers] are better quality. This one, the Chinese one, the metals can bend with something heavy.
>
> I: Is it because it's new? Are you more familiar with the Challenger is that why you think it's stronger? You don't trust the other one?
>
> R: Yeah it's new and most of these new things are just not of good quality." (Male, 18-20 years)

This respondent evidences that concerns of durability are matters of cultural perception and it is particularly newer technologies that produce anxieties of quality (Pierce and Paulos, 2011). Thus, the re-valuing of materials is structured into existing cultural meanings attached to

second-hand imports in contexts of other products available locally (Omobowale, 2013). The quote also demonstrates that the decisions consumers make in choosing a bicycle for strength are not necessarily a generational trend. Young consumers also are aware of strength and durability and the physical attributes of a bicycle's script are important to a young generation.

To summarise, an older generation of Namibian users are more engaged than younger users with a bike's physical script of utility, strength and durability. However, that is not to say younger users do not care for having a strong and durable bike as elder Namibians might assume. They demonstrate this by acknowledging the lack of quality and strength of Chinese mountain bikes imported to Namibia and cite their preference for bikes sold by a reputable German company and the second-hand bike shops. However, because young Namibians prioritise speed, image and fashion over utility and durability, they choose mountain bikes rather than roadster style Challengers. Both young and older Namibians are consumers that make decisions by weighing up the different product scripts of mountain and roadster bikes, thus choosing a bicycle that best suits the function they require from a bike and the identity they would like to construct and perform (Fallan, 2008). This de-inscription of the NGOs uniform utilitarian script occurs situationally and relationally, where other technologies with alternative scripts are available (Jensen, 2013). Scripts are read by users in complex networks that are not easily detangled, as Latour states "it is never clear who or what is acting when we act since an actor on stage is never alone in acting", other actants are at play, such as the backstage crew, the lighting, the audience, the playwright and so forth (2005: 46). Without detailed empirical knowledge of the local situation in which the bicycles travel to, it is difficult to predict how their script will be interpreted by users.

Here, it is an older generation that de-inscribe the physical script of second-hand mountain bikes shipped by NGOs. They reject these bikes believing that a traditional style, single speed, Challenger is stronger and more durable. However, they do subscribe to the NGOs' socio-technical script of bicycle use for utility. But, because the NGOs have no control over the type of bikes that are donated there is a conflict between the producer and consumer that arises from the compromise of re-valuing second-hand goods (Crang et al., 2013). This demonstrates a tension between the socio-technical scripting of second-hand bikes for development and the physical and socio-technical scripts that already exists in second-hand products available, which are modern, fast and playful as well as durable and relevant for multi-terrain (if of reasonable quality), but not so relevant for carrying heavy loads. Therefore, young consumers are subscribing to the physical script of the mountain bike, however, de-inscribe the 'ideal' uses pre-scribed by development organisations. Rather, the younger Namibians are aware of their agency

to perform the identity they choose through their consumption. An older generation of Namibian consumers continue to use new Challengers imported from India and China and generally (with some exceptions in the urban context) reject second-hand and new mountain bikes.

This evidence relates to Jensen's concept of situated and staged mobilities, which are co-produced by designers and users in complex networks and as a result of shared cultures, values and norms in both designer and user performance (Jensen, 2013). These values and norms occur within the socio-technical and physical product scripts of bikes, but when these are re-inscribed alternatively by NGOs and transported to meet distant consumers in heterogeneous and unpredictable contexts, consumer cultures, values and norms, create some tension and conflict in the designing of mobility practices for development (Söderström, 2013). Jensen draws significance from the "dynamic and process-orientated" nature of mobile situations that are co-produced, but not necessarily face-to-face and move across scales "reaching from the body to global" (2013: 12). For Jensen, mobilities are "constantly mediated and negotiated" and made possible by networks (2013: 13) and it is the stretching of interactions and relations in networks that needs to be accounted for in understanding mobilities, he argues. The evidence of this chapter so far demonstrates the difficulties in stretching technical scripts across space to stage mobilities because of the lack of feedback mechanisms between the entities that are staging and the staged. Distance between users and designers result in tensions in the scripting mechanism and thus, greater flexibility for negotiation is required to smooth these out. In this case NGOs might recognise the heterogeneity of users and diversify their script to account for a wider variety of user performances. This translates to consumer choice, which might be accounted for by supplying a greater range of products scripted for different users.

Speed and Efficiency of Mountain Bikes

Young people often describe the speed of the mountain bike when justifying the choice of bicycle they desire during the photo elicitation exercise, for example:

> "I: What about this one? [Showing respondent an image of a roadster bike]
>
> R: This one? Yes it's old. This one is 20 years.. like 1990 something.
>
> [laughter]
>
> I: The old Challenger?
>
> R: mmm
>
> I: So you prefer this one [the mountain bike]?

R: Yes the latest one. It's faster than that one" (Male, 20 years, Rundu)

The respondent laughs about the image of the roadster bicycle, whilst commenting on its age. He demonstrates his preference for the latest fashions and his distaste for older models ridden by elders. This quote suggests that young people are engaging with the mountain bicycle because it is the latest technology that is quicker and, therefore, also easier to use than older models.

"I: Are all your bikes mountain bikes?

R: Yeah

I: OK why did you choose that kind of bike?

R: It is fast. Even up a hill. You easily go up." (Male, 35 years, Mile 10)

This respondent notes the efficiency of mountain bikes, which allow more speed than roadsters, particularly whilst travelling up-hill. This suggests that the speed of the mountain bike also is about its utility in traveling more efficiently. Younger users often talk about the benefits of having gears on their mountain bikes. They describe using gears as easier than riding the fixed gear roadster bikes:

"I chose the mountain bike because if you are tired after work you can put it in the soft gear and just make it easy". (Male, 34 years, Rundu)

These respondent demonstrates that they are attentive of their embodied experience of using a bike that is more comfortable. Having a choice of gears is useful in windy and sandy conditions, which are frequent in Namibia. Roads tend to be long and straight with no shelter from head winds:

"I think it's good the way they [mountain bikes] are designed. Like they work in different conditions. Say if it's windy and you're facing into the wind, you can adjust the gear to make it easier." (Two males, 18-20 years, Bunya)

This demonstrates a greater complexity in the consumer choices of Namibians than the NGOs assume. These riders demonstrate the situated and embodied performances that contribute to a mobility system (Jensen, 2013), for example, shifting gears to account for the wind. Users select a bicycle that best suits their needs, which are not accounted for in the NGOs script that is purely about economic function. For younger Namibians the weight bearing capacity and utility of a bicycle often do not take precedence over the sensation of moving efficiently and in comfort.

Many young respondents, particularly women, cite a preference for a mountain bicycle during the photo elicitation exercise because they are available in smaller sizes. The roadster is a bicycle women and girls find to be too big for them and therefore difficult to ride. For example:

> "I: You'd choose the mountain bike? Why do you choose that one?
>
> R: Because it's small. It's shorter. It's easier to ride. The high one is very difficult to cycle. You can easily fall off." (Female, early 20's, Bunya)

Although female respondents stated they do not generally ride bicycles beyond their youth, looking at the images of bicycles, women are citing the ease mountain bikes afford over the more traditional style Challengers. The meanings attached to the mountain bicycle, for young people, are gendered with women expressing that they are easier and safer to ride because the size and weight are more suitable:

> "[The mountain bike] it's a bit lighter when cycling compared to the old one."
> (Female, 31 years, Bunya)

However, they also embody the mountain bicycle's physical script, which is read in terms of its comfort and ease. Cycling is an embodied experience for this respondent and with an emphasis on ease and comfort, bicycles might alternatively be scripted by NGOs for facilitating easy and comfortable travel. Rather, the NGOs socio-technical script of load carrying signifies the opposite to its reader. The NGOs have focused on the practical function of mobility, but have not considered the significance of embodied user performances (Jensen, 2013). Speed, comfort and ease are significant to users who want to embody a modern identity that signifies efficiency.

The following respondent spoke about the desire for faster travel and could see the benefits of the bike being faster than walking, or some animal forms of transport, but thought that perhaps bikes, overall, are too slow, which reflects the common aspiration to own a car with the bicycle being the next best thing that people can afford other than walking.

> "R: These days most of the traditional modes of transport are fading out. Everyone wants a fast mode of transport, so it is good that people try to get bicycles.
>
> I: Why is it good?
>
> R: The good thing is if you are trying to go a distance they can cut your journey and make sure you arrive on time. But a bike is a bit slow." (Female, 26 years, Rundu)

This quote demonstrates the desire young Namibians have for fast transport, which is evident in the previous justifications in preferring the efficiency of mountain bikes over roadsters. For example, a respondent describes why he wants to learn to drive:

> "I: How would you like to improve your transport if you could?
>
> R: One is like learning what others do and you can also try to do things that will be easy for you.
>
> I: What do you mean by that?
>
> R: When I started cycling I wanted to learn how to cycle and maybe I will also want to learn how to drive a car.
>
> I: OK so are you saying it would be better for you to learn to drive one day?
>
> R: Yeah.
>
> I: OK. Why is it important for you to learn to drive?
>
> R: Maybe you want to go fast and drive yourself […] then yeah you get to where ever you want." (Male, 18 years, Mile 10)

The importance of progression and improving their lifestyle is significant for the mobility performances young Namibians aspire to. This respondent wants to improve his transport by learning to drive for the speed and freedom it affords. Previously he wanted to learn to cycle to make his mobility more efficient. This focus on lifestyle improvement, which is embodied in the ease, comfort and speed of mobility, is at odds with the NGOs socio-technical scripting of second-hand mountain bicycles for tackling tough terrain and carrying heavy loads. The desire of young Namibians to embody their affiliation with faster ways of moving through using more efficient, quicker mobilities, which are considered to be modern are qualities which are present in the physical script of mountain bikes. Mountain bikes have gears so that they are more easily ridden and relative to roadsters, are lighter. This enables easier and quicker travel, which as the above respondent suggests, is learnt by seeing how others are travelling.

Some older users also choose a mountain bike for its speed and efficiency relative to the roadster:

> "I: Why did you choose a mountain bike over a Challenger?
>
> R: All the bikes work but the reason I got a mountain bike was that it's a bit faster to quickly rush to work." (Male, 50, Rundu)

This elder rider requires fast and efficient mobility in order to be punctual for work. Rushing, however, is not a value that the NGOs' script in their bikes. Efficiency, in the NGOs' script is

represented by load carrying on a technical object rather than by foot. This script assumes a development subject who does not go to work, but one who goes to market with produce and fetches water. The NGOs' script is singular in its user representation and more broadly its representation of African poverty, which in the NGOs' script, is predominantly rural.

The following respondent is 65 years old and owns a mountain bike. He separated the picture cards of bicycles based on their carrying utility; those with carrying racks and those without. He perceives that the more traditional Challenger bikes are for rural lifestyles, whereas mountain bicycles are most suitable for those living in urban areas, since they will want to seek the latest fashions:

> R: I would go for this one [the mountain bike].
>
> I: Why did you change your mind?
>
> R: They [Challengers] are old and for the village.
>
> I: So with these bicycles, the mountain bikes, do you think they're for the town?
>
> R: Yes
>
> I: One is urban and one is rural?
>
> T: Yeah people will come and consider what's new. Like what's new on the market." (Male, 65 years, Rundu)

This elder respondent suggests that the desired use of bikes varies depending on urban and rural contexts. In the town older consumers could be more aware of fashions and the most efficient bikes on the market. This respondent is suggesting a desire to perform a more modern and efficient mobility that differentiates himself as urban, which is a more progressive identity than being rural, or from 'the village'. This highlights that the spatiality of identities is significant in how socio-technical scripts of materials are subscribed to, or de-inscribed, in binary spaces of urban/rural as a result of consumers performing modern or traditional identities. This is aligned with theories that suggest consumption is irrationally driven by the desire for people to differentiate themselves from one another and to perform various identities (Bourdieu, 1984; Sassatelli, 2007; Simmel, 1971).

Technology is de-inscribed in situated socio-material environments at by local users who demonstrate the 'microdynamics' of scripting (Oudshoorn et al., 2004) and the 'situated microecologies' of design (Jensen, 2013). These contextual user negotiations are the bottom-up performances through which users embody the identities they choose to convey (ibid). The

mountain bike is used unpredictably by this elder who appropriates it in order to embody his urban identity that he associates with an awareness of global trends and new commodities. He is closer to a consumer who is concerned to perform a modern identity than the NGOs' construction of a productive and utilitarian development subject. For many of the respondents, consumption is a matter of both rational calculation and other impulsive desires (Corrigan, 1997). This demonstrates how travelling forms are negotiated unpredictably by users, who often de-inscribe the intentions of designers to meet their own needs in mutable networks (Akrich, 1992; Law, 1994; Söderström, 2013). The spatial dimension of subscription and de-inscription that occurs in the 'microdynamics' of scripting enriches Akrich's (1992) analysis that focuses on the vertical dynamics of spatial de-inscription of development tools as they travel from the Global North to South and across spheres of global and local. However, Script Analysis has further use in determining the spatial differentiation of user de-inscription within local places that are not homogenous.

To summarise, a younger generation of Africans are less concerned with productivity and utility, but are more receptive to the mountain bicycle's socio-technical and physical scripts since they desire to travel with speed and efficiency. They de-inscribe the carrying utility of the bicycle as imagined by NGOs and are an example of a more nuanced representation of Namibians as consumers who make decisions based on the embodied ease and speed of travel whilst compromising load carrying potential. The situated microecologies in which the meaning of things are produced and used is relevant. For example, the mountain bike's comfort and ease is understood by users relative to roaster bikes. Because scripts are read in-situ some tensions arise between the actors staging mobilities for development and those performing them. The evidence in this section suggests a need to pay greater attention to the microdyamics of staging mobilities and to open up the possibility for user feedback and negotiation in technical development networks. This might be though flexible design that encourages users to re-inscribe objects, which de Laet and Mol (2000) describe as 'configurational immutability' in a network. A bicycle will remain a bicycle, however approaching its socio-technical script with curiosity to see how it is negotiated and adapted in context, might allow it to be transformed in unexpected ways that are more suitable to local contexts and allows the object to travel with fewer complications (ibid).

Alternative Technology

Often, rather than using a bike to carry heavy goods home from Rundu town, the respondents hitch-hike, or use a taxi. Again, the bicycle's socio-technical script designed by NGOs for load carrying utility is de-inscribed by users; both old and young. For many people cars are their

desired mobility choice. Even though they cannot afford to buy a car they may prefer to travel by taxi when they have things to carry:

> "The only value [of a bicycle] is to transport you alone, but not like loading it with a sack of maize meal." (Female, 60 years, Rundu)

> "There are quite a lot of cars carrying a load. He can just put the stuff in the car and then go with the bike." (Male, 60 years, Mile 10)

These respondents value the car that can easily carry heavy goods. There are many cars running into town from Mile 10 and Bunya villages and drivers offer an informal service of going into shops, purchasing a sack of maize meal and bringing it back to their customer in the surrounding areas, which works out cheaper than the client traveling to town themselves. In rural areas that are connected to a nearby town by a main road with substantial traffic the carrying utility of a bike becomes less of a priority. Again, this highlights a spatial element to the de-inscription of the bike's utility by Namibians. The above quotes also demonstrate that the preferred carrying utility of the car over a bike, and particularly a mountain bike, is partly because of food consumption practices in Namibia. People frequently need to carry heavy sacks of maize meal from town that will feed the family, thus the physical script of a car is more appropriate and efficient for this purpose. This demonstrates that the NGOs' script over-values the carrying utility of the bicycle and in reality many users believe the bicycle is not as valuable as the NGOs do. Scripts are accepted, rejected and negotiated depending on needs that are place specific, which requires a more nuanced understanding of the multiplicity of users and the microecologies of mobilities (Jensen, 2013). The evidence suggests that socio-technical and physical scripts of technical objects require a degree of mutability and space for negotiation to be applicable to the heterogeneous consumers in Namibia (de Laet and Mol, 2000). In this case cars are used for load carrying because they are more efficient than bicycles, therefore a script that emphasises the load carrying capabilities of a bicycle is less relevant for these users. Instead, incorporating the mountain bicycle's ease and comfort into its script is more relevant to a younger generation of Namibian users. These negotiations would account for the situational microecologies of Namibia that include other transport systems, regulations, modes and protocols that have developed over time (Jensen, 2013).

It is not just cars that are considered to have a load carrying advantage over bicycles since participants describe the relative advantage of using animals if they want to carry something heavy:

> "Donkeys are better than bicycles. Bicycles can only carry two containers at a time, but donkeys if you yoke them can carry two 150 litre containers at a time. Or even just one donkey itself [without a cart] it can carry four containers." (Female, 54 years, Rundu)

> "The cart carries a lot of things, where as a bicycle can just carry one container, the ox and cart can carry ten." (Female, 25 years, Mile 10)

These respondents suggest a de-inscription of the NGOs' utilitarian script of the bicycle. There is a greater potential for animal based transport to carry heavy loads that by far supersedes the physical script of a bicycle to carry large amounts of water as these quotes suggest. Both of these respondents are based in rural villages and as previous evidence has also demonstrated, there is a spatial variance in how animal transport is valued. Animal transport is valued in rural places, but because it is associated with traditional and rural lifestyles it is not considered to be relevant for an urban place. Therefore, the de-inscription of the bicycle as NGOs intend it to be used occurs vis-à-vis other forms of transport available and their socio-technical scripts. This highlights the complexity of translating and staging mobility practices since a socio-technical script must negotiate local consumption needs and desires, which are constructed and embedded in place specific social-material assemblages. This reflects Jensen's conceptualisation of the meaning of movement, which is created in relational networks of circulating people, goods, information and signs (2014: 4). The 'microdyamics' of scripting, translating and moving materials as part of a staged mobility is uncertain and not easily predicted (Söderström, 2013). This complexity increases the need for negotiation between distant users and designers, yet a hierarchy of power, which is distributed between donors, international and local NGOs, is not inclusive of real user representations. A 'mediation junction', whereby a mechanism is opened for the mutual articulation of demand and supply, is absent (Schot and de la Bruheze, 2003). This situation reinforces the identity of 'beneficiary' for the bike's users (and non-users) who have little choice in what they receive and suppresses the Namibian consumer identities that have the agency to co-produce a socio-technical script (Akrich, 1992). This demonstrates how the bicycle acts as a vehicle in shaping social constructs to reinforce existing identities entrenched in poverty, but also its potential to transform and empower consumer identities in sub-Saharan Africa by becoming a node for global-local/consumer-producer negotiation (Oudshoorn, 2003; Shade, 2007).

Playful and Recreational Mobilities

I now turn to evidence that captures the playful, leisurely and sensory use of bicycles in Namibia that are contrary, or additional, to the bicycle's script of utility and productivity that the NGO respondents conceptualise. In the previous chapter I described how NGOs reject ideas about

bikes being used for pleasure, exercise and play. It is one of the pre-existing, undesirable, elements of the second-hand mountain bike's physical script that is hidden by NGOs, however, is read by users. This section demonstrates the many examples of respondents whom de-inscribe the economic and practical functions of the bikes and find other meaning in their use.

Playful and Sensory Movement

A respondent with children explains that she will not let them use their bikes at school in case they are distracted from their studies:

> "One reason why I brought the bikes is for the children to learn to ride and for exercise. But the reason why I won't let the children cycle to school is that they will have too much fun with the bikes and will not attend [lessons], or pay attention." (Female, 35 years, Bunya)

This is an example of how the bicycle is given meaning that is opposed to the utilitarian and productive script imagined for African development subjects by the NGO respondents. The intention of NGOs is for the bikes to facilitate education for children, thus bicycles are prescribed the bikes with moral content that assumes users will behave responsibly (Akrich, 1992). Rather than using their bikes to get to school quickly, however, these children are thought to be having too much fun with them and in order not to be distracted from their learning, they are only allowed to play on their bikes outside of school hours. This parent de-inscribes the NGOs' socio-technical script with their own moral reasoning and re-inscribes the purpose of the bike for her children's play and exercise. This respondent positions the bike as a playful instrument that risks disturbing an activity it should not. For example, Huizinga states "play is not 'ordinary' or 'real' life. It is stepping out of 'real' life into a temporary sphere of activity with a disposition all of its own" (1949: 8). Time and space are set aside for children playing with their bikes, which is positioned as other in relation to rational life, in this case, attending school (Woodyer, 2012). For this respondent, bicycles do not feature in rational activities, but only in playful activities that are performed away from school. This Namibian respondent is constructing binary accounts of playful and productive mobilities for her children. The respondent's concept of her children's use of bicycles for play, as opposed to utility, is at odds with the NGOs' script. Furthermore, because the respondent understands bicycles for children as only objects of play, she demonstrates how children's bicycles are being reinforced as value-less in a network of NGOs and funders who only value rational productivity in their socio-technical scripting of bicycles.

I observed many children playing on bikes, or with unwanted parts of bikes, such as wheel rims. Bikes that appeared to have no further use to their original owners would be used by children who found value left in them (Figure 5.4).

Figure 5.3 Child playing on a bike, Mile 10, Namibia

For example, the child in Figure 5.3 is using a bike comprising of parts handed down from the second-hand bike shop in Mile 10. It has no gears, chain, or tyres, and has odd sized wheels. Still the child manages to push it up to a hill and ride down, over and over again, for no purpose other than to enjoy the bicycle's movement. Not only is this child de-inscribing the NGOs' utilitarian script, he is also de-inscribing the usual surface materials and topography, such as level asphalt, that relationally constitutes a staged mobility of productivity (Jensen, 2013; Stevens, 2007). Figure 5.3 demonstrates how the eroded surface affords a playful performance in situ with the reconstructed bicycle (Jensen et al., 2017) since it is only the hilly topography in an otherwise flat landscape. Thus, it affords some gravity which enables the use of a bike with no drive mechanism. The second-hand bike's physical script has been deconstructed and re-inscribed along with its socio-technical script, which has been given a new ludic meaning. This playful performance is afforded situationally within a 'microecology' of undulating terrain, which in its natural eroded state is an arena for playful mobility, but not productive mobility. Whilst some surfaces proscribe bike use (see Chapter 6) others afford a re-inscription of the bike's ludic utility for children.

Another child is depicted in Figure 5.4 riding a bike with no pedals, gears, or chain, in Mile 10 village.

Figure 5.4 Child playing on a bike with no pedals, Mile 10, Namibia

The bike's use diverges from its intended function in a creative and unexpected way, thus a new meaning for the object is discovered and enacted through bodily engagement (Stevens, 2006). Children are riding these bicycles close to their homes with no purpose other than to enjoy the sense of movement through play (Solomon, 2009). They engage with the technology and with it express an alternative identity that is not often associated with a development subject by Western aid organisations. The bicycle is giving this child the freedom to experience mobility "felt by a much more rich and differentiated bodily register" than the dominating view of the instrumental rationality that governs the construction of development subjects (Jensen, 2013: 112).

The bicycles the children use are in a state of disrepair as they make use of unwanted bike frames and parts. For example, the bike in Figure 5.5, has no drive mechanism and the wheels are different sizes. Foam is placed on top of the frame in absence of a saddle. It may have very little functional utility, but still it serves some purpose for a child's play.

Figure 5.5 A bike frame with odd sized wheels, simple cushioning and handles used for play

A respondent describes what happened to their bike after they stopped maintaining it:

> "R: It [the bike] disappeared. All the parts in different directions [laughing]
>
> I: Is it the children playing with it or something?
>
> R: Yes" (Male, 45 years, Mile 10)

He laughs as he imagines his bicycle being deconstructed and perhaps jovially fought over by children whom re-inscribe the broken object for play. This is not the use of second-hand bicycles as imagined by NGOs whom train mechanics to repair and sell the bikes mostly to productive adults. These children are de-inscribing the product script of NGOs and making use of parts that are rejected by the second-hand shops who dispose of frames that have no re-sale value for activities that are economic or domestic. This is an example of 'down-cycling' in second-hand trade flows whereby products at the very end of a consumption process are deconstructed and reconstructed into new products and given new meanings (Crang et al., 2013). In this example, functional bicycles are further broken down and remade into objects that almost resemble bicycles, but are used for children's play as opposed to utilitarian mobility. This is an example of a product re-design informed by non-compliant users (Fallan, 2008) whose needs come about in this network because of the limited play equipment available for children and the limited resources they have as consumers (Berinstein and Magalhaes, 2009). The state of disrepair of the bikes children are using evidences their powerless position as consumers. Their families cannot afford to purchase a fully functioning bicycle and whilst NGOs do not value shipping

second-hand children's bikes, they make do with what is available. This resembles a compromised situation of exploiting the heterogeneous material properties of second-hand goods to extract values out of necessity (Crang et al., 2013). Children are appropriating used goods and exercising their agency in this network, even though as consumers they have very little agency, they are still acting in negotiation with the object's socio-technical and physical scripts in order to re-inscribe its utility in a way that is of value to them. They are able to move with speed and to engage with their environment in a sensual and meaningful way (Spinney, 2007). This happens situationally and relationally with other material actants, whereby the surface used for cycling affords an embodied ludic engagement (Jensen et al., 2017).

Children's engagement with the bikes cannot always be separated from more productive mobilities. A respondent states:

> "In every street almost, there will always be a bike somewhere in a house and it's different how kids play. If there's one bike in a house, there's at least five friends that will go try riding it. It's always like that. So people grow knowing how to ride." (Local NGO bike shop employee)

Learning to ride a bike is provides the option of riding later in the children's lives, but simultaneously for children, borrowing and using a bike is a form of play and a social activity. This is evidence of how utility and play are woven together and inseparable in the children's mobility, just as Katz (2004) finds in Sudan, that play and work are tightly bound and often indistinguishable as children experiment with social roles and cultural mobile practices. Through sharing bicycles, children engage playfully with adult mobilities and 'toy' with objects of the social world (Katz, 2004). Play is shaping the children's identities and indicates some progress to their becoming mobile adults, which as Sutton-Smith also argues, is an interplay between forms of play and non-play (1997). If play is positioned in this way, as dialectically occurring within the everyday (Stevens, 2007) and is recognised to interweave with more rational behaviour for children, then their mobilities and use of bicycles might be more highly valued, both locally and globally. This demonstrates the possibility for a co-production of socio-technical scripting of the bicycles that the development narrative could engage with that is flexible in allowing a user freedom to read the bike's script playfully and sensually, whilst developing their embodied and tacit mobile skills for the future and to experiment with social roles and cultural practices (Katz, 2004).

The way in which bicycles are played with by children in Namibia is positioned as occurring other to the more selective script of NGOs and funders whom stage a mobility centred on productive performances. In contrast to children using second-hand bikes for play and for fun, the utilitarian

script of the NGOs resembles what Vannini describes as a "distant, inimical social world that in one way or another seems to exert a uniform pull across individual lives" (2011: 358). Deviating from these normative expectations of productive development subjects, a more playful use of the bike suggests a freer 'wayfaring' style of movement (Vannini, 2011), to which, development networks assign little value. However, the interplay between utilitarian and playful mobilities, for children in Namibia, is not recognised. Development networks may in future recognise children's play as valuable as it interweaves with rational utility and progress, whilst enabling 'looser' mobilities for children (Stevens, 2007). A development network might, therefore, encourage rather than prohibit the shipping of children's bikes that are currently considered to have little value.

Playful performances also occur in the mobility of adults. For example, the following respondent describes the performativity of the speed that young adults can achieve using a mountain bicycle:

> "I: Why have young people swapped to the mountain bike?
>
> R: One it's a speed factor. They [young men] want to be fast when cycling. Secondly it's fashion, for example, they might cycle at high speed with no hands on the handle bars, chatting on their cell phone. Yeah so that's why they want these modern bikes." (Female, 38 years, Mile 10)

This quote demonstrates how mountain bicycles are used to embody faster and more fashionable and modern ways of moving. This respondent is relating to a use of the bicycle based on the pleasure in moving at speed casually and riskily, and the identity that young males want to create, perhaps masculine and modern identities, which are embodied through their mobility performance. This is other than a rational and functional use of the bicycle as scripted by the NGOs. Thus, this user de-inscribes the bike's economic utility and instead uses it casually and playfully. Namibians enact their identity through bicycles, not only with the model they choose, but the way in which it is used and ridden too. Cycling at high speed with no hands may be as much about enjoying the feeling of balancing and freedom as it is about expressing a person's style, fashion, masculinity and modern identity. This highlights the sensual experiences that are enjoyed and embodied in the practice of cycling (Peterson, 2007; Solomon, 2009).

One participant recalls an annual trip they make by bike:

"R: I used to cycle 50km on my mountain bike.

I: Do you still make that trip now?

R: Yes

I: How often do you go there?

R: Once per year at Christmas time

I: Ok and why do you cycle and not hike [hitch-hike]?

R: I prefer it. I used to reach one village. I used to see how they live and then I proceeded again.

T: It's like an adventure.

I: Yeah so you actually enjoy doing it that way?

R: Yes" (Male, 34 years, Rundu)

This participant chooses to cycle this annual journey to visit his family rather than hitch-hike or use a long distance taxi. He does not mention cost as his reason, but chooses to use the bike so he can call in and see how things have changed in the villages en-route. By cycling he has an opportunity to catch up on the news in a way that would not be possible during a taxi ride or bus journey. Although through ethnographic observations of using taxis and buses in Namibia I could see that these mobilities are also social and offer an opportunity for people to talk and meet. Conversations would often take place during the long periods of waiting for a bus to leave town, for example, or as different passengers enter and leave taxis. But, this participant is describing a more intricate journey that allows a connection with numerous places that he has formed a connection with during his childhood. He has independence to stop where he pleases, rest, meet people and then continue. The respondent describes the journey as an adventure and takes pleasure in this. Occurring annually at Christmas, it has become a ritual journey.

This is a very different account of cycling that de-inscribes the NGOs staging of mobility that does not imagine cycling to be about adventurous and social journeying for pleasure. This respondent provides an example of the emotional aspect of travelling and of feeling the pleasure afforded by a particular journey (Sheller, 2004). It reflects a desire to move for movement's sake, in spontaneous creative expression in order to engage with an "emotional and spiritual vocabulary" (Solomon, 2009:163). The trip, for this respondent, is more than just a means to an end and the bicycle affords a sense of excitement, enjoyment, spontaneity and ritual. The places visited by this respondent are experienced with a sense of adventure afforded by the embodiment of technology, with which, the body moves through and senses place in a

meaningful way (Spinney, 2007). In this account the bicycle is giving emotional, adventurous and nostalgic meanings to this respondent's journey home, which presents a more nuanced account of its use than the singular utilitarian socio-technical scripting of NGOs and funders.

Embodied performances are described as the "feel good factor" by an older respondent. He is critical of young users enjoying their bicycles as opposed to using them for something more functional, in his opinion, like carrying maize meal:

> "In the thoughts of the young ones, it's all about that feel good factor, when changing gears and cycling a bicycle. They are not building up plans. For example, he says like a mountain bicycle cannot even lift a 10kg [of maize meal]. So he's not doing plans. Like using the bicycle for a purpose or carrying, just doing it for feel good." (Male, 46 years, Mile 10)

The elder respondent thinks the younger rider is not responsible and lacks a sense of domestic duty and purpose. By riding mountain bikes young adults are judged on their lifestyle, their work, their family duty and life plans. This respondent's focus on the bike's economic and functional script and disregard of the playful aspects of mobility is closely aligned with the NGOs' script observed in the previous chapter. The respondent acknowledges the embodiment of two contrasting identities through the use of bicycles in Namibia; the dutiful worker and the irrational player, or, *homo-economicus* and *homo-ludens*. The latter is dismissed as having any responsible purpose in their bike use and demonstrates the limited value assigned to playful behaviour by a respondent whom believes duty is bound in future plans of productivity and domesticity. However, young adult Namibians and children engage in playful performances embodied through the use of the bicycle, which affords them the opportunity to reflect an identity that is other to an agrarian and rational development subject. It is not only children who engage with play and, as Woodyer (2012) argues, the evidence of how these young adult men playfully engage with their bikes suggests that play is fundamental to human experience across the lifecourse. If play is recognised as not only the interest of children, then it can be related to both the everyday and the more-than-rational features of social life (ibid). These actors select a mountain bike based on its physical script, which is suitable for performing the multiplicity of mobilities that they wish to perform simultaneously. This demonstrates that the inaccuracy of user representations constructed by NGOs'. Rather, their script could be more flexible and place the consumer in a position to move between spheres of play and production.

Recreational Use

Other than being used directly for play, bicycles are used in Namibia to get to destinations for recreation, such as this respondent who travels to a river on weekends to swim:

"I: So you ride it [the bike] to school each day and then also for exercise?

R: No. During a school day I usually just ride it to school then go home and drop it off.

I: And then on the weekend?

R: Yeah it's usually when I go to the river." (Male 20 years, Bunya)

This young respondent demonstrates multiplicity in his mobility needs. His school trip is subscribing to the NGOs' construction of a productive development subject. However, he also re-inscribes the bike on the weekends for recreational use. Another 18 year old participant recounted using his bike to enable a connection to the town Rundu, a 10 mile trip, to meet people, swim and listen to live music:

"I: How often do you cycle to Rundu?

R: It's like Fridays maybe with others if they want to go to the beach mostly during Spring. I meet others that side.

I: And how long does it take you to cycle over to the beach from here?

R: It's about a two hour cycle.

I: Where else do you like to go in Rundu?

R: In kehemu a location where there are some shows […] like a performance.

I: Is it like a music gig?

R: Yeah. A music festival or something like that.

I: So do you have lots of friends that live in Rundu?

R: Yeah.

I: So would you rather be living in Rundu do you think than here?

R: Yeah. It is easy. For example, if you want to walk to the town centre it's just close like that.

I: So for you, do you think everything that is important is in the town centre?

R: Yeah.

I: So how do you find it living in the village then is it a bit isolating? Like are you a bit on your own here?

R: That's how it is." (Male, 18 years, Mile 10)

This young respondent re-inscribes the bike to increase the connection he has with Rundu town. The bike facilitates his lifestyle and enables him to embody his urban identity. He later mentions he has aspirations to be a musician. His bicycle affords opportunities for socialising, learning about music and being creative. In this place he is thinking about his future contrary to what older respondents believed. However, it is not a future that the older respondents could identify with. It is a lifestyle that is contrary to the NGOs' singular representation of productive and predominantly rural bike users too. The respondent also demonstrates multiplicity in his mobility needs and subscribes to the NGOs' script of load carrying. He uses his bike for collecting water, which is what his father intended when he purchased the respondent's bike:

> "I: OK. Did you get it [the bike] yourself?
>
> R: No. My father brought it for me.
>
> I: Ok. And what was the purpose of him buying it?
>
> R: For fetching water.
>
> I: Ok. So do you use it to fetch water?
>
> R: Yes." (Male, 18 years, Mile 10)

Just as the previous respondent above uses his bike to get to school and for recreational trips, this respondent uses his bike for fetching water and visiting the beach and gigs in the nearby town. This highlights the multiple use of bicycles for productive trips that NGOs and donors desire, but also for more leisurely, playful, purposes. However, in their representations of these users (particularly young users) the NGOs conceal multiple and alternative identities that are important to these young Namibians. In doing so they promote desirable uses, such as fetching water and riding to school, and discourage alternative recreational use. The bicycle, therefore, acts in this network as a significant mediator of culture and identity for young Namibians and to convey modernist and singular development discourse for NGOs. It is a travelling form that directs its users towards certain programmes of action in a network that is politically arranged (Söderström, 2013). Users partly subscribe and bend to a system of social codes prescribed by a development network (ibid), however, they also have agency, which the bike's physical script facilitates, to de-inscribe the NGOs' socio-technical script and perform multiple identities.

Other young respondents mentioned using bicycles to reach their local football pitch daily. One of these respondents in pictured below (Figure 5.6).

Figure 5.6 Respondent with his mountain bike at a football pitch

The games are announced by the sound of a whistle and when locals hear it, and are available to play, they will quickly travel to the pitch to join the game. The young men wanted to reach the football pitch with speed and for this, their bicycle is an ideal way to engage in playful recreation with their friends. The respondent in Figure 5.6 uses a second-hand bike with a sloping top-tube, likely to have been designed for women. The socio-technical script of the bike has been re-inscribed by an NGO for utilitarian users and partly re-inscribed by this user for recreation. The image demonstrates he also uses a rear rack for carrying purposes. The bike's value is re-inscribed and negotiated on numerous occasions as it moves between sites of production and consumption (Pierce and Paulos, 2011).

These are accounts of the multiple uses of bikes other than only trips made for economic or domestic purposes. They point to a young generation of Namibians whom are mobile for play, as well as domestic, work and educational practices. Relative to the NGOs' singular utility scripting of bikes, these forms of travel de-inscribe what is considered 'proper', or normative, mobility for rational development subjects. This evidence is similar to how Salen and Zimmerman describe urban structures that "determine proper walking behaviour", but which can also be de-inscribed by being engaged with playfully (2003: 304). The accounts of using bikes recreationally and productively in this way, are more aligned to Stevens's (2007) 'loose' imagining of mobile practices and call for urban planners to enable a wider range of utilitarian

and playful movements. It evidences the complexity and multiplicity of young Namibians' mobility, who also value their movement for leisure and therefore negotiate the singular socio-technical script written by development organisations.

Some respondents talked about cycling for exercise and maintaining their health, finding pleasure in doing so. For example, a respondent states:

> "I: Ok and what do you think about riding the bicycle are you happy with it?
>
> T: I like cycling because I am no longer frequently sick. It's good for my health."
>
> (Male, 35 years, Rundu)

This participant believes that cycling is good for him and is actively keeping him healthy. It could be argued that using a bike for exercise is a utilitarian recreational activity, just as play is co-opted for health, well-being and physical benefits (Sheldon and Lyubomirsky, 2009; Stevens, 2007; Sutton-Smith, 1997). However, the example is included here because the participant is enjoying the benefits of exercising using a bike, which is an example of the de-inscription of the NGOs' economic utility script and more aligned with recreational use. Another respondent uses his bike similarly:

> "I: OK and did you find it [the bicycle] useful?
>
> R: OK just to travel and sometimes if you want to exercise I just use if for that".
>
> (Male, 35 years, Bunya)

This respondent uses his bike when he wants to exercise and does not mention the health benefits of this. This quote highlights how the bicycle is used for the purpose of enjoying exercise and the embodied pleasure of the movement of the bicycle using the body. Similarly, the following participant mentions he uses his bike:

> "For going on a certain journey or just to stretch my legs."
>
> (Male, 35 years, Mile 10)

This participant acknowledges that his bike is his functional transport, which is used for specific journeys, but also that it is used 'just' for moving his legs. His language suggests a casual use of the bike that gives him pleasure and is alternative to more functional journeys. The quote evidences that bicycles are not always used as a means to an end. This is an example of the affordances of '*just*' travelling and discovering pleasure in the feeling of movement (Horten et al., 2014). The bicycle's use in these examples is much like the concept of play outlined by Berinstein and Magalhaes (2009) in Tanzania. Although speaking of children's experiences, they

describe play to be about "having fun, about getting fit, strengthening the body" and "waking the body up" (ibid: 102). These examples evidence that adult development subjects, although constructed singularly as rational and productive by the NGO respondents, in reality, do have and make use of free time for play and exercise, which are overlapping social practices.

Mobilities are embodied and are "felt by a much more rich and differentiated bodily register than the dominating view of the instrumental rationality governing much transportation and city planning" (Jensen, 2013: 112). Jensen (2013) argues that a complex relationship exists between the sensual moving body and the material infrastructures of mobility systems that co-produce norms, meanings and cultures within everyday practices of movement. Mobility embodied often occurs in relation with objects and as Woodyer (2012) argues, emerges through tactility and proximity, thus it has been described as a 'coming-with' the moment or 'coming-with' technology. Peterson (2007) talks of the freedom and right to the city afforded by the bicycle, which provides a range of sensory experiences and an alternative and expressive understanding of place. These are performances that have the potential to be creative and playful acts of emotional character (Vannini, 2011). Sheller (2004) considers the emotional aspect of car driving, which entails feelings of pleasure and euphoria, as well as frustration, fear and envy. Spinney (2007) recognises that travel by bicycle stimulates mind and body senses that engage a person with place in deeply meaningful ways that going beyond moving through place as a means to an end. Solomon (2009) explores the pleasurable sensations evoked through movement that cannot be experienced in other ways. For example, the exhilaration felt when actively powering a bicycle using human energy. Solomon recognises people's desire to move for movement's sake, but states as adults "we have ceased to allow ourselves to indulge in spontaneous creative expression in physical movement" and in doing so we are missing out on our "emotional and spiritual vocabulary" (2009:163). The evidence in this chapter indicates that development organisations are acting similarly by denying the multiple identities of African bike users who do engage in mobility in playful, leisurely and embodied, meaningful ways as well as using the bikes productively.

One of the youngest participants sorted the picture cards of bicycles into groups of bikes for sport and bikes for transport (Figure 5.7):

> "I: Did you sort them into two categories? One for sports and one for transport?
>
> T: He says yes some for sports, some for transport only." (Male, 18 years, Mile 10)

Figure 5.7 Respondent sorts pictures of bikes into recreational and functional use

This respondent recognises that bikes are not only used for transport, but also for recreation, and can distinguish the different styles of bikes used for either activities. These statements suggest that there is a value in the bicycle to these riders that is not only about income generation, employment, education or necessity. The accounts depict a more heterogeneous representation of bicycle use than the objectives and conceptions of NGOs.

All of the accounts above demonstrate that there are numerous alternative accounts of bike use by Namibians. Respondents describe their mobility for leisure, exercise and pleasure, with one participant even describing the adventure of his bike journey. This offers a more heterogeneous account of bike use than that of the NGO respondents whom perceive the bike to only impact people's lives and mobility through income generating functions and for carrying things and people, therefore being an intermediate transport mode for those who cannot afford motorised transport. This neglects the possibility of bikes in affording a way for people in developing nations to exercise, play, explore and to feel good though movement and travel, or to use the bicycle for social occasions, which may not have any economic or labour saving benefits.

Bicycles are used for both playful and utilitarian purposes just as, for example, skateboarding is used both for recreation and for transportation, thus it is both playful and utilitarian (Stratford, 2016). De Souza e Silva and Hjorth (2009) and Stevens (2007) consider boundaries between play and ordinary life to be blurred and a scripting of mobility from their perspective is about setting

clues to navigate space, whilst enabling spontaneity, rather than enforcing rules for movement. These examples of travel to reach places of recreation and to engage in play also point towards a future scripting of development mobility, which might also enable spontaneity and creative, enjoyable, alternative movements. However, the extent to which this bottom-up performance can currently stage a mobility system is limited because these respondents' performances are being excluded by designers (Jensen, 2013). In the context of development, whereby mobility staging takes place in politically shaped networks, predominantly from above and by distant actors, the agency that mobile subjects have to negotiate their needs with designers cannot be assumed. Additionally, the complex structures that restrict the freedom of designers being able to respond to such user needs present a challenge to the negotiation mechanisms of mobility staging. These arguments, more broadly speaking, suggest that in the designing of mobilities, a relevant framework might give significant attention to the facilitation of designer and user negotiations as an ongoing process of staging. The lack of negotiation in a staging mechanism of mobility is particularly evident in the misrepresentation of mobile development subjects as this chapter evidences. As Akrich (1992) and Callon (1987) agree, this is most apparent in networks whereby technology is de-inscribed, thus illuminating a miss-match between designer and user intentions, needs and desires. The mechanisms through which technology is inscribed and subsequently re-inscribed in mobility staging is one site of action where a de-politicisation of mobility design might be addressed.

Constructing Cosmopolitan Consumer Identities

Young participants demonstrate an awareness of global fashions, which influence their consumer choice. For example:

> "I: Did you find a strong one [bike] that was good?
>
> R: Yeah I got one from Germany.
>
> I: From Germany? How do you know it was from Germany?
>
> R: It's written and he mostly sees it with Germans.
>
> I: Germans in Namibia?
>
> R: Yeah.
>
> I: Where did you see them?
>
> R: They cycle along here.
>
> I: So are you choosing a bike that white people are riding?

This respondent chooses a similar bike to those he has seen German Namibians riding, saying that most things, or fashions, arrive with white people. This is an example of a young Namibian choosing to ride a bike that is aligned with the latest trends from the West rather than what an older generation of Namibians are already riding. Similarly, another respondent suggests that young Namibians have learnt to use bikes recreationally based on global trends learnt from watching television:

"I: Where is that fashion coming from [riding mountain bikes] do you think?

R: Fashion is in the world. That's what everyone is doing in the world. But mostly it's from the West. It's also from them watching videos and it's the bikes ridden in competitions. Like whenever they watch sports on television they're using mountain bikes."

(Female, 38 years, Mile 10)

This respondent demonstrates that young Namibians are globally aware of fashions and are witnessing the recreational use of mountain bikes separately to a more traditional use of roadsters focused on load carrying and utility.

The roadster is an unfavourable design for young Namibians and its appearance is commented on in the photo elicitation exercise, for example:

"R: I don't like the handles. They don't look nice. And the seat as well.

I: Would you be embarrassed to ride that bicycle?

R: [Laughing] yes because it looks ugly and because the seat is a bit down behind [the seat post is completely down]. I would be embarrassed. (Female 35 years, Bunya)

This participant has picked up on small details in the picture card of a roadster – the handles and the seat being dropped down – as she explains it is not the right looking bike. It does not appeal in the same way that the images of mountain bikes do. She does not ride a bike, which is common amongst the female respondents (see chapter 6) and therefore has no experience of the technical benefits of the mountain bike, or the roadster, but the style and over all image of the bike is important to her. This response is aligned with other younger respondents commenting on the image and design of mountain bikes positively:

"R: Oh wow this one's nice

I: You think it's nice? Why?

R: Because of the way it's decorated there, the way it's designed is good. The stand and the wheels even." (Male, 20 years, Rundu)

These young participants are concerned with the style of the mountain bikes, as well as some objects on the bikes that they like, or consider useful. These respondents demonstrate that mountain bikes are the preference for young Namibians and are thought to be the most modern style available. For example, a participant sorted the picture cards of bikes into two groups: bikes he thought were traditional and associated with rural lifestyles and more modern bicycles he associated with the town (Figure 5.8).
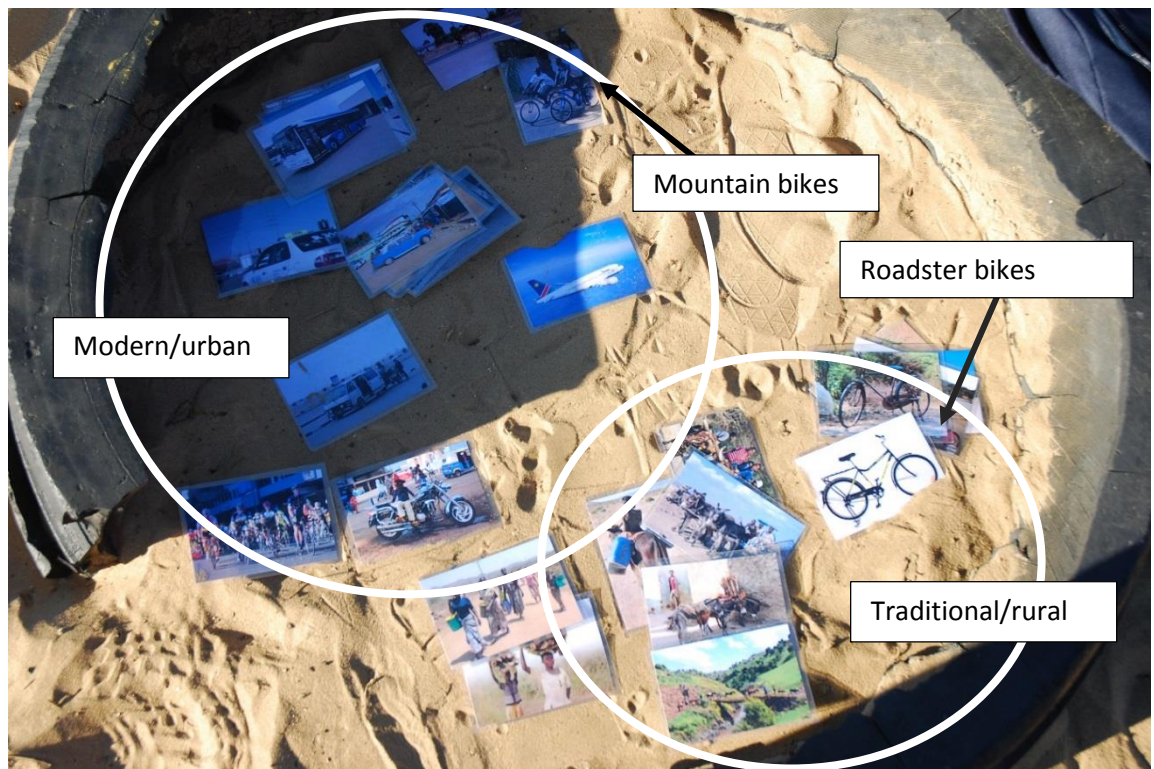
Figure 5.8 Respondent groups rural and urban images of transport during the photo elicitation exercise

This led to the following conversation:

"I: What do you think about the bicycles then [in the picture cards]? Are they modern or more traditional?

R: I think with the bicycle we have to think about the design. It's also from the modern time.

I: Can you pick out the bicycles which are a bit more modern and which are a bit older?

R: Even this one is not so modern

I: The Challenger type thing [indicated with arrow Figure 5]?

R: Yes

I: So you do you think that bike is more traditional and it associates people with a rural lifestyle?

R: Yes

I: It does? So the others you picked out, are they mostly mountain bikes?

R: Yes" (Male, 34 years, Rundu)

This quote is similar to the conversation with a 65 year old in the previous section who lives in Rundu town and owns a mountain bike. He also thought mountain bikes are most suited to urban areas, whereas he stated the roadster is suitable for rural areas. The two respondents consider the village as being a place that is traditional, whereas the town is more modern and they exclude the traditional style bikes from a more modern, urban context. This is contrasting to the NGOs' script that positions mountain bikes to be most suitable for the rural context because they are physically scripted to handle off-road terrain. The NGOs tend to supply fewer bikes to urban areas, whereas it is evident in these discussions that mountain bikes are considered to be more desirable for use in towns where users, and particularly young users, may reject other more traditional bikes because they are not fashionable and more difficult to use. The mountain bikes are re-inscribed by young, urban, users in order to perform a cosmopolitan identity that differentiates them from an alternative rural and lifestyle, which they consider to be pre-modern. The NGOs' socio-technical script of the bike as a utilitarian vehicle design for weight carrying is de-inscribed by this respondent who instead ascribes to a more desirable identity.

Many of the young respondents are demonstrating their consumer identity and choosing to buy objects of fashion in order to differentiate from others (Bourdieu, 1984; Simmel, 1971). However, the NGOs script assumes African consumers are directed only towards purchasing objects that they need for practical utility (Baudrillard, 1988). By singularly constructing all African users as 'homo economicus', some of the NGOs' scripts are similar to Veblen's (1975) model of consumption that separates the consumption of goods by lower classes to be for their subsistence, whereas only the upper classes supposedly consume goods for reasons that are more conspicuous in a performance of status. The evidence in this chapter has demonstrated that Namibians have multiple identities that they wish to perform and often consume bikes in such a way that they are weighing up both rational and identity distinguishing features. By denying that Namibians are consuming objects in order to perform their desired identity and by

not incorporating other user representations, some of the NGO scripts are carrying an assumption of the users' class, identity and social status. It could, therefore, be argued that the NGOs' scripts are racialized in that they reinforce identities of poverty and rural backwardness in their construction of development subjects. This draws parallel with studies of gender scripting. For example, Shade (2007) argues that gender scripts can reinforce normalised representations of femininity and masculinity, and as Rommes (2002) argues, scripts can hide or emphasise certain gender identities.

The following statement identifies the function of a mountain bicycle for young people who choose to ride them to exhibit a modern and fashionable identity:

> "I: Why do younger ones prefer the newer style?
>
> R: It's just fashion for kids.
>
> I: For kids? When they get a bit older what will they choose to ride?
>
> R: I don't know. It is up to the person whether they will go back to the old days or just keep with the modern type of bicycles, yes.
>
> I: What sort of age are people choosing older bikes then? What's the cut off age when people choose a Challenger, rather than a mountain bike?
>
> R: That depends to the person but from about 25 and above, maybe 30, because they now have households to have purposes to use these bicycles. But for these ones below 20 they have no responsibilities, so they just go for fashion." (Female, 31 years, Mile 10)

In this respondent's opinion, young riders – or 'kids' as she casually refers to them, have no real need, or purpose to ride, but instead do it for fashion only. For young users the image and style of a bike becomes central to their mobility performance, whereas elder users do not mention the look or style of a roadster bike. Elder users are less interested in the latest fashions outside of their local area and, as previous quotes have demonstrated, resist using the latest technology available. The statement highlights that not only is the type of bike significant to creating a modern identity, but also the mobility performance in its own right. The way in which the bike is used to ride without a purpose, rather than for load carrying, or using it for economic purposes, has a social function in shaping a young person's identity that is relevant for their generation and incorporates global, rather than local, fashions. Social constructions are working to transform second-hand materials from the Global North into desirable products that project status (Hansen, 1999; Norris, 2013, Omobowale, 2013). Just as Hansen (1999) finds with items of clothing, consumers in Namibia also look for exclusive materials to distinguish themselves from others, which turns the commodity into a token of modernity and particularly for young

and urban consumers looking for the latest trends. The bicycle is a material that acts to translocate young Namibian consumers, connecting them with others and other places (Callon and Law, 2004), thus it is a vehicle that mediates global culture (Lash and Lury, 2007) and enables development subjects to create their own autonomous identity through consuming material objects. Thus, the bicycle in this network, mediates interchangeable meanings, acts with political strength and has the possibility to transform existing identities (Akrich, 1992; Fallan, 2008; Oudshoorn, 2003).

The following image (Figure 5.9) depicts two young men in Mile 10 village as they casually pose to have their image taken with their bikes.

Figure 5.9 Young riders casually pose on their mountain bikes

Their body language is expressing a sense of pride in the bikes that they own and it appears as if they are comfortable in demonstrating their identity as young Namibians and use their mountain bikes as props to do this. They pose as if they could be appearing in an advertisement.

Figure 5.10 A young student stands with his mountain bike in Rundu University campus

Here, in Figure 5.10 another young male student stands by his mountain bike, a new import from China with full-suspension, which he uses to ride to the University campus among other trips. In contrast an elder rider stands with his mountain bike, which is simpler in design and with no suspension. Attached to the handle bar is an office bag. His employment is treating circumcised boys and he uses his mountain bicycle functionally to ride to different villages providing outpatient healthcare and embodies comfort and ease in his mobility, using a mountain bike because of its speed and efficiency (Figure 5.11).

Figure 5.11 Elder male using a mountain bike for work, Mile 10, Namibia

De-inscribing Load Carrying Utility and User Adaptations

Younger riders understand that they cannot carry heavy loads on a mountain bike, however, racks are still useful to some users who would like to carry light weight things, *"like plastics"*, a male respondent states. Some of the young riders choose not to use a rack at all or discard their rack. They consider them to be old fashioned and would prefer not to have them, whereas the older generation of respondents tended to identify with the racks as being useful components of bikes because they are concerned with the bike's load carrying utility.

A conversation with an 18 year old participant reveals a contradiction between the bike's intended purpose, which is to carry water for his father, and his desire to perform a modern identity:

> "I: What was the purpose of him [father] buying it?
>
> R: For fetching water.
>
> I: Ok. So do you use it to fetch water?
>
> R: Ya. You put it on the frame then hold the handlebars.
>
> I: How difficult is that?
>
> R: It's easy. You just have to balance it.
>
> I: Is it difficult the first time you do it?
>
> R: Yeah I learnt.
>
> I: Did you buy a bike with a rack on the back?
>
> R: I don't like a rack.
>
> I: Why not?
>
> R: It looks like another elder's bike [laughing]
>
> I: Even if it's a mountain bike with a rack on the back?
>
> [Interviewee laughs]
>
> R: It doesn't look good"
>
> (Male, 18 years, Mile 10)

Because this young user considers using a rack to be old fashioned, but would like to convey a modern identity, he has chosen to de-inscribe the bike's script intended by development organisations and his father. He does this by devising a creative way to carry a water container

on the top tube of a bike. Even if riders have a lightweight rack on the back of their mountain bike, they will carry a second container between their arms (Figure 5.12), whereas a roadster will allow for one larger container on the rear rack.

Figure 5.12 Young rider carrying water containers on a rear rack and top tube of a mountain bike

Young riders do not completely de-inscribe the utilitarian script of a bicycle for load carrying, but preferring to use a mountain bike, they have to be creative in finding objects and practices that enable them to carry things. For example, another young respondent created his own rack using wood, which he fixes to his bike when using it to collect and carry firewood from the bush. He partly de-inscribes the utilitarian script since he has chosen to fix a homemade rack on his bike to use at times when he needs one. He still wants to perform a modern identity at all other times and doesn't want to be associated with the traditional identity of load carrying:

> "R: I carved the wood and designed it in a way to fit and there is enough space to load some wood.
>
> I: Ok is this permanently attached to your bicycle now?
>
> R: It's only attached when I'm going to collect firewood." (Male, 18 years, Bunya)

Again this is an example of how the mobility performance, as well as the physical product script of a certain bike, act together in constructing identity. This is an example of the agency a young Namibian consumer has in negotiating and appropriating the bike's script in order to express himself as both a fashion conscious consumer, as well as a utilitarian consumer. This demonstrates the complexity of consumer choice in young Namibians who have competing

needs and desires, and must reach a compromise, as they perform their identity and re-inscribe the bike's meaning and use.

The mountain bike users who do have a rack do not perceive them as being strong and the bike's physical script defines what users can carry on a rack:

> "I: Did you ever carry any weight on your mountain bike?
>
> R: Yes I do but the rack is very small. I carry spare clothes to work. And bread. I only carry water if it's close to home. I won't carry it a long distance because I'm worried it will affect the rack." (Male, 50 years, Rundu)

Young mountain bike riders are aware of the limited carrying capacity of their bikes (Figure 5.13), however, it is difficult to gauge if they would carry heavier items if they had a bicycle that was stronger, but had gears and a more modern image than the roadster, or whether they are happy with carrying only lightweight items. Whist young Namibians associate carrying a heavy load with a traditional and rural identity, riders may not want to be seen doing this.

Figure 5.13 Lightweight carrying rack on a respondent's mountain bike, Rundu

It seems that the mountain bike as an object partly shapes the mobility of younger Namibians and what they can carry, but ultimately their mobility needs are more aligned to the mountain bike and their understanding of efficiency, which arrives from embodied experiences of speed, comfort and style. These are a priority for young Namibians over the NGOs script of efficiency that is associated with economic and social reproduction. The mountain bike affords them to move more quickly and easily as well as to perform a global and modern identity, but restrains their ability to transport heavier objects, which some young people have the need to do, such as carrying firewood and/or water.

Figure 5.14 Heavy duty welded steel carrying rack on a respondent's Challenger, Rundu

However, these young consumers usually choose not to buy a Challenger despite the potential for a heavy duty carrying rack (Figure 5.14). The utility script of a bicycle is not de-inscribed completely and its function to load carry is important for young Namibians. However, they are creatively adapting the socio-technical script the NGOs and funders construct and devise ways to perform a modern and stylish identity, whilst undertaking domestic duties, such as collecting water and firewood. This evidences young Namibians are informed consumers making choices about their mobility based on their needs and desires, which are not only rational.

Users select technologies according to their needs, desires and abilities (Fallan, 2008). These consumers are constructing identity, experiencing modernity and dealing with social change (Attfield, 2000). The evidence provided in this chapter opposes neo-classical theorising of consumption that is reduced to an abstract act of acquiring goods based on an instrumental decision of what to buy according to the utility of goods (Baudrillard, 1988). The respondents are concerned with maximising utility, however, they have a broader sense of utility that is not only about productivity. Young Namibians consume based on efficiency, comfort, fashion and some decide to use a lightweight carrying rack. There is more multiplicity in their consumption choices than the NGOs imagine in their script. The situation is that there are heterogeneous mobility performances, fashions, and functions relating to bicycles. The youth particularly want to use a bicycle that engages with modernity and global fashions, whereas an older generation often choose to resist this, preferring a more traditionally styled bicycle. There is also a spatial element to this with mountain bicycles being most popular for users in urban contexts who wish to express an awareness of modern and global fashions. However, these distinctions are not absolute as this chapter demonstrates and some elder participants prefer to embody the speed

and ease of mountain bikes (Figure 5.11). The age at which Namibians choose to ride durable and functional bikes, rather than more fashionable, but less utile, mountain bikes is not fixed and the future of the roadster bike is not determined. Furthermore, young Namibians may ultimately prefer to drive a car, but without this option, the mountain bicycle is an opportunity to engage with modern mobility performances.

Young Namibians demonstrate how the bicycle as a commodity is a central actor that has the agency to mobilise ideas, meanings and culture. As the bicycle's meanings are transformed through global development-consumer networks, they act to constitute and transform 'local' practices of self-identity and community (Lash and Lury, 2007). A relationship between material objects and meaning, constructed by human actors, culture, space and time, is being redrawn through the movement of things (Lash and Lury, 2007). Thus, the meanings Namibians assign to objects is evidence of how culture circulates neither locally, or globally, but as "dynamically constituted in the movements, the biographies of objects" (Lash and Lury, 2007: 19). The object, here, is central to the political arrangements of culture and the construction of local social subjects and identity. It is a vehicle of exchange and enables co-production of meaning relationally in heterogeneous, spatial and political networks (Söderström, 2013). However, in a more democratic scripting process of the bicycle's socio-technical meaning, facilitated by user-designer negotiations and with more independence from donor desires, user representations could be more realistic and account for the diversity of user identities and needs.

Conclusion

The multiplicity of mobility performances of Namibians in this case study include the expression of modernity and global connectivity embodied through the speed, efficiency and style afforded by second-hand mountain bikes. Young and older cyclists express a desire for playful and recreational mobility including sensual, emotive and joyous movement. That is not to say, however, that young people reject a bike's meaning of utility, strength and durability, rather they make informed decisions that include and go beyond this socio-technical script. For younger users the bicycle's utility script is read in relation to embodied sensory feelings of speed, ease and comfort rather than its economic productivity, which is associated with a more traditional Namibian identity. Thus, I argue that constructing development subjects singularly as rational, productive, beings is overly simplistic because it excludes the multiple needs, desires and diversity of Namibian consumers.

These choices are spatialised to some extent to a binary of urban and rural mobilities. A socio-technical script that is more aligned with embodied mobility and less focused on load carrying

and economic and cultural reproduction is more relevant to urban places. The bicycle's socio-technical script of a slower form of mobility, centred on load carrying, durability, domesticity and productivity, is associated with rural places by actors within this network. Therefore, the mountain bicycle is an object that materially connects young urban Namibians to global trends and is used to construct cosmopolitan identities. This chapter has also demonstrated how local forms of mobility, such as animal driven transport and hitch-hiking, act as important elements in the network that co-produce a staged mobility situationally (Jensen, 2013). In rural places of Namibia the physical script of an ox and cart, or hitch-hiking, to carry heavy loads often influences users to de-inscribe the mountain bicycle. The socio-technical script of the second-hand mountain bike is accepted, rejected and negotiated as part of a complex social-material network that fluctuates from place to place.

The politics between NGOs and development subjects in this network are created and reproduced through materials, social practices and their flow (Gregson, 2011; Swanton, 2014). The recycling of the second-hand bicycle creates a vehicle of translation in the ordering of social actors (Hetherington, 2003) through the codes and norms written in its socio-technical script. The way in which Namibians adapt the script of NGOs, which imagines certain users, demonstrates the depth of agency that development subjects have in creating their own autonomous identity through consuming material objects (Akrich, 1992). Much like Woodyer's argument that play is too often theorised as occurring beyond the rational and therefore seen as serving no useful purpose (2012), playful, unexpected creative, fun and enjoyable mobilities are positioned similarly in the staged design of development mobilities that attempt to construct rational and productive development subjects. However, development subjects are also spontaneous and behave unproductively in their everyday mobility and consumption choices.

These alternative accounts of mobility could be included in a more complex and heterogeneous socio-technical scripting and design just as Stevens (2007) ambiguously encourages a loosening of the design of space and mobility to enable possibilities other than productive movement. Stevens recognises an opportunity in the design of the built environment to facilitate and stimulate unexpected and impractical behaviour as part of everyday life and occurring in public space (2007). Similarly, Jensen calls for the exploration of how future mobile systems might become "more inspiring and attractive; and more open minded and fun" (2014: 240). In staging mobilities, Jensen argues that we need to see more than just the rational and utilitarian goal satisfaction of the hardware and practices of mobilities (2013). For example, Lynch describes urban design as both "a playful creation and strict evaluation of the possible forms of something, including how it is made" (1981: 290). This points towards design as a process that is orientated

toward diverse practices. However, the structuring of design, which is influenced by donors and local partners, and is restricted by the materiality of second-hand goods, reduces the potential for spontaneity and flexibility in this network, which would avoid a rational/irrational binary.

Mobilities, Jensen argues are staged by systems that stretch interactions and relations across space and time (2013). Analysing the scripting mechanism of mobility technologies has detailed how this occurs in the design and translation of materials in politically structured networks. But, despite the proximity brought through the associations of actor-networks (Jóhannesson and Bærenholdt, 2009; Law and Mol, 2001), distance between actors in this network arrives as the diversity of mobilities are regulated through the scripting mechanism, which is often at odds with consumer desires. Thus, this chapter has demonstrated that the bottom-up practices that are constructed locally and contribute to a staging of mobility (Jensen, 2013) are not mediated to designers and highlight a gap in the translations that occur between the mobile subjects and designers. Staged mobilities include not only materials, technical objects and users, but also codes, shared protocols, cultures, values and norms in both design and user performance (Jensen, 2013). The codes and shared protocols occur within the socio-technical and physical product scripts of materials, but when these travel and meet local cultures, values and norms, they create some tension and conflict in the designing of mobility practices for development. This demonstrates that staging is a continuous process, but successful adaptations are reliant on the negotiation of technical scripts, which are a site of contention in this network. Consumers might subscribe to a second-hand product's physical script in terms of its function and appearance, whilst simultaneously rejecting a producer's socio-technical script that attempts to regulate unproductive practices of mobility and to promote utilitarian meanings of movement. These findings are relevant for Jensen's concept of staging mobilities and suggest that examining negotiations and user feedback mechanisms are likely to be imperative to creating mobilities that are more open minded and afford some flexibility in how they are interpreted by diverse users. In order to understand how mobility systems might become more interpretively flexible as they are prescribed within networks that associate global and local entities, the interface between top-down and bottom-up staging processes requires further inquiry.

This chapter highlights the potential for greater curiosity and flexibility in the scripting of materials to account for their adaptations in context and in order to respond to their use, which may be transformed in unexpected ways that are more suitable to local contexts (de Laet and Mol, 2000). There are potentials for new experiences, opportunities and inclusive practices of mobility design that recognise the multiplicity of identities of development subjects. Rather than being socially restraining, mobilities for development could be scripted in such a way that they

are more inclusive and may be interpreted in a myriad of ways (Jensen, 2014). From the perspective of NGOs, this may be difficult to accomplish whilst they are scripting products to meet donor obligations rather to represent diverse user needs. The narrative of the humanitarian aid network is so singular in its vision it overlooks the multiplicity of contemporary African mobility and consumer culture.

Whilst this chapter demonstrates that the power of donors and NGOs are reproduced through object scripts and an ordering of social actors, as well as the agency of users to resist these scripts, the limitation of its conclusion is that using an analytical perspective of Script Analysis has weighted the focus of the chapter to the interpretations of design scripts by users. The bicycle's script is very much at the centre of this network and therefore, less attention has been given to alternative mobility practices, which are of importance to mobile subjects in Namibia, particularly to women of this socio-economic group who tend not to cycle (see Chapter 6). Script Analysis conceptualises the success and failure of technology in terms of the extent to which designers can anticipate the needs of users. However, the implication to this analysis is that the mobile subjects of this chapter are in danger of being degraded to only objects of designer strategies (Oudshoorn and Pinch, 2003). In this framework, technological innovation and consumption is at the fore and the agency of designers and producers is given greater attention than other actors involved in social networks (ibid). Thus, alternative actors are in danger of being concealed within what has been described as a simplistic and linear perspective of production and consumption (Williams et al., 2005). In the framework of scripting the evidence put forward in this chapter implies that users are given limited choices of either adopting, or rejecting, the designers' intended use and meanings of an object, which Oudshoorn and Pinch (2003) argue is inadequate in understanding the full dynamics of design where users are more actively involved. Chapter 6, however, gives greater attention than Script Analysis has previously granted to examine the more complex arrangements of local social and material entities that act to proscribe the bicycle's use in a local context that are outside of a linear framework of designers and users.

6. Proscribing Development Mobilities

This chapter examines how the bicycle's script imagined by NGOs' as a development tool for productivity is proscribed by multiple actors and actants in a complex network. When object scripts are accepted, or re-inscribed, by users they often become stabilised through a process of domestication as users find meaning in objects that suit their needs and desires. Fallan (2008) describes domestication in terms of the modifications made to objects to improve their utility for users. This chapter demonstrates that a process of domestication, whereby bicycles may be used more widely, requires not only object adjustments by designers, but also a series of adjustments that engage multiple elements of a network of material and social actors, in which the bicycle's script is embedded (Jensen, 2013; 2014). Without a conscription (Latour, 1992) of these relational elements that form a setting for a bicycle's subscription, it is less valuable to users. These include road surface materials, the sand and thorns present in the environment, cycling legislation, the lack of security materials and the lack of an efficient maintenance network. Furthermore, the economic situation of low income users is at odds with the NGOs' socio-technical scripting of the bicycle as an affordable and universal tool for development subjects.

Proscription prevents the domestication of technical objects as they move from place to place. This is because the conditions of production and acceptance vary from one place to the next (Söderström, 2013). This chapter demonstrates the difficulty of staging a mobility system from afar as object scripts are not predictably translated across global and local scales (Kullman, 2017; Söderström, 2013). The proscriptions that occur in this network reflect a division in the "standard" interdependent relationship between production and consumption (Akrich, 1992: 213). This is because Namibian consumers are given little opportunity to feedback to designers and designers have little control over the adjustments that can be made to domesticate the second-hand bicycles into a network that varies from place to place. For example, wide wheels would enable the bicycle's use in deep sand, but this adjustment would require an overhaul of many of the bike's components and would be unaffordable.

The negotiations between actors required for the domestication of technical-objects is given little attention in this consumption network, which is compromised by complex material-social histories and relationships (Fallan, 2008). Thus, I argue Script Analysis requires a more nuanced conceptualisation that understands proscription to be a situated process aligned with Jensen's 'staged mobilities' (2013). Rather than a conflicting negotiation mediated by just designers and

users (Akrich, 1992; Fallan, 2008), I argue that proscription arrives through an entanglement of multiple material and human actors. This chapter also demonstrates that Script Analysis contributes to Jensen's model of staging mobilities by providing a framework to examine the conflicts and negotiations between designers, users and local situated socio-material networks of mobility systems. The lack of feedback mechanisms for users in this network leads to proscriptions of the second-hand bicycle, which evidences that the mediations between user performances and stage designers could be further examined with an intent to increase negotiation and identify the restrictions in user feedback and designer adaptation.

The main themes of proscription explored are environmental (sand and thorns, and material infrastructure), economic (cost of maintenance) and cultural (employment, legislation and gender). These themes overlap at times and many sub-themes of proscription involve both human and material actors. All of these themes build a detailed understanding of how negotiation processes of product domestication and re-contextualisation fail under conditions of non-action in the network that traverses global and local spaces.

Environmental Proscription

The non-human and human features of the environment greatly act to proscribe (and afford) the utility of the bicycle, which is compounded by components of a network. Due to its complexity and multiplicity cycling is a practice that requires certain features in the built environment in order for it to become a mobility mode (Jensen, 2014). In the absence of these man-made features the natural environment produces a barrier for cycling in Namibia. This restricts the spaces in which cycling can take place, thus the appropriateness of the second-hand bicycles' script is not consistent from place to place in this Northern region of Namibia and its proscription (and subscription) transpires contextually and heterogeneously. The bicycle offers a lens through which to analyse the politics and spatiality of infrastructure development and maintenance in Africa, where certain spaces and practices are prioritised for development over others. Rather than being a process that occurs between only designers and users (Akrich, 1992; Fallan, 2008), I argue, proscription arrives through an entanglement of multiple material and human actors.

The Non-human Environment

Sandy Surfaces

Sand featured in many interviews as the most prohibitive surface for cycling and other transport modes. Namibia is a country with a dessert climate and thoroughfares that are not surfaced with

hard gravel, or asphalt, are comprised of deep sand (Figure 6.1). Sand is also difficult for pedestrians to negotiate and it lengthens journey distances in terms of time and effort.

Figure 6.1 A thoroughfare of deep sand in Bunya village, Namibia

In deep sand the only option of using a bicycle is to push. People will push a bike through sand before re-joining a harder surface, for example, compact sand, gravel, or tarmac:

> "When I'm going to the bush I push [the bike] and when I hit a pavement I cycle where it [the surface] is hard." (Male, 18 years, Bunya)

This young respondent mentions 'the bush', which is any area stretching away from hard infrastructure and rivers. It is where people collect firewood and natural building materials and is where fields are located. All tracks leading into the bush in the two villages consist of deep sand. The sand disrupts the flow of an already limited network of hard infrastructure. Another respondent finds the sand to be a problem even when pushing his bike:

> "If you're walking the tyres get stuck." (Male, 35 years, Bunya)

It takes a lot of effort, especially if something heavy is being carried, to push a bicycle through deep sand. These respondents find that the bicycle is inappropriate for soft surfaces, which act to reduce its utility; however, some think it is useful to use a bicycle to reduce the burden of carrying water, or firewood, even if they have to push it:

> "I: What about the sand though? How is carrying water on a bike in the sand?

R: It is still better on a bike because you can push the bike through the sand whereas if you are walking you have to carry the container on your head in sand. The load is more if you're carrying it directly." (Female, 53, Rundu)

The sand proscribes the NGOs' script for users imagined in rural areas. Users, thus, re-inscribe its function in sand and sometimes use it as an intermediate mode of transport to assist with the weight of carrying water.

In Bunya, the village fans out from the river and reaches further into the bush (Figure 6.2). Figure 6.2 is a drawing that represents the layout of Bunya village as I came to understand it by the end of my period of ethnography by walking and running in the area daily. After each day I added more detail to the map, much like making ethnographic notes, however, recording information in a visual form. On the day of arrival I was accompanied by the head of the village who pointed out the village boundaries and features to assist navigation, such as tall and distinct trees. The map documents the many pathways that connect homesteads to one another, the main road running through the centre of the village, the river on the left, the bush to the right, bars, shops, fields and the catholic missionary church. The network of sandy footpaths is extensive and proscribes the utility of a bicycle across much of the village. One respondent interviewed in Bunya brought a bike with the purpose of cycling to work every day from the neighbouring village to the missionary church. All of his journey is on a tar road. The hard surface of the infrastructure enables him to subscribe to the NGOs' rational utilitarian script of the bicycles. However, there are few examples of journeys like this one in Bunya for which a bicycle is appropriate. This is an example of how material actants in the environment proscribe users from engaging with the bicycle's socio-technical script as intended by development practitioners. This proscription is contextualised in a material-social network, which highlights the local knowledge, or research, required to predict the appropriateness of a product's physical script.
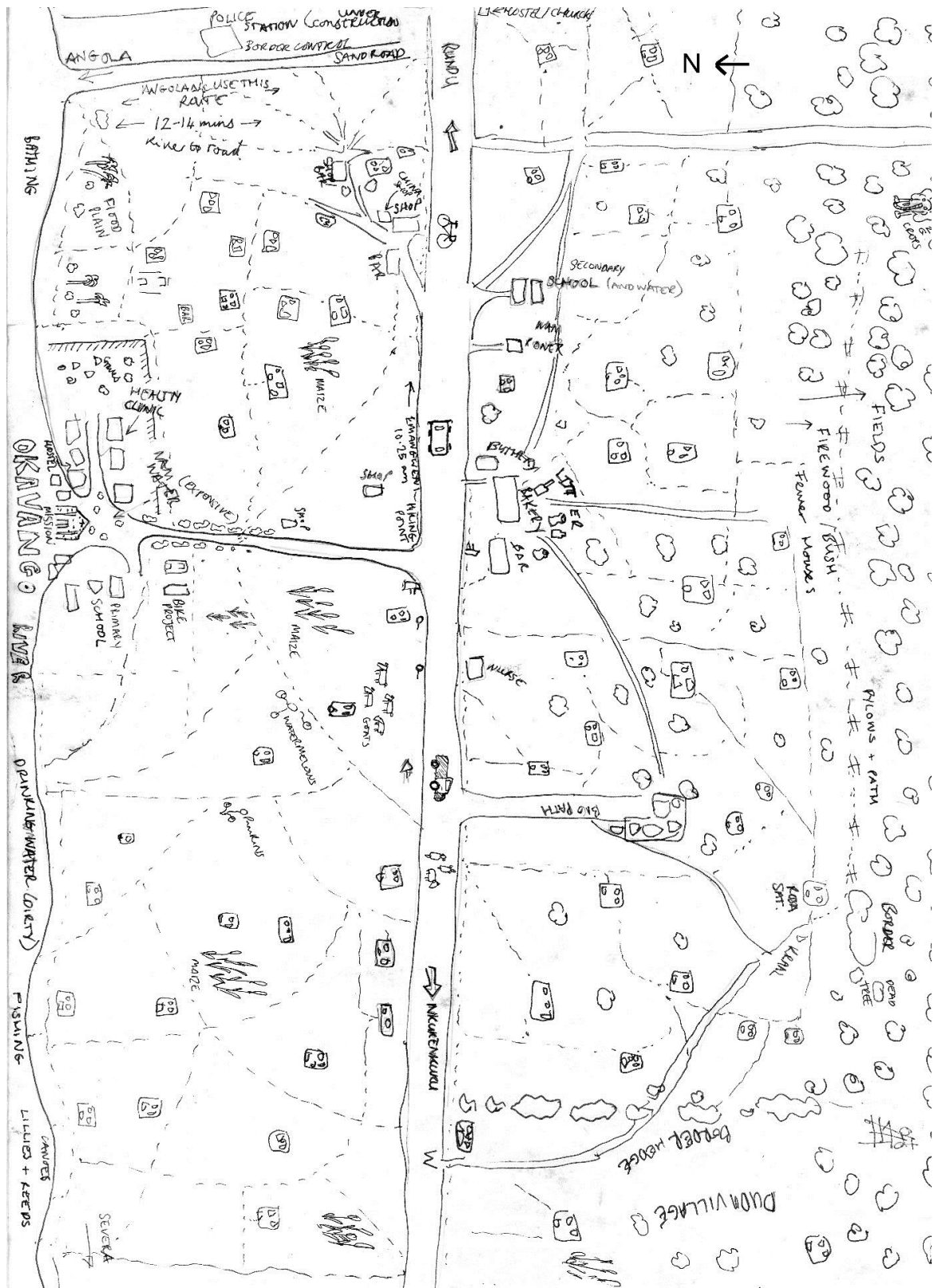
Figure 6.2 Ethnographic sketch map of Bunya village showing sand path network

Figure 6.3 shows a different spatial layout of a village in Mile 10 where people are more connected to a tar road. This is because it is a more recent village that has arrived since the road's construction. The village's relationship with the road is distinguished in its name 'Mile 10'

because it is situated 10 miles along the tar road out of Rundu town. In contrast, Bunya is an older village that was established after a German catholic mission was built. The river was the main thoroughfare in the region and so the mission was sited next to it for accessibility and presence. The remainder of the village spreads from this off-road epicentre.

Figure 6.3 depicts how Mile 10 inhabitants have built their homesteads as close to the main road as possible. Respondents told me this was so they could keep watch over the road for possible hikes to town, or for moving their produce to other market towns. Others mentioned using the road to sell their hand-crafted wood carvings and produce, for example, peanuts, or fried fish. The main water tap of the village is situated about 100 metres off the tar road, therefore most of the village use the tar road to reach it. This includes cyclists who also have the opportunity to use the tar road to fetch water and to get to Rundu town, which is a cycle-able distance away. Contrarily, Bunya is too far a distance away from Rundu for most men to cycle regularly. The implication of the arrangement of infrastructure in Mile 10 and the cultural connection the village has with it means that the bicycle has more utility than it does in Bunya village. The less significant sand is as a surface material in a place's mobile network, the less it acts to proscribe cycling.

Figure 6.3 shows that agricultural fields in Mile 10 are located 1-2 hour's walk away. There are no hard surfaces to reach these fields, which are situated away from where animals are grazed. The land near to people's houses is reserved only for grazing animals freely. This prevents animals from wandering into fields to graze. This is a cultural ordering of space that holds significant meaning for inhabitants of the village, however, when entangled with the material nature of path surfaces it acts to proscribe the utility of a bike. Here, agricultural practices interact with features of the environment to proscribe the physical script of both mountain and roadster bikes. Only one respondent was able to cycle to their field because a borehole had been placed near to their field and the company constructing the borehole also invested in a gravel road to access their water tank for maintenance. Tar roads in Namibia are predominantly constructed to supply the main trading routes in the country, linking the port at Walvis Bay, the capital city Windhoek, other major trading towns, and neighbouring countries. The failure of road infrastructure to be integrated into local village cultures rather than attend only to trade, acts to prohibit the bike's script in association with the natural environment. These proscriptions arrive through an entanglement of multiple material and human actors that conflict with
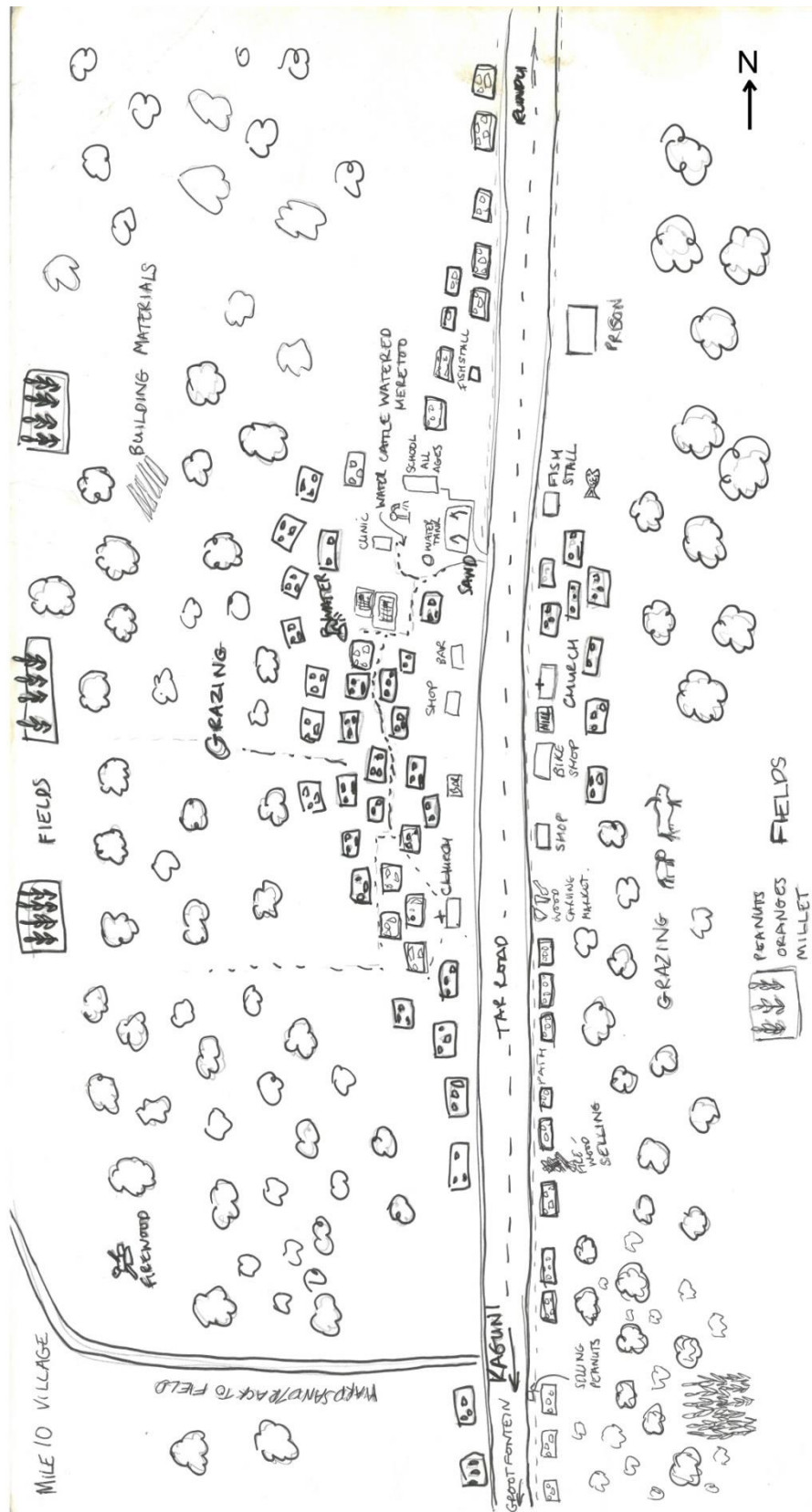
Figure 6.3 Ethnographic sketch map of Mile 10 village

Figure 6.4 Ethnographic map sketch Rundu town showing various road surface infrastructure

standard negotiations between designers and users (Akrich, 1992; Fallan, 2008). This demonstrates that proscription is an arrangement of cultural histories that shape the spatial layout of the villages and therefore, the mobility patterns of inhabitants, and the natural surfaces or their daily routes.

In Rundu (Figure 6.4) the situation is quite different. There is a far greater network of hard, compacted surfaces of roads made from tar and gravel. Homesteads are more compactly concentrated in both formal and informal areas and there is a greater scope of places where people can cycle to, in this urban context, that are connected by hard infrastructure:

> "In the bush there are no bicycles. Where will they cycle the bicycles? It's sandy paths and roads. Bicycles are only found here [in town] where there are roads." (Female, 53 years, Rundu)

This quote is similarly aligned with my ethnographic experience of witnessing far more cyclists day-to-day in Rundu. In Bunya I struggled to find cyclists to interview, whereas, their presence in Rundu suggested cycling was a viable mobility option there. In Bunya, cycling is proscribed because of the lack of infrastructure and the cultural significance of the path network comprised of deep sand (Figure 6.5), which act in conflict with the physical script of most bicycles that have slim tyres and sink into sand. Users are proscribed not only by designers, but by multiple actors in a situational socio-material mobility 'microecology' of social arrangements, histories and materials (Jensen, 2013).

Figure 6.5 An example of a sand path in Bunya village

The sandy surfaces also present a barrier to the bicycle's utility in Rundu. The tar roads around the centre of the town offer speed and efficiency for cycle users, however, this level of development of road surface is absent in other areas, such as informal settlements (Figure 6.6):

> "I: So when you come to work, first you have to push your bike then you can ride on the gravel?
>
> R: Yes
>
> I: How long does it take to walk pushing your bike?
>
> R: Something like 2-3 minutes." (Male, 34 years, Rundu)

The bicycle is partly proscribed for this respondent who lives in an informal 'location' (as the suburbs are termed locally) because where the connectivity of hard infrastructure is fractured, the sand acts as a natural barrier. Pushing their bike is required for a small proportion of this respondent's journey although enough utility is derived from the bike in the remainder of the journey to make using it worthwhile. This interplay between surface materials and users signifies how a bicycle's physical script interacts relationally with other contextual elements of a network of materials and actors. Thus, proscriptions are transpired through negotiations between material actors and users that occur unpredictably in some places, but not others, which is why traveling mobility technologies interact in mobile systems unpredictably (Söderström, 2013). This signifies that socio-technical scripts are fragile sites of ongoing and complex negotiations.

Figure 6.6 Sandy road surface in an informal settlement of Rundu town

I asked a respondent to mark on his map the areas where he has to push his bike and he marked an area from Ndama location to the main road (top-right corner, Figure 6.7). From the road to

the campus his commute is faster and he marks the time it takes on each stretch to the campus and the road surface. He is giving significant thought to the materials of the road surface and the speed and efficiency of his journey. Because he has some distance to travel by tarred and gravel roads to the campus it is worth his while pushing his bike the short distance through the sand in the informal settlement.
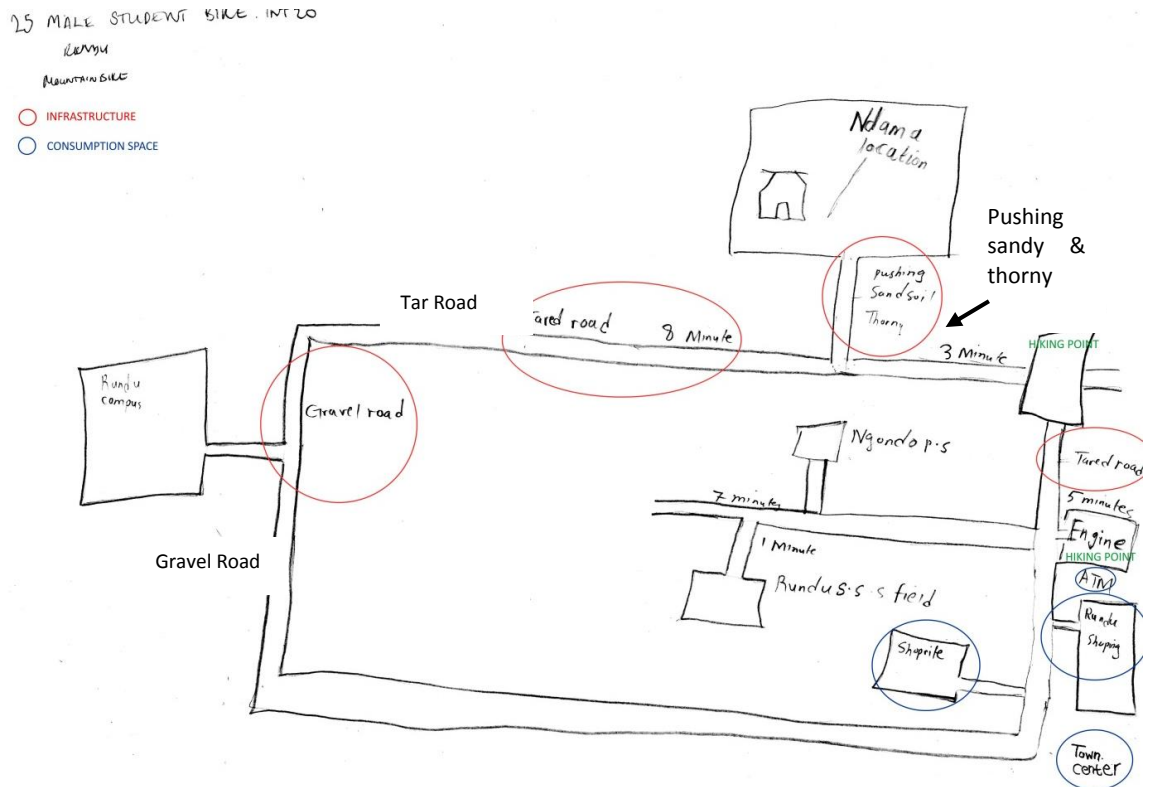
Figure 6.7 Young male cyclist highlights different road surfaces marking where he can and can't ride a bike

For shorter journeys near to home, however, the sand covers a greater proportion of the journey and thus, it proscribes use of the bike entirely. For example, to visit friends and family, a nearby food stall, or church, respondents found it more efficient to walk and so the utility of the bike in this situation is void:

"I: Do you ride your bike to church?

R: Only footing [walking] because it's nearby. The one I used to go to by bike sometimes is this one. The one by the clinic.

I: So you cycle there because it's a bit further away?

R: Yes" (Male, 34 years, Rundu)

Cultural decisions about land use are spatialised and also interact within this network further complicating the proscription of the bicycle. For example, the contrast between a village's epicentre being either more traditionally a river in Bunya, or more recently, a tar road in Mile 10. Or, the decision of locating fields deeper within the bush to protect crops from livestock grazing demonstrates how traditional cultural practices act in association with the environment to proscribe the utility of a bicycle and create a tension in translating a cycling practice from one place to another. These are examples of the nuances that occur in mobile microecologies of material environments, social practices and embodied performances (Jensen, 2013) that disturb the bicycle's script of efficiency. The surface material and topography of bike paths, type of bike, number of gears and quality, or size, of tyres, for example, all contribute to "particular and mediated embodied mobilities" (Jensen, 2014: 236). A lower gear ratio assists the bike to negotiate sand, which is partly why mountain bikes are more popular in Namibia, however, without wider tyres, the bike's script is usually proscribed in the sand. A great deal of effort is required from multiple human and non-human actors to enable the technology to be subscribed by users, which is evidently not occurring in some contexts. This is evidence of the spatialised and contextualised dimensions of the subscription and proscription of technology. Akrich (1992) finds, objects with intended functions are sometimes poorly matched with imagined users and the environments they are transferred to. However, she fails to provide more nuanced accounts of the interactions and arrangements that occur in local contexts at the user end, which highlight the importance of an ethnographic approach to understanding how scripts can be negotiated situationally. The local 'microecologies' that mobility technologies are transferred to cannot be overlooked and demand a mobile and embodied ethnographic methodology to trace the interactions of actors and actants that contribute to a socio-technical scripting mechanism. Evaluating the relevance of technical objects for local situations requires a bodily experience, Kullman argues (2017), which differs from other forms of evaluating design that do not easily represent the reality of everyday settings or the particularities of the local. This is because networks are constantly assembling and ordering the social (Latour, 2005). The agency of materials in mutable networks cannot be assumed and thus, objects travel with uncertain possibilities that are generated by a network (Law, 1994).

Thorns

Thorny plants growing on the ground further exacerbate the proscription of bike use by the environment. Thorns are particularly problematic where there is little infrastructure to ease cycling, such as gravel or tar roads. They are most prominent in Bunya where they are particularly rampant on the flood plains of the nearby river, which is a distinct part of life in the

village with people fetching water from it daily, fishing and bathing. The thorns are a carpet species known as 'Devil's Thorn' (*Tribulus Terrestris*) that easily spread across empty land and tend to grow on disturbed land that is grazed. This restricts Namibians to mostly cycling on the tar roads and in Bunya respondents say they cannot venture into the bush, to the river, or to get to their fields, at least with the second-hand bikes sent by NGOs. For example:

> "I: OK why don't you travel with your bicycle further into the bush? Or across this way?
>
> R: The only problem with the bush is sand and then towards the river it's thorns like on most of the paths.
>
> I: Yeah do you get many punctures?
>
> R: Yes
>
> I: How many?
>
> R: If you're cycling on thorns there really are a lot of times.
>
> I: If you're cycling on the tar road how often?
>
> R: On the tar road I don't usually get a puncture.
>
> I: How many punctures have you had since you brought the bike in the past two months?
>
> R: He can't tell, but there are a lot
>
> I: Can you fix them yourself?
>
> R: Yes"
>
> (Male, 28 years, Bunya)

This cyclist does not often venture off the tar road because of the thorns and sand. Even though he knows how to repair a puncture himself and has some access to puncture repair equipment, he is proscribed by the thorns off-road. It is not practical, or affordable, to buy inner tubes to undertake repairs as frequently as this cyclist needs to whilst using the paths that connect the village.

One 18 year old cyclist interviewed in Bunya couldn't afford to buy inner tubes, but adapted to this proscription by using some plastic water piping that had been discarded to replace his inner tubes. I asked to ride the bike to see how it functioned. The tyre felt flat and it was much slower than having air in the inner tubes, but it offered a practical replacement because the punctures were no longer an issue. The water piping he used was just as effective as a foam inner tube

designed for the same purpose. This cyclist's re-inscription of his bike purchased from the nearby NGO shop affords access to a wider range of places he can reach by bike. For example, he uses his bike to get to the football pitch and the river. Both journeys negotiate the flood plains that are covered in thorns, which necessitated him, along with having no income, to find a solution to punctures, whereas most cyclists restrict themselves to the tar road. This demonstrates how consumers re-contextualise objects by "integrating them into their own worlds" (Øllgaard, 1999: 144) not only after a process of de-inscription, or non-compliance, as outlined by Fallan (2008), but after another actant in the network (i.e. thorns) has proscribed the bicycle's physical script. Similarly, Øllgaard states "processes of appropriation are not confined to consumer practices but are part of a wider interaction with material culture that can be detected in other moments of the cultural circuit of things" (1999: 144). New meanings are re-inscribed in objects in times of the object's biography other than production and consumption. This is an example of the complexity of the scripting mechanism that has been neglected by previous analyses.

This user's negotiation of the bike's physical script occurs relationally to the thorns that are one entity of a 'microecology' to which the bike is transported to. However, the designer's in this network have not responded to such a re-inscription. A local supplier of spare parts, Cymot, in Rundu are aware of foam inner tubes that could be a solution to thorns for these cyclists, however, they had feedback from customers that the foam replacements slow the bike too much. Whilst a local supplier has attempted to respond to this proscription that occurs in the particularities of this Northern region of Namibia, the local and international NGOs have not. A moderation by a consumer to redesign a product script in a way that suits them and their environment, such as this example, is considered to be a feedback mechanism between user and designer (Akirich, 1992; Fallon, 2008). However, this case demonstrates the lack of mediation occurring between designers and users in this network, which cannot be assumed to be the result of Euclidian distance. There is greater complexity occurring as scripts move between global and local spheres in this development network. The lack of resources and the model of working with second-hand objects also proscribe the bike in-situ. Whereas, NGO 3 has adapted to similar proscriptions by producing their own hardwearing tyre. The lack of translation of this user's adaptation demonstrates that users must 'make-do' with the physical script of the second-hand bikes supplied and does not evidence that these users are represented as consumers. The agency of users to incorporate technology into their lives cannot be assumed because of the proscriptions that occur in situated at the 'microdynamics' of scripting (Oudshoorn et al., 2004) and the failure to negotiate these proscriptions. Whilst Jensen's 'staging mobilities' framework rejects such binary spaces of local and global because of the

possibility of translations that hold together entities regardless of these boundaries, this network has not yet configured the mediations required to negotiate the separate spaces, which leads to user proscription (2013).

The thorns were an unexpected ethnographic encounter for me and in with a lack of contextual, local knowledge, I selected a bike from the NGO shipping container, where I was based in Bunya, to hire for the time I was there carrying out ethnography and interviews. I chose a bike based on wanting to use the tar road for exercise, visiting surrounding villages and a lodge 5km down the road that offered fishing trips for tourists. However, I was surprised to have to stop twice to repair punctures from thorns. When I came back to my bike after the fishing trip its tyres were flat again from more thorns. I repaired them again (Figure 6.8), but on the way back I decided not to remove the thorns and stopped to blow up the tyres once.

Figure 6.8 Repairing punctures, Bunya village

I gave up with the bike after that trip because its utility was not worth the effort to repair it. Its tyres were thin road tyres, but also almost completely worn through in places because the bike's tyres had not been replaced (Figure 6.9).

Figure 6.9 Worn tyres on a second-hand bike

The organisation had decided not to replace them and to sell the bike as it was, perhaps to maximise their profit, or because they did not have replacements in stock. A tyre with a much thicker tread would have reduced the number of thorns puncturing, but was still not going to be able to avoid them. Airless foam inner tubes were not available and therefore the environment proscribed the value I held for this transport mode as did the type of stock that the NGOs had shipped to the bike shop in Bunya. The lack of relevant spares available that might have eased the technical and environmental problems I experienced further proscribed my bike use.

Thorns are also an issue in Rundu, which is situated beside the River Kavango, because thorns can be carried out of areas with poor infrastructure, mostly in informal settlements, onto tar roads:

> "People come in through the bush and carry thorns on their feet onto the tar
> road." (Male, 34 years, Rundu)

The thorn's proscription of the bicycle is far less in the places where relevant infrastructure is present, however, they do also infiltrate hard infrastructure as my ethnographic encounter and the above quote evidence. The presence of thorns and sand accentuates the issue of not having sufficient infrastructure for cycling and acts to prohibit cycling, particularly in rural villages that are connected by natural paths, but also in the town. The environment acts within this network in a contextually specific way and relationally with other actors and actants to proscribe the physical and socio-technical script of the bike. Proscriptions occur through complicated sets of entangled agencies (Latour, 2005). Several different actors are at play and are often work behind

the scenes unnoticed. There is a large amount of work that must be undertaken by actors in a network to translate a product script, which is embedded in a network of multiple environmental, material, cultural and economic agents, in order to domesticate a product (Fallan, 2008). The particularities of the local are in conflict with the universal and singular script of the NGOs' (Kullman, 2017). This calls for an understanding of the processes and relations that give rise to and configure particular spaces (Murdoch, 1998).

Whilst NGOs are acting in constructing and facilitating a prescribed mobility, it is incomplete without the actions of other network components. It is impossible to predict that these actions will fall into place without negotiation. In this network the design field is multiple and complex, and the stage crew comprises not only of international and local NGOs and donors, but also investors of infrastructure and those responsible for land-use planning. Networked entities are diverse and each component reflects the whole, working in unison, or not, as the case may be (Söderström, 2013). Networks of technical objects, designers and users must be arranged for them to be capable of being transported intact over distance; a process that demands work and effort by diverse actors (Jóhannesson and Bærenholdt, 2009). Development practitioners inscribe second-hand bicycles with a socio-technical script of rural productivity, yet the entanglement of the natural environment and the absence of road surface materials has been neglected, therefore users are proscribed from cycling. The 'taming' processes of domestication – of appropriation and adaptation to an object (Fallan, 2008) - involving both product designers and consumers in this example is incomplete because of the complexity of actors and actants that are in ongoing negotiation in this network.

Although NGOs represent a participatory method of development, Script Analysis demonstrates the absence of negotiations occurring in the design process of material forms as they travel. Development occurs in networks that go beyond the 'local' (Bebbington, 2004) and beyond international and local partnerships to individuals, who in this case are consumers. More attention is required in the mediations between users and designers in staging mobilities, as a conceptual approach to mobility design that attempts to overcome local and global boundaries. This is more broadly relevant to the development concept of 'alternative modernity' (Greenstein, 2009) that seeks to reshape local and global relationships in order to recognise 'modernity' is established through a plurality of experiences positioned in a network of global relations (Greenstein, 2009). Massey (2015) and Saldaña-Portillo (2003) argue for a movement towards perceiving local knowledge to be based on the experience of being immersed in global relations. This case study reaffirms this argument, however, global knowledge will also need to be immersed in local relations, including relations with apparently simple entities, such as sand

and thorns, which act to proscribe globally constructed development solutions. Whilst Massey calls for "a global sense of the local" (ibid: 42) there also needs to be a local sense of the global.

The Human Environment

The following section evidences the tensions that arise through the interactions bicycle users have with other materials in the built environment that contribute to the proscription of the bicycle's utility in this Northern region of Namibia, in this case the infrastructure and its condition, and secure bike parking materials.

The Condition of Infrastructure

A respondent explains the difficulties he experiences with using a bike for his day-to-day transport:

> "R: At times it [the bike] can get broken. Maybe one month, then the second month a part gets broken and he has to buy [a part].
>
> I: So you're fixing your bike pretty much every month?
>
> R: Yes
>
> I: Can you give some examples of what went wrong?
>
> R: The rim of the wheel the rear one, after going through potholes, it gets out of alignment. It's no longer straight.
>
> I: Can you avoid the potholes? Or does the traffic make it difficult?
>
> R: The main challenge is the cars. If you change lanes then someone can bump you easily. So you just have to be in your lane and yeah.
>
> I: So it's hard to avoid the potholes. Have you ever been knocked off?
>
> R: Yes maybe twice."
>
> (Male, 35 years, Rundu)

Firstly, this respondent is discussing the prohibitive aspect of the maintenance required on his bike. As the conversation continues, though, it becomes apparent that two other elements are also interacting in proscribing the bike's utility. The condition of the tar roads in relation with the risk presented by other automobile traffic also using the roads increases the amount of maintenance his bike requires. Without interacting with other road users the cyclist would be able to avoid the potholes, but in this case, the traffic prevents avoidance and creates a hazardous environment, which is detrimental to the functional condition of this respondent's bike. This demonstrates that the bike's script is only translatable within a network of other

actants, including adequate infrastructure that is maintained. The NGOs' script assumes that the 'conscription' work has been done to align various actors in the network in order to prime a setting for prescription, in this case the presence of adequate infrastructure (Latour, 1992). The point at which technology is subscribed depends on the "lines of other setups being aligned" (Latour, 1992: 240). NGOs are not aware of their assumption since they intend the bikes to be predominantly used in a rural context where there is little infrastructure as Chapter 3 demonstrated.

The condition of infrastructure is particularly relevant in Namibia where the hierarchical position of drivers, relative to cyclists, further proscribes the bike's utility because cyclists are at risk and therefore restricted to riding only at the very edge of roads (see Figure 6.10 p. 223). As Söderström (2013) describes, roads are traveling urban forms prescribed for users acting from afar to orchestrate user movements. However, infrastructure may be de-inscribed by users who sometimes miss-read the script of the infrastructure, resist it and/or re-inscribe it in through some course of action, such as driving against the flow of oncoming traffic to take a more efficient route. Similarly, whilst transporting the second-hand bike, designers have assumed that users will be pre-inscribed upstream of the scene (Latour, 1992) to use the bike with infrastructure as intended. It has been assumed that riders will interact with other road users and hold a position in the road that enables them to negotiate pot holes and traffic.

Another respondent describes an area where he is forced to interact with other road users, which he is not comfortable with:

> "I: OK are there any more difficulties to using a bicycle?
>
> R: Yes some tar roads are not nice […] sometimes going from the tar road to the gravel is like this height [demonstrates with hand] and sometimes you have to go out into traffic to avoid it. Now when you need to repair it [the bike] you don't have many spare parts here."
>
> (Male, 34 years, Rundu)

This demonstrates that the interface of two different surface materials are acting problematically in this network. Cyclists have to negotiate this interface as roads are being upgraded to tar. In the places where infrastructure is not suitable for a bicycle, cyclists must either risk their safety, or risk their bike getting damaged. If it does get damaged then the maintenance, which is costly and inefficient, proscribes the bike's utility. It is both other road users and poor road infrastructure that increase the need for bicycle maintenance. This is an issue of implementing a system of materials, or the 'conscriptions' (Latour, 1992) that support the bicycle's script, which falls in the remit of urban planners, the government and those who

maintain and are contracted to build infrastructure. However, evidence from the literature (Bos et al. 2008; Leinbach, 2000; Sietchiping et al., 2012; Vasconcellos, 2003) and the above quotes, suggest this is not currently a priority for these actors who tend to prioritise infrastructure investment for automobiles.

The above evidence demonstrates that tensions between poor infrastructure and other road users is spatialised to a binary of rural and urban contexts. Other road users were not presented as problematic by rural respondents. In Mile 10 and Bunya villages, the lack of infrastructure altogether and natural surfaces, such as sand and thorns, have a greater proscribing effect than car drivers. The few tar roads that exist in the two villages are recently constructed and in good condition. Therefore, it is the combination of poor infrastructure and road users that is an urban issue in this case study. This highlights the complexity of proscription processes within socio-material networks, which transpires contextually and spatially. This makes the translation of objects in mobility systems unpredictable (Söderström, 2013). Whilst the bicycle is scripted as a universal tool by development practitioners, in reality, the dissemination of universal technology and practice is highly precarious and geographically complex (Kullman, 2017). In this network, the 'situatedness' of scripting objects and staging mobilities (Jensen, 2013) has been overlooked and the bicycle lacks cross-cultural compatibility (Kullman, 2017). In order for an object to be truly universal it must shift between scales of global and local, and address the material and cultural particularities encountered through its travels, which co-produce mobility practices (Jensen, 2013; Kullman; 2017).

Security Infrastructure for Cycling

Materials that afford cycle security that are usually found as part of the infrastructure that facilitates cycling, such as public bike locking facilities, are not present in Namibia. There are no bike stands and there is little street furniture, such as lamp posts, to lock a bike to. Furthermore, whilst constrained by their budget and the range of commodities available to them, respondents whom cycle usually only have access to thin chains and padlocks rather than secure, strong bike locks. Low quality locks are not strong enough to prevent bike theft as this respondent has experienced:

> "I: Is it ever a problem to lock it up?
>
> R: I have a problem, like in town, once I left it outside a shop. Someone came, tried to lift it up and the security guards rescued the bike for him. They broke the padlock." (Male, 50 years, Rundu)

This quote demonstrates that social action is required in place of material technologies that are not available to secure parked bikes (Kullman, 2017). Cyclists rely on the trust of others whilst lacking the infrastructure that affords security. For example:

> "I: Could you not get a padlock for your bike and lock it to a post or something?
>
> R: Yes I have a lock and I used to lock it outside my house. But my neighbour said I didn't need to use the lock. I could give it to him to keep inside his house." (Male, 20 years, Rundu)

This young male would rather leave his bike with his neighbour whom he knows and trusts rather than leave it unattended outside his house, even when locked. People rely on others and particularly people they know and trust because of the lack of secure and affordable objects that can be relied upon. Even with a padlock, this interviewee thinks a thief could still break into a house if they wanted to desperately enough:

> "I: Do you get many break –ins in Ndama?
>
> R: Yeah it really occurs most of the time. Not every time, but just sometimes.
>
> I: I'm just wondering how secure the locks are on the houses?
>
> T: Yeah they are secure
>
> I: A big padlock?
>
> T: Yeah. It depends. If they want to break into your house they will get in."
> (Male, 20 years, Rundu)

This respondent states that his neighbourhood in Rundu is not secure with theft occurring frequently. The lack of secure housing is also a problem for cyclists whom have an object of value to keep secure. With a lack of materials to ensure secure bike parking and also to secure houses, cycling is proscribed. The bicycle's script is not only written in its mobile state, but also in its immobility. As Aldred and Jungnickel suggest (2013: 608) the bicycle's state of immobility "is particularly important for privately owned transport objects, which are designed for motion, yet which (even if regularly used) spend most of their time stationary". Aldred and Jungnickel demonstrate that secure bicycle parking is often neglected whilst cycling is positioned as a secondary mobility relative to the automobile. The normalisation of the car in society means that parking is understood for cars and not for bicycles, yet cyclists in the context of a developed

country, can alternatively re-inscribe street furniture, such as lampposts in configuring the immobility of their bike (ibid). Aldred and Jungnickel highlight the negotiations between users and various infrastructure, the conflicts that arise in the bike's stationary existence, and the multiplicity of actors engaged in configuring the bike's immobility. However, in this network the bike's immobility has been overlooked. The NGOs' script of the bicycle as a transport mode assumes that it can be securely immobile, which will enable the object's subscription. This is because users value the ability to lock a bicycle once they have reached their destination and whilst it is stored in their home. If this function is prohibited because of a lack of material infrastructure, particularly in an urban context, the value of the bicycle's script is reduced and its use is proscribed.

Security issues were mostly brought up by interviewees in Rundu town rather than Bunya and Mile 10 villages:

> "The main problem is town. When I'm home it's in my house. I don't leave it far from me. In the village people wouldn't steal it like they would in town." (Male, 50 years, Rundu)

This is because the trust within the village communities is stronger, where people are more accountable, since neighbours know each other well. Whereas, in Rundu, despite houses being so much closer together in informal settlements, people often did not know their neighbours. For example, the following respondent uses the word "strangers" to describe people who might steal a bike:

> "R: The risk with using the bicycle for shopping is that strangers might come and take it away. Sometimes you try to leave it with someone and that person asks you for money to look after it.
>
> I: How much would they want?
>
> R: It depends sometimes they want 16 [Namibian] dollars
>
> I: So you may as well just get a taxi?
>
> R: Mmm so just in case it's better to pay 10 dollars for a cab." (Male, 35 years, Rundu)

The anonymity that is present in the town increases the risk of bike theft. This was also reflected in my ethnographic observations as I felt safer and at ease walking around the two villages, but did not in the informal areas of the town. The increased risk of theft is coupled with a reduction in social solutions to bicycle security, which is embedded in neighbourly trust. This respondent describes paying a security guard to watch his bike, which is typically how people ensure the

security of their parked cars in Namibia. These security systems in place for motor vehicles, however, are often too expensive for those who choose to cycle. The cost of paying a guard is weighed up against an alternative transport mode in the town – the taxi. This respondent states it is cheaper to use a taxi than to keep his bicycle secure. Therefore, the bike's use is proscribed by the lack of bike parking infrastructure, along with a lack of strong, but affordable, bike locks and the presence of a cheaper alternative transport option. This proscription is occurring within complex and contextual systems of social security, urban planning, mobility systems and socio-economic factors. It is a spatialised proscription to some extent because the pre-existing cultural systems of trust, utilised in the absence of the material technologies that afford security, are embedded in the rural context, but to a lesser extent in the urban context.

The NGOs' universal scripting of the bike as a development tool is reliant on security technologies, however, these quotes demonstrate that in place of material technologies, alternative and humanistic relations of compatibility, such as neighbourly trust, are constructed (Kullman, 2017). This is a re-inscription of design in response to the complications arising as the bicycle's script negotiates its trajectory from global to local spaces. This evidences how a staged mobility travels precariously and unpredictably. It also demonstrates an alternative concept of mobility design, which evolves as it negotiates global and local networks and exists as an arrangement of ideas, materials and practices. Product scripts have the capacity for flexibility as they facilitate actors to re-inscribe their utility to suit the situational particularities of socio-material networks (de laet and Mol, 2001; Jensen, 2013) rather than attempting to generalise design across cultural and geographical distances (Kullman, 2017). The latter risks masking alternative understandings of mobility design, such as the re-inscriptions described in Chapter 5, which are constructed through a process of negotiation (ibid). However, re-inscriptions are also precarious, as this example has shown, whereby the cultural systems of trust required for local solutions to bicycle security are not fixed.

In this case, the NGOs are acting to stage a mobility for development subjects by scripting desired uses for second-hand bicycles, however, they neglect that the bicycle's script is less valuable to consumers who are proscribed from the object's script, which is designed to be securely immobile in relation with other locking technologies. The NGOs' script presumes that the conscripting work has been done to align actors in order to setup a stage in which the bicycle is inserted (Latour, 1992). In this case the NGOs have overlooked that users do not have access to secure bike parking and locks. This evidence demonstrates that cycling is a complex practice that requires certain features in the built environment in order for it to become embedded into a mobility system (Jensen, 2014). The translation of a material form in this way is unpredictable

because the utility of its socio-technical and physical scripts are reliant on multiple actors and a material network entangling consumption and urban development, thus conditions of subscription vary from one place to the next (Söderström, 2013). These complications inhibit a domestication of the bicycle, which has not yet taken place as is evidenced in the proscriptions that occur in the absence of an urban planning system that facilitates the bicycle's translation (Fallan, 2008).

Economic Proscription

This section examines how economic factors proscribe the bicycle's utility and accessibility for Namibian consumers. Proscriptions are exacerbated within a development network that operates with very limited financial investment and operates in such a way that averts any financial risk. In this case the cost of maintenance and the limited supply of spare parts proscribes users from repairing their bicycles, which shortens the life-span of the objects and is at odds with the NGOs' model of increasing the mobility of users in rural places. This evidences the complexity of proscription, which is not only a binary conflict mediated by designers and users, but rather, by multiple actors in complex, local, microecologies (Jensen, 2013) that are formed of particularities that challenge the notion of universal design (Kullman, 2017).

Maintenance Costs

The larger NGOs train mechanics in bike maintenance during the implementation of new projects set-up with local partner organisations. They sometimes send ad-hoc spares that have been donated with the second-hand bikes, but generally the local projects are intended to be independent businesses that run from the profits of bike sales and repair services. The concept of sustainable development has permeated into the staging of local programmes of development, which are now often funded temporarily and self-funded from there on (Watkins et al., 2012). This shapes the types of projects set up to those that will not require recurrent funding, goods and services (ibid). The concept of sustainability influences the NGOs' overall model since bikes are, in theory, a simple technology to repair and spare parts are assumed to be available across the Global South if ordered regularly from a local wholesaler. Otherwise stripped parts from the discarded second-hand bike frames are thought to be a suitable and affordable alternative. Thus, the technology can be maintained locally and provides an opportunity for capacity building as mechanics are trained and given a prospect for employment. However, this assumes that other actors are conscribed to the local network in order to create a setting that enables the bike's sustainable maintenance (Latour, 1992). This staging entails a multiplicity of human actors and non-human actants including; spare parts, tools, wholesalers, affordable and efficient logistics, communication devices, consumers with

disposable income and environments that do not overly strain this network. The sustainability of the bike's script is reliant on, and assumes, a unison of these entities. When the network is strained by non-compliant actors proscriptions of the bike's use take place.

The following NGO respondent does not acknowledge the full cost of owning a bicycle for users:

> "Instantly the life situation changes [after buying a bike]; you can save money because you don't have to spend money on transportation anymore." (NGO 8)

The bicycle as an affordable transport mode is emphasised by the respondent. However, cycling is not cost free. For those who use their bikes regularly the maintenance and repairs necessary to keep the bike in order are ongoing as this NGO respondent comments:

> "Looking after your bike will cost some money – bikes aren't free, the running costs, they're cheap but they're not free – looking after your bike means it'll last longer and be safer. Rather than riding it into the ground and saying now take it to be fixed." (NGO 1)

This quote is a more realistic representation of the costs of bicycle maintenance and the knowledge required to predict when and how a bike needs to be serviced. However, the respondent is scripting the bike as a technical object that is cheap to maintain, which is at odds with the economic situation of many users in Namibia for whom the bicycles are prescribed. Some users may have knowledge of some basic repairs and servicing to keep these costs down, but despite bicycles being advertised for their simplicity, repairs often need to be done by a knowledgeable professional and replacement parts purchased. This is partly because a small number of companies within the cycling industry have monopolised the design of spare parts, which require specialist tools and knowledge to repair them (Rosen, 2002). Many spare parts are not compatible across different brands, or even across a range of products by one brand, which limits the involvement of users in repairing their bicycles (ibid). These issues are not unique to Namibia, or developing nations, but do have a stronger prohibiting agency for low income cyclists because of the high costs of parts and labour, particularly in rural regions. The lack of compatibility between the environment and technology places a greater strain on the bike's physical script, which in this context has higher maintenance costs than anticipated by the NGOs.

An excerpt from my field notes describes a brief conversation with two men who were struggling to repair an upturned bike on the road side in Rundu town:

> [Informal chat with two men fixing their bike on the roadside with one adjustable spanner]

> "Two men had a problem with their front wheel and were changing it. I asked if they could repair it at the bike shop. One replied 'I don't have the money'. I asked where they got the bicycle. They replied 'from Cymot' - the German car and bike parts retailer." (30/06/2015 Rundu)

Although these men had brought their bike from a reputable shop they could not afford to have a professional to repair it, nor did they have adequate tools to carry out the repair themselves. This example highlights a conflict between the bicycle's socio-technical scripting as a universal tool for development subjects, whom have limited income to maintain a technical object, and the bicycle's dependency on a conscribed network of objects and actors to enable its continuing utility. The economic position of real users, as opposed to imagined users (Akrich, 1992; Latour, 1992), places a strain on the network as the bicycle's script is transposed from a place where the object was previously embedded in a network of maintenance to a more unstable network. These ongoing tensions complicate a staging of mobility (Jensen, 2013) by distant actors and demonstrate the difficulty in prescribing movements for development subjects in the shape of travelling material forms (Söderström, 2013).

Another excerpt from my field diary is an account of a customer repairing their bicycle at the NGO shop in Mile 10 village:

> "He'd cycled there from the police check point about 6 miles down the road. He's had his bike for 5 years and has been riding it 10km daily for work each way. The tyre he was replacing was completely knackered and the remaining one didn't look great, but he couldn't afford two." (3/07/2015 Mile 10 village)

This account demonstrates the amount of daily use that bicycles may endure by users in Namibia. If someone rides 10km per day, their bike will need parts replacing regularly. Not only do tyres wear out, but also the bike's mechanical drivetrain, for example, the gears, chain rings and chain, need replacing over time, which is costly. In many cases real users cannot afford these costs, which ultimately proscribe the prolonged daily use of bicycles. For example, I asked an interviewee if they had a bicycle and his response was:

"R: One of my brothers took it [the bike] home, but it's not functioning.

I: OK and what's stopping you from having it repaired?

R: Ah it's expensive sometimes to take it to the repair [NGO bike shop]"

(Male, 35 years, Bunya)

For this respondent, the cost of a repair is more than they can afford to pay for the utility they gain from the bike, which has therefore been given to his brother, who may have the financial means to repair it and a greater desire to use it. Whilst this respondent initially engages in the NGOs' mobility script, he has later been proscribed in a mismatch between the physical script of the bicycle that depends on technical maintenance and his economic position.

When I asked a respondent if there was anything he'd like to add as the interview was coming to a close, he says:

"R: It would be good if there was some sort of help or assistance in fixing the bikes [...] it's difficult because they [NGO bike shop] won't fix the bikes on credit.

I: So you want them to fix the bikes on credit, pay bit by bit, and keep using your bike?

R: I may have that idea, but the project won't like it. It's their rules."

(Male, 18 years, Bunya)

Although the NGO have facilitated the training of mechanics and provide a shipping container on some land in Bunya for them to carry out a repair service, their model fails to meet the needs of many low income bicycle owners who find payments for repairs up-front beyond their economic means. The local NGO do not offer credit for repairs, or discounts for follow up servicing. This demonstrates that the negotiation between actors required to enable the bicycle to become domesticated (Fallan, 2008) is only partially occurring in this network, which highlights a lack of feedback from development subjects to those designing their mobility. Without an affordable network of repair expertise the second-hand bicycles shipped to Namibia often have no long-term value. This evidence demonstrates that the complexity and multiplicity of staging mobilities that requires ongoing negotiations between designers and users (Jensen, 2013), particularly in cases where technical objects and mobilities are designed for transnational compatibility (Kullman, 2017). In travelling, object scripts and mobility designs may need to facilitate "an open arrangement of ideas, material and practices" (ibid: 140), for example in this case, enabling users to pay for repairs in instalments, and to invest in infrastructure that reduces

bicycle wear and tear. The complexity is that this involves multiple actors and thus, requires communication and resources that are limited.

Supply Networks

The proscribing cost of repairs is further exacerbated by expensive transport costs of moving goods in Namibia. For this reason the bike shops in the Northern region rarely order spare parts from a wholesaler:

> "There is only one bicycle wholesaler in Windhoek. You can find all the parts you need, but sometimes more expensive. Courier is expensive for us. For tyres and tubes, brake cables and gears, it is about N$1700 [£100]. It depends on weight. Some couriers are cheaper; we decide on the courier".
>
> (Excerpt from field notes 30/06/2015 documenting a conversation with an NGO mechanic, Rundu)

Instead shops rely on buying spare parts in Rundu at the German shop, Cymot. However, these supplies are frequently depleted. The shop does not have a regular, or extensive, supply of spare parts because the size of the market is small. Therefore, the NGO mechanics often fail to find the stock they need. For example:

> "We are having a BIG problem to get size 26, 20 and size 16 [inch] we don't have the tubes." (Village NGO shop near Rundu)

These inner tubes and tyres can be ordered from Windhoek, but the distance and transport costs prohibit the order being placed. The implication of expensive courier costs is that customers often have to find their own spare parts in Rundu. If no parts are available customers have to wait for the next delivery, which could be several months. This is an example of how the particularities in this network multiple actors proscribe the staging of mobility (Jensen, 2013; Kullman, 2017). The Namibian context of a low population density reduces the efficiency of the supply network and increases the cost of maintenance. This works together with other actors in the network, such as the natural and built environment and infrastructure investors and planners, to proscribe the use of bikes. Although according to the NGOs' script the bicycle ought to increase user mobility in areas of low population density, in reality the bicycle's physical and technical script relies on a certain pre-existing density of human activity that supports supply networks. Without the conscription of other actors to a local 'microecology' the NGOs' script does not translate intact. This demonstrates that the stage design mechanism of mobility is a messy process that requires the conscription of several entities to create a setting in which technology is subscribed by users. This occurs in both global and local networks and thus,

ongoing negotiations between actors are a vital part of transporting material forms and programmes of action in their scripts.

The shops of the Northern region do not communicate amongst one another to chain their orders to reduce transport costs and to get a bulk order discount from the wholesaler:

> "R: Everyone orders by themselves. We can get spare parts from Rundu, from Cymot. […] If you ask for a part in the shop sometimes you won't get the right one. Rear rims are the worst problem. Sometimes when you go to Cymot they're already finished because the other shop in Rundu have already brought them. We went to look for tubes and they said 'no your friend has already brought them all in the other shop'.
>
> I: How do you feel about that?
>
> R: Well the thing you went to get, you cannot get. You will feel painful.
>
> I: Because the time it takes and the cost of the taxi?
>
> R: Yes" (Nkurenkuru NGO shop mechanic)

Rather than working in co-operation the NGO shops are in competition against one another, which is partly driven by the limited supply of spare parts in the region. It is also because there are many different tribes in Namibia and the NGO shops located in different villages are run by competing tribes. The NGO working in Namibia comment on rivalry between the shops, which prohibits their cooperation:

> "There are some very strong jealousy issues um we had had a bike shop in one village and they wanted to start a bicycle tour enterprise with bikes in another village and there was a historical dispute, or rivalry, between these two villages that goes back two hundred years and everyone was fully aware of this rivalry except us and so we didn't understand what the issue was with giving the bikes that had been allocated. They did everything they could to give them really inferior bikes and it was a huge fight to get the bikes. The whole time we said that there were 30 bicycles allocated to this other project in this other village and yeah it was simply based on this long standing rivalry um yeah so there are definitely issues around co-operation [….] there were clearly jealousy issues. But yeah not always. And not in all regions. And there are cultural issues we never understand at all we're not privy to them."

These competitive traits between different villages, or opposing sub-tribes of the Kavango and Caprivi regions (Tötemeyer, 2013), is a complexity within this network that results in non-compliance between actors in the supply network. Multi-racial diversity is an important part of Namibia's identity as a recently independent nation. For example, Namibia legislatively protects traditional authority systems of over 50 indigenous ethnicities (there are five in Kavango region) that have been allocated administrative and legal powers. However, it is thought that Namibia

is yet to establish a common 'state' identity whereby Namibians share common goals and values (Tötemeyer, 2013). It is an ethical and reflexive question whether, or not, smoothing out highly localised rivalries for the sake of improving the efficiency of the NGOs maintenance and delivery model by an outsider would be morally correct, or even possible. The NGO says the rivalry 'goes back two hundred years', which seems to give it some temporal depth and grounding that would not be possible to unearth and a history that should not be interfered with by them. The NGO is suggesting it is not their business to get involved in what they dismiss as 'cultural issues' even though tribal cooperation could be an important negotiation in reducing the cost of the maintenance network. Thus, they are not accepting responsibility for any failure on their part to research the potential of a maintenance and supply network prior to setting up projects. Whilst NGOs are generally advocated to have a responsibility to represent grassroots knowledge in the movement of postmodern, postcolonial, development discourses (Chambers, 1997; Potter et al., 2012), in this case the NGO is working with local actors to some extent, however, is also denying responsibility for how its actions are translated to a local scale and concede to local formations of power and rivalry.

The NGO shops are also prohibited from ordering parts because the Windhoek wholesaler requires them to place an order by email rather than by telephone:

> "R: If we can't get parts there [Cymot] we have to order from Windhoek wholesaler through emails. We need to go somewhere to get assistance with emails.
>
> I: Yeah where do you go to get emails?
>
> R: Just to order the spare parts, in town.
>
> I: Like how often do you order parts? Every week?
>
> R: Oh no. We ordered form Windhoek last year. This year we have not ordered. There are a lot of spare parts here this year, we did not order." (Nkerenkuru NGO shop)

The NGO has set up the shops with a laptop computer, printer and fax machine. These are materials designed to enable shops to operate in an established business system, which requires access to the internet and a laptop. However, since the shops are finding internet connection difficult, the materials of business transactions are prohibiting orders from being made. It could be helpful if the wholesale shop encouraged these customers to place their order by cell phone, which almost everyone has access to in the Northern region. By supplying inappropriate technology and asking shops to place orders by email the NGO and wholesaler are actually slowing down the efficiency of the bike maintenance network. This is an example of the

complexities that exist in this network and the failure of actors to negotiate solutions to match the bicycle's physical script with other elements of the auxiliary network it interacts with and depends on for subscription to take place. The NGO attempted a negotiation by providing laptops, however, the lack of further negotiation is causing proscription in the network. This highlights the need for ongoing negotiations of design scripts between multiple actors for a mobility to be translated across global and local scales (Jensen, 2013; Kullman, 2017).

The complexity of bicycles as mechanical objects confronts the rural spaces in which the NGOs stage a mobility. A maintenance network is more efficient in major urban areas, such as Windhoek, that receive and distribute stock from South Africa. The further the NGO shops are from this central activity, the more expensive and logistically difficult it is for them to practice an efficient maintenance culture. The cost of maintenance is exacerbated by contextual factors that act within this network. This is particularly problematic for the subscription of the bicycle for development subjects whom do not have the economic flexibility to negotiate the clash between object script and the particularities of a rural maintenance network. Therefore, the bicycle quickly becomes junk for many users. The failure to maintain a bicycle in this network is not something that is unique to the context of developing countries, or Africa, but is rather an issue of the auxiliary infrastructure required for maintenance that problematically confronts Namibian users. The cost of maintenance for users is weighed up against the value of a bicycle's utility, which decreases when environmental actants, such as sand and thorns, proscribe it. Once these costs outweigh the value of the bike's function in certain contexts, they are not repaired and thus, users are proscribed. This section has demonstrated that the local 'microecology' of this mobility system as assumed by the NGO respondents comprises of multiple conscribed actors that in unity lead to a domestication of the second-hand mountain bicycle. The diversity of actors and actants accounted for in this case demonstrate a detailed notion of the 'microecologies' that stage situated mobilities (Jensen, 2013). These are socially arranged, for example, in networks of mechanics, spare part distributors and logistics, which are susceptible to population densities and the rivalries of different ethnic groups. They are also materially arranged through, for example, spare parts, tools, communication technologies and road infrastructure. The 'microecology' of actors in this case contributes to the staging of mobilities, thus the scripting process of the bicycle is situated across global and local spaces in order to create scenes for a prescribed technology, however, 'microecologies' are fragile and cannot be assumed.

Cultural Proscription

The section explores the social proscriptions of bicycle use in Namibia, for example, employment opportunities of users, legislation that proscribes low income users and the embodiment of gender norms that proscribe women from using bikes to a greater extent than men. As part of a network that traverses global and local scales of space these cultural elements are relevant for the translation of a mobility practice. This section demonstrates that proscriptions in mobility design are therefore constructed by multiple actors in microecologies (Jensen, 2013) that are formed of social and material particularities that challenge the notion of universal design and an objects ability to hold its utility whilst travelling across varying scales of global and local (Kullman, 2017). Design subscription, I argue, goes beyond a relationship between producers and consumers (Akrich, 1992) and is also influenced by multiple actors that determine how users interpret a design script in local situations that act to stage mobilities (Jensen, 2013). However, NGOs do not go beyond introducing a technical object and workshops to facilitate its maintenance.

Socio-Economic Proscription

Being in employment is commonly not a permanent state of being for many Namibians in this region, which records some of the lowest participation rates in the labour force (Namibia Statistics Agency, 2015). In Kavango West just 23 per cent of households' income is predominantly from salaried employment. In Kavango East, which includes Rundu town, 40 per cent of households' income is from salaried employment, whereas fewer households (23 per cent) rely on subsistence farming for their main income (Namibia Statistics Agency, 2015). Regular salaried employment is not the norm in this region and working in temporary and casual construction labour makes it difficult to save up money over time to buy a bike:

> "R: I don't work so it's difficult for me to get a bike
>
> I: Have you ever had a bike?
>
> R: I had one a long time ago because my parents brought me one" (Male, 46 years, Mile 10)

I then asked the respondent if it was a lack of incentive to use one, however, he could see utility in a bicycle:

> "I: And do you want to cycle?
>
> R: Yes it would be useful
>
> I: Ok how would it be useful?
>
> R: I could carry a sack of maize meal like a 10kg to cut transport costs. Or I could ride to the field because there is a road there now.
>
> I: Is it a tar road?
>
> R: There is a network mast close to their field and they build roads to maintain the masts.
>
> I: Is it sand or gravel?
>
> R: It's gravel. I can use it for fetching produce or water." (Male, 46 years, Mile 10)

For this respondent, there is potentially more utility in a bicycle than for many of his neighbours because he could cycle on a gravel road to get to his land, whereas most others can only access their land via a deep sandy track. His response also suggests that he had previously given some thought to purchasing a bicycle. He is of the age that men consider bikes in the most functional sense as argued in Chapter 5. In the above quote the respondent can foresee utility in a bicycle for taking water to his field, which demonstrates although he subscribes to the NGOs' productive scripting of a bicycle, he is proscribed by the cost of owning one.

The affordability of a bicycle for Namibians is spatialised to some extent. For example, one of the interviewees suggests:

> "Bicycles are quite a lot in town, more than in the village. It's because people don't have the means to afford bicycles as much as people do in town." (Female, 67 years, Rundu)

There are a number of factors that proscribe the utility of cycling in Bunya and Mile 10 villages and it is therefore not only an affordability issue. However, there are more males in employment in the town, Rundu, than in Bunya or Mile 10 villages and more employment opportunities available (Namibia Statistics Agency, 2015). On average, employment opportunities are increasing in urban areas of Namibia. Most commonly men are employed as security guards in shops, restaurants, cafes, hotels, or car parks, for example. However, it is also very common that men will be unemployed or on such a low income that they cannot afford to buy a bicycle in Rundu:

"I: Have you thought about getting a bicycle?

R: Yes I would. The only challenge is I don't work so I just sees others who are using it." (Male, 32 years, Rundu)

This quote demonstrates that the economic position of people proscribes the use of a bicycle in an urban context too. Affordability of bicycles is a problem that does not end with the initial investment. As I argued in the previous section, the maintenance of a bicycle after its initial purchase, is also problematic. The nature of employment, which is often short term for Namibian men, means that they can have difficulties getting a bike repaired, even though at one time when they completed a job, for example in construction labour, they could afford the initial investment of a bike. If, at the time it breaks they are unemployed, the bike may be abandoned and forgotten, or given away. Thus, the socio-economic factors in this network demonstrate that the particularities of this mobility 'microecology' (Jensen, 2013; Kullman, 2017) acts to proscribe the utility of the bike. The lack of income and the type of employment people have, is contextually specific and varies from place to place even in this Northern region of Namibia. The highly localised applicability of the bicycle's socio-technical script challenges its universality as imagined by the NGOs (Kullman, 2017). This demonstrates the unpredictability of travelling scripts (Söderström, 2013) and the complexity of proscription as a process, which is coproduced by multiple actors within the network. The bicycle as a development tool is prescribed for use in the Global South by donors and international NGOs of the Global North, however these actors cannot stage a mobility from afar. Staging a mobility requires the circumscription of multiple actors in highly localised ecologies and global 'macro-ecologies'. Without constant negotiations between multiple designers and users across space, users will ultimately de-inscribe, or be proscribed from using, the technology.

Legislative Proscription

Wearing a helmet is compulsory in Namibia. The government states:

"226. (1) A person may not drive or be a passenger on a motorcycle, or be a passenger in the side-car attached to a motorcycle, on a public road unless he or she is wearing a protective helmet - (a) which is specially designed for use in connection with that cycle; and (b) which fits him, or her, properly and of which the chin strap is properly fastened under his, or her, chin." (Government of Namibia, 2001: 77).

The law is enforced by a fine that may be given to people visibly not wearing a helmet whilst cycling on a tar road, which is approximately £60.00; the equivalent of the price of a second-hand bike for Namibians. This respondent describes how it deters him from cycling on the road since he doesn't own a helmet:

"I: And are there any difficulties at all with using a bicycle here?

R: It's about the helmet. If the police find you riding without a helmet they might confiscate your bicycle.

I: Ok do you have a helmet?

R: No

I: Why not?

R: It's expensive they are 150 NAD each [about £9.00].

I: OK. Are you worried about the police stopping you?

T: Yeah.

I: How much is the fine?

R: 1000 [Namibian] dollars [£60.00].

I: That's a lot!

R: A guy ran away and left his bike. Then the police man got tired of waiting and left.

I: Did he lose his bicycle?

R: No they also left it

I: Oh that's nice of them they could have taken the bicycle

R: Yeah he was lucky.

I: So how do you get around this problem?

R: We don't ride on the tar road. When we're riding a bicycle we do it off road."
(Male, 20 years, Bunya)

This young respondent cannot afford to buy a helmet and therefore, whilst the legislation is attempting to take care of the welfare of cyclists on fast, dangerous roads, it also acts to proscribe low income cyclists from one of the few items of infrastructure on which they can ride in this sandy environment. The risk of a fine, or having a bike confiscated, is too great for cyclists and so, the potential places where a bike can be ridden are greatly reduced.

Another regulation to cyclists is related to carrying loads:

"247. A person may not operate on a public road a motorcycle or pedal cycle if any goods carried there on, or on any portion or side-car of such cycles, project more than 600 millimetres to the front of the axle centre of the front wheel or more than 900 millimetres to the rear of the axle centre of the rear wheel or more than 450 millimetres to either side of the wheels of such cycles, or more than 300 millimetres to the outside of the wheel of any side-car, but this regulation does not apply to any side-mirror or crash bars." (Government of Namibia, 2001: 88)

This regulation recognises the carrying utility of bicycles and demonstrates that the carrying of objects is common practice in Namibia. However, a restriction is imposed in order to prevent a cyclist becoming an obstruction to a passing vehicle and thus, the regulation is an example of priority of the road space is given to motorised vehicles. A number of other regulations are employed in order to control the way in which bicycles are ridden in public:

"Persons riding pedal cycles on a public road must ride in single file except in the course of overtaking another pedal cycle"

"A person riding a pedal cycle on a public road may not deliberately cause the pedal cycle to swerve from side to side."

"A person riding a pedal cycle on a public road must do so with at least one hand on the handle-bars of the pedal cycle."

"A person riding a pedal cycle on a public road or a portion of a public road set aside for use by persons riding pedal cycles, must do so in such manner that all the wheels of the pedal cycle are in contact with the surface of the road at all times." (Government of Namibia, 2001: 142)

Whilst these regulations are not necessarily always enforced by issuing penalties, they do however give authority to actors, such as the police, to monitor a kind of cycling practice that is deviant from what is considered to be the proper way of riding. A police officer has the right to challenge cyclists who choose to cycle in such a way that is ludic, which relates to the empirical evidence presented in Chapter 5. For example, a rider may be prevented from acting playfully by swerving and riding with no hands whilst on a road. Such a regulation is likely to most commonly restrict young male riders from performing a daring and skilful display of masculinity and those who wish to engage with the sensual experiences of riding a bicycle in alternative movements that the object affords (Peterson, 2007; Solomon, 2009). The regulation gives foremost priority of the road space to motorised vehicles and their efficient movement that should not be obstructed by cyclists. As described in Chapter 5 such regulations constitute a staged mobility of productivity that exerts a uniform pull the lives of citizens (Jensen, 2013; Stevens, 2007; Vannini, 2011). These regulations demonstrate that not only are Western development organisations acting to impose ideals of rational mobilities in the scripting of

bicycles, but so too are local actors who operate in a hierarchy of power in order to control the mobility of citizens. A bicycle is one such object that is utilised as a tool to script the mobility and identity of citizens, a motor vehicle is another, and drivers are also subjugated to many rules that act to avert undesirable ways of moving.

This presents an example of the complexity and multiplicity in the network of materials and actors that work to proscribe the bicycle's utility in Namibia. The flat landscape of this northern region of Namibia and the design of roads, to be as straight and as efficient as possible, increases the risk to cyclists. In response to this risk, official legislation requires cyclists to wear a helmet in place of segregated cycle lanes. A cyclist on a very limited income cannot afford a helmet and therefore is liable to a fine. The legislation and the cost of a helmet proscribe the bike's utility in addition to the natural environment. Other regulations steer cyclists to move in desirable, efficient and rational movements and discourage undesirable practices carried out on public roads. Such regulations increase the vulnerability of cyclists to be charged fines and act to proscribe certain ways of moving.

Cox highlights the importance of situating "design objects with the complex connections in which they are entangled" (2017: 59). The bicycle and its design script is a node in the connections and configurations of staging a mobility (Cox, 2017; Jensen, 2013). As the bicycle travels from NGOs to Namibian consumers, it is proscribed by the particularities of Namibian mobility systems, thus its utility as a universal development tool is challenged (Kullman, 2017). Kullman describes the 'situatedness' and "inescapable difficulties of scaling, measuring and standardising" of design (2017: 140). Design is "not a ready-made concept, but an arrangement of ideas, materials and practices" thus, it requires flexibility in order to "facilitate an evolving and admittedly challenging debate around the possibility of societies to create environments for the widest range of capabilities" (ibid: 140). The evidence in this section highlights the failure of the bicycle's script to freely traverse scales of global and local because of the absence of the necessary work of other actors, for example, lobbying for safe cycling infrastructure and the removal of proscribing legislation. These ideas and practices need to be arranged in the staging of mobility systems with a wider design focus than only technological problem solving because of their empirically specific 'situatedness'. The acceptance of the bicycle's script as an affordable, simple and universal tool for development is relationally dependent on the possibility of multiple actors, such as the government and the authorities, being enrolled that define a mobile situation, which varies from place to place (Jensen et al., 2017; Söderström, 2013).

Gendered Proscription

Bicycle use is predominantly associated with men in sub-Saharan Africa (Grieco et al., 1994; Malmberg-Calvo, 1994; Porter et al., 2009; Tanzarn, 2008) and this is how I found the situation in the Northern region of Namibia. In Windhoek, day-to-day, I did not observe women cycling, or many men either, however I did meet some women who cycle for leisure in an advocacy group and a mountain biking community group, which was mostly attended by Afrikaans and German-Namibians. One of these women was organising a group of children (boys and girls) to learn to ride BMX bikes and another was running an NGO that teaches adult women to ride in Katutura. However, this is not the norm across the country and whilst I was frequently told that is it acceptable for women to ride, when I interviewed women, respondents frequently gave me reasons why they do not. Furthermore, I did not see any women riding in Kavango region. I found amongst respondents in this deprived region of Namibia that a culture exists that embodies traditional gender normative identities and roles in women's mobility practices. These include perceptions of women's safety and bodily strength and skill, a lack of purchasing power for women to own a bicycle and proscriptions associated with clothing.

These gender norms proscribe women and teenage girls from using bicycles in Namibia in the way that NGOs' imagine the bike's socio-technical script to be read. NGOs envisage that second-hand bikes will improve access to education for girls and to generally increase women's mobility. However, this section evidences that this design solution is dependent on women and girls being confident to embody the prescribed technology publicly in the same way that men do. These gendered proscriptions are an example of the complexities of transporting technical objects in order to stage mobilities that are situational (Jensen, 2013). The embodiment of gender is a particularity that confronts the socio-technical script of the bicycle as a universal development tool for both men and women in Namibia (Kullman, 2017). The second-hand materiality of the bikes used by NGOs reduces their ability to adapt their script for women and thus, without any solutions that are more nuanced than the provision of a technological object, the NGOs' mobility 'solution' simply reinforces existing gender inequalities in mobility (Rommes, 2002).

Gendered embodiment of fear and cycling

Kullman argues that universal design is not a stable concept because it is "grounded in specific bodies and places" (2017: 137). The concept of universal design assumes that 'everyone' is pre-inscribed to embody technology in the same way. However, bodies are shaped by differing capabilities, experiences and assumptions, which makes universal design a fragile concept (ibid). Oudshoorn et al. (2004) find that prescribing technology for 'everybody' often fails to incorporate user representations into more specific design requirements. For example, they find

that men and women respond to scripts differently and that women can be polarised from the amount of 'inclusion work' necessary to undertake to adapt to technological designs. Thus, they argue that users cannot be assumed to incorporate technology into their lives. The 'microecologies' of situated mobility systems are a myriad of human subjects, social norms, embodied performances, physical settings and material infrastructures (Jensen, 2013). It is in relation to these mobile arrangements that mobilities are afforded or proscribed (ibid). It is women's relationship to various other actors and materials in this network that proscribe their use of the bicycle, which is overlooked by the NGOs.

It is generally accepted that the restriction of women's mobility is primarily due to the rigid cultural underpinnings in women's movement and representation (Uteng, 2011). Cultural norms in sub-Saharan Africa often position womens' bodies as vulnerable and thus, safety concerns and the fear of harassment restrict the mobility of women (Fernando and Porter, 2002; Law, 1999; Uteng, 2011). Similarly, Silvey (2000) argues that gender norms, such as the meanings of 'good girls', 'obedient daughters' and 'virtuous women', also influence women's mobility. Namibian women adapt to gender norms with self-imposed precautionary measures, such as not riding past their childhood years, not riding on tar roads where they might be more vulnerable, or by not learning to ride at all (Law, 1999). Such a restricted use of public space is an indication of gendered social constructions (Massey, 1994).

For example, women often spoke about their feelings of fear attached to cycling:

> "Girls are more scared to cycle. They are scared of falling and getting injured."
> (Female, 43 years, Rundu)

A fear of falling off whilst riding was not mentioned by men and very few men spoke of feeling scared whilst riding in traffic. However, one man spoke of having to ride through deep potholes to avoid the risk of swerving into traffic. Another male spoke of the risk of cycling into the headwind since he could not then hear traffic approaching from behind. I also observed that men cycle on the very periphery of the road in Namibia (Figure 6.10).

Figure 6.10 Cyclist avoids encountering traffic in the road, Mile 10, Namibia

Although men do not commonly give accounts of their fear, interviews and ethnographic observations suggest that they are aware of the risks of cycling in traffic and adjust their behaviour to account for such risks. However, men's bike use is not proscribed by their understanding of fear in the same way that it proscribes women. It seems that men choose to cycle despite their fear and choose not to talk about their fear. Instead they embody their masculine identity of strength and fearlessness through their mobility (Jungnickel, 2015).

Most commonly women would laugh when I asked if they cycled and would say they tried but fell:

> "R: [laughter] I attempted cycling and then I fell and I didn't try again.
>
> I: You didn't try again?
>
> R: No I never tried [laughing].
>
> I: Why?
>
> R: I just can't make it to master cycling.
>
> I: [To the second interviewee]? Did you try?
>
> R2: I tried it only once and then stopped.
>
> I: Because of the same thing; you couldn't do it?
>
> R2: I was just scared I might fall and then I would break for good."
>
> (Females, 32 and 34 years, Bunya)

Both respondents imply a sense of fear that women experience when learning to cycle, which ultimately involves falling off. The fear of falling deterred these women from learning to ride and they have given up with no self-belief that they can, after some time, master the skill. These experiences were always recalled with laughter in interviews as if women are shy, or embarrassed, about their experience of falling off a bike. The laughter may be a way for them to try to cover their lack of self-confidence in their abilities to ride. Whilst men embody gendered expectations of skill, strength and emotional bravery whilst learning to ride and mask their fear of traffic, women tend to embody gendered expectations of weakness, fear and lack of skill. It seems that these women mask their learned inadequacy through laughter as part of a performance of their feminine identity as they enact what is expected of themselves rather than challenging the norm. The activities of individuals and their relation to space is shaped by social norms and assumptions about the different roles that should be 'naturally' carried out by men and women, which demonstrates how space is a subject of control reflecting social inequalities and power relations (Flannery, 2003; Massey, 1994).

It is generally understood that girls do not ride bikes within this area of Namibia. Girls grow up learning that they cannot ride a bike and that their female bodies are not capable of learning. The following quote by a mechanic summarises this when he explains that women, or girls, might be able to cycle around their homes for play, but cannot use bikes for mobility:

> "I: Do girls ride here?
>
> R: No there are very few. They can ride, but they cannot ride on the tar road. They can ride for fun but they cannot start from home by riding.
>
> I: Why? Have they tried?
>
> R: Ya. It's because they are not strong enough and they are afraid. If you ask 'why don't you go and ride on the road?' They will say 'Ah no because they [drivers] will bark at me'" (Male mechanic, Rundu bike shop)

It is not only a fear of not being competent and being embarrassed by falling off, but women are also scared of being told that they do not belong on the road on a bike. Similarly, Jungnickel (2015) argues that women suffered ridicule in the history of cycling in Europe for embodying their desire to live more publically and actively. The above quote highlights the vulnerability of women in a space that is believed only to be used by male cyclists. It would take a determined female to attempt to expose her vulnerability in order to brake this gendered social norm. Another interviewee states that most parents like to keep their girls safe in their backyards, or on safe roads:

"I: You said you often sell bikes to parents for their children. Are they for boys or girls?

R: Both

I: Is it mostly boys?

R: Yes mostly boys

I: Ok and do you know what the parents' attitudes are like towards letting their children cycle in the city and particularly for girls?

R: Yeah they're ok, they do support it. Mostly with girls, though, they like to keep them safe in their yards, or on safe roads.

I: Is it a fear for traffic, or their safety in general?

R: The traffic. The boys ride the bicycles to school, but mostly not girls.

(NGO shop, Windhoek, female manager)

This respondent demonstrates that girls can't be on a main road with traffic, but boys can, although they face the same risk whilst undertaking the same journey to school. Women are perceived to be more vulnerable in traffic than men. By being encouraged to cycle only in their yard, girls learn that cycling on the roads is out of bounds. These quotes demonstrate that there are gendered variations in how women and men move through space safely, which are shaped socially (Butler, 1990; Flannery, 2003) that act to proscribe the bicycle's utility for girls and women in Namibia. This is an example of how differing perceptions of bodily strength and the self-protective ability of men and women are consequences of gender embodiment reiterated through practices over time (Bourdieu, 1990). The gendered proscription of the bicycle's socio-technical script is determined by an associated set of respectable and safe behaviours carried out by women, which is produced by a social coding of a body as female and therefore vulnerable (Law, 1999).

Whilst this gendered norm restricts how women's bodies are mobile in public spaces, women are proscribed from the bicycle's utility to a greater extent than men. Regardless of the significance of these local gender norms to women's mobility, the bicycle's script written by NGO's, is often more heavily targeted towards girls' mobility, with the objective of increasing their school attendance and women's mobility in order to increase their economic productivity. The NGOs' socio-technical script is in contrast to the reality of bicycle use in Namibia, which presents a conflict between imagined and real users as objects travel and are inserted into new environments (Akrich, 1992). This is because the NGOs' solution is to insert a technical object onto a stage without pre-inscribing users by teaching them the skills to use the technology, and

without conscribing other actors and materials to prime a stage for the object's subscription (Latour, 1992). This might involve advocacy work to increase the acceptability of women's use of bicycles and to increase the confidence of women's technological competency. It might involve lobbying for safe cycling infrastructure. However, without the understanding of the more complex and nuanced 'microecologies' of a mobility system, and without the mediation of user feedback and negotiation, women are proscribed from using the NGOs' bikes.

Gendered access to bikes and affordability

Women are also proscribed from using bicycles to a greater extent than men because they are relatively more economically impoverished. Far more women in Namibia (65 per cent) rely on subsistence farming as a source of income than men (34 per cent) and a larger proportion of women (32 per cent) are unemployed than men (24 per cent) (Namibia Statistics Agency, 2015). Women who are in employment generally are paid less than men. The average monthly wage Namibians earn is approximately £400 (ibid) and women in employment, on average, earn below this (approximately £362).

Women frequently stated that they cannot afford to buy a bike, which prevents them from cycling, for example:

> "I: So you don't have a bicycle now?
>
> R: No
>
> I: Is there a reason?
>
> R: There's no money to buy a bike"
>
> (Female, 44 years, Bunya)

This reflects findings from previous studies of women's mobility in sub-Saharan Africa that affirms women are less likely to own, or have access to, a vehicle (Peters, 2001; Porter, 2008; Uteng, 2011) and have more limited resources to purchase transport equipment than men (Malmberg-Calvo, 1994; Porter, 2008; Porter, 2014). The economic situation of many Namibians also impacts girls' access to bikes as the following quote demonstrates:

> "I: Ok do you have a daughter?
>
> R: Yes
>
> I: Will she learn to ride a bicycle or not?
>
> R: Yeah she might learn but no one will buy it for her" (Female, 43 years, Rundu)

This mother may want her daughter to learn to cycle, but cannot afford to buy her a bike, which is not considered to be a priority. Although NGOs write a socio-technical script for the bicycle to be a development tool, often targeted to improve girls' and women's mobility, women are frequently prohibited from buying one. It is likely that this mother has no, or very little, income to be able to purchase products, such as a child's bicycle, that hold little value other than for play as described in Chapter 5.

A female mechanic in the Bunya NGO shop, highlights the lack of purchasing power that women have within their households:

> "R: Most the people riding bicycles in our village are men.
>
> I: Why do you think that is?
>
> R: Most they say they don't know how to ride bicycles, some they want help, they want a bicycle, but they don't have money. Some say our bicycles are very expensive. But we are cheaper than the bike shop in Rundu town.
>
> I: So some people can afford it, but not women?
>
> R: Not women, only men.
>
> I: Because the men have a job maybe?
>
> R: Yes
>
> I: But can women not borrow money from the men?
>
> R: [laughing] It can't happen." (Mechanic, NGO shop, Bunya)

This demonstrates that men, as 'breadwinner' figures, can afford to purchase a bicycle, whereas women's lack of purchasing power is firmly embedded in normalised gender roles. Traditionally, two contrasting gendered mobilities exist in relation to one another; the female homemaker and the male breadwinner, whereby masculinity has come to be coded as mobile and femininity as static (Uteng, 2011). Previous studies have evidenced accounts of fears of women leaving their husbands in sub-Saharan Africa if they become financially independent or "too liberated" through using a bicycle (Malmberg-Calvo, 1994). Similarly when bicycles were introduced to

Western countries, it was fiercely contested that women should cycle and bicycles were deemed inappropriate to women because of the physical demands of the technology and its liberating potential (Domosh and Seager, 2001). A gendered structure of household income production and spending is demonstrated by this respondent that suggests they have control over a household's income.

Women are further proscribed from utilising the bikes because the local NGO shops will not sell them on credit and there are no bicycle hire networks in Namibia as there are in other Western African countries where cycling is more popular, for example, in Ghana and Burkina Faso (Gruehl Kipke, 1987; Porter, 2003). The lack of bike hire opportunities makes short term access to bikes for women impossible. Above the age of childhood, young women do not usually consider it possible to approach a male friend for a loan of a bike, therefore, once over a certain age it becomes increasingly difficult for them to engage with cycling as this interviewee suggests:

> "There's no money for a bicycle and no way I can go and borrow a bicycle."

> (Female, 20 years, Mile 10)

The shops set up by the NGO in Namibia are not willing for bicycles to be purchased on credit and micro-finance loans are not possible for those whom are not in official employment, or receiving a regular cash income (Porter, 2003). New bicycles can be purchased on credit in Rundu town at a number of furniture stores and the retailer Cymot. It seems likely that if women did have a regular income and wanted to purchase a bicycle, they could do so through a credit loan from one of these stores. However, in a context where income generation is so heavily gendered, most women do not have the means to pay off financial instalments. There are many actors that are proscribing women from the bicycle's utility as a development tool and therefore, negotiations between real users and NGOs are likely to require a more nuanced approach than just providing credit systems to enable their subscription. This demonstrates the complexity of staging mobilities that are coproduced by designers at global and local scales. Staging mobilities requires ongoing negotiations between actors, for example in this case, addressing the lack of power women have to embody their gender using the bicycle in public space, as well as, the gendered inequality in employment in this particular situation (Jensen, 2013). Without conscribing other actors to prime a setting for this technological solution to be inserted, the NGOs' imagined use of the bikes fails. Women have little agency to incorporate the bicycle into their lives and in this situation the bicycle as a development tool does not account for the diversity of users intended by designers (Oudshoorn et al., 2004). The NGOs script intends the bicycle to be utilised by neoliberal and industrious adolescent girls who will get an education

through using the bike and will have a future role in increasing the economic growth of Namibia (Wilson, 2018). However, without the necessary funds to purchase a bicycle, the NGOs' script as intended for girls and women is proscribed, which presents an unintended gendering of scripting in this case of staging a mobility using a technical object that is more suitable for male consumers than girls and women.

Despite the current financial situation for most women that prevents them from buying bikes there are some positive thoughts about cycling from some women, for example:

> "Back then in the past girls believed cycling was only for boys. But now things are changing. Now a days girls can do whatever they want. So now I would give it a shot." (Female, 26 years, Rundu)

This is evident in Windhoek, the capital city, where girls and women are learning to ride through local NGO projects. It seems likely that the acceptability of women's cycling in Namibia will increase more so in future, however, this requires work from multiple actors, such as these local NGOs and advocacy groups, to encourage girls and women to ride in public and to challenge existing gender norms that restrict their mobility relative to men's. It also requires a change in the gendered structure of women's employment and income generation. Whilst NGOs of the Global North prescribe mobilities in a staged socio-technical scripting of the bicycle, the object's ability to predictably traverse from place-to-place as a universal tool is taken for granted (Kullman, 2017; Söderström, 2013). Scripting the bicycle as a tool for development for women and girls within consumer networks, neglects that women do not have the necessary consumer power to subscribe to the mobility practice that NGOs construct. This highlights how an object's affordance is relationally dependent on the multiple actors enrolled that define a mobile situation (Jensen et al., 2017; Latour, 1992).

Clothing

Traditionally, in Namibia, it would be expected that girls and women would wear a long skirt covering their legs. But, younger women in the Kavango region of Namibia are now beginning to wear shorter skirts, jeans and shorts, or cropped trousers. Many young women wear jeans given the increased access to global clothing markets including imports of new items from China and second-hand clothing from developed nations via South Africa. It is mostly middle-aged and elder women whom frequently wear traditional fabrics that are sewn and fashioned into clothing by local makers, or worn more simply as Kigali skirts. Observing the clothing that younger women and students are wearing in urban areas and at Rundu and Windhoek campuses, it is unlikely that clothing will continue to be a barrier for women and girls to cycle in future. As Jungnickel (2015) argues, women's rationally dressed bodies played a critical role in

helping to legitimize new mobile forms of gendered citizenship in the Victorian era of Britain. Changes to clothing, from skirts to trousers, made it possible for women to inhabit public space in such a way that challenged the gendered normative of a mobile subject and to relate to technologies in ways more aligned with their male counterparts (ibid). It is likely that as the structured expectations of women's dress is resisted in Namibia and as women's clothing fashions change, changes in their mobility will be facilitated in much the same way as has been documented by Jungnickel (2015). However, at this time, many women and girls daily wear a skirt, which prohibits them from riding:

> "I: Do you think girls are too shy and worried people will laugh at them [cycling]?
>
> R: Maybe it's because most of the girls around here wear a skirt and they feel embarrassed to cycle with a skirt.
>
> I: OK so if they were wearing shorts like me would it be ok?
>
> R: Yes
>
> I: So can you buy shorts in shops, or is it not really what people do?
>
> R: [laughing] You can, my sister has shorts
>
> I: You can? Would you cycle in those shorts?
>
> R: Yeah she would"
>
> (Female, 22 years, Rundu)

It is not necessarily that this young woman thinks it will be impossible to ride in a skirt, but rather her fear is in the vulnerability she would feel in simultaneously embodying her femininity by wearing a skirt and whilst performing a perceived masculine mobility of riding a bike. These concerns are related to the gendered embodiment of mobility and technology use. Jungnickel (2015) demonstrates that in the history of Western cycling, women's safety has been concerned with the normalisation of 'irrational' clothing, such as dresses and skirts that shape feminine identity. A societal expectation of women to wear certain clothing has challenged their ability to perform physical bodily movements. This imposed a safety issue for female cyclists, which consequently reinforced the notion of "innate feminine 'weakness' and women's technological incompetency" (ibid: 365). However, men's dangers were articulated in forms of "risky and daring behaviour, producing a fusion of masculinity, modernity and technology" (2015: 365).

Normalisations of feminine identity impose restrictions on women's autonomy to wear practical clothing in Namibia as the above quote evidences. Societal gender norms, thus act to proscribe

a bicycle's physical script for women since its top-bar and drive chain mechanism cannot easily be negotiated whilst wearing a skirt, or dress. This proscription is particularly compounded in this network because the NGOs are not in control of the physical scripting of the second-hand bicycles they ship to Namibia, which might otherwise be altered to allow for women to cycle more easily in a skirt. For example, by designing a bicycle with a lowered top-tube that allows for a step through mount and dismount. Instead the second-hand nature of the bikes prohibits the extent to which NGOs can stage a mobility, since the possibility to negotiate these proscriptions through design adaptations are limited by the materiality of the bikes that are relevant to other users and produced in other complex mobile situations (Crang et al., 2013; Jensen, 2013). Although the NGO respondents imagine bikes to be used by women and girls in Namibia the gender norms that are acting in this local 'microecology' proscribe them as users. Women and girls are proscribed from using the bicycle to a greater extent than men in this network. This reinforces the existing structuring of gendered mobilities in Namibia and women's position as subordinate to men (Oudshoorn, 2003). NGOs are aware of the gendering of mobility in sub-Saharan Africa, which is why they script bikes to increase girls' education attainment. However, the focus in this network is on a technological solution, which overlooks the other social and material actors that relationally proscribe the bike for women. For example, Starkey (2001) suggests that interventions need to create the demand required to justify the design and manufacture of more appropriate technologies for women. However, in the absence of the 'inclusion work' (Oudshoorn et al., 2004) that might challenge and transform existing gender norms relating to women's mobility and assist in incorporating the bicycle into women's lives, this demand will not materialise.

Conclusion

This chapter has focused on the heterogeneous local actants and actors that destabilise and proscribe narratives of productive and affordable mobilities that development actors inscribe into second-hand bicycles as they attempt to stage a mobility. This chapter demonstrates the difficulty of staging a mobility system from afar as object scripts are not predictably translated across global and local scales (Kullman, 2017; Söderström, 2013). The global staging of mobility is complex "where different planning cultures meet and where different injunctions related to different traveling urban forms clash with each other" (Söderström, 2013: 54). These clashes require ongoing negotiations in order to resolve themselves, however, NGOs are limited by the pre-existing physical scripts of the second-hand objects they are shipping (Crang et al., 2013) and with an emphasis on a physical and technical solution to mobility development, NGOs

overlook a more complex social engagement that enrols other actors to facilitate the bicycle's subscription by diverse users.

The second-handedness of the development tools in this case closes down the "interpretive flexibility" required for script appropriation (Söderström, 2013: 54). Therefore, the proscriptions that occur in this network reflect a division in the "standard" interdependent relationship between production and consumption (Akrich, 1992: 213). This is because Namibian consumers are given little opportunity to feedback to designers and designers have little control over the adjustments that can be made to domesticate second-hand bicycles into a network that varies from place to place. For example, wide wheels would enable the bicycle's use in deep sand, but this adjustment would require an overhaul of many of the bike's components and would be unaffordable.

The evidence in this chapter demonstrates that users are proscribed from the bicycle relationally in complex actor-networks rather than in binary relationships between designers and users as outlined by Akrich (1992) and Fallan (2008), whom have previously overlooked the responsibilities of multiple actors in processes of proscription. For example, Akrich states:

> "We cannot be satisfied with the designer's or user's point of view alone. Instead we have to go back and forth continually between the designer and the user, between the designer's projected user and the real user" (1992:209).

However, this is a simplified version of a mechanism that stages the subscription of a technological object. Akrich does not address the heterogeneity and complexity of designers and design environments. For example, the local 'microecologies' that structure user proscriptions be it in this particular network the material built environment and its designers, or the natural environment, or the normalisation of women's roles as domestic carers and subsistence farmers that restrict their economic position in Namibia. Fallan states that:

> "Script Analysis can bridge the gap between the sphere of production and the sphere of consumption: by moving from studying how scripts are constructed and promoted by manufacturers, designers and marketers to how they are read and interpreted by users" (2008: 67).

However, this pays no attention to the users' relation to their local and global networks that influence their interpretations of scripts, which importantly, are politically structured. Nor does it pay attention to the external environments that materially interact with users and designers. The boundary of what defines a 'designer' is far messier than Akrich implies, because staging socio-technical networks happens across distant spaces and heterogeneous networks. For example, as Latour states "it is never clear who or what is acting when we act since an actor on

stage is never alone in acting", other actants are at play, such as the backstage crew, the lighting, the audience, the playwright and so forth (2005: 46). This account of action in a network implies that design is a process that associates multiple actors in opaque configurations. This complexity is further compounded when 'designers' are not innovating new products, but are revaluing and weaving pre-used products into existing settings. Fallan (2008) describes domestication in terms of the modifications made to technological artefacts to improve their utility for users. However, this assumes the agency of designers to adapt their product script, whereby existing studies have concentrated on the innovation of new products and design solutions. Fallan is concentrating on a technological solution rather than a more nuanced scripting in which multiple actors stage a setting for domestication. Furthermore, Akrich examines the exclusion of users by designers, but does not fully explore the complexity of exclusions by other actors in the network. Thus, proscription is a term used by Akrich and Latour (1992) to describe the actions of users that are forbidden by a device, whereas this chapter details that users are forbidden by multiple actors, not only by designers and their devices.

The chapter, thus, challenges ontological assumptions that objects have a universal ability to seamlessly traverse global and local scales and thus 'flatten' the concept of space. For example, Latour argues that the social world cannot be ordered into binaries of local and global (2005) and Johannesson and Baerenholdt argue that translation as a process of networks "goes beyond the relation between proximity and distance" (2009:18). Latour's 'immutable mobile' is described as a technical device that stabilises knowledge produced in laboratory settings and allows it to circulate across a universal space that transcends the global (Latour, 1987; Law and Mol, 2008). The only way that facts can remain facts in Latour's actor-network involves transporting them without them changing in any way, which requires effort and a network of actors to ensure facts, or things, remain immutable. Akrich (1992) also states that objects build heterogeneous networks, bring together actors and stabilise links between actors. These arguments suggest a liberal freedom of design scripts to travel in objects, although not predictably, but with the work of multiple actors, to rupture the concepts of local and Euclidian space. However, when we are not dealing with scientific laws that must remain immutable for their survival in controlled settings, this is a very limited view of networks and the mobility of ideas, things and culture.

Instead the evidence in this chapter demonstrates that proscriptions occur within 'microecologies' (Jensen, 2013) that are highly localised and disrupt the notion that objects can always transform and connect mutable, distant, actors. For example, the social history of Bunya village that determines the relevance of its off road network of paths in people's day-to-day

mobility proscribes a bicycle's socio-technical script as a universal tool for development. Whereas, the significance of a tar road in the nearby Mile 10 village increases the likelihood of the bicycle's subscription. For this reason, Jensen's (2013) concept of 'mobile situationism' that pays attention to the particularities of mobility practices that are created in material spaces, embodied performances and social interactions is relevant to Script Analysis. Networks and physical environments both afford and restrict mobility practices through dynamic mediations between multiple actors (Jensen, 2013). This concept enriches a Script Analysis framework because it decentralises the standard linear producer-consumer relationship (Akrich, 1992) and gives greater attention to the agency of additional heterogeneous human and non-human actors that proscribe global technical scripts in particular situations. These situations are highly localised whilst simultaneously being connected to elsewhere. This goes beyond work that recognises objects travel with uncertain possibilities that are generated by mutable and complex networks (de Laet and Mol, 2000; Law, 1994; Söderström, 2013). Rather the evidence of proscriptions highlights the immutability of networks constrained by local environments, practices, legislation and so forth.

A more nuanced understanding of the processes of proscription is particularly relevant for development networks that stage mobilities from afar. These networks are particularly constrained by the limited economic situations of both designers and users. This disrupts negotiations between producers and consumers. A more nuanced understanding of how global objects negotiate localised networks is also particularly relevant to consumption networks mobilising second-hand materials. This is because their physical product scripts have little flexibility to negotiate proscriptions and networks that are rendered immutable through limited economic resources.

7. Conclusion

This thesis has applied mobility theories and a mobile methodology to examine the interactions between NGOs and development subjects that are politically mediated through the flow of second-hand commodities from the Global North to Namibia, Africa. In response to the first research question: 'how are development subjects constructed by NGOs in the mobility of second-hand materials and technical design 'solutions'?', the thesis demonstrates how the bicycle is a central actor in this network as it translates meanings inscribed by NGOs for imagined users in the Global South in order to stage a mobility that mechanically assists those who are otherwise restricted to a walking world. The thesis has provided a detailed account of the structures that shape the staging of mobility as a development 'solution', which is communicated by NGOs through the accounts given in interviews with representatives and in content that documents NGO objectives. The bicycle is scripted by NGOs as applicable to be inserted into an imaginary development stage that represents inaccessible 'rural Africa' in and its users are singularly constructed as utilitarian development subjects

The politics between NGOs and development subjects in this network are created and reproduced through material scripts and their movement, which demonstrates the importance of understanding how the mobility of materials is a mechanism that shapes the conceptual identity of a development subject and how this representation is resisted locally. NGOs and donors construct a stage onto which a bicycle is inserted in order to function as a technological development 'solution' (Callon, 1987). Second-hand mountain bikes, the most common design donated to NGOs, are deemed to be appropriate and able to cope with rugged and extreme terrain in inaccessible places. This scripting is materialised in the bikes, which must be strong and simple so they are easily repaired with the few spare parts and tools available in 'rural Africa'. This rural stage is a simplistic binary to an urban place, which is described as irrelevant for the use of bicycles since infrastructure does not safely accommodate cyclists and where alternative motorised public transport is assumed to be adequately available. Alternatively, a rural scene is used by NGOs to prime a modernist script for the bicycle, which mechanises more traditional forms of mobility, such as walking and animal driven transport. This thesis has demonstrated how the NGOs in this study inscribe meanings into technical objects that regulate unproductive practices of mobility and to promote utilitarian meanings of movement. NGOs focus on the utility of a bicycle as a functional vehicle that will bring a financial return to families and individuals by increasing access to income generation. The inscription of productivity in second-hand bicycles imposes a moral framework of economic growth onto the mobility of

African consumers and development subjects. Thus, bicycles are positioned as vehicles that co-produce and translate a modernist discourse influenced by a wider network of donors who control what is understood to be a relevant outcome of humanitarian aid.

In response to the second part of research question 1; 'how are these conventional representations resisted in local contexts?' the thesis has evidenced the contrast of imagined users and real users who have diverse needs and desires. This demonstrates how the design of supposedly neutral systems of movement are inscribed with rationales and norms that may in fact be acts of power (Jensen, 2014). For example, this thesis has challenged the conventional stereotype of a singularly utilitarian development subject and evidences the agency Namibians have to appropriate technology to build cosmopolitan identities that are connected to a global concept of what it is to be a modern consumer. Alternative performative, sensual and playful uses of the bicycle are performed by Namibian users that do not fit into this prevalent conceptualisation of a development subject. Greater value is given to adult bikes by both international and local NGOs and children's bikes are considered to be space fillers in shipping containers within a development network that prioritises the physical utility and economic impacts of mobility. However, a more nuanced scripting of bicycles could align production further towards end users and further away from the expectations of donors. Namibian users do not reject a bike's meaning of utility, strength and durability, rather they make informed decisions that include and go beyond this socio-technical script.

For younger users the bicycle's utility script is read in relation to embodied sensory feelings of speed, ease and comfort, and in relation to global fashions, rather than its economic productivity, which is associated with a more traditional Namibian identity. Both young adults and children may ride for no other reason than enjoying the sensory feeling that movement brings (Solomon, 2009). Children appropriate the bikes at the very end of this commodity chain, finding value in little more than a bike frame and two wheels for play, whilst developing their embodied and tacit mobile skills for the future and experimenting with social roles and cultural practices (Katz, 2004). This is a more embodied and meaningful experience of mobility than the dominant view of the instrumental rationality that governs the construction of development subjects. Accounts of the playful and recreational use of bikes in Namibia contrast the utilitarian script of the NGOs that resembles what Vannini describes as a "distant, inimical social world that in one way or another seems to exert a uniform pull across individual lives" (2011: 358). Thus, I argue that constructing development subjects singularly as rational and productive beings is overly simplistic because it excludes the multiple needs, desires and diversity of Namibian consumers, and when this representation is inscribed into a travelling form, such as the bicycle,

it has the effect of moral pedagogy as desirable practices are projected onto globally aware consumers in Namibia (Söderström, 2013).

These alternative accounts of mobility could be included in a more complex and heterogeneous construction of development subjects and socio-technical 'solutions' just as Stevens (2007) ambiguously encourages a loosening of the design of space and mobility to enable possibilities other than productive movement. Stevens recognises an opportunity in the design of the built environment to facilitate and stimulate unexpected and impractical behaviour as part of everyday life and occurring in public space (2007). Similarly, Jensen calls for the exploration of how future mobile systems might become "more inspiring and attractive; and more open minded and fun" (2014: 240). In staging mobilities, Jensen argues that designers (and users) need to see more than just the rational and utilitarian goal satisfaction of the hardware and practices of mobilities (2013). However, the structuring of design, which is influenced by donors, local and international development organisations and societal norms, and is further restricted by the materiality of second-hand goods, reduces the potential for spontaneity and flexibility in this network. Development organisations could incorporate a greater diversity of users into more flexible scripts in bike designs for African consumers. NGOs that sell and transport second-hand bikes to sub-Saharan Africa could promote alternative recreational, fun and urban use of their products in their representations of users. This might be recognised in their objectives, promotional material, and their impact monitoring. It could also be demonstrated in the variety of bikes that are sold. For example, some of the NGOs sell their best quality bikes to a market of Western consumers in order to make higher profits to fund their humanitarian work. However, this projects an identity of necessity onto African consumers who may alternatively want to pay more for a desirable bike. This practice reduces the choice African consumers have in selecting desirable objects to demonstrate their individual identity and social status. More children's bikes could also be transported with adult bikes, even if they are not used for education, which would decentralise the conventional modernist representation of a singularly utilitarian development subject.

In response to research question 2; 'how are technological design 'solutions' for mobility practices proscribed in local situations?' the thesis has highlighted that the agency of designers to negotiate with users cannot always be assumed in the production of technical objects. As this case evidences, multiple actors influence and restrict the construction of imagined users and desirable mobilities for distant users who are excluded from design mechanisms. Furthermore, the direction of power in scripting users of technical materials for development cannot be assumed to operate only in North to South flows, which further develops Akrich's (1992) Script

Analysis study. Local NGO partners also use their agency as gatekeepers and mediators to represent local users in such a way that their own financial needs are prioritised over user needs, and in doing so, end users are distanced from negotiating with designers. The result is that even though local partners are involved in the design mechanisms of mobilities for sub-Saharan Africa, they are not staged as inclusive for diverse users and are conceived through a power mediated process. This implies that the definition of a 'designer' is far more convoluted than Akrich implies, because staging socio-technical networks happens across distant spaces and heterogeneous networks. Rather, Akrich conceptualises scripting as a design process between "the designer and the user, between the designer's projected user and the real user" (1992: 209). However, this does not address the heterogeneity and complexity of designers and design environments that structure user proscriptions in complex local and situated arrangements. For example, in this particular network, the material built environment and its designers, the natural environment, logistic networks, employment opportunities, and the normalisation of women's roles as domestic carers and subsistence farmers, are all entities of a local socio-material network that relationally configures user needs and identities.

Whilst existing studies have concentrated on the innovation of new products and technical design solutions in proximal networks (Cox, 2017; Fallan, 2008; Oudshoorn et al, 2004; Rommes, 2002; Shade, 2008), this thesis demonstrates the need for a more nuanced understanding of design in which multiple global and local actors stage a setting for domestication. For example, Fallan (2008) describes domestication in terms of the modifications made to technological artefacts to improve their utility for users. However, this assumes the agency of users to feedback the modifications necessary and for designers to adapt their product script. The complexity of design is further compounded when designers are not innovating new products, but are revaluing and weaving pre-used products into existing settings. The second-hand materiality of the development tools in this case closes down the "interpretive flexibility" required for script adaptation (Söderström, 2013: 54). Therefore, the proscriptions that occur in this network reflect a division in the "standard" interdependent relationship between production and consumption (Akrich, 1992: 213). This is because Namibian consumers are given little opportunity to feedback to designers and designers have little control over the adjustments that can be made to domesticate second-hand bicycles into a network that varies from place to place. Fallan states that "Script Analysis can bridge the gap between the sphere of production and the sphere of consumption" (2008: 67), however, I argue that unless more nuanced understandings of the wider actor-networks of user de-inscription, re-inscription and proscription are incorporated into design scripting by mediating user feedback, the gap will not

be bridged. This finding goes beyond Gregson et al.'s (2010) understanding of the ongoing processes of adapting second-hand goods for consumers as contexts change. Whilst they recognise the objects' instability and the need for maintenance, this thesis demonstrates how other actors proscribe the utility of these objects in local situations, for example, the sand and thorns of Northern Namibia and the lack of infrastructure that acts relationally with the second-hand object. In terms of development practice and design, the enrolment of many other actors is necessary to enable the contextualisation of second-hand goods that go beyond maintenance networks. Such configuration of diverse actors is likely to be negotiated differently depending on local contexts, which highlights the need for feedback mechanisms and communication between NGOs, consumers and other contextual actors, to avoid waste entering these networks.

The diversity of place cannot be taken for granted in designing creative solutions for social practice. For this reason, Jensen's (2013) concept of 'mobile situationism' that pays attention to the particularities of mobility practices that are created in material spaces, embodied performances and social interactions, is relevant to Script Analysis. Networks and physical environments both afford and restrict social practices through dynamic mediations between multiple actors (Jensen, 2013). This concept enriches a Script Analysis framework because it decentralises the standard linear producer-consumer relationship (Akrich, 1992) and gives greater attention to the agency of additional heterogeneous human and non-human actors that proscribe global technical scripts in particular situations. Local and complex proscriptions are important design mechanisms that influence user adaptations and more negatively, result in design failure. Thus, the evidence of proscriptions in this case highlights the immutability of networks constrained by local environments, practices, legislation and so forth. A more nuanced understanding of the mechanism of proscription is particularly relevant for development networks that stage mobilities from afar. These networks are particularly constrained by the limited economic situations of both designers and users, which disrupt negotiations between producers and consumers. A more nuanced understanding of how global objects negotiate localised networks is also particularly relevant to consumption networks mobilising second-hand materials. This is because their physical product scripts have little flexibility to negotiate proscriptions and networks that are rendered immutable through limited economic resources. That is not to say that producing second-hand goods to sub-Saharan African consumers is wrong, as this case demonstrates, second-hand bikes are in demand because of the lack of affordable and quality new products on the market. However, the way in which consumers are represented

and their lack of agency to choose quality products that are suitable for their needs is problematic.

Aligned with research question 3; 'how are Actor-Network Theory and Script Analysis relevant for examining how mobility practices are framed for, and in, the Global South?' the case study outlined in this thesis has made some contributions to understanding how these theoretical and analytical frameworks are useful for researching and practicing mobility development. The thesis has provided a more nuanced account of designer and user negotiations, which are shaped and restricted by local and global arrangements of heterogeneous material and social actors. By utilising Jensen's (2013) actor-network inspired theory of 'staging mobilities', designer-user negotiations can be understood with more contextual nuance than Script Analysis studies have previously indicated by situating processes of adaptation and proscription in local 'microecologies'. That is, in relation to the interactions of multiple social and material actors in localised scenarios that are taken for granted within linear networks compromising only designers and users. The thesis demonstrates that Script Analysis is a useful analytical tool to apply to analyses that examine how mobilities are staged. This is because it pays significant attention to the negotiations between those staging mobilities and those who perform them, which is relevant for a de-colonisation of mobility design that seeks to be more inclusive of diverse user performances, to incorporate user feedback processes and to recognise how users are proscribed in relation to situated actor-networks.

One of the criticisms of Actor-Network Theory is that it is heavily weighted to the concept of fluidity and thus appeals to liberal notions of the freedom of movement (Jóhannesson and Baerenholdt, 2009). The views of space and scale that can be seen as always existing as a product of the processes and relations of networks is thought to lead to vague specifications of spatiality (Bosco, 2006). The thesis, however, challenges ontological assumptions that objects have a universal ability to seamlessly traverse global and local scales and thus 'flatten' the concept of space. For example, Latour argues that the social world cannot be ordered into binaries of local and global (2005) and Johannesson and Baerenholdt argue that translation as a process of networks "goes beyond the relation between proximity and distance" (2009:18). Latour's 'immutable mobile' is described as a technical device that stabilises knowledge produced in laboratory settings and allows it to circulate across a universal space that transcends the global (Latour, 1987; Law & Mol, 2001). The only way that facts can remain facts in Latour's actor-network involves transporting them without them changing in any way, which requires effort and a network of actors to ensure facts, or things, remain immutable. These ANT arguments suggest a liberal freedom of design scripts to travel in objects, although not predictably, but with

the work of multiple enrolled actors, to rupture the concepts of local and Euclidian space. However, this is a simplistic view of networks and the mobility of ideas, things and culture. By utilising Script Analysis, this thesis has demonstrated the difficulty of staging a mobility system from afar as object scripts are, realistically, not translated across global and local scales without mechanisms for negotiation and enrolling other actors for the social and material pre-inscription of a setting in which to domesticate technology (Kullman, 2017; Latour, 1992; Söderström, 2013). Thus, the global staging of a mobility 'solution' for development purposes is complex "where different planning cultures meet and where different injunctions related to different traveling urban forms clash with each other" (Söderström, 2013: 54). This network of actors and things stretches across different scales of local and global space. It links actors and inscribes meaning to a technological object, which is interpreted by distant users. However, object and technology scripting is not a liberal process of movement and as this thesis has evidenced scripting is not necessarily successful and is not apolitical.

In terms of the practical implications of the research findings, this thesis calls for a situated approach to global mobilities design, which is particularly relevant for developing mobilities of the Global South through participatory methods. This will include a greater engagement with the pre-inscription process of social actors that will be necessary for the subscription of technology in local contexts, rather than an assumption that all users have the potential to incorporate a technological solution into their lives (Oudshoorn et al., 2004). For example, an engagement with actors who implement and maintain the type of infrastructure that is suitable for cycling and an engagement with women and the actors who restrict their mobility, will be necessary in the designing of development mobility solutions. Ultimately, reducing binaries of local and global spaces will involve increasing negotiations between designers and users and bringing the local into the global. This is a call to strengthen participatory engagement in development practice and knowledge, and to recognise the prohibitions of local engagement and its neutral representation. Massey (2015) and Portillo (2003) argue for a movement towards perceiving local knowledge to be based on the experience of being immersed in global relations. This thesis reaffirms this argument, however, I argue that there is also a possibility for a slight shift in thinking about how global knowledge can be more immersed in local relations. For example, this case study evidences a requirement for more social engagement in mobility staging rather than assuming local actors will enroll themselves to domesticate technical objects into local mobility systems. This might be through advocating for appropriate infrastructure and teaching women how to cycle. NGOs may also scope in greater detail the situations into which technical objects are to be inserted in order to understand the local 'microecologies' of social

norms, practices and materials, and in order to address the appropriateness of technology and the adaptations required to increase its utility.

There are a number of limitations to this study. In relation to the research method and design, this thesis is limited by its narrow case study context that traces and examines the use of the bicycle by users in Namibia, a country of sub-Saharan Africa, which has a very small population density and is a very sandy environment that proscribes the bike's use in the absence of infrastructure. The research conclusions may have been different had the bicycles been traced to more densely populated countries of sub-Saharan Africa that evidence higher numbers of cyclists, for example. The case is also limited to studying the flow of one second-hand object, the bicycle, the impact of which is relatively small. However, the study utilises this object to examine the processes of object scripting and the power of different actors to stage mobilities and other actors to resist and rework object scripts. Future research could investigate these commodity networks and relations, focusing on other places of the Global South and sub-Saharan Africa. Future studies may also consider the processes of scripting other technologies, objects and commodities that are situated within practices of mobility, both new and second-hand.

In terms of the theoretical limitations of the thesis, Script Analysis has foremost been used to examine the production and consumption of new commodities. The use of this analytical tool has not fitted tidily with the empirical data gathered in the study, which traces second-hand object scripts. For example, the second-hand bicycles have previously been scripted by designers mostly for leisure purposes for actors in the Global North. It was difficult to utilise the terminology of Script Analysis to explain how the bicycles were then revalued for different consumers in a different context. The amount of physical scripting that designers could do to a second-hand object was limited. For example, the socio-technical meanings of the bicycles intended by NGOs of load carrying were not easily reworked to fit with the physical properties of mountain bikes, which are not strong enough to carry heavy loads and were not usually sold with carrying racks. Alternatively, Social Practice Theory (Shove et al., 2012) may have given greater attention to the staging and translation of a cycling practice intended for development subjects, which would have avoided the problems of using Script Analysis to describe the limited design processes that can be applied to second-hand objects. It would also have given greater attention to the practice in which the bicycle is situated, whereas a limitation of Script Analysis is that it is heavily weighted to the world of designers and technical objects (Oudshoorn and Pinch, 2003). An alternative theoretical framing could have focused more on the practices that facilitate and constrain the emergence of object value (ibid). Script Analysis tends to focus

heavily on the materials themselves and their affordances and, hence, non-affordances. In this study the bicycle's script is at the fore and thus, how it is read and revalued by actors in different places is a key focus of the study. Instead the local social context of mobility activities might have been examined in greater detail as well as the actors that control different mobility practices as they are accomplished. This may also have been considered more useful by local actors who choose to use alternative mobility objects in the context of Namibia, such as cars for hitch-hiking, or animal driven transport. However, this study is preoccupied with the intentions encoded in the bicycle's themselves and the political processes of staging mobility (Jarzabkowski and Pinch, 2013). The consequence of the theoretical framework selected in this study is that the bicycle and its design is the centre of empirical focus rather than development subjects and their practices.

Furthermore, using Script Analysis has focused on interactions between the bicycle, its designers, users and non-users. Although the study has considered the agency of the shipping container to also script users, the study has not empirically evidenced all of the possible affordances of the bicycle as a material object and its agency to interact independently of designer and user negotiations, which is a limitation of the theoretical framework. Script Analysis tends to be restricted to a world of producers and consumers and thus, strips the possibility of an object to autonomously engender effects (Schwanen, 2015). The framework assumes that the design of an artefact is the result of the values within certain social systems and reflects the priorities of designers and producers (Williams et al., 2005). Therefore, Script Analysis is heavily weighted to the world of designers and technical objects and is at risk of concealing other actors that might be involved in staging mobilities in sub-Saharan Africa (Oudshoorn and Pinch, 2003). The full potential of an object's possibilities is limited in this study to the processes of design and the study's contexts and temporal moments (Schwanen, 2015).

The thesis highlights the potential for greater nuance, curiosity and flexibility in the scripting of materials to account for their adaptations in context and in order for designers to respond to their use, which may be transformed in unexpected ways that are more suitable to local contexts. For example, NGOs might supply a wider range of new and second-hand bicycles that are applicable for urban consumers (de Laet and Mol, 2000). Foam inner tubes might be supplied with second-hand bikes to reduce the maintenance required in rural regions of Namibia. NGOs may pay greater attention to their retail spaces, which could be more aligned with modern retail space. The mediation of user feedback is an area for future research that will be relevant for designing mobilities and mobilising development 'solutions'. This argument is applicable to local actors as well as international development funders and NGOs, for example, the social

proscriptions that regulate women's technical engagement with mobility practices could be addressed in partnership with local NGOs, schools and advocacy groups. Governments and local NGOs could regulate the in-flow of substandard second-hand goods, such as Tanzania's Pre-Shipment Verification of Conformity that verifies the quality of products before they are exported. However, without a pan-African approach to regulations, NGOs discouraged by the additional costs and bureaucracy of such regulations are likely to seek partnerships in alternative neighbouring countries. Negotiations between consumers and producers, such as product conformity standards that are mediated by local governments in order to protect consumers, are important in changing the representation of African consumer identity. Further research might identify potential modes and mediations of consumer feedback that are applicable to developing nations and development networks. Currently, the narrative of the humanitarian aid network is so singular in its vision it overlooks the multiplicity of contemporary African mobility and consumer culture. However, there are potentials for new experiences, opportunities and inclusive practices of mobility that recognise the multiplicity of identities of mobile subjects. Rather than being socially restraining, mobilities for development could be more socially inclusive and scripted in such a way that they are more flexible, attractive, inspiring and fun (Jensen, 2014).

8. Bibliography

Adey, P. (2009) *Mobility*. London: Routledge.

Akrich, M. (1992) The De-Scription of Technical Objects. In Bijker, W.E & Law, J. (eds.) *Shaping Technology/ Building Society: Studies in Social Change.* London: The MIT Press, 205 - 224.

Akrich, M. and Latour, B. (1992). "A summary of a convenient vocabulary for the semiotics of human and nonhuman assemblies" in Bijker, W.E and Law, J. eds. *Shaping Technology/ Building Society: Studies in Social Change*. London: The MIT Press, 259-64.

Aldred, R., and Jungnickel, K (2013) Matter in or out of place? Bicycle parking strategies and their effects on people, practices and places. *Social and Cultural Geography* 14(6): 604–624.

Ameel, L. and Tani, S. (2012) Parkour: Creating Loose Spaces. *Geografiska Annaler: Series B Human Geography* (94)1:17 – 30.

Amin, A. and Thrift, N. (2007) Cultural-economy and cities. *Progress in Human Geography,* 31 (2): 143-161.

Amoako-Sakyi, R. O., & Owusu, S. A. (2011). Moving on Two Wheels: A Comprehensive Study on Bicycle Behaviour among Ghanaian Children. *Society, Biology and Human Affairs (SBHA), 76*(1), 107–125.

Appadurai, A. (1986) "Introduction: Commodities and the politics of value". In: Appadura, A. (ed.) *The Social Life of Things: Commodities in Cultural Perspective*. Cambridge: Cambridge University Press: 3 – 63.

Atkinson, P. (2015). *For Ethnography.* London: Sage.

Attfield, J. (2000) *Wild things: the material culture of everyday life*. Oxford: Bloomsbury.

Aveling, E.L. (2010) The impact of aid chains: relations of dependence or supportive partnerships for community-led responses to HIV/AIDS. *AIDS Care,* 22(2): 1588 – 1597.

Banks, G. and Scheyvens, R. (2014) 'Ethical Issues'. In R. Scheyvens (Ed). *Development Fieldwork: A Practical Guide 2nd Edition*. London: Sage, pp. 160 - 187.

Banks, M. (2007) *Using Visual Data in Qualitative Research.* Londond: Sage.

Barbour, R. (2007). *Doing Focus Groups*. London: Sage.

Barbour, R. S., and Kitzinger, J. (eds.) (1999). *Developing focus group research: Politics, theory and practice*. London : Sage Publications.

Barnett, I., Guell, C. and Ogilvie, O. (2012) The experience of physical activity and the transition to retirement: a systematic review and integrative synthesis of qualitative and quantitative evidence. *International Journal of Behavioural Nutrition and Physical Activity,* 9: 97.

Baudrillard, J. (1988) 'Consumer Society', in Poster, M. (ed) *Selected Writings*. Cambridge: Polity Press: 29 – 56.

Bebbington, A. (2004) NGOs and uneven development: geographies of development intervention. *Progress in Human Geography*, 28 (6): 725 – 745.

Bebbington, A. (2005) Donor-NGO relations and representations of livelihoods in non-governmental aid chains. *World Development*, 33(6) 937 – 950.

Beirão,G. and Sarsfield Cabral, J.A. (2007) Understanding attitudes towards public transport and private car: A qualitative study. *Transport Policy*, 14, (6): 478-489.

Berger, P. and Luckman, T. (1966) *The social construction of reality: A treatise in the sociology of knowledge*. Harmondsworth: Penguin.

Berinstein, S. and Magalhaes, L. A study of the essence of play experience to children living in Zanzibar, Tanzania. *Occupational Therapy International*, 16(2): 89 - 106.

Bijker, W.E. (1995) *Of Bicycles, Bakelites, and Bulbs: Toward a Theory of Socio-technical Change*. Cambridge, MA, London: The MIT Press.

Blaikie, P. (2000) Development, post-, anti and populist: a critical review. Environment and Planning A, 32(6): 1033-1050.

Bloor, M., Frankland, J., Thomas, M. and Robson, K. (2001). *Focus Groups in Social Research*. London: Sage.

Bogdan, C., Norman, C. and Holm, J. (2007) The Spectre of Dionysus: Play, Work and Managerialism. *Society and Business Review,* 2(2), pp.153-165

Bos, E., Koster, F., and Mulder, F. (2003). *The bicycle sector in Uganda: an overview*. The First African Bicycle Information Office, Jinja, Uganda. Amsterdam: University of Amsterdam.

Bosco, F. (2006) 'Actor-Network Theory, Networks, and Relational Approaches in Human Geography'. In Aitken, S. and Valtentine, G. (eds.) *Approaches to Human Geography.* London: Sage: 136 - 146.

Bourdieu, P. (1990). *The logic of practice*. Cambridge: Polity Press.

Bourdillon, M. F. C. (2004) Children in Development. *Progress in Development Studies,* 4 (2), 99 - 113.

Bourne, J. (2013) Inside the curl: surfing's surprising history. *National Geographic* [online]. Available at: http://news.nationalgeographic.com/news/2013/08/130803-surfing-surprising-history-hawaiian-culture-extreme-sports/ [Accessed: 05/07/2017

Boyatzis, R. (1998). *Transforming qualitative information: Thematic analysis and code development*. Thousand Oaks, CA: Sage.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3: 77–101.

Brett, E. A. (2003) Participation and Accountability in Development Management. *The Journal of Development Studies,* 40 (2) 1 - 29.

Briggs, J. (2005) The use of indigenous knowledge in development: problems and challenges. *Progress in Development Studies,* 5(2):99 - 114.

Brinkmann, S. and Kvale, S. (2015) Interviews: Learning the craft of qualitative research interviewing. London: Sage (3rd ed.)

Brodie, E., Hughes, T., Jochum, V., Miller, S., Ockendon, N. and Warburton, D. (2010) Pathways through participation: What creates and sustains active citizenship? [online]. Available at: http://www.sharedpractice.org.uk/Downloads/Pathways_final_report.pdf [Accessed: 3/04/2018].

Brooks, A. (2012) Networks of power and corruption: the trade of used cars to Mozambique. *The Geographical Journal,*178(1): 80 – 92.

Brooks, A. (2013) Stretching global production networks: the international second-hand clothing trade. *Geoforum*, 44: 10-22.

Brooks, A. and Simon, D. (2012) Unravelling the Relationships between Used-Clothing Imports and the Decline of African Clothing Industries. Development and Change, 00(0): 1–26.

Bryceson, D. and Howe, J. (1993). Rural household transport in Africa : reducing the burden on women? *World Development*, *21*(11): 1715–1728.

Bryceson, D. and McCall, M. (1994). Lightening the Load: Women's Labour and Appropriate Rural Technology in Sub-Saharan Africa. ASC working paper, Issue 21. Leiden: African Studies Centre.

Bryman, A. (2008) *Social Research Methods*. 3rd ed. Oxford : Oxford University Press.

Busby, C. (2000). *The performance of gender: an anthropology of everday life in a south Indian fishing village*. London: Routledge.

Butler, J. (1990). *Gender Trouble*. London: Routledge.

Callon, M. (1987) "Society in the making: the study of technology as a tool for sociological analysis" in Bijker, W.E., Hughes, T. and Pinch, T. (eds.) *The social construction of technological systems: new directions in the sociology and history of technology*. London: The MIT Press, 83 – 103.

Callon, M. and Law, J. (2004) Absence – presence, circulation and encountering in complex space. *Environment and Planning D: Society and Space,* 22(1): 3 – 11.

Carotenuto, M. (2013) Grappling with the past: Wrestling and performative identity in Kenya. *The International Journal of the History of Sport*, 30(16): 1889 – 1902.

Castleden, S. (2013). *Wanderlust: Mobility, Mapping and Being in the World.* PhD Thesis, RMIT University, Melbourne.

Cervero, R. and Kockelman, K. (1997) Travel demand and the 3Ds: Density, diversity and design. Transportation Research Part D: Transport and Environment, 2(3): 199-219.

Chambers, R. (1997) *Whose Reality Counts? Putting the First Last*. London: Intermediate Technology Publications.

Clarke, C. (1999) The autodriven interview: a photographic viewfinder into children's experience, *Visual Sociology*, 14: 39-50.

Clifford, J. (1997). *Routes: Travel and Translation in the Late Twentieth Century.* Cambridge: Harvard University Press.

Collier, J. and Collier, M. (1986) *Visual Anthropology*. Albuquerque, NM: University of New Mexico Press.

Cook, I. (2004) Follow the Thing: Papaya. *Antipode,* 36 (4), 642-664.

Cook, I. (2005). *Participant Observation*. In Methods in Human Geography: A guide for students doing a research project Flowerdue, R. & Martin, D. 167 - 188 (eds. 2nd ed. 1st ed 1997) . Harlow: Pearson Education Limited

Cook, I. & Harrison, M. (2007) Follow the Thing: West Indian Hot Pepper Sauce. *Space and Culture,* 10(1): 40 - 63.

Cook, D.T. (2013) Taking exception with the child consumer, *Childhood,* 20(1), 423-428.

Cooper, F. (2005). *Colonialism in question: theory, knowledge, history*. Berkeley, CA: University of California Press.

Corrigan, P. (1997) *The Sociology of Consumption*. London: Sage.

Cox, P. (2017) 'Bicycle design history and systems of mobility'. In Spinney, J., Reimer, S. and Pinch, P. (eds) *Mobilising Design*, Oxford, New York: Routledge: 48 - 61.

Crang, M. (2002) Qualitaive methods: the new orthodoxy? *Progress in Human Geography*, 26(5): 647 - 655.

Crang, M., Hughes, A., Gregson, N. Norris, L., Ahmed, F. (2013) Rethinking governance and value in commodity chains through global recycling networks. *Transactions of the Institute of British Geographers*, 38 (1): 12-24.

Cresswell, T. (2006) *On the move: Mobility in the modern western world* (New York: Routledge).

Cresswell, T. (2010) Towards a politics of mobility. *Environment and Planning D: Society and Space*; 28(1): 17 – 31.

Creswell, J. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Thousand Oaks, CA: Sage.

Crush, J. (1994) Postcolonialism, de-colanization and geography. In Godlewska, A. and Smith, N. eds. *Geography and Empire.* Oxford: Blackwell, 289 - 313.

Dagnew Bogala, B. (2012). The importance and challenges of low cost mobility modes for sustained socioeconomic and environmental developmen t in cities of Africa: Comparative analysis of bicycle transport in Bahir Dar and Hawassa cities in Ethiopia. In *CODATU XV The role of urban mobility in (re)shaping cities*. Addis Ababa.

Daley, M. and Rissel, C. (2011) Perspectives and images of cycling as a barrier or facilitator of cycling. *Transport Policy*, 18(1): 211 - 216.

DARG Royal Geographic Society Developing Areas Research Group (2017) *DARG Ethical Guidelines*. [Online] Available at: http://www.darg.rgs.org/darg-ethical-guidelines/ [Accessed: 28/02/2018]

Davies, A. (2012) Geography and the matter of waste mobilities. *Transactions of the Institue of British Geographers*, 37(2): 191 - 196.

Davies, C.A. (1999) *Reflexive Ethnography: A Guide to Researching Selves and Others.* London: Routledge

de Laet. M. and Mol, A. (2000) The Zimbabwe bush pump: mechanics of a fluid technology. Social Studies of Science, 30(2): 225 – 263.

Delamont, S. (2004) Ethnography and Participant Observation. In Seale, C. et al. eds. *Qualitative Research Practice.* London: Sage, pp. 218 - 229.

DeLyser, D. and Greenstein, P. (2015) "Follow that car!" Mobilities of enthusiasm in a rare car's restoration. *The professional Geographer*, 67(2): 255 – 268.

Denzin, N. (2009) The elephant in the living room: Or extending the conversation about the politics of evidence. *Qualitative Research*, 9(2), pp.139-160.

de Souza E Silva, A., Hjorth, L. (2009) Playful Urban Spaces a Historical Approach to Mobile Games. *Simulation and Gaming*, 40 (5): 404-424.

Devereux, S. and Hoddinott, J. (1992) 'The context of fieldwork'. In Devereux, S. and Hoddinott, J. (eds) *Fieldwork in Developing Countries*. New York: Harvester Wheatsheaf, pp. 3-24.

Dodgson, D. (2017) Innovation and Play. *Organization & Management*, 19(1), pp.86-90

Domosh, M. and Seager, J. (2001). *Putting women in place: feminist geographers make sense of the world*. New York: The Guildford Press.

Easterling, K. (2011) 'Fresh field' in N. Bhatia, M. Przybylski, L. Shepard and M. White (eds) *Coupling: Strategies for Infrastructureal Opportunism*. New York: Princeton Architechtural Press, pp. 10-13.

Edwards, M. and Hulme, D. (1996) Too close for comfort? The impact of oficial aid on non-governmental organisations. *World Development*, 24: 961-973.

Edwards, R. (1998) A critical examination of the use of interpreters in the qualitative research process. *Journal of Ethnic and Migration Studies*, 24(1): 197 - 208.

Escobar, A. (1995). *Encountering Development*. Princeton, NJ: Princeton University Press.

Fallan, K. (2008) De-scribing design: Appropriating script analysis to design history. *Design Issues*, 24 (4): 61 – 75.

Fallan, K. (2010) *Design history: understanding theory and method*. Oxford: Berg.

Ferguson, J. (2006) *Global shadows: Africa in the neoliberal world order*. Berkeley, CA: University of California Press.

Fernando, P., and Porter, G. (2002) Bridging the gap between gender and transport. In P. Fernando & G. Porter (Eds.), *Balancing the Load: Women, Gender and Transport* (pp. 1–19). London: Zed Books.

Flannery, R. M. D. U. (2003) *Gender and Embodied Mobility: Learning in Tarsaw, Northern Ghana*. Durham University. PhD Thesis [online]. Retrieved from http://etheses.dur.ac.uk/1270 [Accessed: 03/04/2018].

Flick, U. (2002) *An Introduction to Qualitative Research.* 2nd ed. London: SAGE.

Flick, U. (2018) *Managing Quality in Qualitative Research*, 2nd Ed. London: Sage.

Flyvbjerg, B. (2006) Five misunderstandings about case-study research. *Qualitative Enquiry*, 12, 219 - 245.

Fowler, A. (2000) 'NGDOs as a Moment of History: Beyond Aid to Social Entrepreneurship or Civic Innovation?'. *Third World Quarterly*, 21(4): 637–54.

Geertz, C. (1973) *The interpretation of cultures*. New York: Basic Books

Gell, A. (1992) The technology of enchantment and the enchantment of technology. In Cooke, J. & Sheldon, A. (eds) *Anthropology, art & aesthetics*. Oxford: Oxford University Press: 40-66

Gergen, K. (1999) *An invitation to social constructionism.* London: SAGE.

Glaser, B.G. and Strauss, A.L. (1967) *The Discovery of Grounded Theory: Strategies for Qualitative Research*. New York: Aldine.

Goebel, A. (1998) Process, Perception and Power: Notes from 'Participatory' Research in a Zimbabwean Resettlement Area. *Development and Change,* 29: 227 - 305.

Goffman, E. (1979) *Gender Advertisements*. New York: Harper & Row.

Government of Namibia (2001) *The Road Traffic and Transport Regulations, 2001.* Retrieved from http://www.mwt.gov.na/documents/98944/247608/Summary_Roads.pdf/6500f7c7-995f-4e88-a78c-5af6f0e64f1d [Accessed: 17/07/2018]

Grace, J. (2013). Heroes of the road: Race, gender and the politics of mobility in twentieth century Tanzania. *Africa*, *83*(03), 403 – 425.

Gray, A. (2003). Cultural studies at Birmingham: the impossibility of critical pedagogy?. *Cultural Studies*, 17: 767–782.

Greenstein, R. (2009) Alternative Modernity: development discourse in post-apartheid South-Africa. International Social Science Journal, 60(195): 69-84.

Gregson, N. (2011) Performativity, corporeality and the politics of ship disposal. *Journal of Cultural Economy,* 2: 137 – 156.

Gregson, N., Crang, M., Ahamed, F., Akhtar, N. and Ferdous, R. (2010) Following things of rubbish value: end-of-life ships, 'chock-chocky' furniture and the Bangladeshi middle class consumer. *Geoforum*, 41:846 - 854.

Gregson, N., Metcalfe, A. and Crewe, L. (2007) Identity, mobility and the throwaway society. *Environment and Planning D: Society and Space,* 24: 682 – 700.

Grieco, M., Turner, J., and Kwakye, E. A. (1994). A Tale of Two Cultures: Ethnicity and cycling Behaviour in Urban Ghana. In *73rd Annual Meeting of the Transportation Research Board*. Washington D.C.: Transportation Research Laboratory.

Grous, A. (2011) The British Cycling Economy: Grosse Cyling Product Report. London School of Economics, Sky and British Cycling. Retreived from: http://eprints.lse.ac.uk/38063/1/BritishCyclingEconomy.pdf [accessed: 23/07/2018]

Guathier, A., & Hook, W. (2005). Tapping the Market for Quality Bicycles in Africa. *Sustainable Transport*, (17), 8–11, 30.

Gurney, C. (1999) Lowering the drawbridge: A case study of analogy and metaphor in the social construction of home-ownership, *Urban Studies* 36(10), pp. 1705-1722.

Gwilliam, K. (2013). Cities on the move - Ten years after. *Research in Transportation Economics*, *40*, 3 – 18.

Hammersley, M. (1995) *The Politics of Social Research*. London: Sage.

Hammersley, M. and Traianou, A. (2012). *Ethics in Qualitative Research: Controversies and Contexts.* London: Sage.

Hansen, K.T., (1999) Second-hand clothing encounters in Zambia: global discourses, western commodities, and local histories. *Africa: Journal of the International African Institute,* 69(3): 343-365.

Harper, D. (2002) Talking about pictures: a case for photo elicitation, *Visual Studies*, 17: 13-26.

Heierli, U. (1993). *Environmental limits to motorisation - non- motorised transport in developed and developing countries*. St Gallen.

Herlihy, P and Knapp, G. (2003) Maps of, by, and for the peoples of Latin America. Human Oganization, 62(4): 303-314.

Hetherington, K. (2003) Secondhandedness: consumption, disposal, and absent presence. *Environment and Planning D: Society and Space*, 22: 157 - 173.

Heatherington, K. and law, J. (2000) After Networks. *Environment and Planning D: Society and Space*, 18: 1-6.

Heyen-Perschon, J. (2001) *Non-Motorised Transport and its socio-economic impact on poor housholds in Africa: cost-benefit analysis of bicycle ownership in Uganda*. Hamburg : FABIO/BSPW, Jinja, Uganada.

Holstein, J.A. and Gubrium, J.F. (2004) The active interview. In: Silverman, D. ed. *Qualitative Research: Theory, Method and Practice.* 4th ed. London: Sage, pp. 140 - 161.

Horton, J. Christensen, P., Kraftl, P. & Hadfield-Hill (2014). 'Walking … just walking': how children and young people's everyday pedestrian practices matter. *Social & Cultural Geography*, 15(1), pp. 94-115

Howe, J., & Bryceson, D. (2000). *Poverty and urban transport in East Africa: review of research and Dutch donor experience*. Retrieved from http://siteresources.worldbank.org/INTURBANTRANSPORT/Resources/poverty%26ut_eafrica.pdf [Accessed: 02/10/2017]

Hui, A. (2012) Things in motion, things in practices: How mobile practice networks facilitate the travel and use of leisure objects. *Journal of Consumer Culture*, 12(2): 195 – 215.

Huizinga, J. (1949) *Homo ludens: A study of the play-element in culture*. London, Routledge.

Hurdley, R., Biddulph, M., Backhaus, V., Hipwood, T. and Hossain, R. (2017) Drawing as radical multimodality: salvaging Patrick Geddes's material methodology *American Anthropologist,* 119 (4): 748-753.

Ingold, T. (2011) Being alive: essays on movement, knowledge and description. Oxford, New York: Routledge.

Iphofen, R. (2009) *Ethical Decision-Making in Social Research: a Practical Guide.* Basingstoke: Palgrave Macmillan.

James, A., Jenks, C. and Prout, A. (1998) *Theorizing Childhood*. Cambridge: Polity Press

Jarzabkowski, P. and Pinch, T. (2013) Sociomateriality is 'the New Black': Accomplishing repurposing, reinscripting and repairing in context. *Managmegent (France)*, 16(5): 579-592.

Jensen, O. (2013) *Staging Mobilities*. Oxford, New York: Routledge.

Jensen, O. (2014) *Designing Mobilities*. Aalborg: Aalborg University Press.

Jensen, O. , Lanng, D. B., and Wind, S. (2017) Artefacts, affordances and the design of mobilities. In In Spinney, J., Reimer, S. and Pinch, P. (eds) *Mobilising Design*, Oxford, New York: Routledge:143 - 154.

Jóhannesson, G.T & Bærenholdt. (2009). Actor-Network Theory/Network Geographies. In Kitchen, R. & Thrift, N. (eds.) *International Encyclopedia of Human Geography.* Vol. 1. Amsterdam: Pergamon Press, 15-19.

Jungnickel, K. (2015) "One needs to be very brave to stand all that": Cycling, rational dress and the struggle for citizenship in late nineteenth century Britain*. Geoforum,* 64: 362 - 371.

Katz, C. (1992) All the world is staged: intellectuals and the projects of ethnography. *Environment and Planning D, Society and Space,* 10, 495-510.

Katz, C. (2004) *Growing up global: economic restructuring and children's everyday lives.* Minneapolis: University of Minnesota Press.

Kemtsop, G. (2008) Snapshots of a two wheeled rural economy. *IFRTD News*, *14*(2), 3.

Kesby, M., Kindon, S. & Pain, R. (2005) 'Participatory' approaches and diagramming techniques in Methods in Human Geography: A guide for students doing a research project Flowerdew, R. & Martin, D. (eds. 1ˢᵗ ed 1997) pp. 144 - 166. Harlow: Pearson Education Limited

King, N. (2004). 'Using templates in the thematic analysis of text'. In Cassell, C. & Symon, G. (Eds.), *Essential guide to qualitative methods in organizational research,* pp. 257–270. London, UK: Sage.

Kleine, D. (2008) Negotiating partnerships, understanding power: doing action research on Chilean Fairtrade wine and value chains. *The Geographical Journal,* 174(2): 108 – 123.

Knabb, K. (1981) *Situationist International Anthology*. Berkeley, CA: Bureau of Public Secrets.

Kopytoff, I. (1986) "The cultural biography of things: commoditization as process". In: Appadura, A. (ed.) *The Social Life of Things: Commodities in Cultural Perspective*. Cambridge: Cambridge University Press: 64 – 91.

Kremer, M. & Miguel, E. (2007) The illusion of sustainability. *Quarterly Journal of Economics.* 122 (3): 1007-1065.

Kullman, K. (2017) Universalising and particularising design with Professor Kawauchi. In Spinney, J., Reimer, S. and Pinch, P. (eds) *Mobilising Design*, Oxford, New York: Routledge: 130 - 142.

Lash, S. and Lury, C. (2007) *Global Culture Industry: The mediation of Things*. Cambridge: Cambridge University Press.

Latour, B. (1987) *Science in Action: How to Follow Scientists and Engineers through Society*. Milton Kenes: Open University Press.

Latour, B. (1992) Where are the missing masses? The sociology of a few mundane artifacts. In Bijker, W.E & Law, J. (eds.) *Shaping Technology/ Building Society: Studies in Social Change.* London: The MIT Press,225 - 258.

Latour, B. (2005) *Reassembling the social: an introduction to actor-network theory*. Oxford: Oxford University Press.

Law, J. (1994) *Organizing Modernity*. Oxford: Blackwell.

Law, J. (2004) *After Methods: mess in social science research*.Oxford, New York: Routledge.

Law, J. and Mol, A. (2001) Situating technoscience: an inquiry into spatialities. *Environment and Planning D: Society and Space,* 19: 609 – 621.

Law, R. (1999) Beyond "women and transport": towards new geographies of gender and daily mobility. *Progress in Human Geoegraphy*, *23*(4), 567–588.

LeCompte, M. & Goetz, J. (1982) Promblems of Reliability and Validity in Ethnographic Research. *Review of Educational Research*, 52(1): 31 - 60.

Leeder, K. (2014) The Play Time Manifesto: Why Having Fun makes us Better Workers. *Journal of Library Administration,* 54(7): 620-628

Leinbach, T. R. (2000) Mobility in development context: changing perspectives, new interpretations, and the real issues. *Journal of Transport Geography*, *8*: 1–9.

Lepawsky, J. and Mather, C. (2011) From beginnings and endings to boundaries and edges: rethinking circulation and exchange through electronic waste. *Area* 43(3), 242-249.

Lewis, D. and Sobhan, B. (1999) Routes of funding, roots of trust? Northern NGOs, Southern NGOs, donors and the rise of of direct funding. *Development in Practice*, 9(1-2): 117-129.

Lincoln, Y.S. and Guba, E.G. (2000) 'Paradigmatic Controversies, Contradictions and Emerging Confluences', in Denzin, N.K. and Lincoln, Y.S. (eds.) *Handbook of Qualitative Research.* 2nd ed. London: SAGE, pp. 163-188.

Lynch, K. (1981) *Good City Form*. Cambridge, MA: MIT Press.

Mackay, P., Carne, C., Beyon-Davies, P. and Tudhope, D. (2000) Reconfiguring the user: Using Rapid Application Development. *Social Studies of Science*, 30(5): 737-57.

Mahapa, S. (2003). *Integrating gender into World Bank financed transport programmes: Case Study South Africa, Shova Kalula*.

Malmberg-Calvo, C. (1994). Case study on intermediate means of transport: Bicycles and rural women in Uganda. Working Paper - SSATP, Issue 12.

Manji, F. and O'Coill, C. (2002) The missionary position: NGOs and development in Africa. *International Affairs*, 78(3): 567-584.

Martin. C. (2016) Shipping Container. London: Bloomsbury.

Martin, C. (2017) 'Why ship air? packaging design, mobilities and the materiality of void fillers'. In Spinney, J., Reimer, S. and Pinch, P. (eds) *Mobilising Design*, Oxford, New York: Routledge: 89 - 102.

Mason, J. (1996) *Qualitative Researching*. London: Sage Publications.

Massey, D. (1994). *Space, Place and Gender*. Cambridge: Polity Press.

Massey, D. (2015) A global sense of place. In Jensen, O. *Mobilities: critical concepts in built environment*. Oxford, New York: Routledge: 33 - 42.

McIlwaine, C. (2007) From local to global to transnational civil society: Re-framing developemnt perspectives on the non-state sector. *Geography Compass*, 1(6): 1252-1281.

McKinnon, I. (2011) 'Expanding Cartographic Practices in the Social Sciences'. In E. Margolis and Pauwels, L. (Eds). *The Sage Handbook of Visual Research Methods*. London: Sage, pp. 452-473.

McLennan, S., Storey, D. and Leslie, H. (2013) 'Entering the Field'. In Scheyvens, R. (ed.) *Development Fieldwork: A Practical Guide* (2nd Edition). London: Sage, pp. 143- 159.

Mercer, C., Mohan, G., & Power, M. (2003). Towards a critical political geography of African development. *Geoforum*, *34*(4), 419 – 430.

Merriman, P. (2004) Driving spaces: Marc Augé, non-places and the geographies of England's M1 motorway. Theory, Culture and Society21(4-5): 145-167.

Miller, D. (2010) *Stuff*. Cambridge: Polity Press.

Miller, J. and Glassner, B. (2004) 'The "Inside" and the "Outside": Finding Realities in Interviews', in D. Silverman (ed.) *Qualitative Research: Theory, Method and Practice.* London: Sage: 125-39.

Mohan, G. (2002) The disappointments of civil society: the politics of NGO intervention in northern Ghana. *Political Geography*, 21(1): 125-154.

Mohan, G. and Stokke, K. (2000) Participatory development and empowerment: the dangers of localism. *Third World Quarterly*, 21(2): 247-268.

Morse, J. and Richards, L. (2002). *Readme First for a User's Guide to Qualitative Methods.* London: Sage Publications.

Motzafi-Haller, P. (1997) Writing birthright: on native anthropologists and the politics of representation. In Reed-Danahay, D.E (ed.) *Auto/Ethnography: Rewriting the Self and The Social.* Oxford: Berg.

Moyo, B. H. Z. (2009). Indigenous knowledge-based farming practices: a setting for the contestation of modernity development and progress. *Scottish Geographic Journal,* 125 (3-4), 353 - 360.

Müller, M. (2015) Assemblages and actor-networks: re-thinking socio-material power, politics and space. *Geography Compass*, 9(1): 27-41.

Murdoch, J. (1998). The Spaces of Actor-Network Theory. *Geoforum,* 29 (4), 357 - 374.

Murphy, E. and Dingwall, R. (2007) Informed consent, anticipatory regulation and ethnographic practice. *Social Science and Medicine*, 65(11): 2223-34.

Namibia Statistics Agency (2008). *A Review of Poverty and Inequality in Namibia* [online]. Available at: http://cms.my.na/assets/documents/p19dmr33n31i1b1ko1f0016hg1jdq1.pdf [Accessed: 6/01/2016]

Namibia Statistics Agency (2012). *Namibia Household and Income Expenditure Survey 2009/10* [online]. Available at: http://cms.my.na/assets/documents/p19dmr57141501927152512mn18631.pdf [Accessed: 6/01/2016]

Namibia Statistics Agency (2014) *Namibia Household Income and Expenditure Survey 2009/10* [online]. Available at: http://cms.my.na/assets/documents/p19dmrae8os57rbnfuvbrgoae1.pdf [Accessed: 13/01/2014]

Namibia Statistics Agency (2015) *Namibia Household Income and Expenditure Survey 2015/16* [online]. Available at: https://cms.my.na/assets/documents/NHIES_2015-16.pdf [Accessed: 03/04/2018]

Natsoulas, A. (1995) The game of Mancala with reference to commonalities among the peoples of Ethiopia and in comparison to other African peoples: rules and strategies. *Northeast African Studies*: 2(2): 7 – 24.

Ndee, H. (2010a) Pre-colonial East Africa: History, Culture and Physical Activity. *The International Journal of the History of Sport*, 27(5): 780 – 797.

Ndee, H. (2010b): Epilogue: Traditionalism, Colonization, Modernisation. The International *Journal of the History of Sport*, 27(5): 960 – 983.

Nkurunziza, A., Zuidgeest, M., Brussel, M., & Van Maarseveen, M. (2012). Examining the potential for modal change: Motivators and barriers for bicycle commuting in Dar-er-Salaam. *Transport Policy*, *24*, 249–259.

Norris, L. (2013). 'Aesthetics and Ethics: upgrading textile production in northern Kerala' *Geoforum*, 50: 221-231.

Nowell, L., Norris, J. White, D. and Moules, N. (2017) Thematic Analysis: Striving to Meet the Trustworthiness Criteria, International Journal of Qualatative Methods, 16: 1 - 13.

Øllgaard, G. (1999) A super-elliptical moment in the cultural form of the table: a case study of a Danish table. Journal of Design History, 12(2): 143 - 157.

Omobowale, A. (2013) Tokunbo ICT: symobolic-rationality of second-hand ICT utilization in Nigeria. *International Journal of Sociology and Social Policy,* 33 (7-8): 509 – 523.

Onwumechili, C. (2011). Urbanization and female football in Nigeria: history and struggle in a man's game. *The International Journal of The History of Sport*, *28*(15), 2206 – 2219.

Oudshoorn, N. (2003) Clinical trials as a cultural niche in which to configure the gender identities of users: the case of the male contraceptive pill. In Oudshoorn, N. and Pinch, T. (eds) *How users Matter: the co-construction of users and technologies*. London, Massachusetts, MIT Press: 209 - 27.

Oudshoorn, N. and Pinch, T. (2003) 'How Users and Non-Users Matter'. In Oudshoorn, N. and Pinch, T. (eds.) *How users Matter: the co-construction of users and technologies*. London, Massachusetts, MIT Press: 1-25.

Oudshoorn, N., Rommes, E. and Stienstra, M. (2004) Configuring the user as everybody: Gender and design cultures in informationan and communication technologies. *Science, Technology and Human Values*, 29(1), 30-63.

Overton, K. (1994). Women Take Back the Streets: Overcoming Gender Obstacles to Women's Mobility in Africa. *Sustainable Transport*, *3*, 6 – 7 & 17.

Overton, K., and Zambeze, A. (1999). Case Study: Bicycle Project in Chockwe, Mozambique.

Pain, R. (2004) Social Geography: Particiaptory Research, *Progress in Human Geography*, 28(5): 652 - 663.

Paul, K. (2002). Safety and Gender Issues in Rural Transport in Busia District, Uganda. In P. Fernando and G. Porter (Eds.), *Balancing the Load: Women, Gender and Transport*. London: Zed Books.

Perry, S. (2015) Beyond waters: the transormative paractice (and politics) of digital spatial and visual ethnography in a rural shale gas boomtown. In Gubrium, A., Harper, K. and Otanez, M. (eds.). *Particiaporty visual and digital research in action.* Walnut Creek, California: Left Coast Press, Inc.: 147-162.

Peters, D. (2001). Gender and transport in Less Developed Countries: A Background Paper in Prearation for the CSD-9. In *Background paper for the expert workshop "Gender perspectives for Earth Summit 2002: Energy, transport, information for Dicision Making."* London: UNED Forum.

Peterson, J. (2007) Pedalling Hope. *Magazine on Urbanism*, 6: 36 – 39.

Pfaff, J. (2010) A mobile phone: mobility, materiality and everyday Swahili trading practices. *Cultural Geographies,* 17(3): 342 – 357.

Pierce, J. and Paulos, E. (2011) Second-hand interactions: investigating reacquisition and dispossession practices and domestic objects. CHI 2011, May 7-12, 2011, Sustainability 2, Vancouver, BC, Canada.

Pinch, T. and Bijker, W.E. (1987) "The social construction of facts and artifacts: or how the sociology of science and the sociology of technology might benefit each other". In Bijker,

Hughes and Pinch (eds.) *The Social Construction of Technological Systems*. Cambridge (MA), London: The MIT Press: 17 - 50.

Pink, S. (2006) *Doing Visual Ethnography*. London: Sage.

Pochet, P., and Cusset, J. (1999). Cultural Barriers to bicycle use in Western African Cities. *IATSS Research*, *23*(2), 45–50.

Polanyi, M. (1966) *The Tacit Dimension*. New York: Doubleday.

Porter, G. (2002). Living in a Walking World: Rural Mobility and Social Equity Issues in Sub-Saharan Africa. *World Development*, *30*(2), 285–300.

Porter, G. (2003). *Intermediate Means of Transport: An Extended Review Paper with Reference to Ghana*.

Porter, G. (2007). Transport Planning in sub-Saharan Africa. *Progress in Development Studies*, *7*(3), 251–57.

Porter, G. (2008). Transport planning in sub-Saharan Africa II: putting gender into mobility and transport planning in Africa. *Progress in Development Studies*, *8*(3), 281 – 89.

Porter, G. (2014). Transport services and their impact on poverty and growth in rural sub-Saharan Africa: A review of recent research and future research needs. *Transport Reviews: A Transnational Transdisciplinary Journal*, *34*(1), 25–45.

Porter, G., Hampshire, K., Abane, A., Munthali, A., Robson, E., Mashiri, M., & Tanle, M. (2009). 'Youth Transport, Mobility, and Security', in Sub-Saharan Africa: The Gendered Journey to School'. In *Women's Issues in Transportation: Summary of the 4th international conference. Volume 2: Technical Papers.* (pp. 105–116). Irvine, California: Transportation Research Board.

Potter, R., Conway, D. Evans, R. and Lloyd-Evans, S. (2012) *Key Concepts of Development Geography*. London: Sage.

Power, M. (2003) *Rethinking development geographies.* London: Routledge.

Pressman, S. and Cohen, S. (2005) Does positive affect influence health? Psychological Bulletin. 131 (6), pp.925-971.

Prosser, J and Burke, C. (2006) 'Childlike perspectives through image-based educational research'. InKnowles, J.G and Cole, A. L. (eds), *Handbook of the Arts in Qualitative Research: Perspectives, Methodologies, Examples and Issues*. London: Sage, pp. 407 -20.

Pugh, A.J. (2009) *Longing and Belonging: Parents, children and consumer culture*. Berkley: University of California Press.

Radcliffe, S. (2005) Development and geography: towards a postcolonial development geography? *Progress in Human Geography,* 29 (3), 291-298.

Raghuram, P., & Madge, C. (2006). Towards a method for postcolonial development geography? Possibilities and challenges. *Singapore Journal of Tropical Geography*, *27*, 270–288.

Rattray, N. (2015) Counter-mapping as situated knowledge: intergrating lay expertise in participatory geographic research. In Gubrium, A., Harper, K. and Otanez, M. (eds.). *Particiaporty visual and digital research in action.* Walnut Creek, California: Left Coast Press, Inc.: 131-146.

Reith, S. (2010) Money, power and donor-NGO partnerships. *Development in Practice*, 20(3): 446 – 455.

Republic of Namibia Planning Commission (2015) Poverty and Deprivation in Namibia. Available online: http://www.na.undp.org/content/namibia/en/home/library/poverty/nimdpovmao2015.html [Accessed 13/02/2018]

Ritchie, J. and Lewis, J. (2003). Qualitative research practice – a guide for social science students and researchers. London: Sage Publications.

Rommes, R. (2002) *Gender scripts and the internet: the design and use of Amsterdam's digital city*. Enschede : Twente University Press.

Rose, G. (2004) "Everyone's cuddled up and it just looks really nice": an emotional geography of some mums and their family photos, *Social and Cultural Geography*, 5: 549 - 64.

Rosen, P. (2002) Up the Vélorution: Appropriating the Bicycle and the Politics of Technology. In *Appropriating Technology*, R. Eglash, J. Bleecker, J. Croissant, R. Fouché and G. Di Chiro (eds.). Minnesota: University of Minnesota Press.

Rubin, H.J. and Rubin, I.S. (2005) *Qualitative Interviewing the Art of Hearing Data,* 2nd ed. London: Sage.

Ryan, G. and Bernard, H. (2003) Thechniques to Identify Themes, *Field Methods*, 15: 85-109.

Ryen, A. (2004) 'Ethical Issues', in Seale, C., Gobo, G., Gubrium, J.F. and Silverman, D. (eds.) Qualitative Research Practice. London: Sage Publications.

Saldana-Portillo, M. J. (2003). *The revolutionary imagination in the Americas and the age of development*. Durham, NC: Duke University Press.

Salen, K. & Zimmerman, E. (2003) *Rules of Play: Game Design Fundamentals*. Cambridge: MIT Press.

Salifu, M. (1994). The cycle trailer in Ghana: A reasonable but inappropriate technology. *African Technology Forum*, *7*(3), 37–40.

Salon, D., & Aligula, E. (2012). Urban travel in Nairobi, Kenya: analysis, insights and opportunities. *Journal of Transport Geography*, *22*: 65 – 76.

Sassatelli, R. (2007) *Consumer culture: history, theory and politics*. London: Sage.

Schot, J. and de la Bruheze, A. (2003) The mediated design of products, consumption, and consumers in the twentieth century. In N. Oudshoorn and T. Pinch (eds) *How Users Matter: The co-construction of users and technology* MIT Press: 229 - 245.

Schwanen, T. (2015) Beyond instrument: smartphone app and sustainable mobility. *European Journal of Transport and Infrastructure Research*, 15(4): 675-690.

Schwartz-Shea, P. (2006) 'Judging quality: Evaluative criteria and epistemic communities'. In D. Yanow and P. Schwartz-Shea (eds), *Interpretation and Method - Emperical Research Methods and the Interpretive Turn*. Armonk, NY: M.E.Sharpe, pp. 89-112.

Scott, W.R. and Davis, G.F. (2006) *Organizations and Organizing: Rational, Natural and Open Systems Perspectives*. Upper Saddle River, NJ: Pearson Prentice Hall.

Seale, C. (1999) *The Quality of Qualitative Research.* London: SAGE.

Shade, L. (2007) Feminizing the mobile: Gender Scripting of mobiles in North America. Journal of Media and Cultural Studies, 21(2): 179-89.

Sharp, J. and Briggs, J. (2006) Postcolonialism and development: New dialogues? *The Geographical Journal,* 172 (1), 6 - 9.

Sheldon, K.M. and Lyubomirsky, S. (2009) Change your actions, not your circumstances: An experimental test of the Sustainable Happiness Model. In: Dutt, A.K. and Radcliff, B., eds. (2009) *Happiness, Economics, and Politics: Toward a Multi-Disciplinary Approach.* Cheltenham: Edward Elgar: 324-342.

Sheller, M. (2004) Automotive emotions: Feeling the car. *Theory, Culture and Society*, 21 (4/5), 221 – 242.

Sheller, M. & Urry, J. (2006) The new mobilities paradigm. *Environment and Planning A,* 38(1): 207 – 226.

Sheppard, E. (2002) The spaces and times of globalisation: place, scale, networks and positionality. *Economic Geography*, 78: 307-330.

Shove, E., Pantzar, M. and Watson, M. (2012) *Dyamics of social practice: everyday life and how it changes.* London: Sage.

Shutz, A. J. (1962) Collected Papers -I. The problem of social reality. The Hague: Martinues Nijhoff.

Sietchiping, R., Permezel, M.J., and Ngomsi, C. (2012) Transport and mobility in sub-Saharan African cities: an overview of practices, lessons and options for improvements. *Cities,* 29(3): 183 - 189.

Silk, J. (2000) Caring at a distance: (Im)partiality, moral motivation and the ethics of representation. *Ethics, Place and Environment*, 3 (3): 303 – 322.

Silverman, D. (1993). *Interpreting Qualitative Data. Methods for Analysing Talk, Text and Interaction*. London: Sage Publications.

Silvey, R. (2000). Stigmatized spaces: gender and mobility under crisis in South Sulawesi, Indonesia. *Gender, Place and Culture*, *7*(2), 143–161.

Simmel, G. (1971) *On individuality and social forms*. Chicago: Chicago University Press, 324 – 339.

Simon, S. (1996). *Gender in translation: Cultural identity and the politics of transmission*. London: Routledge.

Slater, D. (1997) *Consumer Culture and Modernity.* Cambridge: Polity Press.

Smith, T. A. (2011). Local Knowledge in Development Geography. *Geography Compass*, *5*(8), 595 – 609.

Söderström, O. & Crot, L. (2010) The Mobile Consitution of Society: Rethinking the mobility-society Nexus. Working Paper 7. MAPS, Université de Neuchâtel.

Söderstrom, O. (2013) What travelling urban types do: Postcolonial modernisation in two globalizing cities. In Söderstrom, O. et al., (eds.) *Critical Mobilities,* 1-16*.*

Solomon, J. (2009) Happiness and the consumption of mobility. In Soper, K. Ryle, M. and Thomas, L. (eds.) *The politics and pleasures of consuming differently*. Basingstoke; New York: Palgrave Macmillan: 157 – 170.

Spinney, J. (2007) "Cycling the city: non-place and the sensory construction of meaning in a mobile practice", in Horton, D., Rosen, P. and Cox, P. eds. *Cycling and Society*. Aldershot, Burlington: Ashgate: 25–46.

Spivak, G. (1992). The politics of translation. In M. Barrett & A. Phillips (Eds.), *Destabilizing theory: Contemporary feminist debate*s . Cambridge, UK: Polity, pp. 177-200.

Stake, R. (2000) 'Case Studies', in Denzin, N.K. and Lincoln, Y.S. (eds.) *Handbook of Qualitative Research.* 2nd ed. London: SAGE, pp. 435 – 449.

Starkey, P. (2001). *Local Transport Solutions: People, Paradoxes and Progress: Lessons Arising from the Spread of Intermediate Means of Transport*. Sub-Saharan Africa Transport Policy Program working paper series (SSATP), no. 56. World Bank, Washington, DC.

Steinbach, R., Green, J., Datta, J. and Edwards, P. (2011) Cycling and the city: a case study of how gendered, ethnic and class identities can shape healthy transport choices. *Social science and medicine*, 72(7): 1123-30.

Stevens, Q. (2007) *The Ludic City – Exploring the Potential of Public Spaces*. Oxford: Routledge.

Stratford, E. (2016) Mobilizing a spatial politics of street skating: thinking about the geographies of generosity. *Annals of the American Association of Geographers*, 106 (2): 350 – 357.

Sutton-Smith, B. (1997) *The Ambiguity of Play*. Cambridge, Massachusetts: Harvard University Press.

Swanton, D. (2014) 'Waste'. In Adey, P. Bissell, D. Hannam, K., Merriman, P. and Sheller, M. (eds.) *The Routledge Handbook of Mobilities*, London: Routledge.

Tanzarn, N. (2008). Gendered Mobilities in Developing Counrtires: The case of (urban) Uganda. In T. P. Uteng & T. Cresswell (Eds.), *Gendered Mobilities*. Aldershot: Ashgate.

Temple, R. (2002) Crossed Wires: Interpretors, Translators and Bilingual Workers in Cross-Language Research. Qualitative Health Resarch, 12(6): 844-854.

The Daily Maverik (2012) "I want to ride my bicycle: Africa's waiting. Davis, R. 4th May 2012 [online]. Available at: https://www.dailymaverick.co.za/article/2012-05-04-i-want-to-ride-my-bicycle-africas-waiting/#.WsN1fa6nGUk [accessed:03/04/2018].

Tinkler, P. (2013) *Using Photographs in Social and Historical Research*. London: Sage.

Tötemeyer, G. (2013) Obstacles to reconciliation and stability in the Namibian state and society. Windhoek, Namibia: Namibia Institute for Democracy.

Townsend, J.G. and Townsend, A.R. (2004) Accountability, motivation and practice: NGOs North and South. *Social and Cultural Geography*, 5 (2): 271: 284.

Tvedt T (1998) *Angels of Mercy or Development Diplomats? NGOs and Foreign Aid* Oxford: James Currey

Twyman, C., Morrisson, J. and Sporton, D. (1999). The final fifth: Autobiography, reflexivity and interpretation in cross-cultural research. *Area*, 31: 313--326.

Ugorji, R. U., & Achinivu, N. (1977). The significance of bicycles in a Nigerian village. *The Journal of Scoail Psychology*, *102*, 241 – 246.

Urry, J. (2000) *Sociology beyond Societies: Mobilities for the twenty-first century*. London: Routledge.

Urry, J. (2007) *Mobilities*. Cambridge: Polity.

Urry, J. (2011) *Climate Change and Society*. Oxford: Polity.

Uteng, T. P. (2011). *Gender and Mobility in the Developing World. Background Paper, World Development Report 2012: Gender, Equality and Development.*

Valentine, G. (2005) Tell me about….: using interviews as a research methodology in *Methods in Human Geography: A guide for students doing a research project* Flowerdew, R. and Martin, D. (eds. 1st ed 1997) Harlow: Pearson Education Limited: 110 - 127.

Vannini, P. (2011) Constellations of (in-)convenience: disentangling the assemblages of Canada's west coast island mobilities. *Social and Cultural Geography*, 5(12): 471 - 492.

Van Oost, E. (2003). "Materialized gender: how shavers configure the users' femininity and masculinity". In Oudshoorn, N. and Pinch, T. (Eds.) *How Users Matter: The Co-construction of Users and Technology*, Cambridge, MA: MIT Press: 193–208.

Varnelis, K. (2008) *The Infrastructural City: Networked Ecologies in Los Angeles*. Barcelona: Actar.

Vasconcellos, E. A. (2001). *Urban Transport, Environment and Equity: The case for developing countries*. London: Earthscan.

Veblen, T. (1975) *The theory of the leisure class*. New York: Augustus, M. Kelly.

Waerdahl, R. (2005) 'Maybe I'll need a pair of Levis before junior high?' Child to youth trajectories and anticipatory socialization. *Childhood,* 12(2): 201-219.

Wallace, T. (2004) 'NGO dilemmas: Trojan horses for global neoliberalism?' In Panitch, L. & Leys, C. (eds.) *Socialist Register 2004*. London: The Merlin Press: 202-219.

Watkins, S.C., Swidler, A. and Hannan, T. (2012) Outsourcing Social Transformation: Development NGOs as Organizations. *Annual Review of Sociology,*38: 285-315

Watson, W. (2004) 'What a dolt one is': Language learning and fieldwork in geography, *Area*. 36(1): 59-68.

White, P., Erlank, G., Luzolo, F., and Bamba, C. A. (2000). The promotion of intermediate means of transport through a South-South cooperation: Phase one, report of the mission. Washington, DC: Worldbank.

Williams, R., Stewart, J. and Slack, R. (2005) *Social learning in technological innovation: experimenting with information and communicatio technologies.* Cheltenham: Edard Elgar.

Wilson, K. (2018) 'Development' in Bleiker., E. (ed.) *Visual Global Politics*. Abington, New York: Routledege.

Woodyer, T. (2012) Ludic geographies: not merely child's play. *Geography Compass,* 6 (6): 313-326.

Yanow, D. (2006) 'Neither rigorous nor objective? Interrogating criteria for knowledge claims in interpretive science'. In D. Yanow and P. Schwartz-Shea (Eds.), *Interpretation and Method - Empirical Research Methods and the Interpretive Turn*. Armonk, NY: M.E. Sharpe, pp. 67 - 88.

Yin, R. (2003) *Case Study Research: Design and Methods (3rd ed.).* Thousand Oaks, California: SAGE.

9. Appendix

Interview Template Namibian Participants

1) Introduce exercise
   a) We will be discussing your local area and how you travel day-to-day, your transport aspirations, how you choose to shop and mobile cell phones
   b) **How**– we are going to draw maps of the key places where you travel day-to-day and talk as we do this
   c) **Outcomes** – you will produce a map, have a discussion about mobility and have a chance to raise any issues/concerns about your mobility
   d) **Verbal consent** – this exercise will take about an hour, all data will be used and held anonymously, you may leave the research project at any time you want, the data you give will be used for my PhD thesis and may be published in journal articles and may be made available to other organisations. My research is independent so feel free to be as open as you wish. Is it ok to take photographs? Please ask questions if something is not clear at any point.

2) Getting started
   a) Think about the key places where you spend your time, for example, places where you work, shop, farm, see friends, visit family, schools, medical centres, or any places that are significant to you. Begin to draw a map of these key places spaced out on the page as you know them. It doesn't have to be accurate but you should aim to produce a drawing of the places where your life is carried out day-to-day on one sheet. If you regularly go to another town or village include this and space it out on the page as you wish, perhaps placing some locations near and some far.

3) Travel
   a) How do you travel to each of these places?
   b) How long does the journey usually take?
   c) Are you happy with the amount of time it takes?
   d) Are there any issues with travelling to any of these places?
   e) Is it difficult/easy? Safe/unsafe? Slow/fast? Cheap/expensive? Enjoyable?
   f) Do you travel alone or with company/children?
   g) What do you think about your transport and how you travel?
   h) Do you think there is an easier or better way you could travel to any of these places? And why?
   i) What is preventing you from travelling in that way?
   j) Show images of different transport modes used in Namibia: old/new buses, old/new mountain/road bikes, motorcycles, cars (old/new/fast & expensive/4x4/cheap & slow, chartered planes, taxis).
      i) What do you think about the transport mode in each of these images?
      ii) Which ones would you prefer to use and why?
      iii) Is anything preventing you from using this mode of transport?
      iv) Are there any you would not want to use and why?
      v) What will other people think about you using these transport modes?

4) ICTs
   a) Do you have a mobile telephone/cell phone?
   b) What do you think about owning a mobile cell phone?
   c) What do you use if for if you have one? Call family/friends? Buying/selling goods? Banking? Doctor?
   d) Do you ever use it instead of travelling somewhere?

5) Consumption Choices
   a) Do you travel to town? What for?
   b) Where do you choose to shop? Why?
   c) Where do you do your food shopping and why?
   d) If you were to buy a bicycle where would you go to get it? Why?
   e) If you were to buy household goods or tools where would you get them? Why?
   f) If you were to buy clothes where would you get them? Why?

6) Concluding discussion/debrief
   a) Is there anything else you'd like to say about the places on your map or your mobility/travel?
   b) Do you have any questions?
   c) What have you learnt about the way that you and others travel in this session?
   d) Would you like access to a summary report about this research that I could have sent to the local bike repair centre?

Interview Template with NGO Participants

Informed consent and anonymity

You are about to take part in an interview which may take up to an hour of your time. If you need to stop the interview at any time and rearrange another date please say so. The information you give will be used for my PhD on the transfer of mobility practices to Africa, which will be shared with my research supervisors and may be made publically available by Cardiff University. The data and information you give may also be used for future publications. It may be also be used for recommendations to other organisations. The information you give will be held anonymously and will not be traceable to you individually or the NGO. In accordance with the Data Protection Act this information may be retained indefinitely.

Your participation is entirely voluntary and you have the right to refuse to answer any questions and to remove yourself from the research at any point without giving a reason.

You may in future contact myself or my supervisor, Justin Spinney at Cardiff University School of Planning and Geography if you wish to discuss any aspect of this research his email is [blank].

So, do you consent to take part in this study?

Questions

What are the objectives of the NGO?

What opportunities did it identify when it started selling second hand bicycles to Africa? Who are the intended consumers/beneficiaries?

How do you perceive people's mobility in rural Namibia?

Function of bikes

What do think bicycles have to offer for people in Namibia?

> What is the function of a bicycle? How is it beneficial over other mobility transport practices?

What do mountain bikes afford over other types of bicycles?

Mechanics/Knowledge

Assuming mechanics describe the benefits of owning a bicycle to potential buyers, is this information that you have given the mechanics as part of their training?

> What knowledge has been passed on about cycling and the benefits of owning a bicycle to mechanics? – How do you promote the bicycles to the mechanics in Namibia?

What is the idea behind training mechanics?

Empowerment

How successful is the NGO in improving mobility and empowering people?

Who is empowered?

Is there anyone targeted that the NGO fails to empower? For example, women or children?

Chinese bikes

What do you think about Chinese bicycles available to buy cheaply and using credit in Namibia?

What benefits do used bikes from the West have over Chinese bikes?

How did you find out about the quality of the Chinese imports?

How do the mechanics know about this? Do you share this with new mechanics as they are trained?

Business Model

Can you tell me about the process with ordering and delivering the bikes?

> Is there a limit to how often you can send out the bikes? Why do mechanics have to wait, often for 3 or 4 months, for a delivery?

> Can mechanics not purchase second hand bikes available for sale from Europe (Eastern Europe). For example I was told in the Netherlands that they have too many abandoned bikes on the street.

What is the intention of using a shipping container for the bicycle empowerment centres?

> This is quite a contrast to other shops that sell bikes e.g. Cymot or China shops – how do you think this affects the type of consumers you get or the way that bicycles are purchased and used?

How is it decided what bikes go where when they reach Namibia?

> *(Many bikes are still shipped out that are not useable and once stripped of spares are piled up outside of the shipping containers. Some bikes would just not sell. The mechanics all thought this was a problem. There is a sense of they get what they are given', which maybe considered disempowering.)*

Do you have any control over what stock is sent out?

Do you know if the bikes are still being used by health workers?

How does the NGO appeal to Western donors of bicycles and monetary funds?