Walking with farmers: floods, agriculture and the social practice of everyday mobility

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Abstract

Despite growing interest in the relationship between human mobility and environmental variability and change in recent years, there is relatively little understanding of the role of human agency within this nexus. This paper helps to address this knowledge gap by illuminating the role of perception, action and decision-making in the everyday. Using an innovative walking methodology, it presents an empirical case study of regularised farmer movements in and out of a floodplain during the rainy season in central Mozambique to show how people's day-to-day routes are continuously reproduced through meaningful encounters and engagements with physical obstacles and other people. The paper demonstrates how a concern with everyday mobility highlights people's day-to-day capacities to respond to environmental variability and change while also drawing attention to the challenges associated with the gradual accumulation of risk in mobile, rural livelihoods.

Keywords: agency, everyday, travel, floods, farming, Mozambique.

1. Introduction

In the last few decades, there has been considerable interest among researchers and policymakers in the relationship between human mobility and environmental variability and change, or the 'mobility-environment nexus' (Zetter and Morrissey, 2014). As has been well-documented elsewhere (Ober and Sakdapolrak, 2017; Piguet, 2013), this field has shifted considerably in recent years, from viewing mobility as essentially problematic and an indication of a failure to adapt, to seeing it as a crucial part of people's resiliencies. As a result, the risk of population immobility in the face of environmental shocks and stresses has been highlighted (Black et al., 2013). These concerns are particularly applicable to small-scale farming communities in rural areas of developing countries, where the importance of geographical mobility to people's livelihoods has long been recognised (Ellis, 1998). And yet, despite this work, there is limited understanding of the agencies and decision-making processes of those who are frequently 'on the move' in the context of environmental variability and change. Most research conducted to date in this vein has focused on international- and national-scale migration (Foresight Project, 2011), with discussions concerning international flows of climate refugees (Biermann and Boas, 2010), rural to urban population movements (Suckall et al., 2015) or long-distance circular migration (McLeman and Hunter, 2010) taking precedence in academic, policy and public debate. In these studies, long-standing models of agency based on human rationality are commonly applied, which view people as weighing up the costs and benefits

of various livelihood options through access to, and mobilisation of, different capitals (Ransan-Cooper, 2016). These calculations, in turn, are understood to affect the 'push' and 'pull' forces influencing migrants' movements between 'A' and 'B' or origin and destination.

This conventional approach to understanding human agency is not universally shared, however. According to Sakdapolrak et al. (2016), it fails to consider that not all action is rational and calculative, and that migrants should be treated as persons with "perceptions and ideas, hopes and fears, norms and values" (Kaag et al. 2004: 54). Ransan-Cooper (2016), exploring the non-economic dimensions of migrants' decision-making processes, such as emotions and intuition, in rural Philippines, refers to agency as a 'black-box' subject in the study of environmental migration. Moreover, scholars have recently begun to uncover migrants' agencies on route, in addition to places of origin and destination. For example, Schapendonk and Steel (2014) argued that migration studies have long been based on a 'sedentarist metaphysics', with little attention "paid to experiences of mobility and spatial frictions in mobility processes, let alone to the journeys between places of departure and arrival" (p. 263). Similarly, literature on the 'autonomy of migration' has questioned the stability of infrastructures and migration controls, arguing for the need to pay greater "attention to migrant itineraries, spaces, and tactics *en route*" (Casas-Cortes et al., 2015, p. 895). Taken together, these studies suggest the potential for further unpacking and nuancing people's experiences of travel at different scales, their substantial and dynamic encounters with places on route, and the complex emotive and practical factors involved.

This paper aims to contribute to this task by emphasising the importance of another dimension of human agency in the mobility-environment nexus: that of perception, action and decision-making at the scale of the everyday. It presents an empirical case study of regularised farmer movements in and out of a river valley during the rainy season in central Mozambique, showing how people are engaged in day-to-day routines and rhythms of movement that are situated and meaningful to them. These movements are temporally and spatially structured by the seasons, but people are also subject to weather-related disruptions and frictions, especially floods, as well as a sense of longer-term environmental change. The paper reveals how people work to weave these multiple dislocations back into the mundane through processes of improvisation in their route-making and via interactions and negotiations with other people. In other words, the routes that people follow in the context of environmental variability and change are continually reproduced through their engagements with their quotidian surroundings. This makes such routes adaptive and contingent in nature on the one hand, but also potentially vulnerable to the cumulative effects of shocks and

stresses on the other hand. In these ways, the paper explores the physical and social processes through which people's everyday journeys unfold and discusses what these flows and interdependencies mean for future research situated in the mobility-environment nexus.

These issues are highly relevant to Mozambique, a country located in southeast Africa alongside the Indian Ocean. Mozambique is one of the poorest countries in the world (UNDP, 2019) and small-scale agriculture is the main way in which rural people earn a living. Mozambique is also highly vulnerable to environmental extremes (Kreft et al., 2016). This is particularly so with regard to the hundreds of thousands of farmers that practice agriculture in the country's floodplains. In recent decades, the effects of large-scale floods in displacing Mozambican farmers living in river valleys have been widely publicised in national and international media (Christie and Hanlon, 2001). However, less attention has been given to the regularised and seasonally structured movements that other farmers undertake in relation to floods, and to the dynamics of such movements in relation to longer-term environmental change. To investigate these activities and processes, a series of walking interviews (Chambers, 1994; Katz, 1986) was undertaken in 2016 and 2018 during which farmers were accompanied as they travelled between their fields in the Revue River valley and their homes positioned a few kilometres away in higher areas of land. The interviews facilitated detailed discussion with farmers about their experiences of traversing a landscape subject to regular but varied flooding events, thus allowing insights into their everyday travels to emerge.

This paper is structured as follows. In sections 2 and 3, a distinction is made between mobility as an 'every day' phenomenon, in the sense of commonly occurring on a daily basis, and mobility in the 'everyday' or 'day-to-day', in the sense of a social practice. In this way, section 2 explores the literature on the daily dimensions of rural livelihoods, whereas section 3 introduces theoretical perspectives from social practice theory and mobilities studies on how journeys are enacted and performed. Section 4 provides further information on the paper's geographical focus and methodology, explaining the environmental variabilities and changes that farmers are experiencing and responding to. In section 5, the empirical data from the case study are presented, demonstrating how farmer movements in the context of land fragmentation and floods are improvised around obstacles and negotiated with other people. The paper concludes in section 6 by discussing the contributions that an everyday agency perspective makes to how the mobility-environment nexus is viewed. It shows that a concern with day-to-day mobility highlights people's everyday capacities to respond to environmental variability and change while also drawing attention to the challenges associated with the gradual accumulation of risk in mobile, rural livelihoods.

2. 'Every day' dimensions of spatially diverse rural livelihoods

Since the early 1970s, researchers have sought to understand temporary and circular forms of movement at the local level. Zelinsky (1971) characterised circulation as "usually short-term, repetitive or cyclic in nature, [with] the lack of any declared intention of a permanent residence" (p.225-6). Circulation "involves repeated returns to a 'home base' after frequent journeys away" (Taylor and Bell, 2012, p.572) and, unlike migration, does not alter the long-term distribution of people (Gould and Prothero, 1975). Much work on circulation has aimed to establish the importance of the phenomenon across a wide variety of cultures and societies vis-à-vis better-known forms of permanent and semi-permanent migration. For this reason, there has been a longstanding concern with "data and techniques for developing summary measures" with a view to making temporary forms of mobility more visible to researchers and policymakers (Taylor and Bell, 2012, p.567).

Although a number of ways of exploring high frequency circulation exist (Chapin, 1968; Mortimore, 1982), the household is the most common unit of analysis. The household is a coordinated 'multipurpose unit' (Bryceson, 1996), one characterised by "production-related moves, which occur for the purpose of making some form of economic contribution at the destination, and consumption-related moves, which are triggered by the need to access some form of amenity, good or service" (Bell and Ward, 2000, p.94). In rural areas, temporary absences from households are common, generated by a range of factors such as customary land use practices, social networks, access to services, and marginal socioeconomic status (Taylor and Bell, 2004). In addition to diversity of movement, households are characterised by diversity of social interactions. Household members are thus continually involved in processes of "renegotiation and redefinition of family, gender, power, and property relations" (Ellis, 1998, p.7). Particularly prominent in this regard is work on the gendered dimensions of water and firewood collection, which is normally undertaken by women (Graham et al., 2016).

Many forms of temporary or circular mobility are associated with rural livelihoods diversification, defined as "the process by which rural families construct a diverse portfolio of activities and social support capabilities in order to survive and to improve their standards of living" (Ellis, 1998, p.1). It has long been recognised that the study of diversification requires a spatially extended understanding of the household, the resulting movements of individuals and things between locations permitting "the integration of distinct places and circumstance" (Chapman and Prothero, 1983, p.599). Particular attention has been given to the spatial diversity of agricultural holdings, or

farm fragmentation, in which a household operates on more than one separate parcel of land. According to Blarel (1992), “it has long been understood that scattering of parcels reduces the risk of total loss from flood, drought, fire, and other perils” (p.235), thus reducing the chance of the entire crop being destroyed (Van Dijk, 2003). There are also downsides to farm fragmentation, however, most notably efficiency losses in the production of agricultural goods (Clay et al., 198). These result from more travel time between parcels of land, more complex access requirements in reaching fields, and a heightened risk of border disputes (Tan et al., 2010).

In addition to these spatial dimensions, there are important temporal elements relating to circular mobility. Seasonality is a particularly prominent effect across a range of geographical contexts, producing large, periodic fluctuations in population distribution over the course of the year (Charles-Edwards et al., 2008). Although detailed surveys of the seasonality of movements in small-scale agricultural communities are uncommon, Srinivasan et al. (2020) report considerable diversity in farmers’ activity levels across the year, “particularly in environments with a strong wet-dry seasonality where people rely on harvest of cereals for their subsistence” (p.3). Patterns of temporary mobility can also shift on a more permanent basis due to alterations in the balance between the persistence of customary practices of population movement on the one hand and external pressures for change on the other hand (Taylor, 1986). For example, Safra de Campos et al. (2017) examined changes in the daily movements of farmers in northeast Brazil resulting from the 2010-2013 drought. They found significant alterations to circular mobility as a result, most commonly regarding changes to the frequency and duration of trips to market, to secure water, to hunt, and to visit friends and relatives.

Taken together, these studies underscore the significance of temporary and circular population movements to people’s livelihoods in rural areas of developing countries. They thus frequently concern the ‘every day’ aspects of people’s lives, in the sense that they commonly occur on a daily basis. Less attention, in contrast, has been paid to processes of travel as an ‘everyday’ phenomenon: as habitual, familiar and regularised (Back, 2015). This is despite the growth in recent years of literature explaining the significance of the everyday to understanding human-environment interactions (Kothari and Arnall, 2019). Moving from an ‘every day’ perspective to a more systematic engagement with the ‘everyday’, it is suggested here, allows us to shift from simply identifying and measuring the spatial and temporal dynamics of mobility, documenting factors such as its nature, magnitude, persistence and effects, towards consideration of the processes of travel that unfold along the way as people move from A to B. Thus, rather than viewing movements as prescribed,

seamless, predetermined, linear or planned, it is possible to account for people's everyday agencies and decision-making processes on route, or how people might be diverted or redirected as their journeys progress. This suggests that a more comprehensive perspective on everyday mobility in the face of environmental shocks and stresses is warranted. The next section aims to develop such a perspective.

3. Bringing the 'everyday' into the mobility-environment nexus

In recent years, various strands of research have contributed to understanding travel as an active, everyday process. One set of perspectives is provided by social practice theory. Although definitions vary, one common understanding of social practices are "routine-driven, everyday activities situated in time and space and shared by groups of people as part of their everyday life" (Verbeek and Mommaas, 2008, p.634). Social practices, then, are embodied, practical forms of knowledge that are grounded in the familiar landscapes of the day-to-day (Brace and Geoghegan, 2010). According to Reckwitz (2002), a social practice "consists of several elements interconnected to one another: forms of bodily activities, forms of mental activities, 'things' and their use, a background knowledge in the form of understanding, knowhow, states of emotion and motivational knowledge" (p.249). When undertaking travel, these elements are assembled and combined by the actors involved in meaningful and creative ways, a process referred to by Schatzi (2001) as 'practice-as-performance'. Performances, therefore, are the points of action when all the different contributing elements are integrated by the actors involved and are slightly different each time (Warde, 2005). Repeat performances by actors ensure that practices persist over time as part of a wider, identifiable entity but that entities are also potentially transformed as "people in myriad situations adapt, improvise and experiment" (Warde, 2005;141).

Further insight into the creative undertaking of everyday travel is provided by the 'new mobilities paradigm' (Sheller and Urry, 2006). This body of work directs attention to how the movement of people, things and ideas is prominent in the world and in our lives. Mobilities scholars emphasise that people's day-to-day movements are rarely seamless, but instead take place subject to different sets of frictions. These are numerous in nature and continually encountered during travel (Binnie et al., 2007). In recent years, scholars have conducted in-depth exploration of the physical and social obstacles commonly navigated on route during everyday travel in urban areas, especially by children (Benwell, 2009; Porter and Hampshire, 2010) older adults (Hjorthol, 2013) and people with physical disabilities (Lindsay and Tyantzi, 2014). In rural areas, mobility is commonly disrupted due to scarce infrastructure (Pirie, 2009) and physical and social isolation (Naybor et al., 2016). For example,

Porter et al. (2015), accompanying school children on their walks to and from school in rural Ghana, Malawi and South Africa, showed how rapidly rising rivers in the rainy season act as barriers to travel routes. Obstacles such as these make it "necessary at times to take a circuitous route, which adds not only additional distance but also additional time to the journey", or it might even be necessary to turn back when water levels are particularly high (p.8).

The studies outlined above show how the frictions encountered during travel dislocate rhythms and cause disruptions, potentially producing multiple stops or blocking routes altogether. However, even though concerning, even life-threatening, such dislocations must also be addressed and woven back into the mundane (Binnie et al., 2007). Mobilities studies aims to demonstrate how this weaving occurs, showing that the skills of improvisation required to accomplish even the most familiar forms of travel can be overlooked. In this way, customary journeys have been reframed as complex undertakings requiring "ongoing reconfiguration" (Middleton, 2011, p.2857) or a 'craft' in which social and material relations are rearranged (Watts, 2008). Commuters, then, should be viewed less as habitualised automatons, as popularly imagined, and more as "artful social agents who skilfully negotiate their passages' multifaceted spatial and temporal features" (Vannini, 2011, p.1031). In this vein, Prno's et al.'s (2011) study of the community of Kugluktuk in Nunavut, Canada, showed that managing everyday disruption through adjusting the mode and timing of travel, the routes taken, and making use of new technologies is an important competency when faced with environmental change.

Whereas social practice theory and mobilities studies emphasise people's capacities to exert everyday agency in the face of ambiguity and change, another body of literature stresses the limitations that people face in negotiating mobility. Limitations arise due to spatial and temporal effects. Spatially, actors can struggle to negotiate the mobility 'labyrinth' due to the political-economic structures within which they are situated (Marcu, 2019). Limitations also arise because practices occur over time, their outcomes seldom clear at the point of action, which generates actor uncertainty in decision making (Bourdieu, 1977). People engaged in travel processes are thus akin to "strategic improvisors", moving "through a maze of constraints and opportunities that they grasp imperfectly through past experience and over time" (Swartz, 1997, p.99). From this perspective, people do not just move through geographical space but navigate their way "according to their social positions and by the shifting constraints and possibilities of the spaces through which they move" (Langevang and Gough, 2009, p.742). Everyday mobility, then, is a phenomenon situated in between agency and structure (Carr, 2008). It is a bounded, tactical form of activity involving

responses to changing locations, circumstances and relationships rather than a system of complete control over route-making.

In sum, the various strands of theory introduced above concerning social practice theory and mobilities studies point toward travel as an active process that is negotiated and improvised in a continuous manner and as conditions change, but also one that is potentially fraught with dangers, disruptions and diversions. Day-to-day travel involves the ongoing ability to react to immediate opportunities and barriers as well as to plan and realise one's trajectory from the present day into the envisaged future. But there are also limits to people's everyday agencies associated with the structures and uncertainties of navigating mobility landscapes, including the actions and social positions of other actors with which those undertaking movement are linked and bound. The aim of the sections that follow is to explore these ideas empirically in the context of central Mozambique.

4. Farming, floods and everyday mobility in central Mozambique

Around the world, floodplains are central to the livelihoods of tens of millions of small-scale farmers (Everard, 2016). In these areas, frequent replenishment of freshwater aquifers and the abundance of rich soils provide ideal growing conditions for crops. However, the occurrence of floods can also present risks to local populations, meaning that a high degree of personal mobility is often essential in order to sustain a livelihood (Cannon and Schipper, 2014). In central Mozambique, much small-scale crop production occurs in or alongside the floodplain of the Revue River. Like many other major rivers in the country, the Revue is associated with two main agro-ecological areas: a low area (*zona baixa*) located close to the river and an elevated high area (*zona alta*) a few kilometres away. Crops in the *zona alta* are typically produced once during the rainy season, which occurs between December and April each year. However, this area is prone to drought due to the predominance of sandy soils. For this reason, many farmers also practice agriculture in the *zona baixa*, as the richer soils allow for an extended growing season of two harvests per year between December and May. In order to maximise agricultural production, many households have several dwellings and fields in both the *zona alta* and *zona baixa*. For farmers, whose primary home is based in the *zona alta*, movement between the high and low areas by foot or bicycle is a regular activity.

As has been documented by Bowen (2000), Mozambique's floodplains have historically been a focus of colonial and postcolonial interventions and controls due to the high levels of natural resources that they provide. This is also the case in the country's central region, which has long been subject to low levels of investment in services and infrastructure due to its association with forms of politics

viewed as antagonistic by the ruling party in the national capital (Carbone, 2005). As a result, small-scale farmers located in this region are particularly vulnerable to a variety of global economic and environmental changes and effects. The best known of these are major flooding disasters that can displace large numbers of farmers out of floodplains and into higher areas of land on a temporary basis (Stal, 2011). These farmers have been the focus of investment efforts, including population resettlement (Arnall, 2014), by development agencies in the past few years. However, most people affected in this manner are those with permanent homes in the low area. Such extreme events are rarely experienced in this way by the hundreds of thousands of farmers based in the high area and moving to and from the *zona baixa* on a regular basis, but who are exposed to environmental variability and change at a range of other scales and temporalities.

As outlined in section 2, there is a strong seasonality effect on farmer's mobilities between high and low areas, with the highest rates of travel occurring during the rainy season and the lowest rates during the dry season. Farmers moving through the Revue River valley in the rainy season regularly encounter weather-related disruptions and frictions on route, particularly those resulting from floods. These can be relatively minor in nature, such as a path becoming blocked, or might occur at a larger scale, when entire areas are inundated. Moreover, there is a sense among many high area-based farmers that, in common with a number of other rivers in the region, the scale, frequency and unpredictability of Revue River valley flooding has increased in the past few decades (Ribeiro and Dolores, 2011). This longer-term sense of change has led to a widespread belief that the river's floodplain is an increasingly insecure environment due to the physical risks that it poses to property and crops. The particular causes of this change are difficult to discern but are most likely due to alterations in the management of the upstream Chicamba Real Dam, as well as regional perturbations brought about by anthropogenic climate change. This, then, suggests a case of 'double-exposure' (O'Brien and Leichenko, 2000), in which local populations are exposed to economic and environmental effects simultaneously. The challenges involved in attributing any particular flooding incident mean that the Revue River valley represents a case study of mobility in the context of climate change, rather than as a direct response (Bouwer, 2018).

To examine these changes and effects, research was undertaken in a single village, *Inacio Bengala*, in 2016 and 2018. This settlement has a population of 240 people arranged into 48 households and is positioned in the *zona alta*, a few kilometres outside of Sussundenga town. Most farmers living in *Inacio Bengala* have one plot of land close to their homes for maize production and several larger fields located in the low area where they produce vegetables, sesame and sorghum. During the rainy

season, many farmers move to and from the low area on a daily basis to once or twice a week in order to plant, care for and harvest their crops, thus frequently encountering floods and associated hazards to different degrees of scale, duration and intensity. During the dry season, however, the frequency of low area travel, mainly to clear fields, can drop to once or twice a month.

From *Inacio Bengala*, individual and small groups of farmers were accompanied during these travels on 17 occasions, making 34 one-way journeys. Walks were undertaken with a translator and varied between thirty minutes and two hours in duration (Figure 1).

Figure 1: A walking interview in progress in the Revue River valley

Caption: The two farmers being interviewed are positioned on the far left of the image and are being followed by the translator. A large waterway is visible to the right of the picture, as is the small, makeshift bridge used for crossing it.

Source: Author's photograph.

Farmers were selected according to a snowballing sampling method, and in consultation with local stakeholders, to ensure that the main institutional divisions present in the community, such as gender and social status, were represented (Atkinson and Flint, 2001). Due to safety restrictions, it was not possible to accompany farmers into the low area at the height of the rainy season. Instead, walks took place as close as possible to the start (November) and end (May) of the flooding period, which allowed the low area environment to be experienced at different times of the year. All research activities were subject to ethical scrutiny at the researcher's home institution and established procedures were followed in Mozambique to gain access to research participants. In this paper, names of people and places have been changed in order to preserve the anonymity of respondents.

While bearing in mind that all observation in research is influenced by the observer's particular embeddedness in the world, the walking interviews aimed to immerse the researcher and translator in farmers' lifeworlds as much as possible (Williams, 2014). During walks, no notetaking was undertaken as the focus was on discussing with farmers in an informal and free-flowing manner what they were doing, thinking and feeling as their journeys progressed, and how these dimensions were affected by floods. This unstructured approach, which encouraged a shared rhythm of movement, allowed for changes in pace, or appearance of features or obstacles, to act as prompts for discussion and provided more space for potentially sensitive issues to emerge (Lee and Ingold, 2006). However, immediately after each trip, detailed notes in a field diary were taken so that important information was not lost. To analyse the data, a combination of inductive and deductive means was employed, with codes being synthesized and then clustered into themes, and interpretive links being made to the existing literature (Lapum et al., 2015). In these ways, the walking interview method led to a richer understanding of farmer movements in relation to floods than would have been possible using sedentary interviews (Evans and Jones, 2011). The narratives that resulted were commonly geographically-structured, farmers' stories "intimately bound up with and shaped by their daily lived experience of the environments around and along their travel routes" (Porter et al., 2015, p.91). The walking interviews provided the research team with first-hand experience of the zones traversed by farmers and enabled direct engagement with the features in the area under study (Kusenbach, 2003). This led to a better appreciation of the obstacles and other people that farmers commonly encountered and engaged with on route.

5. Making ways through floods

Drawing on the various insights provided above, this section demonstrates the processes of everyday agency during people's travels to and from the Revue River valley in the context of environmental variability and change. First, it looks at farmers' mobility practices as an entity, setting out the wider organisational dynamics of high-low area travel and showing how these practices are situated and embodied. Second, in performing these travels, it explores how farmers recurrently encounter and improvise around flooding obstacles, and how their journeys via these obstacles are contingent upon meetings and negotiations with other people. Third, it explores where the limits to these physical and social manoeuvres lie and what the outcomes are for those farmers who encounter such limits.

5.1 The entity of high-low area travel

In the Revue River region, the practice of high-low area travel is an assemblage made up of numerous elements, including pathways, materials, physical ability, knowhow, and ways of feeling about day-to-day accomplishments and setbacks. The paths followed by farmers are gently sloping or flat, but there are also areas where they become uneven and narrow. In addition to propelling their own bodies along these routes, farmers often carry a variety of materials with them, including agricultural equipment and produce, seeds, food and clothing. Women might also carry infants in a harness slung across their backs. Of all these activities, the transportation of produce from low area fields to the *zona alta* for consumption or sale is the most strenuous. Some farmers carry the heavy goods on their heads, shoulders or backs whereas others, who can afford a bicycle, strap the items to a pannier and push. Use of a motorised vehicle, such as a pickup truck, is rare due to the high costs and difficulties involved in manoeuvring along the rough, narrow tracks. For those farmers travelling longer distances between the high and low areas, and during busier periods of the year, it is common to stay in *abrigos*, small huts or shelters made out of wood, mud and reeds, in the *zona baixa* for a few days at a time. As well as providing shelter, *abrigos*, if erected closely to river channels, are a useful base from which to fish.

One important factor in the craft of low area travel is route selection. The Revue River valley is criss-crossed by a complex network of paths, waterways and ponds that weave between areas of farmland, dense undergrowth and boggy marshland. Access routes to different land plots can be circuitous and farmers need a good understanding of where such routes lie and the various points at which they connect with other tracks and lanes. Moreover, the relative homogeneity of the low area landscape, with its shortage of landmarks, means that it is possible for those unfamiliar with its geography to become lost. As people are normally spread out across the low area's large expanse, there is sometimes no one to ask for directions. For this reason, it is common for children to accompany their parents on low area travels until they have developed a certain level of route knowledge. Until a degree of competency in navigating the *zona baixa* is achieved, it is unadvisable to stray too far from known paths. It is particularly important to minimise the risk of inadvertently encountering hippos, which inhabit the low area's waterways and can be dangerous when rearing their young.

According to Wilhoit (2017), day-to-day travel, rather than being a form of 'deadtime', often presents opportunities for a range of activities connected to work, study and leisure. This was observed among commuters moving to and from the Revue River valley, where farmers' journeys

represent valuable opportunities to talk, catch up, and make decisions about families, households and farms. To illustrate, one couple, Maria and Judge, explained that they travel together between the high and low areas once or twice a week. During their walks, which take nearly two hours, they survey the area as they go, looking for signs that the weather is changing and for smoke, which indicates who in the vicinity is clearing land, hunting or burning off crop residues. During the rainy season, it is particularly important to look for signs that floods will take place in the next few days. Common approaches to this include checking water levels in river channels, identifying species of bird that are present and absent in particular areas, and observing the porosity of the soil, the height of the water table, the direction that the wind is travelling in, and the types and configurations of rainclouds.

In undertaking these activities, the sense of routine and familiarity that comes with regularised travel is central to people's experiences of movement to and from the low area. For example, one older farmer, Pedro, who has two small lands plots in the *zona baixa*, explained: "For me, I like this place [the low area]. I know it and I know what to do here. I can grow crops. This is my place." For Pedro, then, the floodplain, despite the risks that it presents, is a place that ultimately provides security and reassurance due to the particular farming-based activities that it enables. However, these are not the only emotions experienced by farmers as they move through the low area. Indeed, farmers often spoke about other feelings that their journeys regularly evoke, such as interest, excitement and curiosity, which are often associated with day-to-day accomplishments, such as safely crossing a river channel or reaching a particular field. There are also occasionally moments of frustration, fear and disappointment associated with various frictions and setbacks as they make their ways. The following sections further explore how these dislocations are experienced and the varying extents to which farmers are able to weave these back into the mundane.

5.2 Travel performances and floods

As explained in section 3, farmers combine elements of social practice via performances in varying and creative ways as flooding-related conditions shift around them. To illustrate, when undertaking route selection, of most concern in *Inacio Bengala* is the occurrence of sudden, localised flooding events caused by the network of waterways in the Revue River valley. Although empty or low in the dry season, these conduits can rapidly fill up during the rainy season, catching farmers unawares as small-scale flash floods cut off known routes. Farmers, therefore, have to know which paths are preferable under which hydrological conditions and select between them accordingly. Especially important is knowledge of where certain channels are located and which waterways are possible to

cross at any particular time in the rainy season. Although many channels are relatively narrow and can be stepped or jumped over, others are wider and must therefore be traversed using a plank of wood laid down as a makeshift bridge. However, stepping along a structure of this kind is not possible for everyone as a degree of agility is required. Other farmers, therefore, sustain their movements through the incorporation of alternative routes into their travel performances. For example, Ana, who owns one hectare of low area land, said, "When the waters are rising, I avoid going near the main [Revue River] channel to reach my farm. Instead, I take a longer route that I know better. It takes more time, but it is safer". Changing the time of day at which travel to and from the low area is undertaken is another recognised tactic in traversing the floodplain. For example, it is common to set off earlier in the afternoon to return to the high area if flooding is anticipated along the route home in order to ensure arrival in the high area before nightfall.

Occasionally, farmers encounter others on the path coming in the opposite direction. These chance meetings provide opportunities to exchange information on travel conditions further along the route and, importantly, which river channels are traversable and which are best avoided. Sometimes farmers are diverted as a result, choosing to take a longer route rather than risk a particular stretch of land. Other times, people are enrolled into assisting others to make channel crossings. As Maria explained, "Sometimes it is not a good idea to try crossing by yourself. You need someone nearby to help you. To hold the ladder or to watch out if anything goes wrong. When it floods there can be more crocodiles in the area so it's good to have someone to keep watch when you are near the water". Farmers therefore rarely travel alone, often preferring to move in small groups of two or three people. For those who can afford it, there is also the option during the rainy season of traversing one of the Revue River's larger tributaries by boat. This service is operated by a local fisher who can take up to two people per crossing. Incorporating this service into the performance of low area travel saves approximately 30 minutes of walking time but costs ten meticais per trip (about 15 US cents), so not everyone is willing to use it. Most farmers, however, incorporate cash into their performance of low area travel by carrying money with them in case the need to use the boat arises.

Negotiation with others is also necessary if travels go wrong as a result of flooding. Farmers' *abrigos* can be quickly erected and disassembled, their temporariness being well suited to the changeable environment of the Revue River valley. Nonetheless, many farmers in *Inacio Bengala* have lost their shelters due to floods or had them damaged at some point. When this happens, it is sometimes necessary to call on the assistance of others. For example, one farmer, Marco, explained that if

someone has their *abrigo* damaged in the low area then it is common for people to band together to gather more materials to quickly undertake repairs to the structure. Other times farmers need to abandon their *abrigo* altogether and seek shelter in someone else's home. To illustrate, a 30-year-old farmer called João explained how, in the previous year, he had woken up in the middle of the night in his *abrigo* to find floodwaters encroaching upon the shelter:

> "I was scared. I grabbed a few belongings and ran for thirty minutes. I have a neighbour who owns a house further up the way and on a higher spot of land. He let me stay over his for the night and then the next day I borrowed his bicycle…He lent it to me in exchange for some maize and I also helped on his farm for a day. But when I returned to my shelter, it was gone."

João's story provides an example of how negotiation with others forms an important part of travel, particularly when disruptions occur. Taken together, the cases presented above illustrate some of the physical and social manoeuvres through which mobility is facilitated in the face of floods.

5.3 The limits of everyday mobility

Farmers in *Inacio Bengala* report that disruptive flooding incidents have become more commonplace in the low area the last ten years. To illustrate, Diego, a thirty-year-old farmer with three hectares located in the *zona baixa* stated, "When I was going down the low area as a child it was safe in the rainy season. But now we feel like we don't know what is going to happen one day to the next". This means that an enhanced level of knowledge is required of which channels can be crossed in different weather and seasonal conditions. For example, one farmer, named Maria, who has been travelling to and from the low area for over twenty years, explained:

> "These days, in the rainy season, you need to know where you are going and how to get there…It can be good to carry a ladder with you in the low area. This is in case the floods come and fill up one of the channels down there. Other people leave planks of wood, tree branches and bits of rope that you can drag across the gap and use to cross. I do this all the time in the rainy season."

Although in this case Maria has been able or willing to adapt through the enrolment of new materials into her travel performance, this is not always the case for other farmers. Indeed, faced with these enhanced requirements in floodplain traversal, some of the older, less agile farmers in *Inacio Bengala* have decided to remain outside of the low area during the rainy season, favouring

agricultural activities in the *zona alta* instead. To illustrate, one sixty-year-old farmer, Inacio, stated that he had recently started renting out his two hectares of low area land to a younger neighbour due to the problems that he had experienced in reaching his plots during the rainy season in the past few years. Instead, Inacio was focussing on breeding cattle in the high area, using the funds from his *zona baixa* fields to construct a cattle pen and hire transport to take the animals to market. However, Inacio explained that he preferred his former life of moving to and from the high area as the income from vegetable production was good and that he sometimes felt "stuck in the high area with nothing to do". This feeling of being 'trapped' in the *zona alta* was commonly reported in *Inacio Bengala* by those farmers that had recently stopped venturing down to the low area in the rainy season.

The challenges that farmers face in undertaking low area travel are exacerbated by a sense among many that, since the increase in the frequency of *zona baixa* flooding, the 'feel' of the Revue River valley has changed. During walking interviews, it was common for farmers to point out new, unfamiliar species of plant that had arrived with the changes in their experience of low area flooding. Farmers also reported that the low area soils have changed; that the ground feels different under their feet as they move between house and farm. This sense, that the low area is somehow less familiar, has lowered the confidence of some to traverse it on a regular basis during the rainy season. For example, João, a 55-year-old farmer, who used to grow sesame in the *zona baixa* but now just farms on two hectares of land in the *zona alta*, stated, "The low area is not the same as it used to be. When down there I used to know the place, but after the increase in flooding that all changed. I don't feel confident that I know what [flooding] is going to happen". For farmers such a João, these changes to their experience of high-low area travel have contributed to their partial exit from the practice. Instead, João is concentrating on maize production in the high area, supplemented by sesame production within the high-low area boundary. This latter zone is relatively safe from flooding but provides more marginal growing conditions and thus less income.

These cases show how limits to everyday mobility in the context of environment variability and change arise in relation to the challenges associated with physical agility and knowledge of local environments. However, as set out in section 3, people can also be restricted by their social positions and how these can shift around them. Some farmers, for example, reported that it is no longer seen as appropriate for single, older women to travel to the low area by themselves as they are viewed as too much of a liability if they are caught out by floods. For example, Ana, who owns a single hectare of low area land, stated, "I don't go down there anymore. The leaders don't

recommend it". In another case, one farmer, called Marco, recounted how his sister, Matilde, is no longer welcome in the low area. This is because, following a spate of damaging floods to a neighbour's field, she was accused of bringing bad luck to the *zona baixa* and told to travel there no longer by a community leader. Marco revealed that, contrary to this order, his sister continues to go to the low area during the dry season to collect firewood and grasses for roofing, but that "she is no longer able to travel freely in the rainy season as there is no one to help her if she gets into trouble". For Marco's sister, low area travel has changed from an everyday activity to something that is no longer possible due to a social context that she is unable to navigate.

6. Conclusion

Although there is growing interest in the operation of human agency in the mobility-environment nexus, this work has mostly been confined to consideration of the 'push' and 'pull' forces at work in international and national-scale migration processes. This paper has shown that an everyday mobilities perspective on this nexus matters for a number of reasons. First, it heightens awareness of an important area of human activity that might otherwise be overlooked. As outlined above, much attention has been given in Mozambique to the movements of farmers affected by major flooding disasters. However, while these events are undoubtedly important, the everyday approach adopted in this paper emphasises the situations of those not directly impacted by large-scale flooding disasters. These latter groups, which are primarily based in the high area, are engaged in regular, circulatory movements to and from floodplains that underpin their livelihoods. Understanding the significance of these movements means not just examining mobilities from the perspective of fixed positions, from origin and destination, but also considering farmers' substantive encounters and engagements taking place on route, as well as the relative immobilities of infrastructures and particular people that make recurrent, regularised movements possible. It means paying attention to the day-to-day dimensions of people's experiences of environmental variability and change, and how people carry such experiences forward via their everyday activities, particularly in the context of a changing climate.

Second, an everyday approach provides new insights into what sustains farmer mobilities, as well as what causes them to change, in the context of environmental variability and change. As explained above, much research to date on the mobility-environment nexus has focused on the calculating and rationalising elements of people's conscious decision-making processes as they access and mobilise different sets of capitals in the face of shocks and stresses. These mental-based dimensions are undoubtedly significant, as demonstrated in the case study by, for example, those farmers who

571 decided to exit low area agriculture altogether as river valley flooding worsened to take up new
572 activities in the high area. However, the case study also shows that the day-to-day, with its emphasis
573 on routine and familiarity, highlights the importance of a corresponding physical domain that is
574 embodied, practical and haptic, grounded in people's everyday connections with specific locations
575 and other people. In the context of floodplain traversal, this domain involves the mingling of physical
576 agility, route knowledge and the feelings that are evoked by navigating spatial and social terrains
577 that mesh security, comfort and familiarity on the one hand with novelty, unpredictability and
578 discovery on the other hand. Mobility, then, must be made to iteratively fit with these dimensions,
579 in addition to the rationalised processes of decision-making at points of origin and destination.
580
581 Third, an everyday mobilities focus emphasises people's day-to-day abilities to respond to
582 environmental variability and change while also highlighting the challenges associated with the
583 cumulative effects of risk in mobile, rural livelihoods. As pointed out in section 1, there has been
584 much interest in the role that mobility plays at a range of temporal and spatial scales in contributing
585 to people's resilience to shocks and stresses (Black et al., 2011). Indeed, as the case study in this
586 paper has illustrated, the flexibilities inherent in everyday movement – potentially involving
587 adjustments to the mode, timing and frequency of travel, the paths followed, and the technologies
588 utilised on route – are resources upon which people can draw as they navigate spatial and social
589 terrains. These ideas accord with a number of studies from developed countries that have examined
590 the adaptive potential of people's everyday activities in the face of climate-related variability and
591 change. For example, Fuller and Bulkerley (2013) examined how families migrating to new, warmer
592 climates aim to achieve thermal comfort via adjustments in their everyday routines and rhythms.
593 And Strengers and Maller (2017) conceptualised adaptation "as a series of everyday and
594 remembered experiences with weather, which are situated within and carried by bodily social
595 practices that contribute to keeping warm and cool" (p. 1432).
596
597 Everyday mobility, then, is a potential source of resilience in the face of environmental shocks and
598 stresses. However, this idea potentially raises concerns around romanticising 'indigenous solutions'
599 to the problems associated with the Anthropocene (Chandler and Reid, 2020). Indeed, as
600 demonstrated in the case study, people's travels are not givens, predetermined in advance, but
601 instead require continual performance, upkeep and investment within the structural confines in
602 which individuals and groups are located. Thus, just as everyday travels are always in the making,
603 they can also be unmade through small-scale, recurrent 'everyday disasters' (Bull-Kamanga et al.,
604 2003). The longer-term risk is that, as climate change progresses, and as floods and other extreme

events become more prominent as a result, the gradual accumulation of obstacles and hindrances in people's day-to-day travels will begin to overwhelm their capacities to deploy their everyday agencies as the limits to adaptation are reached (Adger, 2009). In the case of the Revue River valley, the permanent exit from the performance of high-low area mobility by individual farmers could eventually lead to the collapse of the wider organisational dimensions of the practice-as-entity. This would likely result in widespread immobility in the high area of the Revue River valley as well as the wider region. In these ways, mobility, as well as being a form of resilience, ties "the 'struggles' of everyday life into [the] macro-structural forces and dynamics" of socioeconomic disadvantage present in the region (Crawford and Hutchinson, 2016, p. 1187).

An everyday perspective is also applicable to forms of movement occurring at larger geographical scales in the mobility-environment nexus, such as the processes of rural-to-urban migration and national-level circulation outlined in the introductory section of this paper. Attuning ourselves to the scale of the everyday in the study of these can help bring to the fore the different forms of environmental change that people are exposed to on a day-to-day basis, which forms emerge as significant from the background 'noise' of daily life, and how these affect the push and pull forces between A and B. The approach adopted in this paper also suggests the need to pay greater attention to people's adjustments, manoeuvres and adaptations on route in the study of larger-scale environmental migration and circulation. This is because the physical environment, as well as affecting people's migration decisions at origin and destination, is "the very material substance through which mobility itself is mediated, experienced, and conceptualised" (Baldwin, 2019, p. 290), as the Mozambican case study has shown. Such an orientation towards practice on route would, in turn, likely require an expansion of the qualitative methods used in the study of environment-mobility nexus, such as the adoption of new mobile approaches to data collection (Novoa, 2015). To date, researchers have largely sought to elicit the perceptions, understandings and opinions of different people who are frequently 'on the move'. As this paper shows, however, there is greater scope to observe what people do, in addition to what they say, or even what they say they do, when undertaking environmental migration.

References

Adger, W.N. (2009) Are there social limits to adaptation to climate change? Climatic Change 93, 335–354.

Arnall, A. (2014) A climate of control: flooding, displacement and planned resettlement in the Lower Zambezi River valley, Mozambique. Geographical Journal 180, 141-150.

Atkinson, R., Flint, J. (2001) Accessing hidden and hard-to-reach populations: snowball research strategies. Social Research Update 33, 1-4.

641 Back, L. (2015) Why everyday life matters: class, community and making life livable. Sociology 49, 1-
642 17.
643 Baldwin, A. (2019) From climate migration to anthropocene mobilities: shifting the debate.
644 Mobilities 14, 289-297.
645 Bell, M., Ward, G. (2000) Comparing temporary mobiltiy with permanent migration. Tourism
646 Geographies 2, 87-107.
647 Benwell, M.C. (2009) Challenging minority world privilege: children's outdoor mobilities in
648 postapartheid South Africa. Mobilities 4, 77-101.
649 Biermann, F., Boas, I. (2010) Preparing for a warmer world: towards a global governance system to
650 protect climate refugees. Global Environmental Politics 10, 60-88.
651 Binnie, J., Edensor, T., Holloway, J., Millington, S., Young, C. (2007) Mudane mobilities, banal travels.
652 Social & Cultural Geography 8, 165-174.
653 Black, R., Arnell, N.W., Adger, W.N., Thomas, D., Geddes, A. (2013) Migration, immobility and
654 displacement outcomes following extreme events. Environment Science and Policy 27, 32-43.
655 Blarel, B., Hazell, P., Place, F., Quiggin, J. (1992) The economics of farm fragmentation: evidence
656 from Ghana and Rwanda. The World Bank Economic Review 6, 233-254.
657 Bourdieu, P. (1977) Outline of a Theory of Practice. Cambridge University Press, Cambridge.
658 Bouwer, K. (2018) The unsexy future of climate change litigation. Journal of Environmental Law 30,
659 483-506.
660 Bowen, M.L. (2000) The State Against the Peasantry: Rural Struggles in Colonial and Postcolonial
661 Mozambique. The University Press of Virginia, Richmond.
662 Brace, C., Geoghegan, H. (2010) Human geographies of climate: landscape, temporality and lay
663 knowledges. Progress in Human Geography 35, 284-302.
664 Bryceson, D.F. (1996) Deagrarianization and rural employment in sub-Saharan Africa: a sectoral
665 perspective. World Development 24, 97-111.
666 Cannon, T., Schipper, L., (2014) World Disasters Report: Focus on Culture and Risk. International
667 Federation of Red Cross and Red Crescent Societies, Geneva.
668 Carbone, G.M. (2005) Continuidade-na-renovacao? Ten years of multiparty politics in Mozambique:
669 roots, devolution and stabilisation of the Frelimo-Renamo party system. Journal of Modern
670 African Studies 43, 417-442.
671 Carr, E.R. (2008) Between structure and agency: livelihoods and adaptation in Ghana's Central
672 Region. Global Environmental Change 18, 689-699.
673 Casas-Cortes, M., Cobarrubias, S., Pickles, J. (2015) Riding routes and itinerant borders: autonomy of
674 migration and border externalization. Antipode 47, 894-914.
675 Chambers, R. (1994) The origins and practice of participatory rural appraisal. World Development 22,
676 953-969.
677 Chandler, D., Reid, J. (2020) Becoming Indigenous: the 'speculative turn' in anthropology and the
678 (re)colonisation of indigeneity. Postcolonial Studies 23, 485-504.
679 Chapin, F.S. (1968) Activity systems and urban structure: a working schema. Journal of the American
680 Institute of Planners 34, 11-18.
681 Chapman, M., Prothero, R.M. (1983) Themes on circulation in the Third World. The International
682 Migration Review 17, 597-632.
683 Charles-Edwards, E., Bell, M., Brown, D. (2008) Where people move and when: temporary
684 population mobility in Australia. People and Place 16, 21-20.
685 Christie, F., Hanlon, J. (2001) Mozambique and the great flood of 2000. James Curry and
686 Bloomington, Oxford.
687 Clay, D., Reardon, T., Kangasniemi, J. (198) Sustainable intensification in the highland tropics:
688 Rwandan farmers' investments in land conservation and soil fertility. Economic Development and
689 Cultural Change 46, 351-377.
690 Crawford, G., Hutchinson, S. (2016) Mapping the contours of 'everyday security': time, space and
691 emotion. British Journal of Criminology 56, 1184-1202.

692 Ellis, F. (1998) Household strategies and rural livelihood diversification. The Journal of Development
693 Studies 35, 1-38.
694 Evans, J., Jones, P. (2011) The walking interview: methodology, mobility and place. Applied
695 Geography 31, 849-858.
696 Everard, M., (2016) Flood Recession Agriculture: Case Studies, in: Finlayson, C.M., Everard, M.,
697 Irvine, K., McInnes, R.J., Middleton, B.A., van Dam, A.A., Davidson, N.C. (Eds.), The Wetland Book.
698 Springer, New York.
699 Foresight Project, (2011) Final Project Report. The Government Office for Science, London.
700 Fuller, S., Bulkeley, H. (2013) Changing countries, changing climates: achieving thermal comfort
701 through adaptation in everyday activities. Area 45, 63-69.
702 Gould, W.T.S., Prothero, R.M., (1975) Space and Time in African Population Mobility, in: Kosinski,
703 L.A., Prothero, R.M. (Eds.), People on the Move: Studies on Internal Migration. Methuen, London,
704 pp. 39-49.
705 Graham, J.P., Hirai, M., Kim, S. (2016) An analysis of water collection labor among women and
706 children in 24 sub-Saharan african countries. PLOS ONE 11, 1-14.
707 Hjorthol, R. (2013) Winter weather - an obstacle to older people's activities? Journal of Transport
708 Geography 28, 186-191.
709 Katz, C. (1986) Children and the environment: work, play and learning in rural Sudan. Children's
710 Environments Quarterly 3, 43-51.
711 Kothari, U., Arnall, A. (2019) Everyday life and environmental change. The Geographical Journal 185,
712 130-141.
713 Kusenbach, M. (2003) Street phenomenology: the go-along as ethnographic research tool.
714 Ethnography 4, 455-485.
715 Langevang, T., Gough, K.V. (2009) Surviving through movement: the mobility of urban youth in
716 Ghana. Social and Cultural Geography 10, 741-756.
717 Lapum, J.L., Liu, L., Hume, S., Wang, S., Nguyen, M., Harding, B., Church, K., Cohen, G., Yau, T.M.
718 (2015) Pictorial narrative mapping as a qualitative analytic technique. International Journal of
719 Qualitative Methods 14, 1-15.
720 Lee, J., Ingold, T., (2006) Fieldwork on Foot: Perceiving, Routing, Socializing, in: Coleman, S., Collins,
721 P. (Eds.), Locating the Field: Space, Place and Context in Anthropology. Berg, Oxford.
722 Lindsay, S., Tyantzi, N. (2014) Weather, disability, vulnerability and resilience: exploring how youth
723 with physical disabilities experience winter. Disability and Rehabilitation 36, 2195-2204.
724 Marcu, S. (2019) The limits to mobility: precarious work experiences among Eastern Europeans in
725 Spain. Economy and Space A 51, 913–930.
726 McLeman, R.A., Hunter, L.M. (2010) Migration in the context of vulnerability and adaptation to
727 climate change: insights from analogues. WIREs Climate Change 1, 450-461.
728 Middleton, J. (2011) "I'm on autopilot, I just follow the route": exploring the habits, routines, and
729 decision-making processes of everyday urban mobilities. Environment and Planning A: Economy
730 and Space 43, 2857-2877.
731 Mortimore, M., (1982) Framework for Population Mobility: The Perception of Opportunities in
732 Nigeria, in: Clarke, J.I., Kosinski, L.A. (Eds.), Redistribution of Population in Africa. Heinemann,
733 London, pp. 50-57.
734 Naybor, D., Poon, J., Casas, I. (2016) Mobility disadvantage and livelihood opportunities of
735 marginalised widowed women in rural Uganda. Annals of the Association of American
736 Geographers 106, 404-412.
737 Novoa, A. (2015) Mobile ethnography: emergence, techniques and its importance to geography.
738 Human Geographies – Journal of Studies and Research in Human Geography 9, 97-107.
739 O'Brien, K., Leichenko, R.M. (2000) Double exposure: assessing the impacts of climate change within
740 the context of economic globalisation. Global Environmental Change 10, 221-232.

741 Ober, K., Sakdapolrak, P. (2017) How do social practices shape polocy? Analysing the field of
742 'migration as adaptation' with Bourdieu's 'Theory of Practice'. The Geographical Journal 182, 359-
743 369.
744 Piguet, E. (2013) From "primitive migration" to "climate refugees": the curious fate of the natural
745 environment in migration studies. Annals of the Association of American Geographers 103, 148-
746 162.
747 Pirie, G.H. (2009) Virtuous mobility: moralising vs measuring geographical mobility in Africa. Afrika
748 Focus 22, 21-35.
749 Porter, G., Hampshire, K. (2010) 'Youthscapes' and escapes in rural Africa: Education, mobiltiy and
750 livelihood trajectories for young people in Eastern Cape, South Africa. Journal of International
751 Development 22, 1090-1101.
752 Porter, G., Hampshire, K., Abane, A., Munthali, A., Robson, E., Mashiri, M., Maponya, G. (2015)
753 Where dogs, ghosts and lions roam: learning from mobile ethnographies on the journey from
754 school. Children's Geographies 8, 91-105.
755 Prno, J., Bradshaw, B., Wandel, J., Pearce, T., Smit, B., Tozer, L. (2011) Community vulnerability to
756 climate change in the context of other exposure-sensitivities in Kugluktuk, Nunavut. Polar
757 Research 30, 7363.
758 Ransan-Cooper, H. (2016) The role of human agency in environmental change and mobility: a case
759 study of environmental migration in Southeast Philippines. Environmental Sociology 2, 132-143.
760 Reckwitz, A. (2002) Toward a theory of social practices: a development in culturalist theorizing.
761 European Journal of Social Theory 5, 243-263.
762 Ribeiro, D., Dolores, S., (2011) River Basin Management in the Middle and Lower Zambezi in Critical
763 Periods. Justica Ambiental, Maputo.
764 Safra de Campos, R., Bell, M., Charles-Edwards, E. (2017) Collecting and analysing data on climate-
765 related local mobility: the MISTIC toolkit. Population, Space and Place 23, e2037.
766 Sakdapolrak, P., Naruchaikusol, S., Ober, K., Peth, S., Porst, L., Rockenbauch, T., Tolo, V. (2016)
767 Migration in a changing climate. Towards a translocal social resilience approach. Journal of the
768 Geographical Society of Berlin 147, 81-94.
769 Schapendonk, J., Steel, G. (2014) Following migrant trajectories: the im/mobility of sub-Saharan
770 Africans en route to the European Union. Annals of the Association of American Geographers
771 104, 262-270.
772 Schatzki, T.R. (2001) The Practice Turn in Contemporary Theory. Routledge, London and New York.
773 Sheller, M., Urry, J. (2006) The new mobilities paradigm. Environment and Planning A: Economy and
774 Space 38, 207-226.
775 Srinivasan, C.S., Zanello, G., Nkegbe, P., Cherukuri, R., Picchioni, F., Gowdru, N., Webb, P. (2020)
776 Drudgery reduction, physical activity and energy requirements in rural livelihoods. Economics and
777 Human Biology 37, 1-17.
778 Stal, M. (2011) Flooding and relocation: the Zambezi River Valley in Mozambique. International
779 Migration 49, 125-145.
780 Strengers, Y., Maller, C. (2017) Adapting to "extreme" weather: mobile practice memories of keeping
781 warm and cool as a climate change adaptation strategy. Environment and PLanning A 49, 1432-
782 1450.
783 Suckall, N., Fraser, E., Forster, P., Mkwambisi, D. (2015) Using a migration systems approach to
784 understand the link between climate change and urbanisation in Malawi. Applied Geography 63,
785 244-252.
786 Swartz, D. (1997) Culture and Power: The Sociology of Pierre Bourdieu. The University of Chicago
787 Press, Chicago and London.
788 Tan, S., Heerinkb, N., Kuyvenhovenb, A., Qu, F. (2010) Impact of land fragmentation on rice
789 producers' technical efficiency in South-East China. NJAS -Wageningen Journal of Life Sciences 57,
790 117-123.
791 Taylor, J. (1986) Measuring circulation in Botswana. Area 18, 203-208.

792 Taylor, J., Bell, M., (2004) Continuity and Change in Indigenous Australian Population Mobility, in: J,
793 T., M, B. (Eds.), Mobility and Indigenous Peoples in Australasia and North America. Routledge,
794 London and New York, pp. 13-44.
795 Taylor, J., Bell, M. (2012) Towards comparative measures of circulation: insights from Indigenous
796 Australia. Population, Space and Place 18, 567-578.
797 UNDP (2019) World Development Report. United Nations Development Programme, New York.
798 Van Dijk, T. (2003) Scenarios of Central European land fragmentation. Land Use Policy 20, 149-158.
799 Vannini, P. (2011) The teche of making a ferry: a non-representational approach to passengers'
800 gathering taskscapes. Journal of Transport Geography 19, 1031-1036.
801 Verbeek, D., Mommaas, H. (2008) Transitions to sustainable tourism mobility: the social practice
802 approach. Journal of Sustainable Tourism 16, 629-644.
803 Watts, L. (2008) The art and craft of train travel. Social & Cultural Geography 9, 711-726.
804 Wilhoit, E.D. (2017) 'My drive is my sacred time': commuting as routine liminality. Culture and
805 Organization 23, 263-276.
806 Williams, D.R. (2014) Making sense of 'place': reflections on pluralism and positionality in place
807 research. Landscape and Urban Planning 131, 74-82.
808 Zelinsky, W. (1971) The hypothesis of the mobility transition. The Geographical Review 61, 219–349.
809 Zetter, R., Morrissey, J., (2014) The Environment-Mobility Nexus: Reconceptualizing the Links
810 between Environmental Stress, (Im)mobility, and Power, in: Fiddian-Qasmiyeh, E., Loescher, G.,
811 Long, K., Sigona, N. (Eds.), The Oxford Handbook of Refugee and Forced Migration Studies. Oxford
812 University Press, Oxford.

813