Critical review

Environmental change and human mobility in the digital age

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ABSTRACT

This intervention argues for the need of research to examine how *information and communication technologies* (ICTs) shape human mobility in the context of environmental change. ICTs are becoming increasingly central in the daily lives of migrants and communities at risk of environmental events. There is a lack of research, however, exploring how access to and the use of ICTs influences practices and dynamics of human mobility in the face of environmental change. I will outline this research gap and highlight areas for further research. I will do so by bringing together literature from human geography and environmental studies on migration and social resilience, and from sociology on the influence of our mobile and network society. In conceptualizing the role that ICTs play, I argue that the use of ICTs shapes human mobility *through* its impact on social network activities and relations. In this manner, this intervention builds on a growing body of research conceptualizing social networks – and related dynamics of power, access, in/exclusion – as shaping migration trajectories and abilities to cope with environmental events.

1. Introduction

The negative consequences of environmental change impact on human mobility. Environmental events can put communities at risk through a loss of livelihood, which may compel them to move. The academic and societal debate on this subject is often characterized by a somewhat 'alarmist' tone, assuming that global warming will lead to a mass exodus from the global South to the global North (see Bettini, 2013). In that context, Norman Myers (2002) has warned of 200 million 'environmental refugees' by 2050 – a number which later has been critiqued for being mere speculative (Gemenne, 2011). In recent years, scholarly work has debunked some of the alarmist 'myths' (Bettini, 2017: 34). An environmental event does not have a clear-cut multiplying effect leading to mass human migration from point A to B. Instead, human responses to environmental change vary, informed by existing socio-economic vulnerabilities (Hannam et al., 2006; Black et al., 2013). Affected groups do not necessarily travel far in the context of environmental risk, but try to return home or move to nearby villages or cities (Foresight, 2011). More importantly, not everyone will move in the face of environmental change. Some may not have the means to move away at all and be forced to stay in places that are at risk (Foresight, 2011; Black et al., 2013), or some may not want to leave due to attachment of place (Adams, 2016). Last but not least, migration is a consequence of a multi-causal interplay of drivers (Black et al., 2011), making decisions to migrate and migration trajectories context-specific.

This intervention seeks to highlight a dimension that has thus far been overlooked in the emerging research field on human mobility and environmental change: *the digital age*. Today's social life is heavily influenced by information and communication technologies (ICTs) (Urry, 2007). ICTs – such as the usage of mobile phones with features ranging from text messaging to Google Maps – allow migrants to rapidly exchange information and to access social networks while being on the move (Dekker and Engbersen, 2014). ICTs are becoming a basic need for migrants to sustain their journeys (Dekker and Engbersen, 2014; Hannides et al., 2016; UNHCR, 2016). There is, however, little research that has examined its role in environmentally-related human mobility. An important exception is a recent analysis of anonymized phone data to detect patterns of movement prior, during and after Cyclone Mahasen that hit Bangladesh in May 2013 (Lu et al., 2016).

Qualitative research directions remain underexplored, however: How does ICT-enabled information exchange shape how migrants respond to environmental events in terms of their practices of leaving, travelling, dwelling in (temporary) destinations, and, if the situation allows, in terms of return to traditional habitats? How do ICTs assist these migrants in making quick and informed decisions about whether, when and where to move? How does access to ICTs help to facilitate information exchange between those on the move and those who stay in places of origin? How do ICTs shape adaptive or transformative capacities of those who want to stay or cannot leave? Who are the losers and winners in terms of in- and exclusion from the enabled information exchange?

This intervention will highlight this research gap in further detail. I

outline research directions in need of further inquiry through synthesizing literature from human geography and environmental studies on migration and social resilience in the context of environmental change, and literature from sociology on the influence of our mobile and network society. Section 2 will highlight key research inquiries in relation to practices and dynamics of migration; Section 3 will do so in relation to questions of immobility and the prevention of forced migration; Section 4 concludes.

2. Connecting whilst on the move

We are living in an increasingly networked world where migrants, family, friends and acquaintances connect across far distances, allowing for a diversity of resources and information to flow back and forth shaping translocal dynamics (Young et al., 2006; Urry, 2007; Castells, 2009; Greiner and Sakdapolrak, 2013). Migration has always – also before the digital age – been a practice of networking. Networks are vital for migrants to decide whether to move, to select destinations, and to settle down (Boyd, 1989). The digital age can arguably further add to the dynamism of migrant's social networks (Dekker and Engbersen, 2014). This argument is informed by Granovetter's (1973) hypothesis of the 'strength of weak ties', assuming that weak connections are more vital for information diffusion and innovation than close contacts. This would mean that if migrants stick to their close circles of family and friends, the chances of hearing new information about for example a faster migration route are much slimmer than when connecting to a wider network of acquaintances – such as fellow migrants of diverse social status, employment industry, brokers, a friend of a friend and NGOs (de Haas, 2010). Digital technology allows for weak ties to thrive further as migrants can connect from various places while not being proximate to one another (Urry, 2007; Dekker and Engbersen, 2014). For example, recent findings in migration literature suggest that Skype, Facebook and internet-usage by migrants helps them to maintain strong ties with family and friends, to revive old contacts, if deemed useful, and to expand strong and weak ties throughout the journey and in new destinations (Oiarzabal and Reips, 2012; Dekker and Engbersen, 2014). This, according to Dekker and Engbersen (2014), lowers the threshold for migration by better facilitating it.

At the same time, migrants and refugees are vulnerable groups with limited means to afford a phone or may reside in areas with limited network connectivity (UNHCR, 2016). Whilst access to a mobile phone and the internet is increasingly seen as a basic need, in 2016 still 29% of the refugee population did not own a phone and 20% of the rural refugee population was residing in areas without mobile network coverage (UNHCR, 2016). As information exchange about aid and support is increasingly relying on ICTs – also humanitarian agencies are trying to gear their attention more to these means – the ICT have-nots risk being excluded from the information flows, leaving them more vulnerable (Madianou, 2015; UNHCR, 2016).

Similarly, those moving in the context of environmental change are often also marginalized groups living in vulnerable places receiving little protection from the government or other agencies. Also for this group access to ICTs is limited, though growing. For example, in Bangladesh – a country highly vulnerable to environmental change and experiencing displacement – mobile cellular phone subscriptions have risen from 1 to 83 per 100 people between 2002 and 2015 (World Bank, 2016). Access to phones with internet function is much more limited, however, and network access in rural areas fluctuates.

But there are also clear differences between the situation of an environmental migrant and that of a political refugee (Biermann and Boas, 2010). In particular, in contrast to political refugees, environmental migrants often remain within their home country – they for instance move to a nearby city to find alternative work or are only temporarily displaced or move short distances (Foresight, 2011). This is because the worst affected often do not have the means to move far away, or because environmental impacts on livelihoods are mitigated by already ongoing strategies of seasonal labor migration.

On the one hand, migrants remaining closer to places of origin may be less inclined to search for new ties, as it is possible to rely on existing ones, such as connections with extended family members. For example, in Bangladesh people often move to places where other family members have already settled and thus often rely on strong ties in setting up their journey and in settling down.[1] On the other hand, however, in emerging economies and developing countries, often severely affected by environmental change, the introduction of the mobile phone has led to an extreme boost of connectivity – as landlines were often nonexistent or non-functional (Shrum et al., 2010). It has enabled migrants to be more independent in setting up small businesses, to do mobile banking using sim cards, and to more easily connect between the urban centers and their home town (Rutten and Mwangi, 2012). Such a changing context may very well mean a transformation in the way social networks function by making weak ties more important or by enhancing the number of strong ties – possibly affecting the dynamics of migration *within* countries.

Those migrating in the context of environmental change are furthermore not necessarily trying to escape their government and thus able to move relatively freely in their country, although structural vulnerabilities or other insecurities can of course restrict mobility. In that setting, ICTs can facilitate a dynamic flow of exchanges between those that left and stayed. For instance, those who moved to another place can assist others in joining later or in supporting them at home by connecting them to new weak or strong ties they made along the way. This happened in the past as well (Boyd, 1989), but such connections can be made quicker, allowing social networks to expand or change more easily and for information to spread faster (Urry, 2007; Rutten and Mwangi, 2012; Dekker and Engbersen, 2014). Interesting is to examine how this connectivity (or the lack thereof) (re)shapes translocal ties and dynamics of social resilience and environmental migration, including who benefits and loses in these networks of exchange.

3. Staying in places of origin

The scholarly debate about environmental change and human mobility is not just about those who move, but also about the ability to stay or the risk of being forced to stay in vulnerable locations (Black et al., 2013). The latter has been termed 'trapped populations' (Foresight, 2011), referring to those lacking the resources and connections to move elsewhere. Does ICT-enabled information exchange help in lessening the chance of having to migrate and in protecting those that stay? Or does it create another layer of inequality making some more vulnerable than others – for instance by leaving some 'trapped' in dangerous situations because the information flow did not reach the ICT-poor?

I focus here, briefly, on the informal lines of ICT-enabled information-exchange and how these may or may not help to prevent immobility or forced migration. An example is the increasing use of mobile phones and the internet in Bangladesh to prepare for and respond to a cyclone. The youth and young adults in Bangladesh – especially middle class, but gradually also poorer groups – increasingly use Facebook (Messenger) or WhatsApp to connect to a wide group of friends and more sources of information. Some use these media to ask about each other's safety, to share up-to-date information, and to offer help following a cyclone by providing a place to stay or help to rebuild a house.[2] This in contrast to the elderly and still many of the poor who rely mostly on phones without internet and on family ties for their information and support. Access to online platforms (e.g. Facebook) may involve a wider network of acquaintances – weak ties – in disaster

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[1] Based on interviews conducted in October 2016 in the informal settlement Bastuhara, Chittagong.

[2] Based on interviews in October 2016 in Kutubdia island (Bangladesh), which was affected by cyclone Roanu in May 2016.