Theorizing (im)mobility in the face of environmental change

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Abstract
The study of the relationship between environmental change and human mobility has largely focused on the movement of people as it is driven by environmental change with little regard for those who stay when faced with many of the same adverse conditions. An emerging body of work recognizes and seeks to understand the lack of migration, or immobility, in the contexts of environmental and climatic change, primarily through the notion of “trapped populations.” Theoretically, however, our understandings of immobility in relation to environmental change are underdeveloped and oversimplified, and do not do justice to the diversity, dynamism, or unevenness of (im)mobilities. In order to advance knowledge, this paper connects knowledge from environmental migration studies to immobility in broader migration research. Although there is no silver theoretical bullet, it explores the strengths and weaknesses of three frameworks in explaining and understanding (im)mobility decision-making, patterns, and consequences: (1) the New Economics of Labour Migration; (2) the aspirations-(cap)abilities framework; and (3) the mobilities paradigm. In order to break away from both sedentary and mobility biases, it asserts that scholars should theorize and analyze the entire mobility spectrum in the face of environmental change, rather than considering immobility as a separate outcome.

Keywords Immobility · Trapped populations · Migration · Climate change · Environmental migration · Migration theory

Introduction
The study of the relationship between environmental change and human mobility, rather unsurprisingly, focuses on the movement of people as it is driven by and impacts natural environments. Yet, the proportion of people who leave is relatively low compared to those who stay when faced with many of the same adverse conditions. One explanation for the general disregard for immobility comes from an underlying sedentary bias that frames modern society and its norms (Castles 2011; Jónsson 2011). There is a synchronic and westernized tendency to think that if given a choice, most people will choose to remain in place, feeding the idea that “environmental migration” is a problem to be solved.1

An emerging body of work recognizes and seeks to better explain the absence of migration in the face of environmental change. Until the past decade, few studies had empirically investigated immobility as their primary subject. This empirical gap is narrowing, with more scholars dedicating their efforts to understanding people who do not move when faced with adverse consequences of environmental change, with migration viewed as a normal, logical, and even adaptive response to environmental degradation (Murphy 2014; Adams 2016; Zickgraf et al. 2016; Noy 2017; Beine et al. 2019; Blondin 2020; Mallick et al. 2020; Wesselbaum 2020).

Nonetheless, knowledge of immobility in relation to environmental change remains underdeveloped. Environmental migration scholars continually frame movement as occurring along a spectrum from more voluntary, preemptive forms of migration and more forced forms (Ionesco et al. 2016). Immobility, however, is typically framed in the binary—either one chooses to stay or is forced to do

1 A sedentary bias fuels governance aimed at stopping migration through the mitigation of greenhouse gas emissions, funding for adaptation efforts and development in communities of origin rather than in destinations, and restrictive migration policies.
so—which is far too simplistic to capture real-world complexity (Mallick and Schanze 2020). The former occurs for a variety of reasons, not least of which because people are attached to the places and societies in which they live (Scannell and Gifford 2013; Adams 2016). The latter has been studied under the heading of “trapped populations,” commonly understood as people who have a need to move, a desire to move, but lack the capacity to do so (Black and Collyer 2014a). To date, few studies explicitly examine the spatial or temporal dynamics of immobility or the consequences of (im)mobility decision-making for non-migrants.

This article seeks to contribute to a conceptual reflection on how we think about immobility and environmental change. In order to do so, it connects scholarship on immobility in environmental contexts to scholarship in broader migration research. Despite the wealth of knowledge in each field and their overlaps, theoretical cross-fertilization is limited (Hunter et al. 2015; Millock 2015; Lilleør and Van den Broeck 2011). To this end, this contribution traces the emergence of immobility within environmental migration studies, and implicit and explicit conceptual debates. It then links the study of environmental contexts to theoretical frameworks including the New Economics of Labour Migration (NELM), which is often used to explain environmental migration but is rarely explicitly used to explain who stays and why; the aspirations-(cap)abilities framework, which has dominated explanations for why people do not migrate in broader migration studies even when they want to; and lastly, it turns to the mobilities paradigm to explore (im)mobility dynamics beyond initial decision-making.

The aims of this paper are threefold: (1) to argue that immobility be considered alongside migration and displacement as part of human mobility, not separate from it; (2) to identify strengths of emerging scholarship while also identifying gaps; (3) to explore the theoretical foundations upon which our understandings of immobility in contexts of environmental change are built. Lastly, it advocates for theoretical pluralism to assist the scientific community to better explain the entire mobility spectrum in the face of environmental change.

In the mounting empirical evidence, people who do not migrate have alternatively described as immobile, non-migrants, sedentary, stuck, left behind, or trapped (Jónsson 2011). However, few scholars clearly define or distinguish between these terms, their meanings, and boundaries.

Without terminological consensus in the field or any clear definitions, in what follows, immobility is an umbrella term that includes various sub-types (including non-migration). (Im)mobility or rather (im)mobilities entail all forms of immobility and mobility unified together in a single spectrum.

### Tracing immobility in scholarship

#### Evolution of the field

Society—on a global scale—tends to bifurcate between those who move and those who stay, migrants and non-migrants. For decades, scientific research on climatic or environmental change has similarly divided the study of movement in these same terms. A sedentary bias, in which we see migration as something problematic, underpinned many early reports touching upon the migratory impacts of climate change (El-Hinnawi 1985; Myers 1993). Immobility in the face of climatic and environmental changes, it was long assumed, needed no investigation whereas migration signalled crisis. Any number of articles has reviewed debates within early narratives on the impacts of climate change on migration and displacement (Gemene 2011; Bettini 2013), but what matters here is that these narratives neglected the possibility that we may be facing a world in which fewer people are able to move as a result of climate change, and that immobility, too, presents its own challenges.

The elevation of immobility as a topic of study (and policy intervention) in environmental contexts was a by-product of the growing popularity of the “migration-as-adaptation” discourse, which traded negative depictions of migration in the face of climate change for more positive readings (McLeman and Smit 2006; Tacoli 2009; Barnett and Webber 2010). The pairing of benefits of migration with the perils of immobility can largely be credited to the 2011 Foresight report. It promoted the idea that not all migration was a last resort strategy and that migration could, and did, act as one adaptation strategy among others. It also highlighted the inverse situation—the danger of people becoming “trapped” in environmentally fragile areas unable to escape because climate change depletes the very resources and capital needed to migrate. One of its key findings was that, contrary to the dominant logic, people who do not move may be an equal or greater policy concern prone to displacement and humanitarian emergencies (Black et al. 2011; Foresight 2011). The report, and subsequent publications by some of its lead authors, ignited momentum on the study of why people do not move when confronted with environmental crisis (Foresight 2011; Black et al. 2013; Black and Collyer 2014a).

At the time of its publication, scant empirical work focused specifically on trapped populations or on non-migrants generally. However, in the years since, research has steadily grown on immobility in environmental contexts primarily around immobility decision-making (Murphy 2014; Adams 2016; Zickgraf et al. 2016; Noy 2017; Beine et al. 2019; Blondin 2020; Mallick et al. 2020);
Wesselbaum 2020). Non-academic actors, too, are joining in the recognition of immobility or at least that it presents a future risk of climate change. The 2018 World Bank Groundswell report stated, “Vulnerable people have the fewest opportunities to adapt locally or to move away from risk and, when moving, often do so as a last resort. Others, even more vulnerable, will be unable to move, trapped in increasingly unviable areas” (Rigaud et al. 2018, p. xxi).

**Conceptual approaches to immobility**

Scientific literature on immobility in environmental contexts—like that on environmental migration—skews towards decision-making—what drives someone to stay or impedes them from going—rather than on spatio-temporal dynamics, i.e., the duration of immobility, its dynamism, or its geographical boundaries. Scholarship on environmental immobility decision-making conceptualizes and categorizes immobility along lines of agency: distinguishing between the people who stay (or stop)2 by choice or and those who stay by force (Zickgraf forthcoming). Research has predominantly concentrated on those forced to remain—by a lack of migration opportunities, restrictive policies, environmental hazards, or their own limited assets—and their heightened vulnerability (Blondin 2020). Whereas migration and refugee studies generally refer to this as “involuntary immobility,” “trapped populations” has gained a strong foothold in various empirical and conceptual studies in environmental contexts3 and grey literature. The shift to trapped populations was intentional: Black and Collyer (2014b) prefer the phrase trapped populations rather than involuntary immobility because it is emotive, urging a response.

In order to explain why people become trapped, literature, at least initially, took a predominantly economic rationale to identify barriers to population movement. People become geographically “stuck” because they have lost their assets, fell into poverty traps, or never had financial capital to begin with (Ayeb-Karlsson et al. 2018; Afifi et al. 2015; Penning-Rossell et al. 2013). In Zambia, Nawrotzki and DeWaard found the association between adverse climate conditions and migration was positive only for wealthy migrant-sending districts (Nawrotzki and DeWaard 2018). They noted that trapped populations are highly vulnerable because they are “too poor to migrate given deep and persistent poverty, the financial costs of migrating, and the erosion of already fragile economic livelihoods under climate change” (Nawrotzki and DeWaard 2018, p. 533).

Scholarship is increasingly considering how multiple barriers to movement intersect in disaster contexts especially among marginalized groups. Thiede and Brown (2013) found that black and low-education respondents were least likely to evacuate prior to Hurricane Katrina, and among non-evacuees, most likely to have been unable to evacuate due to lack of transportation, money, place to go, job requirements, and/or some other perceived constraint. Logan et al. (2016), modeling hurricanes in the American Gulf Coast, found that advantaged population groups are more likely to move out of or avoid moving into harm’s way while socially vulnerable groups have fewer choices.

A second track of research challenges the overarching emphasis on involuntary immobility and barriers to movement by considering that immobility can be, and often is, a choice made by people experiencing adverse changes in their physical environment. These studies point out that immobility is not necessarily about not being able to migrate, but rather about wanting to stay, even in contexts of crisis. Black et al. (2013) acknowledge that the notion of a “trapped” population is not a straightforward scientific one, “because it is as difficult to distinguish, either conceptually or in practice, between those who stay where they are because they choose to, and those whose immobility is in some way involuntary.” Thiede and Brown (2013), in the same study of evacuation responses to Hurricane Katrina, divided those non-evacuees who were unable to move from those that chose not to, a distinction that previously had not been made in evacuation behavior. In highland Peru, Adams (2016) underlined the importance of place attachment over resource constraints in explaining some individuals’ choice to stay. In a similar vein, in Indonesian areas facing coastal flooding, Buchori et al. (2018) noted that most people preferred to stay and adapt in situ owing to social factors such as their community relationships. Farbotko, too, found that indigenous people of the Pacific increasingly prefer to stay on their lands for cultural and spiritual reasons rather than to relocate.

Such studies do not refute or reject the notion of involuntary immobility, but rather push for broader perspectives that acknowledge the choice to stay and, therefore, avoid inappropriate, or misguided, policy responses (Farbotko et al. 2020). In government organized relocation programs, for example, there is often significant resistance because drivers of voluntary immobility, including social and psychological factors, have not been considered (Adams 2016). Voluntary non-migrants have yet to be explicitly considered in UNFCCC climate processes outside of sparse references to adaptation in situ (Mallick and Schanze 2020).

The emphasis on agency in immobility opens up discussion on the appropriate unit of analysis—e.g., whether we can identify the need to move, the desire to move, and

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2 Most research focuses on immobility in areas of origin and not immobility “on the move,” e.g., when do people stop migrating, settle, or become “trapped in transit.” This is an important gap in the literature.

3 For more on the frequency and usage of trapped populations, see Ayeb-Karlsson et al. (2018).
the ability to move at the meso level (Ayeb-Karlsson et al. 2018; Zickgraf 2018). The Foresight report emphasized that “worse-off household” narrative, whereby households or groups are described as being at risk of becoming trapped because they have insufficient resources to migrate (Foresight 2011; Ayeb-Karlsson et al. 2018). However, research that refers to trapped populations at the household level or even community-level often rely on (head of) household survey data, without reflection upon intra-household or intra-community differences in their desires to stay (or go) and their ability to implement that decision. Studies on immobility at the individual level reveal important inequalities in (im)mobility decision-making and in the impacts of those decisions on vulnerability and/or resilience (Nawrotzki and DeWaard 2018; Logan et al. 2016).

The usage of migration theory at the environment-migration nexus

How can scholarship support the immobility push in environmental contexts? The answers may lie in more profound engagement with other fields. The persistent disconnect between migration theory and concepts and those of environmental hinders the speed with which we progress in scientific research (and, therefore, also in policy recommendations). There are certainly examples of environmental scholarship speaking to migration theory, but they rarely engage in an in-depth reciprocal conversation around immobility. This is somewhat perplexing considering the consensual starting point that migration is always multi-causal and that separating environmental migration from economic migration, for instance, is an arbitrary distinction of little value (Afifi 2011). Baldwin et al. state, “migration/mobility is irreducible to climate change” (2019, p. 291).

In fact, most knowledge on immobility comes from broader migration literature (i.e., not featuring environment as a driver of migration or key contextual variable) (Hammar et al. 1997; Carling 2002; Jönsson 2008; de Haas 2014; Carling and Schewel 2018; Schewel 2019). In one of the first contemporary migration volumes to explicitly elevate immobility, Hammar et al. (1997) tackled the tripartite relationship between migration, immobility, and development. They asked not just why some people go but also why some people stay, thereby questioning sedentary norms rather than assuming them a priori. In 2002, Jørgen Carling noticed that many of the people “left behind” in Cape Verde wanted to migrate but could not, primarily owing to poverty. Carling, noting this “involuntary immobility,” incorporated his findings into a model of migration that balanced people’s migration aspirations with their abilities—to which this paper will return (Carling 2002).

Immobility has been studied in refugee studies, too, notably when Lubkemann (2008) pushed for a complete theoretical reorientation of the field predicated on research findings from wartime Mozambique. They focused on the gendered impacts of civil conflict on pre-existing mobility patterns, demonstrating how women saw their mobility strategies disrupted while men’s continued international migration attenuated the detrimental impact of conflict. Unlike their male counterparts, women were displaced in situ and suffered from the combined effects of drought and civil war without the ability to move away from them. By focusing on exclusively on movement as a signifier of crisis, therefore, we are rendering an entire category of people invisible.

I now turn to three theories that apply, implicitly or explicitly, to the study of immobility in environmental contexts, their advantages, and disadvantages: the New Economics of Labour Migration (NELM), the Aspirations-(Cap)abilities framework, and the Mobilities paradigm. In line with the seminal work by Massey et al. advocating for theoretical pluralism in international migration, and argued for by Piguet in environmental contexts (Piguet 2018), each school of thought contributes valuable insights that have expanded the theoretical toolbox used to convey the complexity of (im)mobilities. Therefore, I do not assert that one theory should be used over another, but that they hold complementary explanatory power. This is not an exhaustive theoretical exploration, as a number of approaches could be successfully applied.

New economics of labour migration

The migration theory that underpins migration out of environmental areas as a strategic and adaptive response is that of New Economics of Labor Migration (Stark and Bloom 1985). Critical to NELM, the household, not the individual is the primary migration decision-making unit, and thus the appropriate unit of analysis (Stark and Bloom 1985; Stark and Lucas 1988). Seen this way, migrants and non-migrants undertake a collective migration decision for the well-being of the family. Migration may be an individual act, but acts as a household calculated strategy linked with (perceived) risks and the ability of migration to minimize and mitigate those risks (Stark and Bloom 1985; Stark and Lucas 1988; Lilleør and Van den Broeck 2011). Among migrant(s) and non-migrants, “[c]osts and returns are shared, with the rule governing the distribution of both spelled out in an implicit contractual arrangement between the two parties” (Stark and Bloom 1985, p. 174). The family provides support to the migrant during initial migration stages or in the case of

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4 Milan and Ruano (2014) distinguish between entire household migration and the migration of one member within the household.

5 See, for example, Piguet (2018), and Hunter et al. (2015).
need in the destination and migrant eventually returns that support to the family via remittances (Nguyen et al. 2015). Remittances generated—a “clause” in the contract—allow the household to diversify its income, decrease its reliance on local livelihoods, and, in doing so, offer a co-insurance strategy against risks (Stark and Lucas 1988).

Studies of this kind differentiate not between non-migrants or migrants as individuals, but between non-migrant households and migrant-sending households. Migration is, therefore, expected to support livelihoods and reduce vulnerability for the entire household. NELM has been applied to changing environmental conditions and rural to urban migration patterns (Abu et al. 2014; Milan and Ruano 2014; Afifi et al. 2015; Millock 2015; Atiglo 2017). NELM envisions migration as a strategic choice rather than an act of desperation, which has particularly appreciated within studies that interpret migration as adaptation (Bettini and Gioli 2016). In fact, many of the influential projects and reports advocating migration as an (actual or potential) adaptation strategy rely either implicitly or explicitly on its tenets (e.g., Foresight 2011; Warner and Afifi 2014). Even well before these works, several studies on environmental change and adaptive migration were rooted in NELM thinking (e.g., Yang and Choi 2007).

However, NELM has yet to be directly applied to studies of immobility decision-making. The advantage to applying an NELM approach is that non-migrants are not invisible or powerless because they themselves do not migrate. Non-migrants are not necessarily “left behind”; NELM acknowledges components of agency in immobility. They have (at least in principle) a voice in (im)mobility decision-making through their participation in family and household migration strategies, and partaking in its expected benefits. Non-migrant family members are not bystanders to “migration as adaptation” but adaptive actors by virtue of their membership in a migrant-sending household.

Additionally, NELM recognizes that migration is not available to every household. Decades before scholars would speak of trapped populations, Stark hypothesized that the most deprived households may privilege urgent survival and/or not be able to afford migration. Trapped populations are then the households, rather than individuals, that cannot access migration, even if they wish to. Presumably, the voluntarily immobile would be those households that are less vulnerable and have more assets and/or local formal and informal insurance mechanisms, decreasing the utility of migration.

Despite these strengths, NELM has also long been subject to critique (Abreu 2012). NELM has not often been used explicitly to explain non-migration at the individual or household level, nor have non-migrants’ roles in decision-making and in subsequent translocal and transnational relationships been adequately explored in case studies relying on this framework. Rather, the immobile are background actors boxed into two categories: (1) the receivers of remittances, enabled by the migration of some so that they may stay; and (2) the “left behind,” those households who are unable to migrate or to benefit from the mobility of individual members.

To that effect, one of the key weaknesses of applying an NELM perspective to understand and explain immobility is the oversight of inter- and intra-household dynamics, power imbalances, and inequalities (Gioli and Milan 2018). As Baldwin et al. remark (2019, p. 291), “adaptive capacity is highly uneven, mediated by intersectional considerations, such as one’s position in relation to capital, gender, ethnicity, class, race, and sexuality.” NELM assumes that the household is a collective, harmonious unit: i.e., that its constituent members all agree on the decision to migrate, whom should migrate, and share equally in its benefits (de Haas and Fokkema 2010).

With its reliance on NELM, migration-as-adaptation also inherits its weaknesses, since one could level the same critiques. Immobile households and individuals within migrant-sending households remain relatively understudied and undervalued—perpetuated by head of household studies that favor the powerful and neglect the powerless. Conflict over these decisions and unequal power structures within households, including gendered roles, which may give way uneven benefits are minimized if not outright ignored (Gioli and Milan 2018; Atiglo 2017; Bettini and Gioli 2016; Thieme et al. 2011). Individuals also perceive risk differently according to the social context in which they are embedded. For example, gender norms have been shown to shape perceptions of risk and subsequent evacuation behaviors (Bateman and Edwards 2002). This calls for more multi-scalar approaches that address the social complexity of household (or individual) (im)mobility decision-making.

**Aspirations-(cap)abilities framework**

An alternative route to understanding (im)mobility decision-making more suited to the individual level is via the aspirations-abilities framework, developed by Jørgen Carling in 2002. This analytical framework explains migration and non-migration as functions of people’s aspirations to migrate and their abilities to do so. Originating in international migration, the model’s usage was presented as a general framework, appropriate “for analyzing migration within most contexts,” which makes it easily adaptable to environmental contexts (Carling 2002, p. 8).

One of the strengths of this two-step approach is that it is a “refreshingly simple” take on why some people migrate but others do not: a migration “aspiration” is defined as “a conviction that migration is preferable to non-migration” and “ability” is then their “capacity to convert this wish into reality, given context-specific obstacles and opportunities”
(Carling and Schewel 2018, pp. 945, 946, 955). Carling initially identified three possible (im)mobility outcomes: voluntary non-migrants (those who do not aspire to migrate, ability to migrate then being a moot point), involuntary non-migrants (those who aspire to migrate but lack the ability to do so), and migrants (those who have both the aspiration to migrate and the ability to realize migration). This stands in contrast to the more mobility-focused typology posed by Black et al. (2013) that stated in the context of extreme environmental events one can distinguish between displacement, migration, and immobility.

Employing capabilities, Schewel (2019) added a fourth category of “acquiscent immobility” that recognizes that there are differences between those who choose to stay when they have the ability to migrate and those who choose to stay without the necessary means to migrate. This is a category yet to be widely applied in environmental research, but one that has potential to complicate how we identify trapped populations versus voluntary immobility. Borrowing from aspirations-capabilities, we might pursue the study of environmental immobility of three ideal types: voluntary immobility, acquiescent immobility, and involuntary immobility (or trapped populations).

Although the aspirations-abilities framework and trapped populations denote a somewhat step-by-step process in which one identifies a need to migrate (in trapped populations), then the aspiration to do so, and finally the ability, (im)mobility decision-making is rarely so linear a process. De Haas’s subsequent iteration expanded Carling’s framework by replacing ability with capability drawing on Sen’s approach (1999). They define human mobility as “people’s capability (freedom) to choose where to live, including the option to stay” (de Haas 2014, p. 1). Moving and staying are, therefore, considered to be complementary manifestations of the same migratory agency. Capability and ability may seem interchangeable, but Carling and Schewel tease out this subtle but theoretically important distinction:

The capabilities approach suggests that the capability to migrate is a valuable freedom in its own right, regardless of people’s preferences for staying or leaving. Whereas the aspiration/ability model considers ‘ability’ to migrate only among people who aspire to migrate, the ‘capability’ to migrate is, by definition, equally relevant to all. (Carling and Schewel 2018, p. 957)

To date, research on environmental immobility does reference aspirations to migrate or the desire to stay, but without a strict regard for differences between ability, capability, and capacity. The three terms are used interchangeably, without much critical reflection. In Foresight and other publications by its authors, ability is the preferred metric (Foresight 2011; Black and Collyer 2014a, 2014b). Moving to an aspirations-capabilities framework has more explanatory value for understanding both immobility and mobility outcomes in more profound ways. It also allows a reciprocal dialogue. Mallick and Schanze (2020), in one of the few efforts to theoretically articulate non-migration in environmental contexts according to aspirations-capabilities, propose a coordinate system distinguishing “aspirations to stay” from “aspirations to move,” and “capabilities to stay” from “capabilities to move,” offering a new perspective to broader migration studies. They note (2020, p. 4718), “environmental non-migration is more than simply the opposite of environmental migration; the push and pull factors of migration cannot explain the roots of decisions to stay put in the face of climate risks.”

Trapped populations are in many ways derived from the aspirations-abilities with one critical difference—the need to move. Black and Collyer (2014b) acknowledge aspirations-abilities but set the concept of trapped populations apart owing to the incorporation of need. They make the valid point that in crisis situations such as environmental disasters, aspirations are insufficient to capture the urgency of the intention to migrate nor can aspiration and need be conflated as Carling and Schewel (2018) do. Even when there is a humanitarian need to migrate, some people will choose to remain (Black and Collyer 2014b). Its advocates concede that they do not separate categories of forced migration from those of voluntary migration, arguing that there is no clear theoretical distinction between the two because, as is also often said in environmental mobility literature, almost all forms of migration entail choices and constraints (Carling 2002; Schewel 2019). They do, by contrast, distinguish between voluntary and involuntary forms of immobility, with the reason for this apparent contradiction unclear. In this case, studies on immobility in environmental contexts, including in sudden-onset disaster situations, may be used in the future to theorize the role of need within the aspirations-capabilities framework.

**Mobilities paradigm**

Researchers may better understand (im)mobility decision-making and outcomes at the household level using NELM and at the individual level using aspirations-capabilities frameworks, but it is the mobilities paradigm that facilitates new ways of thinking about complex (im)mobility dynamics in environmental contexts. Developed in the 1990s by

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6 Carling (2002) does touch upon refugee contexts such as conflict, noting that the problem of involuntary immobility is likely to be particularly acute in these cases.

7 Although scholars debate whether or not mobilities is indeed a paradigm.
Urry, Sheller, et al., this perspective sheds migration/non-migration distinctions and moves toward an understanding of how mobilities and immobilities intersect, impact, and define one another (Urry 2000; Sheller and Urry 2006; Hannam et al. 2006; Urry 2007). It involves theoretical and methodological approaches examining movement of people, objects and information, speed and barriers, and the representations and meanings attached to such movement and stasis (Sheller and Urry 2006; Sheller 2018). Cresswell (2010, p. 160) defines mobility as the entanglement of movement, representation, and practice: “the fact of physical movement: getting from one place to another; the representations of movement that give it shared meaning; and, finally, the experienced and embodied practice of movement.” Unlike NELM, which concentrates on migration at the household level, (im)mobilities form part of an integrated multi-scalar system connecting individuals, families, communities, and nations with flows of people, goods, technologies, transport, and information.

The mobilities approach, until the past few years, had largely been left out of in environmental contexts despite the continual assertion that human mobility is comprised by a variety of continua (in agency, space, time). Beginning to remedy this gap, authors have examined “Anthropocene mobilities” (Baldwin et al. 2019), “environmental mobilities” (Boas et al. 2018), and called for a new research agenda that frames a range of movement and stasis under the heading of “climate mobilities,” which “encompasses the multiple forms, directions and multiplicities of human movement in the context of climate change, as well as the transformative character of mobility and its impact on places of origin, transit and destination” (Boas et al. 2019, p. 902).

There are multiple advantages to approaching immobility within a mobilities gaze (Zickgraf forthcoming). The first is the relational tenet that mobilities and immobilities are inseparable and play out on different, intertwined scales (Adey 2006; Hannam et al. 2006). They are also subjective, “one person’s speed is another person’s slowness” (Cresswell 2010, p. 162). Adey (2006, pp. 76–77) highlights “while things are always on the move, they can appear in a fixed and stable manner because mobilities are all different, and we relate to them in different ways.” This stands in contrast to research that concentrates on objective, fixed categories based in migration status (and thus defined by the state) of migrant or non-migrant. As highlighted by Wiegel, Boas, and Warner, “relative immobilities might consist of diverse local mobility patterns rather than absolute stillness, which remains unrecognized when only focusing on the distance covered” (2019, p. 5).

It also allows research to expand beyond the drivers of immobility decisions, and to document and analyze spatio-temporal dynamics of movement and stasis, their representations, and practices within and out of environmental contexts (Cresswell 2010). Importantly, “Micro-mobilities” or “everyday mobilities” are embedded in uneven multi-scalar power relations that determine vulnerability to environmental changes as well as (im)mobility options (Wiegel et al. 2019). Mobilities emphasizes the constitutive role of movement within most social institutions and practices, and focuses on how power is organized within systems governing mobility and immobility at local, regional, and global scales: “Such systems are culturally shaped and politically governed by mobility regimes that govern who and what can move (or stay put), when, where, how and under what conditions” (Sheller 2018, p. 19). Here, the importance of power relations and the influence of political structures in determining how (im)mobility is accessed as a resource, when, and by whom is an important question yet to be adequately integrated in studies of environmental immobility (Zickgraf 2019).

That is not to say that the mobilities perspective is without fault if not cautiously applied. Categories of migration and non-migration are useful analytical tools with real-world meaning and implications, including associated rights and protections. Additionally, mobilities scholars when engaging with environmental concerns have not always done so with due nuance. Baldwin et al. (2019) note that one of the mobilities approach’s key authors, Sheller (2018) deploys climate refugee in a relatively unproblematized manner and that the paradigm may benefit from engaging with critiques of climate and migration to deepen theoretically valuable notions like mobility justice. The authors refer to it a “missed opportunity to position mobility justice as both a powerful methodological and normative alternative to those who would approach the relationship between the impacts of climate change and migration as a problem that warrants technical solutions” (Baldwin et al. 2019, pp. 290–291).

It also can be misused to assert that everything and everyone is mobile, empowering non-migrants by reframing them, too, as mobile actors operating on smaller temporal and/or geographical scales. Adey (2006) acknowledges the potential for overextension if mobility to the point of meaninglessness, arguing that practically everything is mobile but that research must focus on “the contingent relations between movements” if mobilities is to have any analytical value (2006, p. 75). Lastly, as with many migration theories, the mobilities paradigm can be interpreted as favoring movement, privileging it over immobility. Restoring and recognizing agency for non-migrants cannot, therefore, be done exclusively by showing how they, too, exercise movement, which threatens to underestimate the many other ways people adapt and cope with the impacts of environmental change that do not involve any form of mobility. De Haas, in advocating for capabilities but also valid here, rightfully asserts that agency “can also involve the choice not to act” and that what matters is that choice is present (2014, p. 25).
Discussion

These three frameworks provide theoretical avenues for research on immobility in environmental contexts. Each has been taken up to some degree in environmental migration studies, but rarely have they been stringently tested in the study of immobility. Their systematic application to (im)mobility in environmental contexts can advance scholarship on (im)mobility decision-making, dynamics, and impacts, and it may reciprocally contribute to the refinement of existing migration frameworks.

NELM forms the basis for migration-as-adaptation discourses, whereby migration is a collective, strategic decision: in migrant-sending households, people stay because their relatives have left, enabling them to remain and face environmental changes or shocks through the diversification of livelihoods and financial remittances generated. Thus, although environmental migration studies based in NELM rarely focus on non-migrants, the framework may be used in the future to shed light on the precise role of non-migrants in the decision-making process, their “investments” in migration, and, eventually, their influence over remittances and their allocation. However, NELM assumes that migration is a rational economic behavior, leaving little room for real-world complexity. Its application has largely been to preemptive, voluntary migration for natural resource-dependent livelihoods affected by slow-onset climatic changes, offering little by way of explanatory value for sudden-onset disaster situations. It does not offer insights into (im)mobility decision-making at the individual level or recognize intra-household power imbalances shaped by social structures and norms. A promising research avenue would be household-level studies that also investigate the real participation of all members and the broader social contexts in which individuals and households are embedded.

An aspirations-capabilities framing more readily addresses the individual choice to stay in sudden or slow onset contexts through its take on migration as a function of people’s desires to migrate and their (cap)abilities to do so. The notion of trapped populations fits fairly well with aspirations-capabilities while challenging the framework to account for the need to migrate, a critical feature of climate change scenarios. Aspirations-capabilities contributes to elaborations of immobility “types” by distinguishing between involuntary, voluntary, and, more recently, acquiescent immobility. Acquiescent mobility provides an important distinction that does not appear in current binary framings of involuntary versus voluntary immobility in environmental contexts. It acknowledges that people may choose to stay regardless of whether or not they can migrate, raising important questions for future scientific inquiries. As suggested by Mallick and Schanz (2020), future research should elaborate upon the aspirations and capabilities to stay rather than considering immobility as a function of migration aspirations or capabilities, the opposite of environmental migration.

The mobilities paradigm suggests the distinction between migrant and non-migrant is not so easily categorized as the former two would suggest. There are a host of movements that classic migration categories are incapable of capturing. It also emphasizes that the choice to go or stay is not all that matters—it is also the multi-scalar dynamics, parallel flows, and the consequences of environmental (im)mobility choices on the individual, their family or household, and their communities that require in-depth research. It allows scholarship to develop beyond the act of migration, filling an important gap in current thinking on immobility. It recognizes, moreover, that migrants or non-migrants do not exist a priori, but are “made” through regulations, visas, and border processes (Hui 2016). However, without cautious application, it may be used to assert that everyone and everything is mobile, further obscuring the plight and the value of immobility.

In different environmental, social, economic, demographic, and political contexts, aspects of (im)mobilities could be explained by one or more or none of these options. No one theory can, nor should, explain (im)mobility in the face of environmental change. More likely a combination of concepts and theories will support the advance of knowledge. We have yet to sufficiently analyze, for example, the relationships between those who stay and those who go, and to explain (externally) non-rational behaviors, including the return to environmentally at-risk areas. Scholarship often tries to explain why people move away from risk, or why they cannot or will not, but the social relations connecting migrants and non-migrants, and motivating remittances, are to date underexplored within contexts of environmental change. NELM frameworks assume that migrants will (eventually) remit to non-migrant family members. Aspirations-capabilities seeks to explain why some migrate and others do not, but does not ask what happens after. A mobilities lens allows us to see the ways in mobility and immobility intersect in concrete measures of time and space, but also in terms of emotional, cultural, and social moorings (Adey 2006; Hannam et al. 2006). In this way, attachments to place, frequently used to explain an absence of—or resistance to—migration, can also explain why many migrants stay connected socially, materially and psychologically to, and grounded in, their societies of origin.

In this regard, a fourth body of literature holds potential in the pursuit of knowledge on environmental immobility: transnational and translocal studies (Glick Schiller et al. 1992; Levitt and Glick Schiller 2004; Portes 1997). With its emphasis on connective ties between those who move and those who stay, without assuming them, it can elucidate return to environmentally at-risk areas and the social meaning behind (social and financial) remittance, mobility,
and communication practices connecting migrants and non-migrants in social spaces (Faist 2000; McKay 2007; Thieme et al. 2011; Sakdapolrak et al. 2016). Further engagement with the migration concepts of transnationalism and trans-locality may help future research to identify social and cultural mechanisms that facilitate adaptation in situ or on the move, while incorporating critical spatial and political dimensions. Research that applies transnational or trans-local multi-sited methodologies can also help to overcome the research divide that prioritizes migration or non-migration, mobility, or immobility, by following the relationships between and among the (im)mobile and critically approaching the socio-economic and political contexts in which they occur.

Conclusion

Since the “birth” of trapped populations, research (and to a lesser extent policy) awakened to the potential that climate change will not uniformly increase migration and may, to the contrary, inhibit the capabilities of some people to move. Trapped populations provide a useful heuristic device shedding light on a previously ignored, and potentially dangerous, situation. When facing even the direst of environmental conditions, however, many people still prefer immobility over migration, rebutting external rational actor assumptions. The diversity and unevenness of environmental immobility requires more theoretical engagement to understand the multiple forms of immobility, what drives immobility, when it occurs, and what its consequences are on micro-, meso-, and macro-scales.

Migration theories have undoubtedly influenced our understandings of how migration “works” in contexts of environmental change, and can also help elucidate immobility. There is no silver bullet with which we can theorize (im) mobility, but reaching across disciplinary and methodological boundaries and bringing in environmental, social, and migration conceptual frameworks can certainly help. This piece explored three perspectives from migration studies and gestured to a fourth, but to progress scientifically research should not merely appropriate but challenge and engage in conversations across any number of fields. The discussed frameworks have largely been developed outside of crisis contexts, including sudden-onset disasters. Refugee studies, for example, may also offer insights that we are currently lacking in our explorations of climate contexts. Theories of (im)mobility decision-making, patterns, and outcomes may benefit from concepts, theories, and evidence from environmental and disaster studies.

Better understanding immobility is not only an academic exercise. The ways in which immobility is conceptualized have impacts on policy perspectives around these issues. The sistering of migration as adaptation and trapped populations is logically tied to the promotion of solutions that facilitate migration out of vulnerable areas. However, this can lead to a mobility bias in policy, whereby the “right” to stay is overlooked (Farbotko et al. 2020). No matter the theoretical or conceptual perspective used to approach (im)mobilities, scholars should not hierarchize movement nor stasis a priori. (Im)mobility is dynamic not fixed: mobile people may become immobile and immobile populations may become mobile; people may stay by choice but then eventually find themselves trapped. By expanding the theoretical toolbox and opening up new lines of inquiry, including what happens after an initial (im)mobility decision and the relationships between migrants and non-migrants, destination, and origin areas, research can better inform and support balanced policy measures.

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